

Abstracts Book



CONGRESS

17-20 APRIL
2024

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S01: BASIC RESEARCH

Moderators: Darius Bägli (Canada), Nicolas Kalfa (France)

ESPU Meeting on Wednesday 17, April 2024, 13:15 - 14:15

13:15 - 13:18

S01-1 (OP)

SINGLE CELL ANALYSIS REVEALS THE EFFECT OF ANTI-PLA2R AND ANTI THSD7A SERA ON HUMAN GLOMERULAR CELLS

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PURPOSE

Primary membranous nephropathy (MN) is a leading cause of nephrotic syndrome in adults due to the deposition of anti-podocyte antibodies in the glomerular subepithelial space. Several podocyte proteins have been identified as targets of these autoantibodies, with PLA2R1 and THSD7A making up about 80-85% of the total. We investigated the specific effect of anti-PLA2R and anti-THSD7A on glomerular cells using single cell transcriptomics on a human glomerulus-on-a-chip (GOAC) system.

MATERIAL AND METHODS

GOACs were generated using human primary podocytes and glomerular endothelial cells and cultured with serum containing anti-PLA2R+ or anti-THSD7A+ antibodies for 72 hours. Sera from healthy individuals were used as a control. Three samples from different individuals were used for each group. Albumin leakage assay was performed on GOAC to confirm injury. Single cell RNA-seq analysis (scRNA-seq) with a depth of 30K reads/cell was performed on isolate cells. Downstream analyses were done using UMAP, gene and pathway enrichment, and intra- and inter-cluster comparative transcriptomics.

RESULTS

Exposure to anti-PLA2R and anti-THSD7A sera from MN patients confirmed injury on the GOAC as shown by onset of albumin leakage. scRNAseq analysis showed robust activation of the complement pathway in both cohorts, as expected. Preliminary analysis also showed different activation of injury pathways in both human podocytes and human glomerular endothelial cells.

CONCLUSIONS

In conclusion, we have successfully performed scRNAseq data on human cells obtained from GOACs exposed to patients' sera. This combination of technologies will help us unravel the glomerular mechanisms of injury in MN and provide potential new targets for the treatment of nephropathies and other glomerular diseases.

★ IMPACT OF BISPHENOLS ON HUMAN EMBRYONIC QUALITY AND GONADAL FUNCTIONS.

Marie BOUSQUET ¹, Marie-Emilie LEBACHELIER DE LA RIVIERE ², Sarah AMAR ¹, Manon GAYET ¹, Virginie MAILLARD ², Aurélien BINET ³, Fabrice GUERIF ⁴ and Sébastien ELIS ²

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PURPOSE

Bisphenol A (BPA) is known as an endocrine disruptor and has been prohibited since 2015. The increasing use of structural analogs of BPA, including bisphenol S (BPS), raises concerns about the adverse effects they can share with BPA on human reproduction.

The first aim of this study was to describe the potentially negative effects of bisphenols on the quality of human embryos produced in vitro for medically assisted reproduction (MAR). The second one, was to investigate the individual factors of variability in the effects of BPS on steroidogenesis.

MATERIAL AND METHODS

Human granulosa cells (HGC) and follicular fluid (FF) were collected from oocyte punctures from women undergoing MAR from January 2019 to April 2023. First, we measured the concentrations of 4 bisphenols in the FF of each patient (mass spectrometry). The "exposed population" included patient with at least one positive dosage. Secondly, we individually cultured HGC at different BPS concentrations and then assessed in vitro steroidogenesis by measuring progesterone and estradiol concentrations (ELISA test). Finally, a correlative study was carried out after gathering patients' clinical data and embryos' characteristics.

RESULTS

We included 368 patients.

Exposure of follicular fluids to bisphenols represented 18.8% of the study population, with mainly BPS (52.5%). Embryo rate was higher in the exposed population ($p < 0,05$). Bisphenols' concentrations in FF were negatively correlated with the number of "high-quality embryos" ($R = -0.35$; $p < 0,05$).

In vitro, BPS decreased progesterone and estradiol secretions by HGC ($p < 0,001$). Progesterone secretion by HGC seemed to be more inhibited in lean individuals ($R = 0.33$; $p < 0,05$).

CONCLUSIONS

This suggests potentially negative effects of BPS on human reproduction. Firstly, BPS alters ovarian steroidogenesis in vitro. Secondly, because of its estrogenic properties, BPS may promote embryonic development in vitro to the detriment of embryonic quality, with potentially deleterious consequences for the future child.

★ IMPACT OF ENDOCRINE DISRUPTORS ON GONAD DEVELOPMENT: BISPHENOL S MODIFIES IN VITRO STEROIDOGENESIS OF HUMAN GRANULOSA CELLS

Sarah AMAR ¹, Aurélien BINET ², Ophélie TETEAU ³, Alice DESMARCHAIS ³, Pascal PAPILLIER ³, Marlène Z. LACROIX ⁴, Virginie MAILLARD ⁵, Fabrice GUERIF ⁶ and Sébastien ELIS ⁵

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PURPOSE

Deleterious effects of endocrine disruptors (ED) on fertility, sexual behaviors and sexual differentiation have been proven in various species. In human, a growing number of studies show a link between ED and the increasing incidence of genital malformations and reduced fertility.

Bisphenol S (BPS) is a structural analog of the endocrine disruptor bisphenol A (BPA) and main BPA replacement in the plastics industry. Previous studies have shown BPS to exhibit similar effects on reproduction in different species. BPS reportedly alters steroidogenesis in bovine granulosa cells. However few studies exist in humans.

We aimed to study in vitro effects of BPS on primary human granulosa cells (HGC), playing an essential role in folliculogenesis and organogenesis, particularly genital organogenesis.

MATERIAL AND METHODS

Luteinised HGC collected from 59 women undergoing in vitro fertilization procedure were cultured for 48h in the presence or absence of BPS (10nM to 50µM). BPS exposure was investigated by assessing follicular fluids for its metabolites (BPS-glucuronide or BPS-G) by mass spectrometry. Culture medium, cells, total messenger RNA (mRNA) and total protein extracted were examined for oestradiol and progesterone secretions, cellular proliferation, viability, gene expression, steroidogenic enzyme expression and cell signaling.

RESULTS

BPS-G were found in 18.6% of patients. 10 or 50µM of BPS induced a 16% ($p=0.0059$) and 64% ($p<0.0001$) decrease, respectively, in progesterone secretion. Fifty µM BPS decreased oestradiol secretion by 46% ($p<0.0001$). Ten µM BPS tended to reduce CYP11A1 protein expression by 37% ($p=0.0947$). Fifty µM BPS increased ER α expression. No effects on cell proliferation or viability.

CONCLUSIONS

BPS appears to exert deleterious effects on HGC, and further studies are needed to investigate the underlying mechanisms. The disruption of steroidogenesis in the context of organogenesis is probably not without consequences via this pathway. The effects of BPS were observed after only 48h of BPS exposure. These acute effects might be similar to chronic effects of physiological BPS levels.

★ THE LOSS OF DNAH8 RESULTS IN HYPOSPADIAS AND MALE DIFFERENTIATION ANOMALIES DUE TO A DECREASE IN PRENATAL TESTOSTERONE LEVELS BY DELAYING DIFFERENTIATION OF STEROID PRECURSOR CELLS

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PURPOSE

The formation of hypospadias is affected by prenatal androgen levels. However, the precise role and timing of genetic factors in this process remain unknown.

MATERIAL AND METHODS

Using whole exome sequencing analysis, we identified DNAH8 as the a new risk gene for hypospadias and established a DNAH8 KO mouse model. Morphological techniques were employed to analyze urogenital development and male differentiation in fetal mice. Furthermore, we utilized ELISA and RT-qPCR to assess testosterone levels and gene expression in steroid biosynthesis pathways. Proteomics and single-cell RNA sequencing combining with immunohistochemical staining were applied to analyze the testicular and external genital cells in fetal mice.

RESULTS

We found that DNAH8 KO mice exhibit hypospadias and male differentiation anomalies due to local effects of DNAH8 loss and systemic effects of testicular hormone deficiency. DNAH8 knockout results in a decreased number of fetal Leydig cells (FLCs) in the testes, accompanied by reduced expression of Hedgehog pathway and steroidogenic genes. Notably, the absence of DNAH8 retards the differentiation of steroid progenitor cells into FLCs, leading to a decline in prenatal testosterone levels, decreased cell population in the distal glans of the external genitalia, and ultimately affecting the proper formation of the urethra.

CONCLUSIONS

DNAH8 play key roles in testosterone production during the androgen-sensitive window, providing significant insights into the underlying pathogenesis of hypospadias as well as genetic counseling.

13:38 - 13:41

S01-5 (OP)

★ GENETIC ROLE OF ANDROGEN RECEPTOR IN ANDROGEN INSENSITIVITY SYNDROME AND ITS LINK TO HYPOSPADIAS AND CRYPTORCHIDISM

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PURPOSE

Androgen insensitivity syndrome (AIS) is a rare genetic male reproductive disorder characterized by mutations in the androgen receptor (AR) gene. AIS patients typically exhibit clinical features such as hypospadias and cryptorchidism. Despite the description of approximately 600 mutations within four functional domains of the AR gene in AIS, the precise genotype-to-phenotype relationship between AR and AIS, as well as between hypospadias and cryptorchidism, remains unclear.

MATERIAL AND METHODS

For a comprehensive exploration of the potential genetic role of AR in complete (CAIS), partial (PAIS) and mild AIS (MAIS), we initially investigate the distribution of different types of AR mutations in AIS using the public database. Subsequently, we conducted AR gene sequencing in 56 AIS patients exhibiting diverse outcomes enrolled from 2015 to 2022, categorizing each variant into groups such as missense, stop codon, insertion, deletion, duplication, and others

RESULTS

The distribution of various types of AR mutations in AIS indicates that mutations with a more substantial effect size are more commonly observed in individuals with CAIS than in those with PAIS and MAIS ($p < 0.001$), as reported in the androgen receptor mutations database. Individuals with high-impact AR mutations are more susceptible to developing cryptorchidism ($p < 0.05$) compared to other mutation types, but there is no significant difference in the development of hypospadias ($p > 0.05$).

CONCLUSIONS

The severity of AIS can vary widely and can be considered as an AR dosage-dependent condition. These findings provide new insights into the genetic role of AR in the development of AIS, hypospadias, and cryptorchidism.

13:41 - 13:44

S01-6 (OP)

LONG-TERM IMPACT OF DOXORUBICIN EXPOSURE IN CHILDHOOD- A MURINE MODEL

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PURPOSE

To examine the long-term effects of systemic doxorubicin (DOX) exposure during childhood on lower urinary tract (LUT) function using a juvenile murine model. DOX plays a pivotal role in the treatment of pediatric cancers, while it has a wide range of side effects including cardiotoxicity and nephrotoxicity. In our recent study, childhood cancer survivors with a history of DOX and/or vincristine exposure reported a significantly increased rate of LUT symptoms compared to a control cohort. Hence, DOX and vincristine exposure in childhood requires consideration of urological complications and long-term side effects.

MATERIAL AND METHODS

After IACUC approval, DOX (3mg/kg/week) was administered intravenously to CD-1 mice for six consecutive weeks (10-17-year-old in human). Control mice received saline similarly. Five weeks after the treatment (early twenties human age), the LUT impacts of DOX exposure were evaluated by bladder histology and physiological recording using bladder strips.

RESULTS

DOX caused induced a significant decrease in the growth ratio, while the bladder weight was compatible between the two groups in both sexes. Bladder histology showed an increased detrusor layer ratio to total area in DOX-treated mice compared to control group, especially in males (69 ± 2 vs. $64 \pm 1\%$, $p=0.0514$). Relative to the control group, the bladder strips from DOX-treated females showed a marked decrease in maximal contractile force produced by depolarization of myocytes (0.46 ± 0.05 vs. 0.30 ± 0.03 g/mg, $p=0.010$) as well as by nerve-excitation (EFS, $p<0.001$) and cholinergic receptor activation ($p<0.001$). On the other hand, no significant differences in the contractility were observed between the two groups of male mice. These results suggest that DOX treatment in early age affected bladder muscle physiology at later age, especially in females.

CONCLUSIONS

DOX exposure in childhood induces LUT dysfunction as a long-term effect. Prospective monitoring for LUT dysfunction could benefit childhood cancer survivors who received DOX.

13:55 - 13:58

S01-7 (OP)

RENAL PROGENITORS DISPLAY ABERRANT SIGNALING IN WILMS TUMOR

Julia KOIVULA ¹, Niklas Alarik PAKKASJÄRVI ² and Satu KUURE ³

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PURPOSE

The regulation differences between normal tissue-residing stem cells and Wilms tumor (WT) stem cells remain elusive. We previously demonstrated that the MAPK/ERK pathway is pivotal in regulating nephron progenitor self-renewal and collecting duct progenitor maintenance. Given indications from past research linking MAPK/ERK activity with WT through IGF2 overexpression mediation, our current study seeks to elucidate the signaling cascades and cellular transitions of renal progenitors during both development and tumorigenesis.

MATERIAL AND METHODS

We isolated renal progenitor cells from MAPK/ERK-deficient mouse embryonic kidneys ($n=4$ /genotype) and subjected them to bulk RNA sequencing. We then conducted differential gene expression analysis to identify aberrant transcripts between wild type and MAPK/ERK-deficient progenitor cells. Further, we employed multiple pathway analyses to contrast these transcriptional alterations with those observed in WT samples.

RESULTS

GO and KEGG pathway analyses revealed several shared pathways with contrasting expression patterns in WT and MAPK/ERK-deficient renal progenitors, including cell cycle regulation. Notably, we identified novel pathways linked to extracellular matrix and chromatin regulation. Extracellular matrix-related changes (395 transcripts) were detected in both nephron progenitors and WT, suggesting that WT transformation involves dysregulation of extracellular matrix, possibly downstream of the MAPK/ERK pathway. Interestingly, chromatin related alterations (142 transcripts) were divergent in WT and nephron progenitors ($p < 0.05$).

CONCLUSIONS

Renal progenitor cells and WT exhibit divergent signaling pathways. These disparities encompass novel pathways linked to extracellular matrix and chromatin regulation. Identification of these will in the future provide means for accurate diagnostics, enabling risk-stratified treatment options.

13:58 - 14:01

S01-8 (OP)

THE IMPACT OF INTEGRINS ON SELF-RENEWAL AND DIFFERENTIATION OF CANCER STEM CELLS IN WILMS TUMOR

Astgik PETROSYAN, Valentina VILLANI, Paola AGUIARI, Min MADHI, Matthew THORNTON, Brendan GRUBBS, Roger DE FILIPPO, Kevin LEMLEY, Gregory SHACKLEFORD, Anat ERDREICH-EPSTEIN, Stefano DA SACCO and Laura PERIN

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PURPOSE

Wilms Tumor (WT) is the most common pediatric renal cancer. Growing evidence links WT to aberrant nephrogenesis. While studies highlighted the genetic complexity of WT, little is known about the molecular mechanisms that regulate WT development. Here we report that uncommitted nephrogenic progenitors (NPs) expressing SIX2 and CITED1 (the master regulators of renal development) present characteristics of cancer stem cells (CSCs) and are the ones driving WT. We have also studied the role of integrins in these NPs in regulating WT development.

MATERIAL AND METHODS

WT and human fetal kidney (hFK) samples were histologically analyzed, digested to single-cell suspension, incubated with Smartflare-probe to isolate SIX2+CITED1+ cells, and processed for RNA-seq, single-cell RNA-seq and spatial transcriptomics. Xenografts of WT-NPs and hFK-NPs were generated and tumor formation was assessed. Analyses of mechanisms that regulate self-renewal vs. differentiation were performed in vitro and in vivo. Knockdown with miREs against SIX2 and CITED1 was performed on WT-NPs and processed for RNA-seq.

RESULTS

By comparing NPs from different WT subtypes and NPs from hFK we identified that cells expressing SIX2 and CITED1 fulfill CSC criteria, reliably recapitulating WT in transplantation studies. We showed that self-renewal vs. differentiation of SIX2+CITED1+ WT CSCs is regulated by the interplay between integrins ITGB1 and ITGB4. WT transplantation studies show that blocking ITGB1 or ITGB4 leads to higher number of SIX2+CITED1+ cells in the xenografts. Knockdown of SIX2 and CITED1 increased expression of kidney differentiation markers LHX1, WNT7B, PODXL, MECOM, reduced expression of nephrogenic markers MEOX1, TMEM100, EYA1, MAYFB, and increased expression of ITGB1, ITGB4, and LAMA5.

CONCLUSIONS

These studies define SIX2+CITED1+ cells as the nephrogenic CSCs of WT, where ITGB1 and ITGB4 interplay may play a role in self-renewal vs. differentiation and serve as a potential target for new strategies to treat WT.

14:01 - 14:04

S01-9 (OP)

MITOCHONDRIAL DYSFUNCTION IN WILMS TUMOR CANCER STEM CELLS

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PURPOSE

We have identified in cells co-expressing SIX2 and CITED1 the cancer stem cells (CSC) that regulate Wilms tumor (WT) development. Our comparative in vitro and in vivo analysis highlighted that mitochondrial dysregulation plays a critical role in modulating biology of these CSC. In this work, we have performed transcriptomics analysis and mechanistic in vitro studies to assess impact of mitochondria function on WT stem cell biology

MATERIAL AND METHODS

SIX2+CITED1+ expressing CSC were isolated using smartflare probes from favorable and unfavorable WT and human fetal kidney (hFK) samples and processed for bulk and scRNA-seq. Differential gene expression and GO ontology analysis were performed to identify differences across samples. Data generated were further confirmed by bulk RNAseq on WT-CSC in which SIX2 or CITED1 were either knocked down or overexpressed, by Spatial Transcriptomics analysis, as well as by in vitro experiments and in vivo WT xenografts.

RESULTS

scRNAseq analysis revealed key differences in gene expression involved in mitochondrial function and dynamics including fission (DRAP1, DNM2, MFF and MEIF2) and fusion (MFN1/2 and OPA1) along with changes in the normal metabolomic and oxidative state. In addition, knocking down SIX2 or CITED1 in WT-NP confirmed their critical role in regulating mitochondrial dynamics and influencing their proliferative capacity and self-renewal. Spatial transcriptomics analysis further confirmed our findings, indicating the presence of mitochondrial and metabolic dysregulation in WT-CSC.

CONCLUSIONS

These data for the first time identify mitochondrial changes as a possible driver in regulating WT formation and progression, in addition to offering potential target for the discover of new WT treatments

S02: CASE REPORTS

Moderators: Berk Burgu (Turkey), Perviz Hajiyev (Azerbaijan)

ESPU Meeting on Wednesday 17, April 2024, 14:45 - 15:55

14:45 - 14:49

S02-1 (CP)

★ RENAL FUNCTION RECOVERABILITY FOLLOWING PYELOPLASTY FOR NON-PERFUSED KIDNEYS BY RADIOISOTOPE SCAN IN INFANCY: OUTCOME OF THREE CASES.

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PURPOSE

Renal isotope scan is considered the most accurate method for diagnosis of a nonfunctioning kidney radiologically. To the best of our knowledge, there is no data regarding outcome of pyeloplasty for congenital ureteropelvic junction obstruction (UPJO) in a nonfunctioning kidney. We present the outcome of pyeloplasty in 3 selected male infants born with antenatal hydronephrosis and had no perfusion of the affected renal units on preoperative nuclear renal scan.

MATERIAL AND METHODS

Basal preoperative renal ultrasound and renal isotope scan were done. All three cases were treated with pyeloplasty based on the favorable gross appearance of the renal parenchyma and the tense dilated extra-renal pelvis on surgical exploration as well as the young patient's age. Open stented Anderson-Hynes pyeloplasty was done in all three cases. Post-operative renal ultrasound and renal isotope scan were repeated for each case.

RESULTS

The diagnosis was right UPJO in one case and left in 2 cases. One infant underwent pyeloplasty at age of 11 months while the other 2 cases at age of 3 months. Post-operative ultrasound was improved regarding Anteroposterior Diameter of renal pelvis and renal Parenchymal Thickness. Post-operative renogram demonstrated recoverability of renal function in the affected renal units. Post operative renogram revealed differential renal function of 29.2%, 43.7% and 31%. The tense dilated renal pelvis (intra-pelvic pressure) may compromise the blood supply to the kidney (arterial pressure) causing the preoperative picture of non-perfused kidney by radioisotope scan.

CONCLUSIONS

Radioisotope renography may be inaccurate in the prediction of renal function in infants with extreme hydronephrosis due to UPJO. In infants with UPJO and zero functioning kidney by radioisotope scan, the decision of pyeloplasty must be considered based on the favorable appearance of the renal parenchyma rather than preoperative radiology.

★ ACELL CYTAL GRAFTING AS A NOVEL PENILE RESURFACING AGENT

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PURPOSE

Penile skin deficiency, as in failed hypospadias repairs and recurrent lichen sclerosus, often present a challenge due to limited durable treatment options. Native tissue grafts possess limitations, such as in lichen sclerosus, where local tissue transfer may not be advisable. Acell Cytal Matrix is a porcine-derived extracellular tissue that facilitates remodeling of local tissue to support a healing environment. We describe our initial experience using Acell Cytal in patients requiring complex skin defect coverage and penile resurfacing.

MATERIAL AND METHODS

We describe the technique and present our initial experience with Acell Cytal as a penile resurfacing matrix for treatment of ventral chordee, Balanitis Xerotica Obliterans (BXO), recurrent lichen sclerosus, and phallic wound dehiscence after penoplasty in both pediatric and adult patients.

RESULTS

Acell Cytal was used as a successful substitute to autologous skin grafts in five patients presenting with poor wound healing as seen on serial post operative photographic follow-up. Good functional and cosmetic outcomes were subjectively reported amongst patients at a median follow up of 14 months.

CONCLUSIONS

Failed hypospadias repairs, Lichen sclerosus, and/or re-operative penile surgery often present unique challenges for the reconstructive urologist. This represents our preliminary series utilizing novel exogenous grafting material for complex penile resurfacing. This grafting technique augments the current reconstructive armamentarium as we were able to demonstrate that Acell Cytal grafts are safe, well tolerated, and able to cover considerable sized defects with acceptable immediate and intermediate-term aesthetic outcomes.

USE OF HYPERBARIC OXYGEN THERAPY(HBOT) IN TREATMENT OF POSTOPERATIVE GLANS ISCHEMIA AFTER DISTAL HYPOSPADIAS SURGERY

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PURPOSE

We aimed to present the hyperbaric oxygen therapy(HBOT) results of five patients who were operated for distal hypospadias and developed glans ischemia.

MATERIAL AND METHODS

Five patients who received HBOT after hypospadias surgery between October 2022 and April 2023 were included in this study. HBOT protocol was carried out in 2.4 ATA(atmosphere absolute)/45 fsw(feet sea water) and treatment time was 120 minutes. The number of sessions were determined individually for each patient. Before and after therapy penile shaft and glans of the patients were photographed.

Patient s	Age(year s old)	Diagnosis	Surgical Method	HBOT Initiation Date(Postoperative)	Number of HBOT Sessions Received	Additional Intervention
1	10	Coronal Hypospadias	TIP(Tubularized Incised Plate) Repair	7th Day	14	One Session of Urethral Bougie Dilation
2	1	Coronal Hypospadias	MAGPI(Meatal Advancement and Glanuloplasty)	1st Day	9	
3	3	MIP(Megameatus and Intact Preputium)	Duplay	4th Day	5	Two Sessions of Urethral Bougie Dilation
4	3	MIP	Duplay	1st Day	9	
5	2.5	Glanular Hypospadias and Concealed Penis	MAGPI and Concealed Penis Correction	1st Day	6	

RESULTS

Patients who developed glans ischemia were treated for the formation of necrosis demarcation line and to support wound healing. It was observed that the ischemic status improved in all patients from the first session of treatment. All patients were discharged when the wound epithelisation started after the ischemia line was demarked. Wound healing was better in patients with early detection of glans ischemia and whose sessions were started more quickly. Urethral strictures requiring urethral dilation developed in patients who started their sessions later than others.

CONCLUSIONS

We believe that HBOT treatment in the early period is important to prevent progression to necrosis and reduces early and late complications in cases of postoperative glans ischemia after hypospadias surgeries.

14:57 - 15:01

S02-4 (CP)

PEDIATRIC PATIENT WITH APPENDICEAL INTERPOSITION AFTER URETERAL STRICTURE

Melis CEVHERTAS, Omer Barış YUCEL, Sumeyye SOZDUYAR, Sibel TIRYAKI, Ali TEKIN and Ibrahim ULMAN
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PURPOSE

The use of the vermiform appendix as a replacement for ureteral segments has been rarely reported, especially in children and on the left side. This study presents a case where the appendix was successfully used to bridge a ureteral stricture in a child.

MATERIAL AND METHODS

A 6-year-old male presented with hematuria and a stone at six months of age. After laser lithotripsy via ureterorenoscopy, hydronephrosis was observed two months later. Despite prophylactic antibiotics, the patient had recurrent urinary tract infections. Retrograde pyelogram revealed a 4 cm stenosis in the left midureter above the iliac cross. The mesoappendix allowed the appendix to be used for interposition on the left ureter.

RESULTS

The patient was followed with a JJ stent for two months. Ureterorenoscopy during JJ removal showed no stricture. Three years after the surgery, imaging showed improved hydronephrosis, stable function, and no obstructive findings on the MAG3 scan.

CONCLUSIONS

Children undergoing stone surgery should be monitored for potential complications, including strictures. Appendiceal interposition should be considered as a viable treatment option for ureteric injuries, even for the left ureter.

15:01 - 15:05

S02-5 (CP)

PADUA TECHNIQUE FOR EFFECTIVE AND MINI-INVASIVE MANAGEMENT OF UNCOMMON URETHRAL DUPLICATION WITH BLADDER OBSTRUCTION AND BILATERAL OBSTRUCTIVE MEGAURETER.

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PURPOSE

Urethral duplications are rare lower urinary tract anomalies, with several anatomical variants. We describe unusual presentation of complete hypoplastic type 2A-2 urethral duplication according to Effmann with bilateral

obstructive megaureter and prolonged bladder outlet obstruction, which was managed through Progressive Augmentation by Dilating the Urethra Anterior (PADUA).

MATERIAL AND METHODS

A 2-year-old boy, with prenatal diagnosis of bilateral hydronephrosis, was referred to our institution for recurrent febrile urinary tract infections (UTIs). Physical examination revealed double urethral meatus, one orthotopic and one hypospadiac. Pre-operative imaging showed bilateral obstructive megaureter with paraureteral diverticula and thickened bladder wall. Cystourethroscopy showed hypoplastic ventral penile urethra and semi-atretic dorsal urethra ending on the glans tip. The two urethras ended in a single obstructed bladder opening. Dilation of the bladder neck and catheterization of both urethras were performed. VCUG confirmed the diagnosis of type 2A-2 urethral duplication according to Effmann. Ureteral reimplantation and bladder neck plasty were performed. Postoperatively, the patient developed prolonged bladder retention, managed with progressive augmentation by dilating the ventral hypospadiac urethra.

RESULTS

Spontaneous voiding was obtained after 6 months. Post-operative VCUG showed normal capacity bladder, with regular walls and no diverticula, and normal profile of the ventral urethra at voiding. To date, the child is asymptomatic, voiding through the hypospadiac meatus with dry intervals, and with the orthotopic meatus functionally obliterated. The hypospadias repair has been postponed.

CONCLUSIONS

The subtype 2A-2 urethral duplication may be complicated by prolonged urinary obstruction. PADUA technique was effective to improve urethral caliber and function recovery.

15:05 - 15:09

S02-6 (CP)

★ UROGENITAL OEDEMA AND CROHN'S DISEASE- THE MISSING LINK

Neetu KUMAR and Abraham CHERIAN

Great Ormond Street Hospital, Paediatric Urology, London, UNITED KINGDOM

PURPOSE

Urogenital manifestations of Crohn's disease are rare. We present a case series of children with genital oedema as the only sign of granulomatous disease without any gastrointestinal symptoms.

MATERIAL AND METHODS

We retrospectively reviewed consecutive children presenting with chronic (>6-months) genital oedema between the years 2013-2019. These children met a variety of clinicians including General Practitioner, Emergency, Paediatrician, Dermatologist, adult Urologist and Gynaecologist. A wide array of investigations was reviewed including soft tissue ultrasound, MRI, upper and lower GI endoscopic biopsy, genital skin biopsy, specific haematological and faecal tests such as calprotectin.

RESULTS

Five children (1F, 4M), mean age of onset 11 years (range 8-14 years) with chronic genital oedema were included. None had any gastrointestinal symptoms. Penile and/or scrotal oedema was noted in boys with clitoral hood oedema in the girl. Genital skin biopsy in all demonstrated the presence of characteristic non-caseating granulomata. Other investigations including gastrointestinal biopsies were normal. Treatment with biologic immunomodulators was offered in 4 patients with good resolution of oedema.

CONCLUSIONS

Genital oedema could be the first and only presenting feature of Crohn's disease. Skin biopsies may be required for diagnosis. This case series alerts urologists to the existence of this entity and stresses the need to have a targeted investigative pathway and collaboration with Gastro-enterology for early confirmation and treatment.

15:09 - 15:13

S02-7 (CP)

★ PNEUMATURIA - UNUSUAL PRESENTATIONS

Tharanga GAMAGE and Abraham CHERIAN

Great Ormond Street Hospital for Children London, Paediatric Urology, London, UNITED KINGDOM

PURPOSE

We present 2 boys with pneumaturia initially dismissed as being unlikely, but could indicate a benign or malignant pathology.

MATERIAL AND METHODS

Case 01

A 5-year-old was referred with a history of recurrent UTI and epididymo-orchitis over a two-year period. Parents described a whistling sound and passage of air towards the end of micturition.

Case 02

A 4-year-old presented with abdominal pain, initially treated for constipation. Subsequently malodorous urine and passage of air bubbles during micturition were reported.

RESULTS

Case 01

Contrast MRI revealed a colo-urethral fistula. Laparotomy revealed total colonic duplication with recto prostatic fistula from one colonic moiety. A bladder duplication was also noted.

Recto prostatic fistula was divided and ligated. Common wall of the colonic duplication was divided with endo GIA stapler. Bladder septum was divided and a covering ileostomy fashioned. SPC provided drainage for 3-months until spontaneous voiding was established. He had an uncomplicated recovery and has remained infection free for a year until now. Stoma reversal is awaited.

Case 02

MRI revealed a large central abdominal mass with air in the bladder and right hydro-ureteronephrosis. Biopsy and further imaging confirmed a high-grade atypical Burkitt's lymphoma with tumour-vesical fistula.

An ileostomy and right-sided nephrostomy was placed. There was a good response to chemotherapy and diversions were subsequently reversed.

He made an excellent recovery following bone marrow transplantation.

CONCLUSIONS

Pneumaturia although rare should be given due gravity and promptly investigated.

15:13 - 15:17

S02-8 (CP)

★ THE GRACILIS FLAP SOLUTION FOR URINARY COMPLEX FISTULA IN KIDS

Sara Monserrat PROAÑO LANDÁZURI¹, Alicia GÓMEZ SÁNCHEZ¹, Daniel CABEZALÍ BARBANCHO², Cristina TORDABLE OJEDA² and Andrés GÓMEZ FRAILE²

1) Hospital Universitario 12 de Octubre, Pediatric Surgery, Madrid, SPAIN - 2) Hospital Universitario 12 de Octubre, Pediatric Surgery, Urology section, Madrid, SPAIN

PURPOSE

Interposition of the gracilis muscle has a success rates of 70-90%, treating urinary complex fistula. We present two cases in which this flap was performed for the repair of urethral fistulization.

MATERIAL AND METHODS

Retrospectively reviewed data. In both cases, after repairing the fistula, we proceed to the disinsertion, dissection and proximal release of the gracilis muscle. Subsequently, the flap was rotated 180° and tunneled through the subcutaneous inguinal tissue, to be placed between the urinary tract and the rectum/vagina.

RESULTS

Patient 1: A 12-year-old girl with exstrophy of the cloaca and meningocele, with a colostomy since birth. At 8 years of age, reconstruction surgery was performed. Urinary incontinence due to urethral recanalization persists despite a second attempt to close the bladder neck. Finally, a new disconnection is successfully performed by interposing a flap of gracilis muscle between the neck suture and the vestibular suture.

Patient 2: A 12-year-old male with embryonic vesicoprostatic rhabdomyosarcoma treated with surgery, radiotherapy and brachytherapy during the first year of life, presenting urinary incontinence, anal stenosis and prostatic rectourethral fistula as sequelae. Definitively repaired by interposition of the gracilis muscle, performing rectal resection and anoplasty, enterocystoplasty, cervicourethral disconnection, bilateral ureteroneocystostomy and Mitrofanoff.

No intra- or postoperative complications were recorded, as well as no recurrence.

CONCLUSIONS

According to our experience, the interposition of the gracilis muscle is a safe technique that can be considered as a surgical resource for the treatment of complex urinary fistulas in pediatric patients.

★ ENHANCING BLADDER SAFETY IN EPIDERMOLYSIS BULLOSA: MACEDO CATHETERIZABLE STOMA FOR EFFICIENT URINARY BLADDER EMPTYING

Grzegorz KUDELA, Agnieszka WIERNIK, Magdalena JASTRZEBSKA and Tomasz KOSZULSKI
Upper Silesian Children's Health Center - Medical University of Silesia, Paediatric Surgery and Urology,
Katowice, POLAND

PURPOSE

Epidermolysis bullosa (EB) is a life-threatening disorder often impacting the urinary tract, resulting in urinary tract strictures, causing varying degrees of urine flow obstruction. Instrumental procedures on the urinary mucosa pose considerable risks, exacerbating symptoms and making efficient, safe bladder emptying a significant challenge. This study presents a successful case of treating severe urethral stenosis in an EB patient with the Macedo procedure and conducts a systematic review of alternative surgical approaches for EB-related urethral obstruction

MATERIAL AND METHODS

We comprehensively reviewed the medical records of an EB patient who underwent the Macedo procedure. We conducted extensive searches on PubMed, Web of Science, Embase, and Google Scholar, strictly adhering to PRISMA guidelines, to investigate urological surgeries in EB patients over the past decade.

RESULTS

The patient initially presented with nail dystrophy and recurrent complete pyloric atresia, followed by severe urethral narrowing, leading to a confirmed EB diagnosis. The patient underwent multiple urethral dilatations and a wide vesicostomy before receiving a Macedo reservoir. Although the follow-up period remains limited, initial outcomes are encouraging. Our systematic review revealed that most urological procedures for EB-related urethral obstruction, including dilation, meatoplasty, urethroplasty, and intraurethral stricture incisions, yielded unsatisfactory results, often necessitating permanent suprapubic catheters, vesicostomies, perineal urethrostomies, ileal-neo bladders with ileum pouches, or constantly catheterized Mitrofanoff appendicovesicostomies.

CONCLUSIONS

The Macedo procedure offers promise for creating a catheterizable bladder in EB patients, reducing urothelial irritation and mitigating the progression of EB-related lesions, ultimately improving the patients' quality of life.

BLADDER BOTRYOID RHABDOMYOSARCOMA: MANAGEMENT OF TWO CASES WITH A MULTIDISCIPLINARY APPROACH

Firat ÖZERVARLI ¹, Rifat Burak ERGÜL ¹, Ismail SELVI ¹, M.İrfan DÖNMEZ ¹, Bilal ÇETİN ¹, Tayfun OKTAR ¹, Hikmet Gülşah TANYILDIZ ², Sifa SAHİN ², Ayça IRIBAŞ ³, Deniz YANIK ³ and Orhan ZIYLAN ¹

1) Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey, Urology, Istanbul, TURKEY - 2) Istanbul

PURPOSE

The treatment of two pediatric patients with bladder rhabdomyosarcoma(RMS) is presented.

MATERIAL AND METHODS

Case 1:A 3-year-old girl without any comorbidities presented with a complaint of difficulty urinating for six months. Computed tomography(CT) revealed bilateral grade 2 hydronephrosis and a 34x25 mm heterogeneous enhancing polypoid mass extending from the anterior bladder (Figure 1a).Immunohistochemical examination of the punch biopsy revealed botryoid rhabdomyosarcoma with strong positive myogenin and desmin, and negative smooth muscle actin.The patient received nine cycles of cyclophosphamide chemotherapy.The bladder mass regressed upon imaging two months after chemotherapy(Figure 1b).The patient underwent partial cystectomy(Figure 1c, 1d).According to final pathology,the case was classified as stage 3 (T1N0M0) intermediate risk.Three sessions of brachytherapy were administered on the 10th postoperative day.At the end of 28 weeks, vincristine+actinomycin+cyclophosphamide(VAC) chemotherapy was administered.No evidence of residual mass was observed during a 6-month follow-up.

Case 2:A 8-month-old male patient without any comorbidities presented with the complaint of difficulty in urination.A 50 mm sized mass from the bladder base extending to the bladder neck was detected in CT(Figure 4).The punch biopsy revealed botryoid rhabdomyosarcoma.The patient underwent radical cystectomy and ileal loop.The final pathology was also confirmed as botryoid rhabdomyosarcoma.No recurrence or metastasis was observed in the five-year follow-up of the patient,who received 25 sessions of radiotherapy in addition to twelve cycles of neoadjuvant and 6 cycles of adjuvant chemotherapy(vincristine+cyclophosphamide).

RESULTS

CONCLUSIONS

Although genitourinary RMS is a rare genitourinary malignancy,it can be cured with a multidisciplinary approach including surgery,chemotherapy,and radiotherapy.

15:25 - 15:29

S02-11 (CP)

INGUINAL LIPOSARCOMA-LIKE TUMOR IN ELEVEN-MONTH-OLD BOY.

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1) The Children's Memorial Health Institute, Paediatric Urology, Warsaw, POLAND - 2) The Children's Memorial Health Institute, Imaging Diagnostics, Warsaw, POLAND

PURPOSE

To evaluate the diagnostic pattern of the fast growing, large tumor located in the right inguinal canal. In MRI study the mass was described as liposarcoma.

MATERIAL AND METHODS

We analyzed medical database. USG Doppler, MRI (iv contrast), surgery and pathology report were reviewed.

RESULTS

Doppler USG revealed a mass in the right inguinal canal and upper half of the scrotum. It was also visible in the subcutaneous tissue. The tumor (63x35x18mm) consisted of abnormal lipomal tissue. The echogenicity was higher than in any normal lipomal tissue. No blood circulation was visible. MRI (iv contrast) showed lipomal tumor (67x29x31mm) with thin septa that enhanced with contrast suggesting liposarcoma originated from testicular cord. Both testicles were described as normal. After oncology consultation the boy was operated. The tumor was removed via inguinal incision. The mass was well separated from the testicular cord. Macroscopically right testis and epididymis were normal. Spermatic cord and right testicle were preserved. There was a thick fiber tissue that connected the tumor with the right pubic ramus. The histo-pathology report revealed totally resected lipoma. Also genetic studies were done. In the 7 months of follow ups the patient had no recurrence.

CONCLUSIONS

1. Fast growing tumor suggests malignancy.
2. USG, MRI (iv contrast) oncology consultation are mandatory before operation.
3. The current treatment of choice is en bloc resection and histo-pathology examination.

15:29 - 15:33

S02-12 (CP)

A RARE CASE OF ADENOCARCINOMA OCCURRENCE IN A MITROFANOFF APPENDICOVESICOSTOMY

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PURPOSE

Malignancies occurring in reconstructed urinary systems using bowel are a well-known phenomenon. Its occurrence in mitrofanoff conduits are rarely described with few case reports of squamous differentiation. We present an unusual case of a patient with adenocarcinoma arising from his mitrofanoff.

MATERIAL AND METHODS

30YO gentleman with i) anorectal malformation, ii) tethered cord and iii) horseshoe kidney. At 5YO, he developed neurogenic bladder with obstructive uropathy resulting in renal failure. A mitrofanoff was created at 13YO to facilitate self-catheterisation. He underwent a living-donor renal transplant at 24YO which was complicated by repeated episodes of rejection requiring treatment. His regular immunosuppressants include tacrolimus, mycophenolate mofetil and prednisolone.

RESULTS

At 27YO he was noted to have a 7mm granulation tissue at the inferior margin of the mitrofanoff exit site. This was cauterized with silver nitrate. A year later, this had grown to 1.5cm and cauterization was performed again with little effect. Further management was delayed till 2 years later due to medical and social reasons. He underwent excision of the exuberant tissue, which had grown to 4x3cm and revision of the mitrofanoff. Histology revealed atypical glandular proliferation with high grade dysplasia and areas of adenocarcinoma with mucinous

features. Repeat circumferential excision of the skin-mucousal junction was performed with mitrofanoffscopy and cystoscopy. There were no other lesions identified and histology was negative for malignancy. Cross-sectional imaging and colonic evaluation are under consideration due the possibility of a primary appendiceal neoplasm.

CONCLUSIONS

Adenocarcinomatous change can occur in mitrofanoff conduits. Attention should be paid to abnormal lesions especially in transplant patients.

15:33 - 15:37

S02-13 (CP)

ANURIA SECONDARY TO TRAUMATIC COMPLETE BILATERAL UPJ DISRUPTION

Martin KAEFER

RILEY HOSPITAL FOR CHILDREN, PEDIATRIC UROLOGY, Indianapolis, USA

PURPOSE

Traumatic UPJ avulsion in a child is a rare event. We report a case of bilateral complete UPJ avulsion in a one-year-old female resulting from an unrestrained motor vehicle accident.

PATEINT AND MATERIALS

A one-year-old female presented to our emergency room following a motor vehicle accident. Abdominal CT scan revealed a partial tear of her aorta. She was taken to the operative suite by vascular surgery. Complete absence of urine output from the Foley catheter combined with bilateral expanding retroperitoneal fluid collections prompted consultation with pediatric urology. Exploration of the right perinephric space released clear fluid. Complete avulsion of the ureter was noted. Inspection of the renal hilum revealed intermittent spurts of urine from a pinpoint opening in the renal pelvis. The ureter was anastomosed to the pelvis with interrupted 7-0 polyglyconate sutures and stented with a 3.0 French double J catheter. Identical pathology was noted on the contralateral side and similarly repaired. Perinephric drains were removed on postoperative days 5 and 6 after demonstrating minimal output. Stents were removed sequentially at 6 and 8 weeks respectively.

RESULTS

Annual renal ultrasounds demonstrate healthy kidneys with no hydronephrosis three years following the event.

CONCLUSIONS

Immediate repair of traumatic UPJ avulsion is feasible and recommended in a stable patient.

15:37 - 15:41

S02-14 (CP)

HIGH-GRADE RENAL TRAUMATISM, IS LAPAROSCOPIC APPROACH AN OPTION?

Sara Monserrat PROAÑO LANDÁZURI ¹, Lara MERINO MATEO ¹, Daniel CABEZALÍ BARBANCHO ², Cristina TORDABLE OJEDA ² and Andrés GÓMEZ FRAILE ²

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PURPOSE

Renal traumatism is a cause of morbidity and mortality in the pediatric patient.

We present a case of renal traumatism grade IV, with complex injury of the renal parenchyma and collector system initially managed by laparoscopy.

MATERIAL AND METHODS

4-year-old girl with trauma on her left lumbar quadrant after falling of a slide, presenting with nausea, abdominal pain, hematuria and pallor, hemodynamically stable. An abdominopelvic CT, founded left renal rupture with avulsion of the pyeloureteral junction (PUJ), urinary leakage at the level of the pelvis and large left perirenal hematoma, surgical management was performed.

RESULTS

Due to the impossibility of placing a nephrostomy and a catheter by cystoscopy, an exploratory laparoscopy was performed, in which was found a complete fracture of the kidney in the middle third with almost complete avulsion of the PUJ. Two urinary diversion drains were placed facing the upper and lower calyces, replaced by nephrotomies in a month, follow up by an double J urethral catheter. An abdominal US performed, 4 months later, showed cortical scars, P2 grade renal and ureteral dilation. In the diuretic renogram, a size reduction of the kidney, with a slight deterioration of parenchymal function (RF 34.8%) and non-obstructive ureteral dilation, was founded. The patient remains asymptomatic.

CONCLUSIONS

High-grade renal traumatism management should be individualized, with a joint collaboration of Urologists and Interventional Radiologists.

We consider that in selected cases the laparoscopic approach has a role in the initial management of renal trauma.

15:41 - 15:45

S02-15 (CP)

PERSISTENT UROGENITAL SINUS (PUGS) WITH UNICORNUATE UTERUS AND DIDELPHYS CERVIX, DOUBLE VAGINA AND SEVERE DYSPLASIA OF THE UPPER URINARY TRACT- A CASE REPORT

Giuseppe CRETÌ ¹, Diego PALLADINO ², Antonio CRETÌ ³, Lorenzo CAPONE ⁴, Costanzo LATIANO ⁴, Nicola PALLADINO ⁴, Filomena URBANO ² and Locatelli ANNA ⁵

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PURPOSE

Identifying the right diagnostic and therapeutic approach in complex persistent urogenital sinus cases.

MATERIAL AND METHODS

Persistent urogenital sinus (PUGS), is a rare congenital malformation of the urogenital system. We report a "high joined" and complex PUGS case of a 3yrs old female from Morocco, in Italy on temporary visa and no fixed abode , presenting with recurrent fever and urinary tract infection, urinary incontinence , chronic renal insufficiency with oligoanuria, chronic constipation and abdominal ultrasound diagnosis of severe bilateral hydroureteronephrosis.

Failure of catheterization per uretram led to derivation with emergency epicistostomy. Diagnostic workup was set as following: Rx-epicistography showed bilateral megaureter (obstructing on the left and refluxing on the right) and a long atresic urethra . MAG 3 renography suggested important loss of renal function (mostly on the left side). Genitoscopy revealed a septate vagina with a didelphys cervix and unicornuate uterus.

RESULTS

Bilateral ureteral reimplantation according to Politano Leadbetter was then performed. In postoperative period minor anemization (2 blood units transfused) and paralytic ileus occurred. Patient was discharged in good condition with draining button cistostomy. Resolution of clinical symptoms and improvement in radiological scenario were evident (abdominal ultrasound follow up at 3 months showing reduction of bilateral hydroureteronephrosis, magnetic resonance of the abdomen with contrast at 6 months demonstrating absence of previous marked bladder hypertrophy).

CONCLUSIONS

Reconstruction of a continent urinary derivation (Mitrofanoff procedure) was delayed only for the previously mentioned social issues.

S03: TESTIS 1

Moderators: Sabine Zundel (Switzerland), David Keene (UK)

ESPU Meeting on Wednesday 17, April 2024, 16:20 - 17:00

16:20 - 16:23

S03-1 (OP)

INTER- AND INTRAOBSERVER VARIABILITY OF TESTICULAR VOLUME ULTRASOUND

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PURPOSE

Testicular Volume (TV) is an clinical decision-making tool in e. g. treatment strategy for adolescent varicocele. While testicular ultrasound has been shown to be superior to Prader orchidometer measurements, recent studies have raised concerns about the validity of testicular ultrasound volume. However, data on larger cohorts of adolescent patients regarding the intra- and interobserver variability of testicular US is scarce.

MATERIAL AND METHODS

Pediatric patients hospitalized for reasons other than testicular pathology were prospectively included for testicular US, performed by a pediatric radiologist (A), a pediatric urologist consultant (B) and a pediatric surgery/urology resident (C). Interobserver variability was calculated within all three investigators. Investigators B and C also performed consecutive ultrasound within 3 days to calculate intraobserver variability. All investigators were blinded to the others as well as their own previous measurements.

RESULTS

22 patients (44 testicular units) were included in the study. A total of 166 measurements were taken. Mean age was 14 yrs (range: 12-17 yrs). 2 patients were excluded from further analysis because of the incidental finding of a testicular pathology. Mean testicular volume was 10.1 ml. Mean overall variability was 10.1 %. Mean Intra-observer variability was 12.6 %, mean inter-observer variability 15.9 %. A TV difference of > 20 % was seen in 29.1 % of the patients in the interobserver group and 23.7 % in the intra-observer group. Subgroup analysis (< / > mean TV) showed the lowest rate of > 20 % TV difference in the intraobserver group with testis > 10 ml (15.0 %).

CONCLUSIONS

Ultrasound measurements of TV has a limited value with a relevant rate of >20 % TV difference measurements both in the intra- and interobserver groups. The highest accuracy was achieved in patients > 10 ml TV in the intraobserver group. This has to be taken into account when clinical decisions are based on TV measurements.

DOES VARICOCELE AFFECT COLLATERAL TESTICULAR GROWTH?

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PURPOSE

Decreased growth of the left testicle (LT) in patients with varicocele has been widely described and a high asymmetry index is used to indicate surgery. This study aims to demonstrate that in patients with a high degree varicocele, the contralateral testicle also has limited growth.

MATERIAL AND METHODS

We conducted a retrospective case-control study. Patients with left varicocele were cases and patients with no pathology affecting testicular growth were controls. Data were collected on age at diagnosis, Tanner stage, symptoms, varicocele degree and ultrasound-measured testicular volume. Testicular volumes were compared between cases and controls, and cases were further subdivided based on varicocele degree.

RESULTS

We included 206 cases (mean age 13 ± 1.4 years) of which most patients had grade 2 ($n=106$, 51.55%) or grade 3 ($n=65$, 31.6%) varicocele, and 94 controls (mean age 12.7 ± 1.9 years). There was no significant difference in testicular volume between grade 1 varicocele and controls. In those with varicocele grade 2 the volume of the LT was significantly smaller than the controls ($p=0.01$). In patients with varicocele grade 3 the volume of both testes was significantly smaller than the controls with a volume difference of 38% for the LT ($p=0.001$) and 28% for the right testicle (RT) ($p=0.01$). Interestingly, in this group, the LT was only 17% smaller than the RT.

CONCLUSIONS

In patients with grade 3 varicocele, the growth of the contralateral testicle is also affected, therefore, the asymmetry index may no longer be a reliable parameter to indicate surgery in these patients.

NEW SPERM QUALITY PARAMETERS IN ADOLESCENTS WITH VARICOCELE

Marcel DRLÍK

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PURPOSE

In adult urology, new methods evaluating sperm quality by flow cytometry using antibodies are gradually introduced. The aim of the study is to assess intraindividual variation of immunological and spermiogram

parameters in adolescents with varicocele and to correlate one with another and with clinical findings. This data has not been available so far.

MATERIAL AND METHODS

61 adolescents of median age 17.1 (15.3–17.8) years, with unilateral varicocele grade II (51 %) and III (49 %) in pubertal stage Tanner 5 were prospectively enrolled. Varicocele grade (VG), total testicular volume (TTV), atrophy index (TAI), peak retrograde flow rate and renotesticular reflux were determined by ultrasound. In two semen samples a spermogram was analyzed according to WHO manual. Vital sperm count (VSC), percentage of apoptotic sperm, sperm with damaged acrosome and DNA fragmentation (SDF) were analyzed by flow cytometry. Non-parametric (Spearman) correlation was used to determine intraindividual variation of semen parameters and their correlation with each other and with clinical findings.

RESULTS

Intra-individual variability of flow cytometry parameters was good (0.45-0.58), better than spermogram parameters (0.37-0.54). The flow cytometry parameters correlated well with spermogram in most cases (-0.35-0.88). They correlated poorly with clinical parameters, except of weak correlation of VSC with TTV (0.32) and TAI (-0.30), VG with SDF (0.27).

CONCLUSIONS

Flow cytometry sperm quality parameters in adolescents with varicocele show good stability in repeated examinations, better than spermogram parameters and they have good correlation with them. However, they correlate poorly with clinical parameters, thus cannot be inferred from clinical findings.

16:29 - 16:40

Discussion

16:40 - 16:43

S03-4 (OP)

UNVEILING REGIONAL DISPARITIES IN PEDIATRIC VARICOCELE CARE: A GLOBAL SURVEY

Adele RAYMO ¹, [Luciana LERENDEGUI](#) ², Daniel TENNENBAUM ³, Rajiv TUMMALA ⁴, George Andrew RANSFORD ³, Andrew LABBIE ³, Rafael GOSALBEZ ³, Miguel CASTELLAN ³, Daniel E. NASSAU ⁵ and Alireza ALAM ³

1) *University of Miami Miller School of Medicine, Miami, USA* - 2) *Jackson Memorial Hospital, Pediatric Urology, Miami, USA* - 3) *Nicklaus Children's Hospital, Pediatric Urology, Miami, USA* - 4) *Lake Erie College of Osteopathic Medicine, Erie, USA* - 5) *University of Miami Desai Sethi Urology Institute, Urology, Miami, USA*

PURPOSE

Despite the high incidence of varicocele, there remains a substantial lack of consensus on the best approach to diagnosis and treatment. The aim of our study is to assess regional differences in the workup and management of pediatric varicoceles amongst physicians practicing in Europe, North America, and Ibero-America.

MATERIAL AND METHODS

A survey consisting of 21 multiple choice and free response questions was sent to three different pediatric urology societies (ESPU, SPU, and SIUP). Responses were collected anonymously via SurveyMonkey. Z-score and chi-square statistical analyses were used to assess significance.

RESULTS

There were 400 physician responses, from Europe (81), Ibero-America (130), and North America (169) with 20 excluded. We found an increased propensity for European and Ibero-American physicians to consider varicocele grade as an indication for surgery in prepubertal patients (z-score=2.4 and 4.4) and post-pubertal patients (z-score=3.6 and 3.2 respectively), whereas North American physicians were more inclined to select abnormal semen analysis in post-pubertal patients (z score=3.3). For case management of a post-pubertal patient with a G3 varicocele, testicular volume discrepancy >20%, total testicular volume >30cc and normal semen analysis, Ibero-America physicians favored surgical intervention, while North Americans preferred active surveillance (Z-score=3.4 and 3.3). Regarding type of varicocelectomy, Europeans were more inclined to choose laparoscopy and sclerotherapy (z-score=2.3 and 5.4) while Ibero-Americans preferred the inguinal/ sub-inguinal approach (z-score=2.5). European physicians leaned towards the non-artery sparing technique (z-score=2.1) while Ibero-Americans physicians chose artery sparing (z-score=2.4). These associations were statistically significant ($p < 0.05$, Z-score > 1.96).

CONCLUSIONS

Significant regional differences were found in pediatric varicocele management amongst physicians in Europe, Ibero-America and North America.

16:43 - 16:46

S03-5 (OP)

LAPAROSCOPIC VARICOCELECTOMY (LV): DOES INTRAOPERATIVE LYMPHOGRAPHY WITH VITAL DYE INFLUENCE THE OUTCOME?

Ana Ludy LOPES MENDES ¹, Andrea Celeste BARNESCHI ², Giulia D'IPPOLITO ³, Del Prete LAURA ³, Michele INNOCENZI ³, Ermelinda MELE ¹, Giuseppe COLLURA ³ and Marco CASTAGNETTI ⁴

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PURPOSE

In order to prevent hydrocele formation after LV, blue lymphography (BL) with vital dyes has been suggested to be a useful adjunct to the preservation of funicular fat for lymphatic sparing (LS). The dye is usually injected in the scrotum, but the adjunct of intra-testicular injection can possibly enhance lymphatic visualization. Intratesticular injection, however, causes concern for the risk of testicular damage.

We reviewed our experience to test the hypothesis that LS-LV with intratesticular injection of the vital dye is safe and increases the chance to avoid post-varicocelectomy hydrocele formation.

MATERIAL AND METHODS

We retrospectively reviewed all consecutive patients undergoing LV <age 18, between 2018 and 2022, and at least 12-month follow-up. We compared the rate of post-operative hydrocele between patients undergoing LS-LV vs. NonLS-LV; between patients undergoing LS with vs. without BL; and finally in those undergoing BL with scrotal vs. intratesticular dye injection.

Hydrocele was defined as a persistent scrotal swelling requiring surgery.

Post-operative testicular ultrasounds at 12-month follow-up were reviewed in patients undergoing BL to rule out anomalies.

Reoperation rate for recurrent varicocele was also analyzed.

RESULTS

130 patients underwent LV at a median(range) age of 14(10-17) years, and 116 had complete follow-up data.

Post-operative hydrocele was significantly more common ($p=0.036$) in patients undergoing NonLS-LV(3/39, 8%) vs. LS-LV(0/77). No hydrocele was observed in patients undergoing LS-LV with(0/47) vs. without(0/30) BL. Vital dye injection sites were scrotal in 26/47(55%) whereas also intratesticular in 21/47(45%). Non-vascularized intratesticular lesions were identified in 4/21(19%) patients undergoing intratesticular dye injection.

Two varicoceles were reoperated for recurrence, one in each group.

CONCLUSIONS

LS-LV significantly reduced the risk of hydrocele formation. However, this was unrelated to the use of intraoperative BL and intratesticular dye injection was associated with persistent lesions at the 12-month testicular ultrasound in 20% of cases.

16:46 - 16:49

S03-6 (OP)

INDOCYANINE GREEN (ICG)-GUIDED LYMPHATIC SPARING LAPAROSCOPIC VARICOCELECTOMY IN CHILDREN AND ADOLESCENTS. IS INTRATESTICULAR INJECTION OF THE DYE SAFE? A MID-TERM FOLLOW-UP STUDY.

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PURPOSE

Laparoscopic Palomo varicocelectomy using indocyanine green (ICG) fluorescent lymphography (FL) is standardized technique to perform lymphatic sparing and avoid post-operative hydrocele. No data regarding the safety of intratesticular injection of dye are currently available.

The study aimed to assess the safety and efficacy of this procedure at mid-term follow-up.

MATERIAL AND METHODS

Seventy-two patients (median age 14.5 years) undergoing laparoscopic Palomo varicocelectomy using ICG-FL from January 2019 to July 2022, were enrolled. Operative indication was high-grade varicocele in all patients, symptoms in 30/72 (41.7%) and left testicular hypotrophy in 42/72 (58.3%). Follow-up included clinical examination at 1, 6, 12 months and scrotal Doppler ultrasonography (US) at 12 months postoperatively.

RESULTS

Lymphatic sparing using ICG-FL was achieved in all cases. No intra-operative complications or adverse reactions to ICG occurred. The median follow-up was 22.8 months (range 11-49). Self-limited scrotal hematoma at the injection site occurred in 1/72 (1.4%). Intratesticular hypoechoic millimetric area with calcifications was detected in 3/72 (4.2%) on scrotal US. Serum tumor markers were negative. This finding disappeared after 1-year observation in 2/3 cases (66.7%). Persistent grade II varicocele was observed in 4/72 (5.5%), not requiring re-intervention. No hydrocele occurred and 14/22 (63.6%) with pre-operative hypotrophy showed catch-up growth.

CONCLUSIONS

Laparoscopic Palomo varicocelectomy using ICG-FL reported excellent outcomes with low incidence of varicocele persistence and no post-operative hydrocele. These preliminary data confirmed safety of intratesticular injection at mid-term follow-up, without specific risks for testis and patient. Future prospective study with larger series is needed to assess long-term outcomes.

16:49 - 17:00

Discussion

S04: MISCELLANEOUS

Moderators: Alex Turner (UK), Anja Lingnau (Germany)

Parallel Meeting on Wednesday 17, April 2024, 16:20 - 17:00

16:20 - 16:23

S04-1 (OP)

PROTECTIVE EFFECT OF IBUPROFEN ON EXPERIMENTAL OVARY TORSION

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PURPOSE

In this study, we aimed to investigate protective effect of ibuprofen on experimental ovarian torsion.

MATERIAL AND METHODS

Thirty female, Wistar-Albino rats were used for the study. The animals were divided into two main groups as early (n =15) and late ischemia reperfusion groups (n = 15). Group 1 Early Sham ES (n=5), Group 2 Early ischemia reperfusion EIR (n=5) and Group 3 Early ischemia reperfusion ibuprofen EIRİ (n=5). Group 4 late sham GS (n=5), Group 5 Late ischemia reperfusion injury GIR (n=5), Group 6 Late ischemia reperfusion injury ibuprofen (40mg/kg) GIRİ (n=5). All blood samples taken from early and late groups were evaluated for serum Superoxide Dismutase (SOD), Xanthine Oxidase (XO), Glutathione (GSH) and Malondialdehyde (MDA) levels. Also tissue samples were histopathologically evaluated.

RESULTS

Serum SOD level was found to be lower in Group 2 ($0,48 \pm 0,02$), higher in Group 3 ($0,52 \pm 0,0$). Statistically significant difference was detected ($p<0,05$). Median serum XO levels were found higher in Group 2 ($1,49 \pm 0,19$) and lower in Group 1 ($1,15 \pm 0,27$). Statistically significant difference was detected ($p<0,05$). Median serum MDA levels were found higher in Group 5 ($0,13 \pm 0,05$), and lower in Group 6 ($0,040 \pm 0,03$). Statistically significant difference was detected ($p<0,05$). Histopathological evaluation by edema, follicular cell damage, vascular congestion, hemorrhage, neutrophil infiltration and cohesion loss. Significant decrease in total cell damage was found in the groups treated with ibuprofen ($p<0,05$).

CONCLUSIONS

According to biochemical findings and histopathologic evaluation ibuprofen treatment is effective in preventing lipid peroxidation by reducing MDA level in early stage and increasing antioxidant enzyme SOD level in late stage ischemia / reperfusion injury. Ibuprofen may has a protective effect on ischemia reperfusion injury.

POSTOPERATIVE OPIOID PRESCRIBING IN ADOLESCENTS AND YOUNG ADULTS AFTER UROLOGIC PROCEDURES IS ASSOCIATED WITH NEW PERSISTENT OPIOID USE DISORDER: A LARGE CLAIMS DATABASE ANALYSIS

Aurora GRUTMAN ¹, Courtney STEWART ², Corey ABLE ², Pranjal AGRAWAL ¹, Ahmad HAFFAR ³, Logan GALANSKY ³, Andrew GABRIELSON ³, Nora HANEY ³, Taylor KOHN ³ and Chad CRIGGER ³

1) Johns Hopkins, School of Medicine, Baltimore, USA - 2) University of Texas Medical Branch at Galveston School of Medicine, Urology, Galveston, USA - 3) Johns Hopkins, Urology, Baltimore, USA

PURPOSE

To assess the risk of persistent opioid use following various urologic procedures in adolescents and young adults.

MATERIAL AND METHODS

The TriNetX LLC Diamond Network was queried for patients aged 13-21 years who underwent pyeloplasty, hypospadias repair, inguinal hernia repair, inguinal orchiopexy, hydrocelectomy, or circumcision. Cohorts of patients prescribed and not prescribed postoperative opioids were created and propensity-matched for age, race/ethnicity, psychiatric diagnoses, and preoperative pain diagnoses. The primary outcome was new persistent opioid use, defined as new opioid use 3-9 months after index procedure without another surgery requiring anesthesia during the postoperative timeframe.

RESULTS

Of 32,789 patients identified, 66.0% received a postoperative opioid prescription. After propensity score matching for each procedure, 18,416 patients were included: 197 for pyeloplasty, 469 for hypospadias repair, 1818 for inguinal hernia repair, 2664 for inguinal orchiectomy, 534 for hydrocelectomy, and 3526 for circumcision. Overall, 0.41% of patients who did not receive postoperative opioids developed new persistent opioid use, whereas 1.69% of patients who received postoperative opioids developed new persistent opioid use ($P < .05$). Patients prescribed postoperative opioids had statistically higher odds of developing new persistent opioid use for hypospadias repair (RR: 17.0; 95% CI: 2.27-127.2), inguinal orchiectomy (RR: 3.46; 95% CI: 1.87-6.4), inguinal hernia repair (RR: 2.18; 95% CI: 1.07-4.44), and circumcision (RR: 4.83; 95% CI: 2.60-8.98).

CONCLUSIONS

The use of postoperative opioids after urological procedures in adolescents and young adults is associated with a significant risk of developing new persistent opioid use.

IS URINE DIPSTICK BEFORE CYSTOSCOPY A RELIABLE SCREENING TOOL FOR BACTERIURIA?

PURPOSE

Coverage of existing antimicrobials is shrinking with ongoing pressure on minimising their use as single prophylaxis dose could be associated with increased resistance. Prophylaxis prior to urological procedures varies among clinicians and is common practice for many aiming to reduce the risk of post-procedure UTI.

We aimed to evaluate the reliability of intraoperative urine dip-stick in predicting culture-proven bacteriuria to determine need for treatment post-cystoscopy

MATERIAL AND METHODS

Prospective study of children undergoing a cystoscopy (diagnostic or interventional). A urine sample has been collected at the beginning of the cystoscopy, dipped and sent for culture. Data regarding indication for the procedure, underlying condition, history of previous UTI and antibiotic status were collected. A 13-point score (Dip score) generated giving 1 point for each 1+ blood or LE or proteins, and 3 points for positive nitrites was used and sensitivity and specificity of several cut-off were calculated

RESULTS

Samples were collected from 123 patients (median age 2 years); 30 were on intermittent catheterization and 51 on antibiotic prophylaxis. Dip-stick was positive for nitrites in 25(20%) leukocyte esterase (LE) in 35(29%), and blood in 69(57%). Culture was positive in 16%. Good sensitivity can be obtained using 3 points cut-off but at the expense of a poor specificity (90% and 68%, respectively). Using 9 points cut-off provides good specificity while sensitivity is low (97% and 15%, respectively). When cut-off of 7/13 is used Dip score showed sensitivity and specificity of 40% and 93%

CONCLUSIONS

Nitrites, leukocyte esterase, and blood detected on dipstick when used together would represent more reliable screening tool for predicting bacteriuria compared to each parameter alone. The 7 points cut-off provides a good balance between sensitivity and specificity and can be used as a simple, easy and cheap screening tool to stratify children undergoing cystoscopy, particularly identifying those with sterile urine and at low risk to develop post-procedure UTI

16:29 - 16:32

S04-4 (OP)

IS A SECOND RUN OF URODYNAMIC PRESSURE-FLOW STUDY IN CHILDREN NECESSARY?

Wouter VAN DORT, Aart KLIJN and Laetitia DE KORT

UMC Utrecht, Urology, Ens, NETHERLANDS

PURPOSE

Urodynamic study (UDS) is a commonly used diagnostic tool for assessing the function of the lower urinary tract. However, a UDS is invasive and may cause anxiety in the child. To reduce the effects of this uneasiness, a second run in the same session can be performed, as the child will probably void in a more representative manner the second time. The goal of this study was to compare urodynamic parameters between two consecutive runs of pressure flow studies (PFS's) in the same urodynamic session.

MATERIAL AND METHODS

1501 high-quality PFS's of children (mean age 9.5 years), consisting of two runs, were included. Maximum flow rate (Q_{max}), voiding time detrusor pressure at maximum flow rate, average flow rate and voided volume were compared between the runs.

RESULTS

In 60% of the second runs an improvement of Q_{max} was found, with an improvement of >20% in 29% of the cases. Overall, all assessed parameters, except the voiding time, slightly improved in the second run, see Table 1.

Table 1: Overview of results. All differences are significant, with Wilcoxon $p < 0.001$.

Urodynamic parameter	Mean difference (second run-first run) [Standard Deviation]
Maximal flow [Q_{max}] (ml/s)	1.0 [4.1]
Voiding time [T_{void}] (s)	0.8 [10.6]
Detrusor pressure at Q_{max} [$p_{detQ_{max}}$] (cmH ₂ O)	-3.4 [29.5]
Average flow [Q_{avg}] (ml/s)	0.7 [2.6]
Voided volume [V_{main}] (ml)	21 [81]

CONCLUSIONS

As urodynamic parameters of the second PFS in the same UDS session showed improved values, we recommend to perform a second PFS in all children as a routine.

16:32 - 16:43

Discussion

16:43 - 16:46

S04-5 (OP)

TRANSFORMING PEDIATRIC UROLOGY CARE: A PEDIATRICIAN-LED MEDICAL UROLOGY COMMUNITY CLINIC ALLEVIATES TERTIARY HOSPITAL CONGESTION IN THE WAKE OF A GLOBAL PANDEMIC

PURPOSE

The COVID-19 worldwide pandemic has resulted in significant clinical and surgical backlogs, resulting in long wait times for patients to be seen. To address this waitlist in a tertiary hospital pediatric urology clinic, a community pediatric urology clinic was implemented. This clinic is staffed by a pediatrician with specialized training in medical pediatric urology and two pediatric urology nurse practitioners. We hypothesized that the community-based clinic would help identify and streamline surgical cases, decrease wait times for non-surgical visits, protect hospital appointments for complex cases, and provide similar level of care and patient satisfaction in both settings.

MATERIAL AND METHODS

Referrals to a tertiary hospital were screened for penile issues, undescended testes(UDT), and bladder and bowel dysfunction(BBD) and redirected to the community clinic. Patient experience surveys were sent to the community clinic Sept2020-Jan 2023 and the hospital urology clinic from January-March 2021.

RESULTS

In the community, 642 surveys resulted in a 37%response rate, an 18%surgical booking rate, and 97%patient satisfaction. In the hospital clinic, 1004 surveys achieved a41% response rate, with 91 patient satisfaction(table 1). Significant differences in wait times were noted between the community and hospital clinics for all diagnoses (table 2).

	Community(n=212)	Hospital(n=216)	p
Wait time(days)	53+/-36	194+/-108	<0.01
Surgical	38(18%)	35(16%)	0.89
Diagnosis	41(19)	31(14)	n.s.
-Phimosis	27(12)	24(11)	<0.01
-Hypospadias	34(16)	15(7)	
-Other penile problem	83(39)	25(12)	
-UDT	27(14)	121(56)	
-BBD			
Satisfied with care	232(97)	373(91)	<0.01

	Community	Hospital	p
Phimosis	43+/-15	214+/-116	<0.01
Hypospadias	52+/-17	245+/-108	<0.01
Other penile problem	57+/-7	252+/-141	<0.01
UDT	56+/-48	154+/-72	<0.01
BBD	55+/-24	160+/-95	<0.01

CONCLUSIONS

A community-based medical pediatric urology clinic is feasible, reducing wait times for similar diagnoses while maintaining patient satisfaction in both settings.

16:46 - 16:49

S04-6 [WITHDRAWN] A COMPARATIVE ASSESSMENT OF CHATGPT VERSUS GOOGLE TRANSLATE FOR THE TRANSLATION OF PATIENT INSTRUCTIONS

16:49 - 16:52

S04-7 (OP)

PATH TO ARTIFICIAL GENERAL INTELLIGENCE? EVALUATING THE PERFORMANCE OF GPT-4 ON VISUAL RECOGNITION QUESTIONS ON PEDIATRIC UROLOGY SPECIALTY EXAMINATIONS

Jin Kyu (Justin) KIM, Michael CHUA, Adree KHONDKER, Mandy RICKARD and Armando LORENZO
The Hospital for Sick Children (SickKids), Urology, Toronto, CANADA

PURPOSE

GPT-4 is the latest large language model (LLM) from OpenAI with 1.76 trillion parameters. This new model allows users to input images along with the prompt and the model can provide an output while evaluating the image features. While there have been numerous efforts to evaluate the performance of ChatGPT for word-based questions, including those in urology, there has been limited efforts in evaluating its efficacy in answering questions requiring visual recognition. We aim to evaluate the GPT-4's performance on visual recognition questions from Pediatric Self-Assessment Study Program (PSASP) from Societies for Pediatric Urology (SPU), and FEAPU.

MATERIAL AND METHODS

Twenty sample FEAPU questions and 100 PSASP questions were obtained. ChatGPT-4 model (<https://chat.openai.com/>) was utilized to input word-based question along with images provided in the question for visual recognition. The answers were evaluated and compared to the answers provided by SPU and FEAPU.

RESULTS

A total of 18 questions were identified (17 PSASP, 1 FEAPU). One question was excluded as GPT-4 was unable to recognize the question and image. Of 16 questions evaluated, only 5 questions were answered correctly (29.4%). There was no trend to which images were the most likely to be interpreted correctly, as abdominal x-ray (1/2), ultrasound (1/4), clinical photo (hypospadias; 1/3), MAG3 and ultrasound (1/1), and VCUG (1/3) questions were answered correctly (Table 1).

Type of Image	Correctly Answered	Incorrectly Answered
Abdominal X-ray	1	1
VCUG	1	2
US	1	3

US + RUG	0	1
US + VCUg	0	1
US + MAG3	1	0
UDS	0	1
CT scan	0	2
clinical photos	1	2

CONCLUSIONS

GPT-4 model does not perform well on imaging-based questions. While it holds tremendous promise for word-based questions and clinical scenarios, it is unreliable as a clinical or educational aid for visual recognition at this time.

16:52 - 17:00

Discussion

SH: HISTORY SESSION

Chairs: Cenk Buyukunal (Turkey)

ESPU Meeting on Wednesday 17, April 2024, 17:00 - 18:20

Opening remarks: Serdar Tekgöl, President of ESPU

Anatomical studies of the Principe di San Severo in Naples

By Ciro Esposito

The Myth of Hermaphroditus

By Emilio Merlini

Epispadias - Known as Challenging Condition in the Literature Since the Byzantine Epoch

By Wolfgang Roesch

The Role of Pelvic Osteotomy in the Modern Treatment of Bladder Extrophy

By John Gearhart

Circumcision Ceremonies in Ottoman Palace and in Istanbul, from Manuscript Called Surname-i Vehbi (1720) with Colorful Miniatures

By Cenk Buyukunal

S05: TESTIS 2

Moderators: Anil Takvani (India), Tariq Abbas (Qatar)

Parallel Meeting on Wednesday 17, April 2024, 17:00 - 17:50

17:00 - 17:03

S05-1 (OP)

THE ROLE OF NEUTROPHYL-TO-LYMPHOCYTE RATIO AS A PREDICTOR OF ORCHIECTOMY OR TESTICULAR ATROPHY AFTER TESTICULAR TORSION IN CHILDREN. RESULTS OF A MULTICENTRIC STUDY.

Carlos DELGADO-MIGUEL ¹, Javier ARREDONDO MONTERO ², Julio César MORENO ALFONSO ³, María SAN BASILIO ¹, Irene HERNÁNDEZ BERMEJO ⁴, Noela CARRERA ⁵, Pablo AGUADO RONCERO ⁶, Ennio FUENTES CEBALLOS ⁷, Pedro LÓPEZ-PEREIRA ⁸ and Ricardo DÍEZ GARCÍA ⁶

1) La Paz Children's Hospital, Pediatric Surgery Department, Madrid, SPAIN - 2) León University Hospital, Pediatric Surgery Department, León, SPAIN - 3) Navarra University Hospital, Pediatric Surgery Department, Pamplona, SPAIN - 4) Rey Juan Carlos University Hospital, Urology Department, Móstoles, SPAIN - 5) Toledo University Hospital, Pediatric Surgery Department, Toledo, SPAIN - 6) Fundación Jiménez Díaz University Hospital, Pediatric Surgery Department, Madrid, SPAIN - 7) Villalba General University Hospital, Pediatric Surgery Department, Villalba, SPAIN - 8) La Paz Children's Hospital, Pediatric Urology Department, Madrid, SPAIN

PURPOSE

Neutrophil-to-lymphocyte ratio (NLR) is an inflammatory biomarker related to ischaemic-inflammatory diseases. Its usefulness in the diagnosis of pediatric testicular torsion (TT) has recently been reported, although its prognostic implication has not been evaluated. Our aim is to analyse the role of NLR in the evolution of TT in children, determining its potential for predicting the risk of adverse outcomes such as orchiectomy or testicular atrophy.

MATERIAL AND METHODS

We performed a retrospective multicentric case-control study in patients with clinical and ultrasound suspicion of TT, in whom surgical testicular examination was performed between 2016-2022 in seven pediatric hospitals. Patients outcomes were analysed according to the intraoperative and postoperative evolution (orchiectomy/ testicular atrophy or not). Demographics, clinical, ultrasound and laboratory features at admission were analyzed. Sensitivity and specificity were determined by the area under the curve (AUC) represented on the receiver operating characteristic (ROC) curves.

RESULTS

A total of 402 patients were included (median age 13.4 years; interquartile range 11.2-15.6 years), in whom 87 orchiectomies (21.6%) were performed and 26 (6.5%) cases of testicular atrophy were observed during follow-up (median follow-up: 10 months). When comparing clinical, ultrasound and laboratory predictors of both events on ROC curves, the NLR was the most sensitive and specific parameter (AUC=0.890), ahead of platelet-to-lymphocyte ratio (AUC=0.825), time since symptoms onset (AUC=0.721), number of twisted sperm cord turns (AUC=0.704) and C-reactive protein (AUC=0.612). The cut-off point of NLR=3.99 presented maximum sensitivity

and specificity (86.2% and 84% respectively) for the prediction of orchiectomy or atrophy after a testicular torsion.

CONCLUSIONS

NLR may be considered as the best predictor for the risk of orchiectomy or testicular atrophy following torsion in pediatric patients, helping the identification of high-risk cases. It can be useful both for obtaining more accurate preoperative information on patient prognosis and for closer follow-up of high-risk testicular atrophy patients.

17:03 - 17:06

S05-2 (OP)

LOW GRADE INJURY FOLLOWING TESTICULAR TORSION: A MULTICENTER STUDY CONFIRMING A DISTURBING POSSIBILITY

Emine Burcu CIGSAR KUZU¹, Sibel TIRYAKI², Neslihan GUNEY³, Kamer POLATDEMIR⁴, Yasemin CAKIR⁵, Ahsen KARAGOZLU AKGUL⁶, Muhammed Hasan TOPER⁷, Güngör KARAGÜZEL⁸, Murat UÇAR⁹, Cumhuriyet İbrahim BASSORGUN¹⁰, Seyhmus Kerem OZEL¹¹, Seyma ÖZKANLI¹², Gül ŞALCI¹³, Sevdegül AYDIN MUNGAN¹⁴, Mehmet Ugur YILMAZ¹⁵, Berna AYTAÇ VURUŞKAN¹⁶, İsmail YAGMUR¹⁷, Emine Zeynep TARINI¹⁸, Meltem KABA¹⁹, Canan TANIK²⁰, Furkan Adem CANBAZ, Özge HURDOĞAN, İdil Rana USER, Diclehan ORHAN, Ahmet ATICI, Didar GÜRSOY, Emin Aydın YAĞMURLU, Duygu ENNELI, Şeref Selçuk KILIÇ and Şeyda ERDOĞAN

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PURPOSE

There is an ongoing debate whether to perform orchiectomy or orchidopexy following testicular torsion in cases where the testis appears nonviable. The main issue is lack of objective criteria defining testicular viability. The objective of this study was to examine the grade of injury in orchiectomy specimens obtained from cases of testicular torsion (TT), and its association with clinical findings.

MATERIAL AND METHODS

This multicenter retrospective study involved double blinded reassessment of the patient files and the pathological specimens using Mikuz classification to analyze the relation between clinical and pathological findings.

RESULTS

A total of 228 patient charts and specimens from 14 centers were reviewed. Twenty (8.8%) patients had grade 1 injury which refers to reversible injury. The clinical findings of these 20 patients were compared to 208 patients with higher grades of injury. As expected, there was statistically significant difference regarding duration of symptoms ($p < 0.001$); however, range was wide in both groups (as long as 96 hours for grade one and as short as 7 hours for higher grades). There was no significant difference in any other variables including age (median 14 for both, $p = 0.531$), symptoms (pain: 19/20 vs 189/202, $p = 0.801$; swelling: 13/19 vs 168/197, $p = 0.094$), absence of blood flow in Doppler US (15/19 vs 164/197, $p = 0.635$) or degree of torsion (median 720° for both, $p = 0.172$).

CONCLUSIONS

This study revealed necessity for better criteria to define viability of testis following testicular torsion. Histopathological injury appeared to be reversible even in some patients with more severe perioperative findings, late admission, or high degree of twisting. Our findings support the tendency for testicular fixation instead of orchiectomy as none of the clinical or perioperative findings could be attributed to high grade injury.

17:06 - 17:11

Discussion

17:11 - 17:14

S05-3 (OP)

THE PATHOGENESIS OF ASCENDING TESTES IS RELATED TO GONADOTROPIN INSUFFICIENCY

Jorgen THORUP ¹, Simone HILDORF ², Andrea HILDORF ³, Tina OLSEN ⁴ and Dina CORTES ⁵

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PURPOSE

Males with an intact hypothalamic-pituitary-gonadal axis react on an impaired germ cell status with an increased serum level of Follicle Stimulating Hormone (FSH). Boys with a low number of germ cells in the testes and no

rise of the FSH serum level probably have hypogonadotropic hypogonadism. The aim of the study is to relate the function of the hypothalamic-pituitary-gonadal axis to the patho-anatomic findings of cryptorchid testes.

MATERIAL AND METHODS

We included 453 boys <5-years old with bilateral non-syndromic cryptorchidism. The position of the testes at orchidopexy, the germ cell number per tubular cross section (G/T) in testicular biopsies and serum FSH at surgery were evaluated.

RESULTS

We found 187 boys responding to impaired G/T with FSH higher than 2 SD of normal values (group A) and 202 boys with hypogonadotropic hypogonadism (normal FSH and G/T under the lower range of normal G/T (group B). Sixty-four boys had normal FSH and G/T. In group A 24% had ascending testes and in group B 35% had ascending testes ($p<0.02$). The number of boys with normal G/T in age groups 0-<1, 1-<2, 2-<3, 3-<4 and 4-<5 years was decreasing by age (52%,16%,18%,28%,13% respectively ($p<0.001$)). In contrast the percentage of boys with ascending testes was increasing by age (3%,26%,46%,35%,39% respectively ($p<0.001$)). Congenital cryptorchid testes had slightly lower median G/T (0.436) than ascending testes (0.500).

DISCUSSION

Ascending testes are associated with hypogonadotropic hypogonadism. Interpreting testes in distal suprascrotal position as late referral ascending testes with unknown history and not as congenital, the difference between group A and B increases ($p<0.0001$).

17:14 - 17:17

S05-4 (OP)

TESTICULAR LOCATION SCORE IN THE RETRACTILE TESTIS

Jae Min CHUNG and Sang Don LEE

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PURPOSE

A small percentage of retractile testis (RT) can ascend and become undescended testicles that need the surgery. The testicular location score for the RT was created and applied clinically to compare the difference between the group that underwent surgery and the group that only followed up.

MATERIAL AND METHODS

We evaluated 191 consecutive boys who visited our clinic due to RT. The testicular location score was given according to the position of the testis at the time of supine position(0-2), standing position(0-1), re-supine position(0-2), and making contraction-induced state of cremasteric reflex (0-2). The range of the total sum was 0-7. We compared and analyzed these scores by dividing them into two groups: the orchiopexy group and the follow-up group.

RESULTS

The mean age was 33.8 ± 26.5 months (6-111 months) at the first visit and 44.8 ± 26.4 months (12-123 months) at the last visit. The mean follow-up period was 10.5 ± 6.6 months (3-37 months). The laterality was 29 right, 20

left, and 142 both. The total score of 333 RT was 1.4 ± 1.7 on the first visit and 1.3 ± 1.7 on the last visit. The total score of 51 RT (15.3%) in the orchiopexy group was 2.3 ± 2.0 at the first visit and 3.3 ± 1.9 at the last visit. The total score of 282 RT (84.7%) in the follow-up group was 1.2 ± 1.6 on the first visit and 1.0 ± 1.4 on the last visit. The total score of the orchiopexy group was significantly higher than the follow-up group on the first and last visit ($p=0.001$).

CONCLUSIONS

The testicular location score for the RT was valuable and effective, and it was very helpful in the surgical decision. Active use is required for confirmation and follow-up of testicular location in clinical practice.

17:17 - 17:21

S05-5 (LOP)

CURATIVE GNRHA TREATMENT FOLLOWING SURGICAL CORRECTION OF CRYPTORCHIDISM STIMULATES TESTICULAR EXPRESSION OF GENES INVOLVED IN RETROTRANSPON SILENCING

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PURPOSE

Spermatogonia contain processing bodies (P-bodies) that harbour P-elements specifically associated with Piwi-interacting RNAs to silence transposable DNA elements. MORC genes are important for the transcription of piRNA precursors and for de novo DNA methylation of a retrotransposon affecting genome structure and gene silencing. The derepression of retrotransposons results in infertility. Here, we examined the expression of key retrotransposon silencing genes in testicular samples from patients diagnosed with cryptorchidism.

MATERIAL AND METHODS

Testicular biopsies from bilateral cryptorchid boys for histological and transcriptome analyses using the Illumina system. Lacking Ad spermatogonia in high infertility risk (HIR) patients results in adult infertility. HIR patients were randomized for treatment either with surgery and GnRHa or surgery only.

RESULTS

In samples from the HIR group four PIWIL genes, MORC1 ($-0.24 \log_2/0.002$ FDR) and MORC4 ($-0.57 \log_2/0.008$ FDR) show decreased signals when compared to samples from the low infertility risk (LIR) group. Curative GnRHa treatment stimulates PIWIL3 and TEX19 expression, which may contribute to the silencing of retrotransposons.

CONCLUSIONS

Our observations support the notion that downregulation of PIWIL and MORC genes may be associated with the derepression of retrotransposons that is thought to cause infertility. Normal mini puberty and LH/testosterone secretion is essential for the development of the endogenous defence system mediated by transposons. We

propose that GnRHa treatment - but not early orchidopexy alone - stimulates PIWIL and MORC genes and thereby restores the adult fertility of HIR patients.

17:21 - 17:31

Discussion

17:31 - 17:34

S05-6 (OP)

HIGHER PREVALENCE OF BENIGN TUMORS IN MEN WITH TESTICULAR TUMORS AND HISTORY OF TREATED CRYPTORCHIDISM

Rachel DAVIS, Alexander M. HIRSCH, Victoria MAXON, Ahmad HAFFAR, Christian MORRILL, Mahir MARUF, Joseph CHEAIB, Phillip PIERORAZIO and Heather DI CARLO
Johns Hopkins University, Brady Urological Institute, Baltimore, USA

PURPOSE

To identify if surgically treated cryptorchidism correlated with testicular tumor pathology at presentation.

MATERIAL AND METHODS

An institutional database of patients treated for testicular cancer between 2003-2020 was reviewed. Inclusion criteria included orchiectomy patients. Exclusion criteria included unknown cryptorchidism history or pathology or laterality of orchiectomy. Data collection included demographics, surgical history, and tumor marker status.

RESULTS

A total of 435 patients were included. Thirty-three of these patients had a history of UDT. There was no statistical difference in age at orchiectomy, laterality of orchiectomy, or lymphovascular invasion with regard to UDT history. There was a statistical difference in tumor pathology after orchiectomy, $p = 0.03$. On secondary analysis, benign pathology was significantly more common in patients with a history of UDT (15.2%) than without (4.7%), $p = 0.01$.

Mixed GCT was also found at a significantly lower rate in patients with a history of UDT (18.2%) compared to those with no history of UDT (37.3%), $p = 0.03$. There were no statistically significant differences in other pathology.

CONCLUSIONS

Previous studies have shown that there is a greater rate of seminoma in patients with testicular cancer in an undescended testis. This study shows that in patients with a history of UDT compared to those without a history of UDT, there is a greater percentage of patients with benign testicular masses after orchiectomy. Guideline based practices including monthly self-examination and testis-sparing surgery for appropriate patients may reduce rates of radical orchiectomy for benign tumors.

SURGICAL MANAGEMENT AND OUTCOMES OF TESTICULAR STROMAL TUMOURS IN CHILDREN: 15 YEAR EXPERIENCE

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PURPOSE

Testicular stromal tumours are extremely rare and 10% show malignant behaviour in adults. There is paucity of long-term outcome data in children. We report our experience in management and outcomes of testicular stromal tumours in prepubertal boys.

MATERIAL AND METHODS

With ethical approval retrospective cohort study of patients presenting with Leydig cell(LC), Sertoli cell(SC), juvenile granulosa cell(JGS) and undifferentiated testicular stromal(UST) tumours managed at a single tertiary centre from 2007 to 2023. Clinical, biochemical, radiological, surgical and follow-up data was analysed.

RESULTS

A total of 15 patients comprising JGS(n=8), LC(n=5), SC and UST(n=1) were included. Age was <10years in all, with JGS exclusively diagnosed in infants <6 months. The common presentation was painless testicular swelling in 10(67%), pain - 3(20%), precocious puberty - 2(13%). One patient had bilateral JGS and one diagnosed with Alport syndrome. Inhibin B was checked in one JGS patient preoperatively and was elevated; all other tumour markers (B-HCG, AFP, LDH) were within normal range for all patients. Ultrasound showed 10(67%) lesions presented as well-defined lesions and 5(33%) as diffuse. 6(40%) lesions were heterogeneous, including 3 cystic and 1 with calcifications. 11 had radical inguinal orchidectomy and 4 had testis-sparing surgery(TSS) with an on-table US in 2/4. Local pathological stage I was assigned in all cases. No relapses at median follow-up of 54 months(range 7-184). In 4 TSS patients the residual testis has shown good growth on the US. Precocious puberty symptoms resolved in both patients.

CONCLUSIONS

Testicular stromal tumours in prepubertal boys are benign with excellent long-term outcome. Our data shows an evolution to TSS and it should be performed when technically feasible using on-table US to delineate margins.

S06: ONCOLOGY

Moderators: Thomas Blanc (France), Haluk Emir (Turkey)

Parallel Meeting on Wednesday 17, April 2024, 17:50 - 18:20

17:50 - 17:53

S06-1 (OP)

SURGICAL OUTCOMES OF UNILATERAL WILMS TUMOUR TREATED WITH AIEOP AND UMBRELLA PROTOCOLS: FOCUS ON PRE-OPERATIVE CHEMOTHERAPY-INDUCED VOLUME REDUCTION

Andrea ZULLI ¹, Alberto MANTOVANI ¹, Anna PERRONE ², Chiara CAPORALINI ³, Luca LANDI ¹, Maria TAVERNA ¹, Chiara CINI ¹, Giulia BORTOT ¹, Laura OLIVERA ¹, Antonio ELIA ¹ and Lorenzo MASIERI ¹
1) Meyer Children's Hospital IRCCS, Pediatric Urology, Florence, ITALY - 2) Meyer Children's Hospital IRCCS, Pediatric Radiology, Florence, ITALY - 3) Meyer Children's Hospital IRCCS, Pathology, Florence, ITALY

INTRODUCTION

UMBRELLA protocol aims to reduce the unilateral Wilms Tumour (WT) volume with pre-operative chemotherapy, thus facilitating surgery. Previous AIEOP protocol allowed surgery as first-line approach instead. We evaluated the efficacy of UMBRELLA protocol in reducing tumour volume, and compared surgical outcomes of UMBRELLA vs AIEOP treatments.

METHODS

Data from patients treated at our institute for unilateral WT with AIEOP (2007-2016) and UMBRELLA (2017-2023): demographics, pre/post-chemotherapy tumour volumes, surgical outcomes, histological patterns were analysed. Mann-Whitney U test was used to compare data.

RESULTS

25 patients treated with AIEOP and 18 with UMBRELLA were collected (44 nephrectomies). Mean pre-op volume was 147 ml (79-284) and 205 ml (138-521) for AIEOP and UMBRELLA respectively ($p=0,14$). No positive resection margins were found, except one for rupture of the tumour capsule in the AIEOP group. AIEOP group showed increased operative time compared to UMBRELLA (193 vs 140 min, $p=0,04$). Among patients treated with UMBRELLA, 16/18 received pre-operative chemotherapy. All these tumours shrunk of a mean of 77 ml (13-193), with a median reduction of 74% (60-87, $p=0,04$). Blastemal and Mixed tumours reduced less compared to Epithelial and Regressive types: 69%-55% vs 87%-78%, respectively ($p=0,48$).

CONCLUSIONS

Our study reports the efficacy of UMBRELLA pre-operative chemotherapy in obtaining significant volume reduction in all WT histotypes, allowing a quicker and safer surgical procedure in terms of surgical time and complications compared to not pre-operatively treated WT.

NEPHRON- SPARING SURGERY IN PAEDIATRIC RENAL TUMOURS: A SINGLE CENTRE PROSPECTIVE COHORT STUDY EVALUATING THE IMPACT OF INTRAOPERATIVE ULTRASOUND ON MARGIN POSITIVITY

Carolina BEBI¹, Tom WATSON², Alberto MANTOVANI¹, Jesper BROK³, Alexander CHO¹, Riwa MESHAKA², Neil SEBIRE⁴, Catriona DUNCAN³, Tanzina CHOWDHURY³, Imran MUSHTAQ¹ and Naima SMEULDERS¹
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PURPOSE

Nephron Sparing Surgery (NSS) for syndromic or bilateral renal tumours seeks maximal preservation of renal function. However, incomplete surgical resection risks increased post-operative treatment or total nephrectomy. This study assesses intraoperative ultrasound's role in reducing positive surgical margins at NSS.

MATERIAL AND METHODS

This single centre prospective cohort study compares patients who underwent US-guided-NSS with historical controls who underwent NSS without US guidance. On-table US was performed by a Consultant Radiologist using a linear array transducer ("hockey stick") on the renal capsule. NSS sought tumour resection with a rim of normal parenchyma. It was utilised for multiple lesions in the same kidney, if necessary. Data included clinical characteristics, demographics, histological diagnoses, surgical margins. Fisher's exact test explored significance of margin positivity for malignant lesions; nephrogenic rests (NR) were excluded in view of their unencapsulated nature.

RESULTS

Among the 87 non-US-guided NSS (November 2001 to November 2016) in 45 patients (median age 29 months), we encountered 58 Wilms tumours (WT), 2 equivocal WT, and 27 NR. In the 20 US-guided NSS (performed from November 2016 to June 2023) in 13 patients (median age 18 months), we identified 7 WT, 3 RCC, and 10 NR. Positive margins for malignant lesions occurred in 14/60 (23.3%) non-US-guided NSS, but in 0/10 US-guided NSS ($p=0.19$).

CONCLUSIONS

Intraoperative ultrasound delineation of renal tumours at NSS eliminated positive surgical margins for malignant lesions in our cohort. This failed to reach statistical significance and an extended cohort is warranted to clarify significance.

OUTCOMES OF INFERIOR VENA CAVA PATCH RECONSTRUCTION IN CHILDREN WITH RENAL TUMOUR THROMBUS

Kristina DZHUMA ¹, Alexander CHO ¹, Muthialu NAGARAJAN ², Tanzina CHOWDHURY ³, Catriona DUNCAN ³, Alice TAYLOR ⁴, Mary MATHIAS ⁴, Tom WATSON ⁵, Susan SHELMERDINE ⁵, Neil SEBIRE ⁶, Abraham CHERIAN ¹, Imran MUSHTAQ ¹ and Naima SMEULDERS ¹

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PURPOSE

Incomplete tumour-thrombus resection(TTR) is associated with reduced survival. Cavectomy carries significant morbidity/mortality. Alternatively, after TTR of adherent tumour-thrombus, patching may be required to maintain inferior-vena-cava(IVC) patency. We report the outcomes of IVC-patch-reconstruction(IVC-PR) following TTR in children with intravascular-extension of renal-tumours.

MATERIAL AND METHODS

With institutional approval, prospective cohort of patients who underwent TTR-IVC-PR (January2007-January2023). Doppler US assessed IVC patency. Secondary outcomes included: 30-day surgical mortality/morbidity and 5-year event-free survival(EFS).

RESULTS

Wilms tumour 19(90%) and renal Ewings-sarcoma 2(10%)comprised diagnoses in 21 patients, age 2-16years. At diagnosis, 8(38%) were metastatic, 1(5%) bilateral. TT proximal extent was right-atrium-8(38%), hepatic-veins-9(43%) and infrahepatic-IVC-4(19%); distal extent was iliac veins-4(19%); contralateral renal vein-10(48%). 5(24%) received anticoagulation preoperatively, 4 with bleeding complications. TTR-IVC-PR occurred alongside primary tumour-nephrectomy in 19(90%);as a secondary procedure after disease progression/relapse despite radiotherapy in 2(10%). Cardio-pulmonary-bypass was used in 17(81%) for median 104(range:63-195)minutes. The patch was Bovine Collgen-19(90%), Gor-Tex®-1(5%), Dacron®-1(5%). A macroscopically complete TTR was achieved for all, en-bloc in 17(81%). Stage III was assigned to 19(90%), with viable TT in 15(71%). While there was no 30-day surgical mortality, complications in 9(43%) required a return-to-theatre for 4(19%): bleeding-2, drain insertion-2.

At median 54(range 10-180)months follow-up, the IVC was patent in 15(71%). Collateral vessels, without varicosity, lower-limb-oedema or venous-claudication were demonstrated in 8(38%). Postoperative anticoagulation was continued for median 5(range 2-14)months in 20(95%), without bleeding complications. Relapse occurred in 2(10%) patients, both after secondary TTR, of whom 1 died.

CONCLUSIONS

TTR at radical nephrectomy appears important for EFS. No surgical mortality occurred; morbidity, though common, required a return-to-theatre for <20%. The IVC was patent in most, without clinically-significant adverse-effects for children without patency.

17:59 - 18:02

S06-4 (OP)

THE RISK OF INFERTILITY IN CHILDREN TREATED FOR WT IS VERY LOW. OR IS IT? A CANADIAN NATIONAL POPULATION-BASED STUDY

Kieran J MOORE ¹, Ainsley BETHUNE ², Daniel KEEFE ¹, Jack BRZEZINSKI ³, Mandy RICKARD ⁴, Armando J LORENZO ⁵ and Rodrigo Lp ROMAO ⁶

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PURPOSE

Wilms' tumor (WT) carries a high survival rate. Treatment-related gonadotoxicity is perceived as low. Herein, we challenge this assumption by reporting on exposure to gonadotoxic treatments in a population-based national cohort of patients with WT.

MATERIAL AND METHODS

The following variables were collected for patients with WT from the CYP-C (cancer in young people in Canada) database from 2001 to 2018: sex, age at diagnosis, chemotherapy agents and doses, cancer relapse, and death. Risk of infertility was defined as exposure to at least one of the following three treatments: a cyclophosphamide equivalent dose (CED) greater than 4000 mg/m² for males and 6000 mg/m² for females, a carboplatin dose greater than 2000mg/m², and whole abdominal irradiation in females (10.8Gy).

RESULTS

A total of 816 patients were included (53% female; mean age at diagnosis 3.7+/-2.6 years). Of these patients, 390 were exposed to radiation, 217 to an alkylating agent, and 65 to carboplatin chemotherapy. 169 patients received at least one gonadotoxic treatment at risk for infertility (169/816-21%), 27 patients received two, while 2 received all three. The most common gonadotoxic exposure was to alkylating agents (151/217-70%- received toxic CED) followed by abdominal irradiation in females (59/215-27%) and carboplatin chemotherapy (19/65-29%). Of the patients exposed to gonadotoxic treatments, 84 relapsed (19%) and 53 died (12%). However, 88% patients exposed to at least one gonadotoxic treatment survived.

CONCLUSIONS

In a national population-based cohort of patients with WT, 21% were exposed to at least one gonadotoxic treatment placing them at risk for infertility, and of those, 88% were survivors. The risk of infertility in children treated for WT may not be as low as previously thought given these exposures. Treatment with alkylating agents posed the highest risk of gonadotoxicity in our cohort. These findings should be discussed during counseling and raise the potential need for fertility preservation interventions.

18:02 - 18:04

S06-5 (CP)

TUBEROUS SCLEROSIS COMPLEX (TSC) WITH BILATERAL RENAL CELL CARCINOMA (RCC) IN A PAEDIATRIC PATIENT: USE OF M-TOR INHIBITOR AS A TARGET THERAPY

PURPOSE

Tuberous sclerosis is an autosomal dominant and multisystem genetic disorder. RCC is rarely associated with TSC in children. We report a case of TSC with RCC in a seven year old girl with bilateral renal involvement and its management with targeted therapy with mammalian target of Rapamycin inhibitor (mTOR inhibitor) "Everolimus".

MATERIAL AND METHODS

Seven year old girl presented with hematuria and abdominal distention. History of seizures at 6 months of life. Examination findings: fascial angiofibroma, dental enamel pits, hypomelanotic macules, periungual fibroma and shagreen patch. Palpable mass on the left side of abdomen. CT scan showed bilateral heterogeneously enhancing soft tissue density renal masses (left larger than right) with multiple cysts in the periphery of right kidney and one small angiomyolipoma (AML) in segment III of liver. Multiple cortical and subcortical tubers and subependymal hamartomas are seen on MRI brain.

RESULTS

Diagnosis of TSC with Bilateral renal masses is established. Nephrectomy of a left non functioning kidney with huge mass was performed, which showed "papillary renal cell carcinoma". Keeping in view the right solitary kidney with mass (of similar character as of left) where nephron-sparing surgery was not possible, long-term complications and parental concerns for hemodialysis and transplant, after discussion in MDT meeting and with family decided to start on targeted medical management with mTOR inhibitor, everolimus. Over 4 months, there was a 50% reduction in the right renal mass size. She has been on Tab. everolimus for the last 4.5 years, without any significant side effects. Right renal mass is stable in size, and Fascial angiofibroma has decreased.

CONCLUSIONS

In pediatric patients, the association between RCC and TSC is very rare and preserving the maximum renal tissues is preferred. The use of targeted medical therapy with mTOR inhibitor yielded significant clinical benefits evidenced by a reduction in right tumour size and other TSC manifestations.

18:04 - 18:20

Discussion

S07: NEUROPATHIC BLADDER

Moderators: Reddy Pramod (USA), Rosalia Misseri (USA)

ESPU Meeting on Thursday 18, April 2024, 08:25 - 09:30

08:25 - 08:28

S07-1 (OP)

LONG TERM FOLLOW-UP OF PATIENTS WITH MYELOMENINGOCELE AFTER IN-UTERO REPAIR: WHAT IS THE FATE OF THE BLADDER? A PROSPECTIVE UROLOGIC FOLLOW-UP OF PATIENTS BORN FROM 2011-2013 (CURRENT AGE 10-12 YEARS OLD)

Rafael Enrique JORDAN BALLADARES, Hugo CRESPO, Taiane ROCHA CAMPELO, Renata CORREA, Emanuelle LIMA MACEDO, Raul GARCIA ARAGON, Marcela LEAL CRUZ, Sergio OTTONI, Gilmar GARRONE and Antonio MACEDO

CACAU-NUPEP, Pediatric Urology, Mexico, MEXICO

PURPOSE

The benefits of in-utero MMC repair to bladder function is still a topic of debate in pediatric urology. Since 2011 we prospectively follow MMC patients operated in utero. We decided to review all patients born between 2011 and 2013, projecting a follow-up of 10 to almost 12 years.

MATERIAL AND METHODS

We selected patients born between 2011 to 2013. We categorize patients according to the Leal da Cruz categorization (J Urol 2015) classification under 4 bladder patterns: high risk, hypocontractile, incontinent and normal to define the treatment. We reviewed clinical information and defined follow-up as the interval between first and last visit in the clinic. We excluded patients from the analysis who did not return for at least a second year evaluation. We registered the number of visits and UE/per patients to outline the relevance of the follow-up.

RESULTS

A total of 40 patients (aged 9 to 12 years, mean age: 10) were selected. Mean follow up was 49.68 months with 6.2 (median:10) urological visits and 3.46 UE per patient. First urological evaluation was at 5.5 months. At first UE (6.5 months) 82.5% had detrusor hyperactivity. We found 62.5% of high risk, 32.5% of incontinence, 2.5% of hypocontractile and 2.5% of normal pattern. CIC was needed in 65% and anticholinergics in 62.5%. 32.5% of the patients had at least 1 febrile UTI, and in 12.85% hospitalization was required. From these, 80% belonged to the high-risk group. Surgery was performed in 6 patients (15%) : 3 enterocystoplasty (Macedo), 1 enterocystoplasty LACE, 1 vesicostomy and 1 sling. After the 5th and 6th UE (under treatment) high risk pattern prevalence was 46.15% and 45.45% respectively.

CONCLUSIONS

This analysis confirms our statements that fetal MMC surgery offers limited improvement in bladder function compared to postnatal surgery. At mean follow-up of 49.6 months at mean age 10 years, prevalence of surgery was 15% and CIC and anticholinergics did not normalize bladder pressure in around 46% of cases.

08:28 - 08:31

S07-2 (OP)

LONG TERM UROLOGICAL OUTCOME IN A LARGE COHORT OF MALE ANORECTAL MALFORMATION PATIENTS WITH RECTO-URINARY FISTULA. A TERTIARY CENTRE STATISTICAL ANALYSIS

Javier RUIZ, Juan Pablo CORBETTA, Luciana DIAZ ZABALA, Nicolas ROSIERE, Santiago WELLER, Felicitas LOPEZ IMIZCOZ, Otilia BLAIN, Cristian SAGER, Carol BUREK and Yesica GOMEZ

Hospital de Pediatria Prof. J. P. Garrahan, Urology, Buenos Aires, ARGENTINA

PURPOSE

Anorectal malformation (ARM) represents a wide spectrum of congenital anomalies with different variables affecting the functional outcome.

The aim of the study is to report long term urological results in a male ARM cohort with urinary fistula (rectourethral bulbar -RB-, rectourethral prostatic -RP- and rectovesical -RV-) and identify variables that correlate with the urological outcome.

MATERIAL AND METHODS

Retrospective review of a prospectively maintained database of male ARM patients with recto-urinary fistula operated between 2009 and 2019 at our tertiary centre. Only subjects older than 4 years old with at least 1 year postoperative follow up were included. Primary outcome was urinary continence status, presence of neuro-vesical disfunction (NVD), need of urological reconstructive surgeries and incidence of chronic kidney disease (CKD).

RESULTS

Eighty-five patients were eligible for inclusion (50.5% rectobulbar, 37.5% rectoprostatic, 12% rectovesical). Median follow up was 5.9 years (r 1-16). Associated urological and spine anomalies were present in 46% and 50.5% of the cohort, respectively. At last follow-up, 92% were urinary continent, of which 22% needed major procedures to achieve it. NVD was present in 39%, and CKD in 25% of the cohort. History of RV fistula was associated with the presence of urinary incontinence ($p<0.001$), need of reconstructive surgeries ($p<0.001$) and CKD ($P<0.002$).

CONCLUSIONS

Overall urological long-term outcome in this large cohort of male ARM patients was in accordance with previous publications, with continence rate of 92% and CKD of 25%. The need of major reconstructive surgeries to achieve continence was more frequent in patients with rectovesical fistula.

08:31 - 08:34

S07-3 (OP)

PROGNOSTIC FACTORS DETERMINING LOWER URINARY TRACT DYSFUNCTION IN PATIENTS WITH LIPOMYELIOMENINGOCELE: PROSPECTIVE LONGITUDINAL STUDY

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PURPOSE

Lipomyelomeningocele (LMM) is the one of the most common forms of spinal dysraphism. Because LMM and Myelomeningocele (MM) differ in many ways, it is important to assess the long-term urologic outcomes of LMM separately from MM to incorporate realistic continence and bladder-management scenarios when counseling families. In this study, lower urinary tract functional outcomes were evaluated and prospectively analyzed to determine prognostic factors in patients undergoing LMM repair.

MATERIAL AND METHODS

Fifty LMM patients underwent repair between March 2017 and December 2022; 35 over the age of four were included in this study. Patient admission complaints, neurological examinations, radiological scans, intraoperative findings, and neuromonitorization results were recorded. Patients were evaluated with Voiding Dysfunction Symptom Score (VDSS) questionnaire with urinary ultrasound after every three months, uroflowmetry with electromyography, post void residual urine and postoperative urinary tract infections were recorded.

RESULTS

Twenty patients were boys and 15 were girls. Average diagnosis age was 32 months (3 months, 14 years); average follow-up period was 30 months (12 months, 60 months). Seventeen were chaotic type, 11 were transitional type, six were dorsal type, and one was caudal type. Preoperative physical examinations revealed swelling on 32 patients' backs, a spot on four patients' backs, and extremity size difference in four patients. There was lower-extremity loss-of-strength in eight patients and urinary incontinence in six patients. Bulbocavernous reflex (BCR) could not be detected bilaterally in 12 patients and unilaterally in two patients. VDSS score was found to be higher in patients with chaotic and transitional type, whose intraoperative BCR could not be obtained unilaterally or bilaterally and patients with neurological deficits in the preoperative period ($p < 0.05$).

CONCLUSIONS

Chaotic and transitional LMM, intraoperative BCR abnormality, and the presence of preoperative neurological deficit are poor prognostic factors for urological outcomes, and these patients should be closely followed like MM patients.

08:34 - 08:37

S07-4 (OP)

ANALYSIS OF LOSS OF UROLOGICAL FOLLOW-UP IN PEDIATRIC PATIENTS WITH MYELOMENINGOCELE (MMC). MULTICENTRIC STUDY

Sebastian TOBIA GONZALEZ ¹, Lisandro PIAGGIO ², Edurne ORMAECHEA ³, Edurne ORMAECHEA ³, S GERBAUDO ⁴, Jose FADIL ITURRALDE ⁴, Jose FADIL ITURRALDE ⁴, Jimena KRIKORIAN ⁵, Anabella MAIOLO ⁶, P PEÑA ⁷, P PEÑA ⁷, Maria Consuelo SIERRALTA ⁸, Andrea CASTRO DU PLESSIS ³, Maria Jose PEREZ ⁹ and Francisca YANCOVIC ⁷

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PURPOSE

Myelomeningcele (MMC) is the main variant of spina bifida in pediatrics and is the main cause of neurogenic bladder in this population. The primary objective of this study is to analyze the rate of loss to urological follow-up in patients with neurogenic bladder secondary to MMC. As secondary objectives, it is proposed to evaluate the initial treatment proposed and the causes that led to the loss of patients to follow-up.

MATERIAL AND METHODS

A retrospective observational longitudinal review was carried out on a database of patients with a diagnosis of neurogenic bladder secondary to MMC treated in Urology Services of different pediatric centers in Argentina and Chile. Data from all patients with less than two years of follow-up were discarded. Data were collected for each patient regarding patient demographics: age (in years), sex (F/M), initial consultation date, and last consultation date. In addition, the initial treatment indicated and the treatment at the end of follow-up were evaluated, as well as the total follow-up period of each patient. In the case of loss to follow-up, the cause was evaluated.

RESULTS

Data from 667 patients were studied, 349 (52.32%) female. The average age at the beginning of the consultation was 1 year (1 - 18), the average age at the end of follow-up was 8 years (1-23), the average follow-up was 67 months (1-244). Proactive treatment was indicated only in 147 (22.04%) of the patients evaluated. Of the rest, 175 (26.24%) took only CIL and 184 (27.58%) had anticholinergics added during follow-up. A lack of follow-up of more than two years was observed in 365 (54.72%), with the cause unknown in 449 (67.31%). Only 54 (8.09%) of the patients presented some degree of chronic renal failure during follow-up.

CONCLUSIONS

Initial treatment is very variable in different centers. A large dropout is observed during follow-up, with the cause of most cases being unknown. We should evaluate in future reports how to contain patients with MMC in maximum complexity centers.

08:37 - 08:50

Discussion

08:50 - 08:53

S07-5 (OP)

CAN EGFR BE USED TO PREDICT WHETHER CHILDREN WITH SPINA BIFIDA NEED A BASELINE DMSA SCAN?

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PURPOSE

EUA/ESPU Spina Bifida (SB) guidelines recommend a baseline DMSA scan in the first year of life. A more selective approach to baseline DMSA scanning has been recommended by recent studies. The aim of our study was to determine if estimated GFR can be used in clinical practice to predict whether children with SB might have renal scarring on DMSA.

MATERIAL AND METHODS

Retrospective review of blood results of all the children who attended our multidisciplinary spina bifida clinic (SBC) over a 2 year period (2017-2019). Estimated GFR (eGFR) was calculated using cystatin C measurements (CYSeGFR) according to Le Bricon et al. DMSA scans were reviewed and differential renal function was also recorded. eGFRs results were correlated to normal and abnormal DMSA scan.

RESULTS

182 children were included in our analysis-106 female with a mean age of 5.5 years. 118 had a normal DMSA, 57 had abnormal DMSA and 7 had no DMSA. The mean age at DMSA was 4 years. 116 children underwent measurement of eGFR with cystatin C. The sensitivity and specificity of eGFR for predicting abnormal DMSA were 0.256 and 0.740 respectively. Positive predictive value 0.33 and negative predictive value 0.66.

CONCLUSIONS

The results of this study demonstrate that eGFR in isolation is not able to identify which children might have renal damage on DMSA scan. Future studies are required to evaluate if the association of an eGFR with other prognostic factors will increase the sensitivity and specificity.

08:53 - 08:56

S07-6 (OP)

URINARY RENALASE DETERMINATION IN THE DETECTION OF RENAL SCARRING IN CHILDREN WITH NEUROPATHIC BLADDER DYSFUNCTION

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PURPOSE

Renalase is a novel enzyme mainly expressed in renal tubules. The aim of this study was to evaluate urinary renalase determination for predicting renal scarring in children with neurogenic bladder dysfunction (NBD).

MATERIAL AND METHODS

Patients with NBD were enrolled. Two study groups were formed; those with unilateral renal scarring (S) and those with no scarring (NS) in DMSA scintigraphy. For control group (C), healthy children were included. Demographic data, height, weight, medical information, detailed urine and serum analysis for kidney function, CRP, beta-2 microglobulin, urinary microalbumin, use of catheterization were noted. Urinary renalase levels were measured by ELISA method.

RESULTS

81 patients were studied (S group n:30, NS group n:30, C group n:21). Mean age of the patients were $10\pm 4,2$ years in S group, $9\pm 3,6$ years in NS group and $8,7\pm 2,9$ years in C group, respectively. No significant difference was seen in gender, age, weight. Late onset of catheterization, urinary tract infections and pyelonephritis were more common in S group. Mean urinary microalbumin was 64.1 ± 137.3 mg/l in S group and 12.7 ± 23.8 mg/l in NS ($p=0.005$). Mean renalase was 179.5 ± 39.8 ng/ml in S group, 164.3 ± 41.6 ng/ml in NS group and 143.4 ± 37.2 ng/ml in group C. Difference in urinary renalase between S and C was significant ($p=0.013$). Cut-off point of 195.2 ng/ml for renalase was significant for predicting renal scar (sensitivity 46,7%, specificity 90,5%, AUC 0,739, $p=0,001$). Urinary renalase more than 284 ng/ml was found to be significant in predicting renal function to be lower than 36.35% (sensitivity 66,7%, specificity 86,7%, AUC 0,724, $p=0,025$).

CONCLUSIONS

Urinary renalase determination is a noninvasive and easy method in detection of renal scarring in children with high specificity. Routine measurement of urinary microalbumin and renalase may be used as a practical diagnostic modality in the follow up of patients with NBD.

08:56 - 08:59

S07-7 (OP)

EFFECT OF PELVIC FLOOR REHABILITATION AND INCENTIVE SPIROMETRY IN CHILDREN WITH NEUROGENIC BLADDER DYSFUNCTION: PRELIMINARY RESULTS OF A RANDOMIZED CONTROLLED STUDY

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PURPOSE

Pelvic floor muscles (PFM) work synergistically with diaphragm in creating and maintaining intra-abdominal pressure. Aim of this study was to examine the effects of incentive spirometry (IS) in addition to pelvic floor rehabilitation (PFR) in children with neurogenic bladder dysfunction (NBD).

MATERIAL AND METHODS

Children over the age of 5 diagnosed with NBD due to spinal dysraphism were included. Patients were divided into two groups by simple randomization, PFR and PFR plus IS. PFR included diaphragmatic breathing, core stabilization exercises, and perineal sensory training. IS was given as home exercise. Pretreatment (PreT) and posttreatment (PoT) evaluation included PFM electromyographic (EMG) activation, diaper use, voluntarily voided urine volumes and emptied volumes with catheter together with clinical information of the patients. Results were analyzed statistically.

RESULTS

Total of 20 children (9 girls, 11 boys) were evaluated, 10 children in PFR group (11.3±4.19 years old) and 10 in PFR plus IS group (9.5±3.53 years old). There was no difference in age and gender between groups. PoT PFM EMG activation was significantly higher in the PFR plus IS group (6.63±3.5 mV) than in PFR group (4.1±1.4 mV) ($p=0.05$). Diaper use in PFR plus IS group (from 4.2±3.39 to 1.5±1.64 times per day) decreased compared to the PFR group (from 4.6±3.23 to 2.1±1.19 times per day). Voluntary voiding volume and emptied volumes with catheter increased in the PFR plus IS group (from 73±86.2 to 169.5±89.2, from 42±81,4 to 58,2±104,8) and in the PFR group (from 42.5±97.9 to 108±121, from 156,5±105,9 to 200±99,6, respectively).

CONCLUSIONS

In addition to PFR, respiratory-based approaches can be used in the treatment of children with NBD. These preliminary results show the beneficial effect of incentive spirometry on PFM EMG activation. Future studies are needed to improve the physiotherapeutic technique for better rehabilitation of NBD in children.

08:59 - 09:10

Discussion

09:10 - 09:13

S07-8 (OP)

ROLE OF MEASURING POSTVOID RESIDUAL URINE AS SCREENING TEST FOR URODYNAMIC STUDY IN PATIENTS WITH CLOSED SPINAL DYSRAPHISM

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PURPOSE

Following spinal cord untethering (SCU), regular urodynamic study (UDS) was recommended to follow in those with spinal dysraphism (SD). We hypothesized that measuring noninvasive postvoid residual urine (PVR) using portable ultrasound could be applied as screening test for UDS.

MATERIAL AND METHODS

The data of 153 SD patients who had undergone SCU at their infancy and showed spontaneous voiding were reviewed. During their regular follow-up of 3-6 months, PVR was measured during regular checking of wet diaper every 30minutes. PVR more than 20% of age-adjusted estimated capacity was considered abnormal and

repetitive measurement was conducted. In those with confirmed abnormal PVR, UDS was immediately performed to find the reason. Otherwise, UDS was conducted in every 1-2 years until 5 years. The frequency of abnormal PVR, sensitivity and specificity of PVR abnormality expecting UDS abnormality, urodynamic findings in case of repetitive abnormal PVR and sparing effect of PVR for UDS were assessed.

RESULTS

During median 7.4 (6-10) years of follow-up, elevated PVR was found at least once during follow-up in 51 (33%) of patients but sustained elevation requiring UDS was seen in 21 (14%) of them. It frequently showed abnormality between 12-36 months and tended to normalize after toilet training. Among those with sustained elevation of PVR, 18 (86%) patients were found to have neurogenic bladder due to spinal cord retethering. No patient with transient elevation of PVR showed evidence for neurogenic bladder and treatment of fecal impaction normalized PVR in 28 (93%) patients. Assuming annual UDS is the rule, PVR has spared 675 (88%) cases of UDS among required number of 765 cases of 5 years follow-up.

CONCLUSIONS

Noninvasive measurement of PVR was an effective and safe screening tests sparing most cases of unnecessary UDS.

09:13 - 09:16

S07-9 (OP)

NOVEL USE OF AN ENURESIS ALARM TO GUIDE TIMING OF BLADDER EMPTYING ASSESSMENT IN COMPLEX NON-VERBAL CHILDREN

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PURPOSE

Assessment of bladder emptying is challenging in non-verbal children with medical complexity due to the lack of indication that voiding has occurred. We sought to test the feasibility and efficacy of an enuresis alarm to guide timing of post-void residual (PVR) measurement in these patients.

MATERIAL AND METHODS

We prospectively enrolled 15 complex patients (<21 years old, nonverbal, diaper-voiding) hospitalized July-September 2023. Exclusion criteria were urinary tract infection or indwelling catheter. Protocol included a 4-hour period with alarm in place (PVR assessment after alarm trigger), and a 4-hour period of routine care (PVR assessment based on nurse observation of wet diaper). The primary endpoint of PVR volume with bladder scanner was analyzed with linear regression. Secondary endpoint was number of detected voids.

RESULTS

Median age was 10 years (0.8 to 16) and median weight was 20.7 kg (6.8 to 49.6). The most common diagnoses were cerebral palsy, spastic quadriplegia, and epilepsy. We excluded 4 patients who did not have at

least one void in both the alarm and routine study periods from data analysis. Median number of detected voids were significantly different in the alarm versus routine care periods (3 vs. 1, $p = 0.0312$). Use of alarm was associated with a mean decrease of 21.09 mL (-40.60 to -1.58, $p = 0.035$) in PVR volume when adjusting for patient weight. Every 1 kg increase in weight was associated with a mean increase of 1.36 mL (0.53 to 2.19, $p = 0.002$) in PVR volume. No adverse events occurred.

CONCLUSIONS

An enuresis alarm facilitated detecting significantly more voids and smaller PVR volume in a population of complex non-verbal, diaper-voiding patients. Such alarms may prove useful to more accurately measure PVR in this challenging population.

09:16 - 09:19

S07-10 (OP)

NON-INVASIVE EVALUATION OF INCONTINENCE IN CHILDREN WITH CEREBRAL PALSY

Bieke SAMIJN ¹, Christine VAN DEN BROECK ², Frank PLASSCHAERT ³, Mathilde JOOS ² and Erik VAN LAECKE ³

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PURPOSE

Urinary incontinence and LUTS are common in patients with cerebral palsy (CP). Although recommended in typically developing children, non-invasive uroflow measurement is not routinely used in children with CP. The objective of the study is to investigate uroflowmetry in children with CP.

MATERIAL AND METHODS

A cross-sectional observational study is conducted including children with CP between five and twelve years old. Children are evaluated using uroflowmetry and the validated Dutch Vancouver Symptom Score for Dysfunctional Elimination Syndrome questionnaire.

RESULTS

Forty-five children were included, with a mean age of 8,3 years old and 58 % being male. 24 children (53%) were dry and 21 (47%) children were incontinent. A bell-shaped curve was most frequently seen and demonstrated by 19 (42%) children. A significant difference of flow pattern ($p < 0.01$) was noted between continence status, with more than 50 % of the dry children demonstrating a bell shaped curve and children with combined daytime incontinence and enuresis demonstrating only pathologically shaped curves. Within this last group, half of them could not void despite having a filled bladder. Voided volume as percentage of expected bladder capacity for age tended to be lower (36.3 % vs. 61.8 %; $p = 0.04$) in children with incontinence.

CONCLUSIONS

Non-invasive uroflow measurement could be useful in children with CP. Depending results, redirection to invasive urodynamic evaluation can be necessary. Special attention should be given to those who have combined daytime incontinence and enuresis and cannot void on uroflowmetry.

09:19 - 09:30

Discussion

S08: BLADDER EXTHROPHY EPISPADIAS COMPLEX

Moderators: Max Cervellione (UK), Anne-Kristin Ebert (Germany)

ESPU Meeting on Thursday 18, April 2024, 10:00 - 11:00

10:00 - 10:03

S08-1 (OP)

DEVELOPMENT OF AN EVIDENCE BASED AND BEST PRACTICE BASED PATHWAY FOR NEONATAL, PRE OPERATIVE AND POSTOPERATIVE CARE IMPROVE OUTCOMES FOR BLADDER EXSTROPHY PATIENTS

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PURPOSE

Clinical Standard Work (CSW) aims to improve quality of care through standardization based on evidence in medical literature and/or expert opinion. We hypothesize that implementing such a pathway for bladder exstrophy patients at our institution will improve outcomes.

MATERIAL AND METHODS

A comprehensive literature search was performed. Of 777 records screened, 15 papers were included in pathway development by a multidisciplinary group. High volume bladder centers were also surveyed regarding management. We compared pre implementation outcomes data for 22 patients from 2014-2018 to post implementation data for 20 patients from 2018-2023

RESULTS

CSW protocols were developed spanning prenatal diagnosis, neonatal admission, pre-operative evaluation, intra operative management and post operative care. Average hospital stay decreased from 7.6 days to 5 days. Thirty day readmission rate decreased from 30% to 10.5%. Laboratory costs decreased from an average of \$2951 to \$1559. Pharmacy costs were reduced from \$7646 to \$4849. Moreover newborns with bladder exstrophy were successfully managed at their birthing institutions without transfer to a tertiary care center.

CONCLUSIONS

Care of bladder exstrophy patients can be standardized using evidence based and best practice pathways. These pathways decrease variation, improve patient education and result in decreased hospital stay, decreased readmissions and decreased cost. These pathways can be updated regularly based on available new evidence such as adding Enhanced Recovery Protocols that have been recently implemented in the pathway

10:03 - 10:06

S08-2 (OP)

SYMPHYSIS APPROXIMATION WITHOUT OSTEOTOMY IN THE IMMEDIATE AND IN DELAYED PRIMARY BLADDER EXSTROPHY REPAIR - COMPARISON OF ORTHOPEDIC LONG-TERM OUTCOME

Martin PROMM ¹, Raphael HOFBAUER ², Roland BRANDL ³, Christopher GOSSLER ⁴, Susanne BRANDSTETTER ⁵, Marco J. SCHNABEL ⁴, Michael KERTAI ⁶ and Wolfgang H. RÖSCH ⁷

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PURPOSE

To compare the orthopedic long-term outcome after primary bladder exstrophy (BE) repair with approximation of the pubic symphysis without osteotomy in immediate and delayed bladder closure.

PATIENTS AND METHODS

From 03/2018-12/2020 individuals with primary exstrophy repair (PER) and approximation of the symphysis without osteotomy were recruited prospectively. Patients <12 years and surgery in the bony pelvis or lower extremities were excluded. Orthopedic examinations were performed by two pediatric orthopedists. MRI (T1- and T2-weighted) of the bony pelvis including the hip joints was performed and pubic diastasis, the acetabulum angle (ACA) and the centre-edge-angle (CEA) were evaluated by a pediatric radiologist.

RESULTS

A total of 29 patients were included, 11 had primary neonatal bladder closure and 18 a delayed procedure. Between the two groups no significant differences could be observed concerning the patient reported orthopaedic outcome at last follow-up, including hip pain ($p=0.419$), mobility impairment ($p=0.543$) and sports impairment ($p=0.543$). Furthermore, there were no significant differences with regard to the measurable orthopaedic endpoints, including hip impingement ($p=1.000$), leg length discrepancy ($p=0.505$) and width of the pubic diastasis as measured by MRI ($p=0.401$). Mean pubic diastasis was 47.69 mm (SD 18.499 mm) for the entire cohort, 52.38 mm (SD 14.793 mm) in the post-partum PER group and 45.61 (SD 19.956) in the delayed PER group. There was also no significant differences with regard of CEA right (median 30°, $p=0.976$), CEA left (median 31.5°, $p=0.420$), ACA right (median 19°, $p=0.382$) and ACA left (median 17°, $p=0.880$).

CONCLUSIONS

Clinical, orthopedic and radiological long-term outcome after neonatal and delayed bladder closure was similar in our cohort. This confirms that delayed bladder closure without osteotomy is feasible and successful.

10:06 - 10:09

S08-3 (OP)

END-STAGE AND CHRONIC KIDNEY DISEASE IN CLASSIC BLADDER EXSTROPHY

Joshua ROTH ¹, Diana BOWEN ², Molly FUCHS ³, Patricio GARGOLLO ⁴, Harrison GOTTLICH ⁴, David HAINS ⁵, Andrew STRINE ⁶ and Konrad SZYMANSKI ⁵

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PURPOSE

Some with classic bladder exstrophy (CBE) experience renal deterioration in adulthood. Little is known about the incidence of end-stage and chronic kidney disease (ESKD/CKD) in this population. Our aim was to describe the incidence of ESKD and prevalence CKD in a CBE cohort.

MATERIAL AND METHODS

We retrospectively reviewed records of patients with CBE followed at five tertiary care centers. The primary outcome was incidence of ESKD, defined as permanent peritoneal/hemodialysis or renal transplantation. The secondary outcome was prevalence of CKD stage 3 or higher (CKD3+, estimated glomerular filtration rate [eGFR]<60ml/min/1.73m²). Creatinine-based eGFRs were calculated using CKD-EPI (adults) and Schwartz (children). Survival analysis and Fisher's exact test were used.

RESULTS

A total of 201/216 patients (93%) had renal function data available (63% male). 197 patients had a primary bladder closure. At a median of 18.8 years old, 12 were diverted and 108 were augmented. Three developed ESKD (1.5%) at a median age of 23.4 years (1 hemodialysis, 2 transplantation). On survival analysis, the risk of ESKD was 0% at 10 years, 1% at 20 years and 5% at 30 years, higher than the 0.003% risk at 21-year-olds in the general population (p<0.001). Median age of 147 individuals with eGFR data was 20.5 years old (65% male). One child (2%) and 8 adults (8%) had CKD3+ (p=0.16).

CONCLUSIONS

The risk of ESKD among patients with CBE appears to be more common than the general population. Reliable long term follow up is needed in this population to monitor for ESKD.

10:09 - 10:21

Discussion

10:21 - 10:24

S08-4 (OP)

PSYCHOSOCIAL AND PSYCHOSEXUAL ADJUSTMENT IN ADULT PATIENTS WITH CLASSIC BLADDER EXSTROPHY: LONG-TERM OUTCOMES OF A HIGH-VOLUME TERTIARY REFERRAL CENTER.

Irene PARABOSCHI ¹, Gianluca SAMPOGNA ², Massimo DI GRAZIA ³, Dario Guido MINOLI ¹, Michele GNECH ⁴, Erika Adalgisa DE MARCO ¹, Francesca MITZMAN ⁵, Gianantonio MANZONI ⁵, Waifro RIGAMONTI ⁶ and Alfredo BERRETTINI ¹

1) *Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Pediatric Urology, Milano, ITALY* - 2) *ASST Grande Ospedale Metropolitano Niguarda, Spinal Unit, Milano, ITALY* - 3) *Infermi Hospital, AUSL Romagna, Rimini, ITALY* - 4) *Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Pediatric Urology, Milano, ITALY* - 5) *Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Pediatric Urology, Milano, ITALY* - 6) *Urology Clinic-Pediatric Urology Unit, Department of Surgery, Oncology and Gastroenterology, Padova, ITALY*

PURPOSE

To examine long-term psychosocial and psychosexual outcomes of adult patients with classic bladder exstrophy (BE).

MATERIAL AND METHODS

The validated Sexrelation Evaluation Schedule Assessment MOnitoring (SESAMO) questionnaire was used to assess the psychosocial and psychosexual adjustment of adult BE patients. Section I investigated domains common to all patients, section II singles, section III couples. Z-scores were calculated for each item and compared in relation to patients' gender, relationship status, and the voiding technique used to empty the bladder.

RESULTS

A total of 33 (F:M 12:21; singles:couples 11:22) BE patients were enrolled in the study at a median age of 39 (32-47) years. The results of the questionnaire showed mild to moderate dysfunctions in all the domains investigated, with no significant differences between the different voiding techniques used to empty the bladder. Lower z-scores were recorded for psychosexual identity (z-score:-1.282), areas of pleasure (z-score:-0.915) and desire (z-score:-0.583); singles for relational attitude (z-score:-1.751) and imaginative eroticism (z-score:-0.806); couples for extramarital sexuality (z-score:-1.175) and communicativeness sexual sphere (z-score:-0.524). Overall women performed significantly worse than men regarding psychosexual identity (p-value: <0.0001) and sphere of pleasure (p-value: <0.001), single women on present masturbation (p-value: <0.05), single men on relational attitude (p-value: <0.05), coupled women on present masturbation (p-value: <0.05), coupled men on sexual intercourses (p-value: <0.01).

CONCLUSIONS

Several psychosocial and psychosexual outcomes were affected in BE adults, regardless of the voiding technique used to empty the bladder. A long-term psychosexuological follow-up is required to help them cope with their past medical experience and actual clinical condition.

10:24 - 10:27

S08-5 (OP)

LONG- TERM ASSESSMENT OF SEXUAL OUTCOMES AND FERTILITY IN PATIENTS TREATED FOR CLASSIC BLADDER EXSTROPHY: ARE THE USUAL SCORES ADAPTED ?

Sarah ABDELLAOUI ¹, Nicolas MOREL JOURNEL ², Fabiana CAZZORLA ³, Valeska BIDAULT ¹, Pierre MOURIQUAND ¹ and Delphine DEMEDE ¹

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PURPOSE

Genital reconstructive surgery and the aesthetic appearance of the external genitalia (EG) may affect classic bladder exstrophy (CBE) patients sex life. To understand surgical outcomes, standardised sexuality scores are necessary. We sought to assess sexual outcomes and fertility in CBE patients using validated questionnaires.

MATERIAL AND METHODS

QUALEXSTRO was a retrospective, non-interventional, single-center cohort study of 15 years and older CBE patients using questionnaires: the FSFI in women and the IIEF-5 in men.

RESULTS

Of the 63 eligible patients, 20 women and 22 men responded (response rate 66.7%). For women, with a median age and follow-up of 28 and 26 years respectively, the median FSFI score was 28.4 [14.2-30.1] with sexual dysfunction for 42.6%. 66.7% reported satisfaction with their sex life. 65% of patients had subsequent gynecological surgery with 37.5% satisfied with the aesthetic appearance of their EG. Pregnancy rate was 66.7%. For men, with a median age and follow-up of 23 years and 21 years respectively, the median IIEF-5 score was 23 [16,5-23] with no erectile dysfunction for 66.7%. 41.7% reported sexual satisfaction. After initial repair mostly with the Cantwell-Ransley technique (21/22), 63.6% had subsequent urethroplasty with 12% satisfied with the aesthetic appearance of their EG. One case of paternity was recorded.

CONCLUSIONS

Long-term sexual outcomes in CBE patients show high rates of sexual dysfunction in women, despite high sexual satisfaction. In men, we report few cases of erectile dysfunction with the Cantwell-Ransley technique, but a low rate of sexual satisfaction. Specific CBE scores need to be developed.

10:27 - 10:30

S08-6 (OP)

URINARY BLADDER CANCER IN BLADDER EXSTROPHY AND EPISPADIAS COMPLEX: A REGISTER STUDY AND A SYSTEMATIC REVIEW OF THE LITERATURE

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PURPOSE

The risk of urinary bladder cancer is known to be higher in individuals with classic bladder exstrophy (BE, 700 times higher) and appears at a younger age compared with the general population. The purpose of this study was to evaluate urinary bladder cancer in individuals with BE/epispadias.

MATERIAL AND METHODS

We performed two studies, a register-based case series reporting 12 novel cases and a systematic review summarizing published cases thus far. MEDLINE, EMBASE, Web of Science, and Google Scholar were searched in January 2022 following the Preferred Reporting Items for Systematic Review and Meta-Analysis statement. Publications reporting at least one case of BE with urinary bladder cancer were eligible. Ninety-seven publications were included, reporting 165 cases.

RESULTS

The main result from the register study was that the tumors were predominantly of urothelial origin (10/12). Conversely, published cases from the literature search had a non-urothelial tumor type in 95%, whereof the majority were adenocarcinomas. Both sub-studies consistently indicate a young age at cancer diagnosis, with the majority being younger than 65 years.

CONCLUSIONS

Urinary bladder cancer affects individuals with BE at a young age. The most common tumor type in the register study is urothelial, but non-urothelial in earlier publications. The divergence between the two sub-studies in tumor types could reflect a slightly older age in our case series, likewise a possible publication bias. This study implies an even higher risk for urinary bladder cancer in persons born with BE than predicted earlier.

10:30 - 10:32

S08-7 (CP)

NOVEL USE OF INTRAVESICAL N-ACETYLCYSTEINE IN RECURRENT BLADDER STONE FORMERS OF THE EXSTROPHY-EPISPADIAS COMPLEX

Victoria MAXON¹, Chloe MICHEL², Logan GALANSKY², Ahmad HAFFAR¹, Alexander HIRSCH¹, Heather DICARLO¹ and Chad CRIGGER¹

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PURPOSE

We present an initial case series on the use of daily intravesical n-acetylcysteine instillation to prevent bladder stones in patients with a history of bladder augmentation in the exstrophy-epispadias complex.

MATERIAL AND METHODS

NAC instillation was implemented in 4 patients who were considered high-risk for recurrent bladder stone formation (defined as having >4 prior stone surgeries) or at high-risk for complications from repeat stone surgery (history of vesicocutaneous fistula or pre-existing CKD). Patients were instructed to dilute 10ml of 20%

NAC with 50ml of NS and then instill the solution into the bladder and allow to dwell for 30-60 minutes twice daily. Patients were followed with renal bladder ultrasound at 6-12 month intervals.

RESULTS

Il four patients had a history of an ileal augmentation and continent urinary stoma. Three patients had a history of at least 4 prior stone surgeries, 2 patients had a history of vesicocutaneous fistula after cystolitholopaxy and the remaining patient had a history of a transplant kidney prior to starting NAC instillations. The four patients had an average of 0.92 stone surgeries per year (range 0.38-1.2) prior to starting NAC. The mean follow up was 25.9 months (range 12.4-41). Three patients have remained stone free on ultrasound. One patient had a recurrence of a 7mm bladder stone 6 months after a previous stone surgery and is awaiting treatment.

CONCLUSIONS

NAC instillation may be useful as an adjunct to prevent bladder stone formation in high-risk stone formers. Further research will be needed to determine long-term efficacy.

10:32 - 10:47

Discussion

10:47 - 10:50

S08-8 (OP)

MANAGEMENT OF CONCEALED EPISPADIAS

Amilal BHAT ¹, Nikhil KHANDELWAL ², Akshita BHAT ³ and Mahakshit BHAT ⁴

1) Bhat Hypospadias & Reconstructive Urology Hospital and Research Centre, Urology, Jaipur, INDIA - 2) Rungta hospital Malviya Nagar Jaipur, Urology, Jaipur, INDIA - 3) SWAI MANSIGH HOSPITAL JAIPUR, SURGERY, Jaipur, INDIA - 4) N.I.M.S.JAIPUR, Jaipur, INDIA

PURPOSE TO EVALUATE THE RESULTS OF MODIFIED PARTIAL PENILE DIS-ASSEMBLY IN MANAGEMENT OF CONCEALED EPISPADIAS

In isolated epispadias, the prepuce is usually absent on the dorsal side of the penis leaving the glans uncovered. But a rare variant of epispadias is concealed epispadias where the prepuce is well formed .Less than 100 cases are reported. The diagnosis can be missed unless looked for specifically.We present the results of modified partial penile dis-assembly in managing these cases.

MATERIAL AND METHODS

In a retrospective study we evaluated isolated male epispadias patients treated at our centre between 2016 and 2023 regarding age at presentation, meatal location, incontinence, dorsal curvature, success rate, and complications.Penile degloving with the mobilization of the urethral plate from the ventral to the dorsal aspect with the preservation of blood supply at both ends, distally up to the level of mid-glans and proximally up to the pubic symphysis is done. Tubularization of urethral plate followed by spongioplasty, corporoplasty with medial rotation of corporeal bodies,and glanuloplasty with meatoplasty was done to bring the meatus ventrally.

RESULTS

We treated 46 patients with isolated male epispadias, out of these 9 (19.56%) were of concealed epispadias . Age of the patients varied from 6 months to 24 years with an average of 7 years. the type were 5 glanular, 2 coronal , one each sub coronal penopubic. All were continent except one who had partial incontinence . Dorsal chordee was seen mild in 3 moderate in 5 & severe I case and seven cases had mild to moderate torsion. Prepuce could be preserved in 3 cases and in remaining cases it was utilized for skin coverage. No complication was seen except in one partial glanular dehiscence in a follow up of 9 months to 4 years

CONCLUSIONS

Concealed epispadias represents about 20 % of isolated male epispadias cases. Presentation is late because of hidden glans .Cosmetic and functional results are good with modified partial penile dis-assembly.

10:50 - 10:53

S08-9 (OP)

LONG-TERM OUTCOME AFTER ISOLATED EPISPADIAS REPAIR

Marko BENCIC, Marta BIZIC, Borko STOJANOVIC and Miroslav DJORDJEVIC
University Children's Hospital Belgrade, Urology, Belgrade, SERBIA

PURPOSE

One of the most severe congenital anomalies of the genitalia. Their correction is necessary to allow average penile growth and normal voiding function. We aimed to analyze the long-term outcome after surgical reconstruction of isolated male epispadias.

MATERIAL AND METHODS

This retrospective study involved 31 patients with isolated epispadias, surgically treated from January 2000 to January 2015. The data were collected from the medical records and outpatient examinations. The data included the age of initial surgery and type of surgical correction, epispadias grade, additional surgical reconstruction, the esthetical appearance of genitals, sexual satisfaction, and continence. Continence was defined as the ability to control urination without needing protection.

RESULTS

Follow-up ranged from 6 to 20 years (mean 14,4 years). Penopubic epispadias was noted in 24 (77.4%) patients, midshaft in 5 (16.1%), and distal in 2 (6.5%) patients. The mean penile length in the stretched position was 9.6 cm (range 7.1-10.2 cm). Recurrent penile curvature was seen in 6 (19.4%) patients, and 5 required surgical repair. Fistula was the most common urethral complication and was corrected with surgical intervention in 7 (22,6%) treated boys six months after the initial surgery. Complete incontinence was maintained in 9 (29%) patients, requiring additional surgical correction.

CONCLUSIONS

Treatment of isolated epispadias requires complex surgical repair in childhood, especially in severe cases. Some complications, such as residual curvature, can worsen after complete penile growth in puberty. Thus, follow-up should be extended until patients achieve their sexual growth.

10:53 - 11:00

Discussion

S09: DIVERSION

Moderators: Raimund Stein (Germany), Armando Lorenzo (Canada)

ESPU Meeting on Thursday 18, April 2024, 11:40 - 12:45

11:40 - 11:43

S09-1 (OP)

DECISIONAL REGRET IN PARENTS OF PATIENTS WITH SPINA BIFIDA REGARDING CHILDHOOD NEUROGENIC BLADDER AND BOWEL SURGERIES

Ashley JOHNSTON, Konrad SZYMANSKI, Rosalia MISSERI and Joshua ROTH
Riley Children's Health at Indiana University, Indianapolis, USA

PURPOSE

Our objective was to assess decision regret (DR) in parents of adults with spina bifida (SB) who underwent surgery for neurogenic bladder/bowel in childhood.

MATERIAL AND METHODS

We surveyed consecutive adult patients with SB (≥ 18 years old [y]) and their parents (6/2018-1/2020). Patient had one of the following surgeries (< 18 y): bladder augmentation, creation of a catheterizable channel (CCC), bladder neck procedure (BNP) and/or Malone antegrade continence enema (MACE) creation. Patients and parents each completed the Decision Regret Scale (DRS) for bladder surgeries and MACE creation. We analyzed whether parental DR was impacted by patient DR, incontinence, history of augmentation, or difficulty catheterizing MACE. Non-parametric testing was used.

RESULTS

Regarding bladder surgeries, 50 paired patients (median 24y, 56% male) and parents (88% mothers) pairs were surveyed. Surgeries included augmentation (64%), CCC (92%), and/or BNP (62%). Median DRS for both groups was 0 ($p=0.99$). More parents (78%) reported no DR than patients (60%, $p=0.02$). Parental DR was strongly associated with patient DR ($p=0.002$). Neither urinary incontinence nor augmentation were associated with parental DR ($p>0.60$).

For MACE, 48 paired patients (median 23y, 54% male) and parents (90% mothers) were surveyed. Median DRS for both groups was 0 ($p=0.93$). More parents (73%) reported no DR than patients (60%, $p=0.03$). Parental DR was associated with patient DR ($p<0.001$). Neither fecal incontinence nor difficulty catheterizing were associated with parental DR ($p>0.50$).

In evaluating DR of those who underwent both bladder surgeries and MACE ($n=43$), DR about bladder surgeries was associated with DR about MACE in both groups ($p<0.001$).

CONCLUSIONS

The majority of parents of patients with SB do not regret childhood bladder surgeries or MACE creation. Parental DR is associated with patient DR. Parents with DR for bladder surgery were more likely to have DR for MACE surgery.

11:43 - 11:46

S09-2 (OP)

CATHETER- IN-CATHETER: INTRODUCTION OF A LOW-FIDELITY MODEL FOR INTERMITTENT CATHETERIZATION TRAINING IN CHILDREN WITH NEUROGENIC BLADDER

Yaser EL HOUT, Ananda NUNES, Jessica ARAG and Santiago VALLASCIANI

Sidra Medicine, Department of Surgery, Doha, QATAR

PURPOSE

Clean intermittent catheterization (CIC) is a vital procedure frequently necessary for children with neurogenic bladder (NB) to ensure bladder emptying and safeguarding the upper tracts. It can be challenging to convince children and parents to initiate CIC due to anticipated apprehension and perceived difficulty to perform CIC. Herein, we describe an innovative model we devised for teaching and practicing CIC for children with NB.

MATERIAL AND METHODS

An open-ended 16 Fr. catheter was utilized to mimic a urethra and was affixed to the prominent cylinder in a lid of a urine collection cup that was secured on a piece of cardboard. The other end of the catheter was connected to a valved water container positioned at a higher level. Drawing of a boy or girl was done on the cardboard to appeal to children. Catheterization of the 16 Fr. catheter is feasible using a 10 Fr. catheter, draining water upon reaching the container, signifying a successful catheterization.

RESULTS

The model was exhibited and tested by children who were present at the World Spina Bifida Day event hosted at a pediatric tertiary care center. Twenty children, aged 6 to 12 years, performed catheterization with both visual and tactile assistance from their other hand while blindfolded.

All catheterizations were successfully conducted with little to no assistance. The task was described as "enjoyable," "simple," and "desirable."

CONCLUSIONS

We consider this to be a cheap, easy to assemble, readily available, low-fidelity model that will encourage, engage, "ice-break", teach and allow practice of CIC for children and caregivers, when it is clinically anticipated or required.

11:46 - 11:49

S09-3 (OP)

APPENDICOCECOVESICOSTOMY: DOES A CECAL FLAP DECREASE RISK OF STENOSIS COMPARED TO CONTEMPORARY APPENDICOVESICOSTOMY?

PURPOSE

Stenosis of a catheterizable channel is one of the most common complications of these channels. We present the appendicocovesicostomy (APCV) which incorporates a cecal flap for channel augmentation. We aim to examine if APCV confers lower stenosis rates compared to appendicovesicostomy without increased bowel complication rates.

MATERIAL AND METHODS

We performed a retrospective review of pediatric patients who underwent open or robotic APV or APCV between 2008 and 2021. We compared the outcomes of APV vs APCV in both robotic and open approaches.

RESULTS

In the robotic group, APCV had a lower rate of suprafascial stenosis but a higher rate of revision, although not statistically significant.

In the open group, APCV had a lower rate of suprafascial and subfascial stenosis, as well as lower rate of revision, although not statistically significant.

In both robotic and open groups, there was no difference in bowel complications. No patients had bowel leak or perforation.

Robotic	APV n (%)	APCV n (%)	p-value
n	26 (67)	13 (33)	
Suprafascial stenosis	9 (35)	2 (15)	0.21
Subfascial stenosis	1 (4)	2 (15)	0.2
Bowel obstruction	1 (4)	1 (8)	0.65
Ileus	6 (23)	4 (31)	0.6
CDG III complication	15 (58)	7 (54)	0.82
Channel revision	10 (39)	6 (46)	0.65

Open	APV n (%)	APCV n(%)	p-value
n	18 (75)	6 (25)	
Suprafascial stenosis	2 (11)	1 (17)	0.72
Subfascial stenosis	2 (11)	0	0.39
Bowel obstruction	1 (6)	0	0.56
Ileus	5 (28)	1 (17)	0.59
CDG III complication	9 (50)	3 (50)	1
Channel revision	5 (28)	1 (17)	0.59

CONCLUSIONS

Appendicococovesicostomy is a new concept with the goal of decreasing channel stenosis. With more patients and longer follow up, we hope to show its benefit to patients.

11:49 - 12:00

Discussion

12:00 - 12:03

S09-4 (OP)

CHARACTERISTICS OF LEAKAGE FROM CATHETERIZABLE CHANNELS. CAN THE UNDERLYING ETHIOLOGY DETERMINE THE ONSET OF THE SYMPTOM AND PREDICT MANAGEMENT?

Alkan OKTAR ¹, Abdurrahman JAFAROV ¹, Mehmet Fatih ÖZKAYA ², Emre ERDEM ¹, Aykut AKINCI ³, Murat Can KARABURUN ⁴, Tarkan SOYGÜR ⁵ and Berk BURGU ⁵

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PURPOSE

Double Monti and Mitrofanoff procedures, are the current standart for continent catheterizable channels in our daily practice. We specifically examined the post operative onset time, underlying reason and management of stomal incontinence.

MATERIAL AND METHODS

Retrospectively patients that underwent aforementioned procedures and were compliant on follow-ups, between Jan-2000 and Dec-2022 (n = 143), were included in the study. All patients had been followed at 1st, 3rd, 6th months and then annually. Depending on the onset time of stomal incontinence, patients were categorized into 3 groups (immediate leakage: 0-6 months, early-leakage: 6-24 months, late-leakage: after 24 months). Chi square test was used for statistical analysis.

RESULTS

Accompanied augmentation or type of channel did not reveal any difference in terms of leakage. 13% of the patients (n=19) had immediate leakage after surgery. All of them are initially followed with anticholinergics. 89% of them (n=17) were continent after 2 months without drugs. Remaining 2 patients were continent after bulking agent injection. 6.2% of the patients had an early-leak (N = 9). They were treated initially with anticholinergic medication. The medical treatment was successful only for 11% of patients (n = 1).

Late-leak was seen in 3% of patients (n=4). Among those, 1 of them was non-compliant with the CIC schedule, 3 patients were after anticholinergic medications. The success rates of treatment modalities were significantly different in 3 groups. (p<0.05)

CONCLUSIONS

Immediate leakage is mainly caused by bladder compliance and overactivity and likely to resolve spontaneously or medication. Whereas leakage after 6 months is very unlikely to respond medication and more likely to indicate an endoscopic intervention. Postponing the revision or injection at the early period is vital. Late-leakage is caused by non-compliance to CIC or bladder conditions and requires adequate tailored approach.

12:03 - 12:06

S09-5 (OP)

ADDING THE YACHIA MANEUVER TO THE MACEDO CATHETERIZABLE ILEAL RESERVOIR TO IMPROVE URINARY CANAL CONTINENCE: LONG-TERM FOLLOW-UP

Gilmar DE OLIVEIRA GARRONE, Sérgio LEITE OTTONI, Marcela LEAL DA CRUZ, Taiane ROCHA CAMPELO, Renata ALVES CORREA, Emanuelle LIMA MACEDO, Raul GARCIA ARAGON, Rafael JORDAN BALLADARES, Ricardo MARCONDES DE MATTOS and Antonio MACEDO JR.
FEDERAL UNIVERSITY OF SÃO PAULO, NUPEP/CACAU PEDIATRIC UROLOGY, São Paulo, BRAZIL

PURPOSE

The Macedo ileal catheterizable channel (BJU, 2000) consists of an enterocystoplasty with a catheterizable channel precluding the need of the appendix for the outlet. After 25 years of experience with this technique, we decided to review our experience in a select subgroup of cases performed and followed by the author in a non-teaching hospital facility after the latest modifications of the procedure.

MATERIAL AND METHODS

Since 2008, we have performed a transverse incision with a semicircular flap to create stomata in the midline and the Yachia maneuver, which consists of crossing two 2-cm rectal muscle flaps in the midline to create a neosphincter over the catheterizable canal. We defined stoma continence if the interval between catheterizations was 4 hours. Early and late complications and reoperation rate were reported.

RESULTS

Of 52 patients. The indications were spinal dysraphism (77.1%), mainly myelomeningocele (67.9%) and others (PUV, exstrophy, anorectal anomalies). Urodynamic evaluation showed high-risk bladder pressure in (66%), urinary incontinence (24.5%), bladder exstrophy (1.9%), detrusor hypocontractility (1.9%), incontinent urinary diversion conversion (3.8%). The mean age at the time of surgery was 7.3 years. Stoma continence was 90.6% after the first surgery (48 patients) and stoma revision was performed in 7 cases (4 skin flap revisions), canal and 3 leak revisions: 2 treated with an endoscopic procedure and 1 case with open revision).

CONCLUSIONS

With a follow-up of 7.3 years, we confirmed that the Macedo procedure associated with the Yachia maneuver is associated with 90.6% stoma continence, higher than most procedures. The cosmetic aspect with a small transverse incision (not superior to 5cm) and a midline stoma is another strength of the technique.

12:06 - 12:11

S09-6 (VP)

★ THE INTUSSUSCEPTED ILEAL NIPPLE AS AN OPTION FOR REVISION OF A NON-FUNCTIONING CONTINENT CATHETERIZABLE CHANNELS (CCC)

Bernhard HAID ¹, Nina YOUNSI ² and Raimund STEIN ²

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PURPOSE

In patients with complex urogenital malformations and unusable or not existing [NY1] bladder outlet, continent catheterizable channels (CCC) are created during childhood. With a known, relatively high long-term complication and revision rate, these stomas are prone to pose problems later in life. However, treatment options are scarce. The intussuscepted ileal nipple was popularized during the late 1980s and 1990s, predominantly in combination with a continent MAINZ-I-reservoir. This video intends to present and review its use and the surgical technique as an isolated stoma replacement.

MATERIAL AND METHODS

The case of a 21-year-old female with multiple prior surgeries and an incontinent CCC in the right lower quadrant after cloacal exstrophy is presented. Surgical revision included the removal of a triple-revised Yang-Monti channel as well as the formation of an intussuscepted ileal nipple and its implantation into the augmented bladder.

RESULTS

The surgery resulted in a wide and continent catheterizable stoma, which could be brought to the umbilicus, respecting the patient's wish. Three years later, the catheterizable channel is still continent.

CONCLUSIONS

In selected patients, creation of an intussuscepted ileal nipple can be a viable option in stoma revision surgery resulting in flexible and continent catheterizable access. The necessary staples are a manageable disadvantage of this technique.

12:11 - 12:15

S09-7 (LOP)

★ TISSUE-ENGINEERED CONDUITS FOR URINARY DIVERSION IN A MINIPIG MODEL

Nikolai JUUL ¹, Oliver WILLACY ¹, Mahboobeh AMOUSHABI ¹, Fatemeh AJALLOUEIAN ², Clara I. CHAMORRO ³ and Magdalena FOSSUM ³

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PURPOSE

Shortness of native tissue demands for alternative treatment strategies in reconstructive malformation surgery. Tissue-engineered scaffolds can be tailored to fit tissue-specific profiles, potentially improving clinical outcomes. In this study, we evaluated the performance of a composite collagen-based tubular scaffold, which was assembled and implanted as a singled-staged procedure in a minipig model. The primary aim was to assess the technical feasibility of the procedure, and the secondary aim was to assess the regenerative performance of micrografted versus acellular scaffolds.

MATERIAL AND METHODS

Ten full-grown female Göttingen minipigs were included. A mesh-reinforced collagen scaffold was tubularized around a biodegradable stent and anastomosed to the anterior bladder wall. In half of the animals (n=5), autologous bladder mucosa micrografts were embedded in the collagen perioperatively, whereas the other half were implanted with acellular but otherwise identical scaffolds. After 6 weeks, the animals were terminated and assessed by cystoscopy and CT-scans before final histology.

RESULTS

The procedure was successfully completed in all animals (mean time 3.2 ± 0.6 hours) without postoperative complications, and all implants demonstrated good take at the time of autopsy. We found a tendency towards larger mean luminal areas in the micrografted group compared to acellular scaffolds (6.5 ± 0.6 mm² vs 5.5 ± 0.8 mm², $p=0.251$). The epithelium expressed urothelial differentiation markers with a tendency towards increased epithelialization in the micrografted group ($59.8 \pm 26.6\%$ vs. $40.5 \pm 31.1\%$, $p=0.088$).

CONCLUSIONS

A one-staged on-site construction and implantation of conduits proved feasible, with positive regenerative outcomes after six weeks. Scaffolds with autologous micrografts demonstrated beneficial effects on luminal size and appearance and could be performed in a standard surgical unit.

12:15 - 12:28

Discussion

12:28 - 12:31

S09-8 (OP)

THE ENTERIC CHIMNEY: SIMPLE,SAFE,SMART

Raul SOSA ¹, Martin KAEFER ², Randall LOU ³, Richard RINK ², Rosalia MISSERI ², Mark CAIN ², Benjamin WHITTAM ², Konrad SZYMANSKI ², Joshua ROTH ², Pankaj DANGLE ², Kirstan MELDRUM ² and Javier BOLANOS ¹

1) ROOSEVELT HOSPITAL, PEDIATRIC SURGERY, Guatemala City, GUATEMALA - 2) RILEY HOSPITAL FOR CHILDREN, PEDIATRIC UROLOGY, Indianapolis, USA - 3) ROOSEVELT HOSPITAL, PEDIATRIC NEPHROLOGY, Guatemala City, GUATEMALA

PURPOSE

Continent urinary diversion including bladder augmentation is a mainstay of surgical management for bladder dysfunction refractory to medical management. However, with inadequate social support the risks may outweigh the benefits. In these patients the Enteric Chimney (EC) may be considered to decompress the bladder and simplify care. We present the largest series of ECs to date. We hypothesize EC provides reliable bladder decompression, and that the larger caliber of the colon serves as a more reliable conduit than ileum.

MATERIAL AND METHODS

We reviewed the records of all patients undergoing EC (2003-2022). The proximal end was widely anastomosed to a flap of bladder and the distal end brought out as a budded stoma. Twice weekly irrigations were prescribed to minimize infection and stone formation. Patient demographic, intestinal segment utilized, length of follow up and complications were recorded. Statistical analysis: Fisher's exact test.

RESULTS

62 children underwent EC (40 ileum / 22 sigmoid). Diagnosis included neurogenic bladder (43), exstrophy variants (8) and other (11). Average age at time of surgery was 9.0 vs 8.7 years. Average follow up was 5.5 vs 3.5 years. Renal function and hydronephrosis (if present) stabilized or improved in all patients. Complications occurred in 14 (20%) and included poor drainage (6), bladder stones (6) and other (2). Colon chimneys experienced fewer complications, but this did not reach statistical significance (Colon 2/22 = 9% vs Ileum 12/40 = 30%, $p = 0.1$) All cases of poor drainage and lithiasis occurred in patients in whom ileum was utilized.

CONCLUSIONS

EC provides reliable, safe bladder drainage. Although there are limitations to this procedure, it has significant benefits as a safe alternative for individuals who are not candidates for bladder augmentation. Colonic segments may have the added advantage of a straighter course and wider stoma, potentially providing more reliable, long-term drainage.

12:31 - 12:34

S09-9 (OP)

INCONTINENT DIVERSION AFTER AUGMENTATION CYSTOPLASTY: WHO IS AT RISK?

Rosalia MISSERI¹, Martin KAEFER², Joshua ROTH², Konrad SZYMANSKI³, Benjamin WHITTAM³, Kirstan MELDRUM³, Mark CAIN³ and Richard RINK³

1) *Indiana University School of Medicine, Paediatric Urology, Indianapolis, USA* - 2) *Indiana University School of Medicine, Pediatric Urology, Indianapolis, USA* - 3) *Indiana University School of Medicine, Pediatric Urology, Indianapolis, USA*

PURPOSE

When medical management fails, patients with spina bifida (SB) and hostile neurogenic bladder often undergo augmentation cystoplasty. Some of our augmented patients have subsequently undergone incontinent continent diversions. We sought to determine risk factors for incontinent diversion after bladder augmentation.

MATERIAL AND METHODS

Over 1100 patients with SB have been followed at our institution since 1979. 418 patients with myelomeningocele were augmented between 1979 and 2022. Thirty-three patients (8%) who had previously had bladder augmentations are known to have proceeded to incontinent diversions over the past 20 years.

RESULTS

The median age at augmentation was 9 years and 21.5 years for subsequent incontinent diversion. Fourteen patients had had at least 1 bladder perforation (4 once, 6 twice and 4 thrice). The most common reasons for diversion included: difficulties with adherence to catheterization (6), difficulties catheterizing (3), intractable incontinence (3), non-healing decubiti (2). Additional causes included bladder cancer, uterine prolapse, fistula after cystolithotomy, hematuria dysuria, recurrent UTI, recurrent bladder stones in one patient each. Four patients had simultaneous colostomies. Incontinent diversions included ileal conduit (18), ileal chimney (6), sigmoid conduit (4), sigmoid chimney (3), Indiana pouch (1) and augment converted to incontinent diversion (1). One patient who had perforated and proceeded to diversion requested subsequent undiversion.

CONCLUSIONS

The most common reasons for diversion after bladder augmentation are related to the ability to catheterize or incontinence long after bladder augmentation. This finding underscores the need for long-term care in patients with congenital diseases affecting the urinary tract.

12:34 - 12:45

Discussion

S10: MY WORST COMPLICATION

Moderators: Gianantonio Manzoni (Italy)

ESPU Meeting on Thursday 18, April 2024, 14:20 - 14:50

14:20 - 14:24

S10-1 (MWCP)

BLADDER INJURY AFTER LAPAROSCOPIC ASSISTED ORCHIDOPEXY

Luis H. BRAGA

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ABSTRACT

This is a case of a 2nd stage laparoscopic orchidopexy for a very high intra-abdominal testicle (1st stage done at another institution). Due to the high intra-abdominal location of the testicle, the gubernaculum was not available, as the internal inguinal ring was closed, and the inguinal canal could not be used as a pathway for testicular descent, as normally done in our institution. In cases where a straighter and shorter pathway into the scrotum is required, my preference is to go medially to the inferior epigastric vessels but laterally to the obliterated umbilical artery. As the testicle was located 6 cm from the internal inguinal ring, there was a concern whether it would be able to reach the scrotum. Therefore, a decision was made to bring the testicle medially to the obliterated umbilical artery to shorten even more the testicular descent pathway.

This new pathway for testicular descent was developed by introducing a 5-mm laparoscopic grasper between the bladder and the obliterated umbilical artery from the scrotum into the abdominal cavity under direct laparoscopic vision. As a safeguard to make sure there was no bladder wall injury, the bladder was filled with saline intra-operatively twice and no leak was observed. We then proceeded to fix the right testicle in the scrotum in the usual fashion, closed the ports, and discharged the patient home.

The child returned the following day with lower abdominal pain, lack of appetite, vomiting and low urine output. On physical exam, we found swelling, induration, and redness in the scrotal, inguinal, and suprapubic regions (Figure A). An urgent ultrasound showed thickening of the right spermatic cord with hematoma in the right hemiscrotum, with no intra-peritoneal fluid collection. A CT cystogram to rule out bladder perforation was ordered and showed no urine extravasation.

Despite having negative diagnostic imaging modalities searching for intra-abdominal collection, and due to a high suspicion of bladder injury, a decision was made to take the child to the operating room for surgical exploration. A Pfannenstiel incision was done to gain access to the peri-vesical space, allowing identification of the spermatic cord which was seen going through the bladder (in and out through the lateral wall of the bladder), explaining why there was no intra-operative urine leak, no intra-abdominal collection on ultrasound, and no urine extravasation on CT cystogram (Figure B). The bladder wall was opened and the cord freed and re-routed into the scrotum. (Figure C). The child developed postoperative ileus, probably from a small amount of urine that had trickled down into the abdominal cavity before surgical exploration. He recovered completely and the 8-week follow-up ultrasound showed a viable and well-positioned right testicle in the scrotum.

LEARNING POINTS

1. The pathway for the intra-abdominal testicle should always be between the obliterated umbilical artery and the inferior epigastric artery to minimize or negate any potential risk of bladder injury.
2. If a trocar is introduced from the scrotum into the abdominal cavity to create the new pathway for testicular descent, it should be done with a full bladder to easily identify the lateral contour of the bladder wall, as an empty bladder may not be properly visualized and may be easily displaced by the trocar insertion.
3. In cases of strong suspicion of bladder wall injury during laparoscopic orchidopexy, injection of methylene blue in the bladder may delineate a very small leak that may not be very noticeable at first.
4. When in doubt, exploration of these cases should be done without hesitation, as it can establish (confirm) the diagnosis, avoiding delayed intervention in a patient who can get really sick with peritonitis due to urine extravasation.

FIGURES

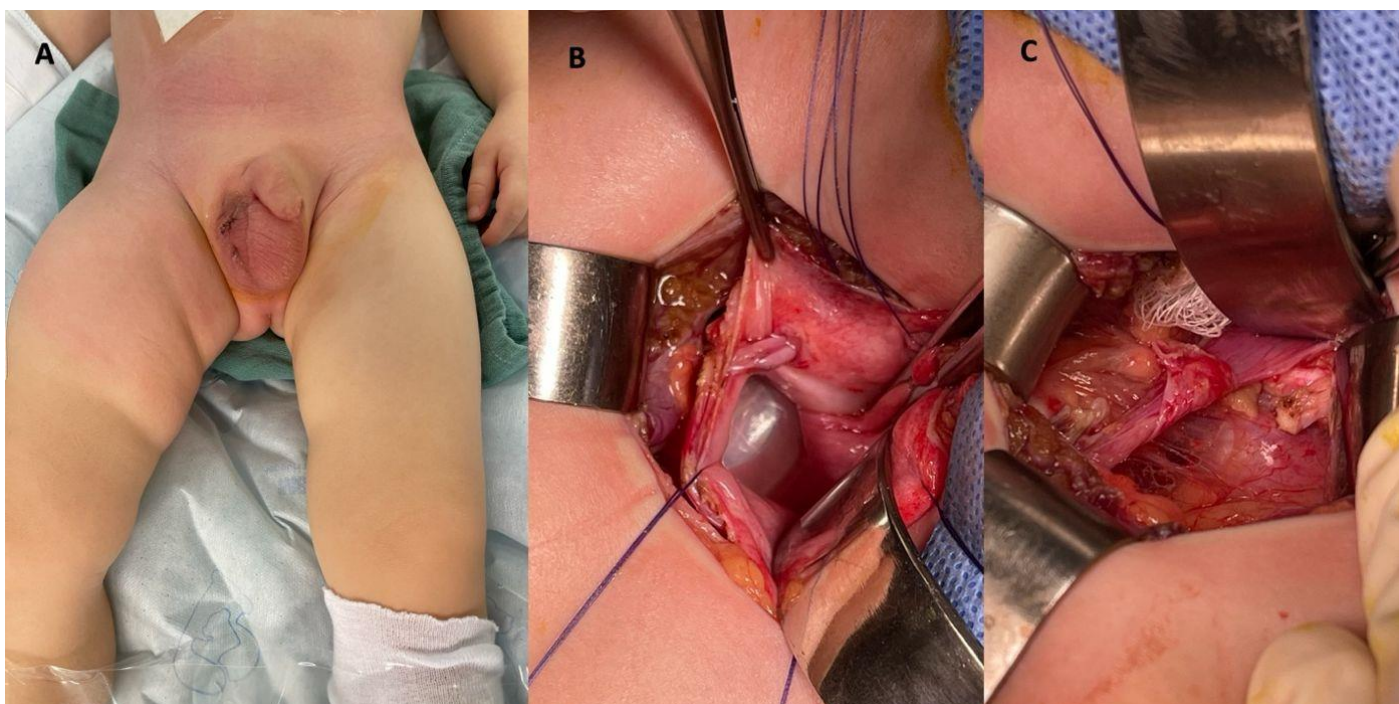


Figure A shows redness in the suprapubic, inguinal and scrotal region.

Figure B shows an open bladder with a foley catheter and the spermatic cord going through the lateral bladder wall.

Figure C shows the bladder retracted medially and the re-routed spermatic cord going into the scrotum.

14:24 - 14:28
S10-2 (MWCP)

RECTAL PERFORATION AS A LATE COMPLICATION OF PROACT BALLOON IMPLANTATION IN A 8 YEAR OLD CHILD

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INTRODUCTION & OBJECTIVES

Surgical approaches to severe urinary incontinence in neurogenic sphincter insufficiency include artificial urinary sphincters, bulking agents, urethral sling, and ProACT device (Uromedica). Previously reported complications of the ProACT procedure include balloon rupture and dislodgement, bladder and urethral erosion and perforation. We report a case of rectal perforation as a late complication of the ProACT procedure for neurogenic sphincter insufficiency (IS) and anorectal malformation (ARM).

MATERIALS & METHODS

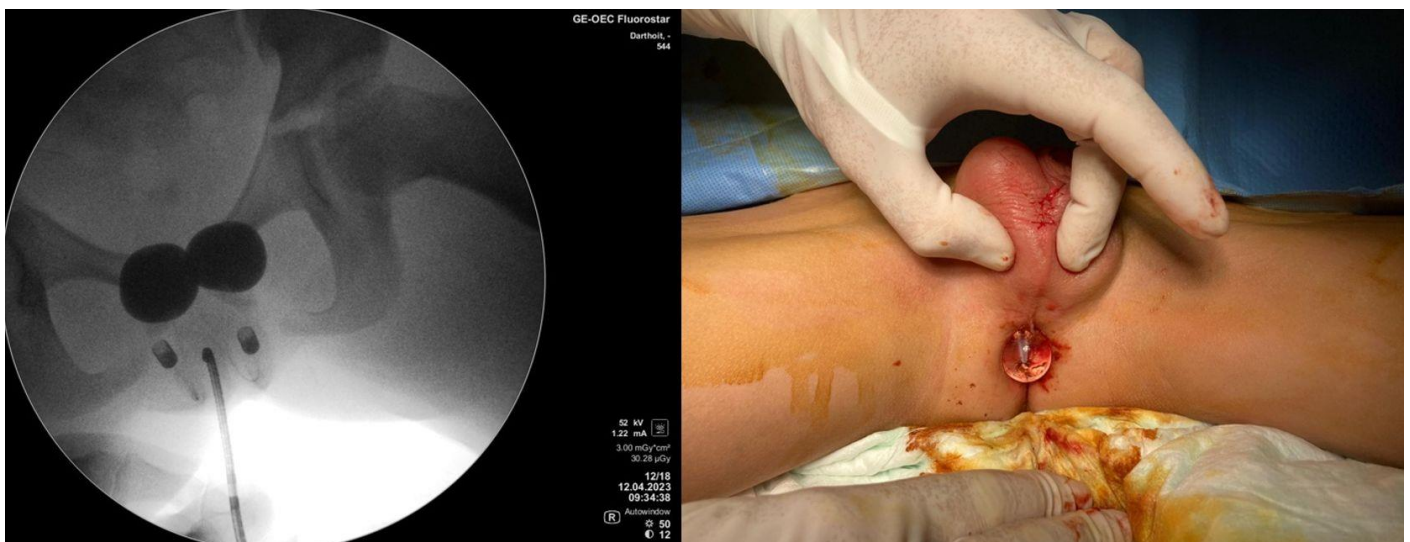
The patient was an 8-year-old boy with VACTER syndrome, with ARM treated in infancy requiring transanal irrigation, and sacral agenesis with neurogenic bladder. Low compliance neurogenic bladder was initially treated with bladder augmentation and Mitrofanoff in 2021. Persistence of severe urinary stress incontinence led to implantation of ProACT-balloon.

RESULTS

Balloon implantation was performed using fluoroscopic and antegrade endoscopic. Two ProACT-balloons were placed paraurethraly below the bladder-neck through subscrotal percutaneous approach. Continence improved after 3 fillings up to 3,6ml. Nine months later, the child presented with rectal erosion and scrotal infection, which required balloon explantation under general anaesthesia and 7 days antibiotics.

CONCLUSIONS

We hypothesised that transanal irrigation would lead to rectal balloon erosion due to repeated minimal rectal trauma. To our knowledge, this complication has not been previously described in children.



14:28 - 14:32
S10-3 (MWCP)

SALVAGING A KIDNEY MAY NOT ALWAYS BE THE BEST OPTION

Sajid SULTAN

Sindh Institute of Urology & Transplantation, Paediatric Urology, Karachi, PAKISTAN

ABSTRACT

Six year old boy presented with intermittent fever for two months and left flank pain with burning micturition for a month. U/S KUB and DMSA scan showed a parenchymal collection in the left kidney with 27% function. Rt kidney was normal.

During surgery purulent infective necrotic lesion involving lower half of the kidney, the pelvis and upper ureter were removed and sent for routine histopathology. No frozen sections were obtained.

The upper half of the kidney was healthy and was salvaged. An uretero-calicostomy with closure of open calyx was performed with an omental wrap.

Histopathology reported invasive mucormycosis.

Amphotericin B was started and the kidney re-explored. Frozen sections were sent this time which showed mucormycosis in omental tissue therefore complete surgical excision of remaining renal tissue was performed including involved omentum.

Postoperative recovery uneventful. Patient later developed Amphotericin B induced pancreatitis which was managed conservatively.

Patient was lost to follow up for two years. Recent outpatient visit showed healthy recovery with normal BMI and normal right kidney function with no left renal bed recurrence.

Renal mucormycosis in an immunocompetent child is very rare. This case highlights the importance of sending frozen sections in a purulent necrotic lesion.

14:32 - 14:36

S10-4 (MWCP)

INTESTINAL VOLVULUS BECAUSE OF CONTINENT STOMA

Seppo TASKINEN

Helsinki University Hospital, Helsinki, FINLAND

ABSTRACT

A myelomeningocele patient was on anticholinergic medication and the CIC program. Previously he had undergone an ACE operation. Because of difficulties in performing CIC on a wheelchair, a continent spiral Monti operation was performed at the age of 16 years. Four months later he was operated on because of intestinal obstruction. Two years later he was operated on because of intestinal volvulus around the vascular pedicle in another hospital by adult surgeons. The patient was remitted back to the pediatric hospital because the risk for recurrent volvulus. The family was worried and asked for a solution to the problem, even if the continent stoma had to be removed. In the operation, the vascular pedicle's location prevented its hiding. On the other hand, the location of the spiral Monti was completely retroperitoneal. It was decided to rely on the collateral blood supply and the vascular pedicle was ligated. In the four-month follow-up spiral, Monti is still working well.

In rare cases, the vascular pedicle of the continent stoma can lead to life-threatening intestinal volvulus. Our case indicates that at least in some cases collateral blood supply may be sufficient for continent stoma if the vascular pedicle must be transected.

14:36 - 14:50

Discussion

S11: OBSTRUCTION & HYDRONEPHROSIS 1

Moderators: Marie-Klaire Farrugia (UK), Paul Austin (USA)

ESPU Meeting on Thursday 18, April 2024, 14:50 - 15:50

14:50 - 14:53

S11-1 (OP)

EXPLORING THE EFFECT OF SLEEPING POSITIONS IN HYDROURETERONEPHROTIC RATS: DOES IT AFFECT THE NOCTURNAL URINE OUTPUT AND KIDNEY OUTCOME?

Emre ERDEM ¹, Abdulrahman JAFAROV ¹, Mustafa Alkan OKTAR ¹, Murat Can KARABURUN ¹, Aykut AKINCI ¹, Tarkan SOYGÜR ² and Berk BURGU ²

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PURPOSE

In patients with severe hydroureteronephrosis and nocturnal polyuria, night time sleeping adversely affects the drainage of the upper urinary tract since the gravitational force during day time is lacking. This study aimed to investigate the effects of sleeping positions and their influence on renal function in a rat model with hydroureteronephrosis.

MATERIAL AND METHODS

36 Male Sprague-Dawley rats were selected and divided into 3 groups for this experiment. The study involved inducing nocturnal polyuria in the rat models through a standardized partial bladder outlet obstruction procedure [followed by continuous nocturnal monitoring for 2 months.

The investigation focused on 3 forced sleeping positions for 8 hours - supine, prone, and upright. Parameters were recorded including day time and nocturnal urine production, and renal function markers.

Mean creatinine levels were as follows: 0.85 ± 0.02 mg/dL for the supine group, 0.9 ± 0.03 mg/dL for the prone group, 0.6 ± 0.01 mg/dL for the upright group. All kidneys were examined histopathologically for scars and fibrosis after 2 months.

RESULTS

In the upright sleeping group creatinine levels were lower. Preliminary results suggest that sleeping in upright position yielded more favorable outcomes regarding renal function. According to independent t sample test rats adopting the supine and prone positions exhibited significantly decreased urine production and increased renal stress potentially mitigating further renal damage.

CONCLUSIONS

These findings highlight the potential benefits of gravitational force in the drainage of dilated systems. Sleeping at prone or supine positions where drainage of the upper tract is impaired at night, worsens the renal outcome

on long run. Since we can not force children sleep at upright position, to reduce the renal damage where drainage of the system is impaired at night, overnight catheterization can potentially save the kidneys.

14:53 - 14:56

S11-2 (OP)

AUTOMATED GRADING OF PRENATAL HYDRONEPHROSIS SEVERITY FROM SEGMENTED KIDNEY ULTRASOUNDS USING DEEP LEARNING

Tariq Osman ABBAS ¹, Sakib MAHMUD ², Muhammad E. H. CHOWDHURY ², [Santiago VALLASCIANI](#) ³, Saidul KABIR ⁴, Sreekumar MUTHIYAL ⁵, Alaa KOKO ⁵, Ahmed BALLA ABDALLA ALTYEB ⁶, Abdulrahman ALQAHTANI ⁷, Amith KHANDAKAR ⁸ and Sheikh MOHAMMED SHARIFUL ISLAM ⁹

1) Sidra Medicine, Urology, Doha, QATAR - 2) Qatar University,, Department of Electrical Engineering, Doha, QATAR - 3) Sidra Medicine,, Urology Division, Surgery Department,, Doha, QATAR - 4) University of Dhaka,, Department of Electrical and Electronic Engineering, Dhaka, BANGLADESH - 5) Hamad Medical Corporation, Radiology, Doha, QATAR - 6) Hamad Medical Corporation, Urology, Doha, QATAR - 7) Prince Sattam Bin Abdulaziz University,, 10Department of Biomedical Technology, College of Applied Medical Sciences in Al-Kharj,, Al-Kharj, SAUDI ARABIA - 8) Qatar University,, Department of Electrical Engineering,, Doha, QATAR - 9) Deakin University,, Institute for Physical Activity and Nutrition,, Melbourne, AUSTRALIA

PURPOSE

Kidney ultrasound images are one of the most common methods of monitoring Antenatal or prenatal hydronephrosis (AHN), but grading of this condition is highly subjective and clinicians may select inappropriate therapies or surgical interventions as a result. New approaches are required to differentiate subjects who can facilitate standardization of hydronephrosis findings in ultrasound.

MATERIAL AND METHODS

An end-to-end deep machine learning framework was developed to sequentially detect ultrasound regions of interest, segment kidneys from 433 US images, and classify AHN severity. We propose the novel Kidney Ultrasound Segmentation Network (KUSNet) for kidney segmentation from ultrasound images, according to the Society of Fetal Urology (SFU) standards. The ground truth kidney masks were generated by two radiologists with more than five years of working experience while the SFU-based annotations for the AHN severity were done by two senior radiologists and three senior urologists. At each stage, the performance of the proposed models was assessed both quantitatively and qualitatively against state-of-the-art networks.

RESULTS

The proposed KUSNet for ultrasound kidney segmentation achieved 97.6% accuracy, 97.4% precision, 97.6% recall or sensitivity, 97.5% f1-score, 95.5% IoU or Jaccard score, and 92.1% Dice score, beating several state-of-the-art networks originally developed for segmenting medical images. On the other hand, the novel PHCNet reached 93.9% accuracy, 93.7% precision, 93.9% recall, 93.8% specificity, and 89.0% f1-score subject-wise when performing multiclass stratification of AHN severity based on the SFU grading system.

CONCLUSIONS

Artificial intelligence-based tools can reliably classify AHN severity to reduce inter- and intra-observer bias, thereby aiding clinicians in the rapid selection of appropriate treatments and surgeries.

14:56 - 14:59

S11-3 (OP)

UNDERSTANDING THE UTILITY OF RENAL LENGTH AS AN INDICATOR OF HYDRONEPHROSIS SEVERITY

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1) McMaster University, Surgery-Urology, Hamilton, CANADA - 2) McMaster University - McMaster Children's Hospital, Department of Surgery / Urology, Hamilton, CANADA

PURPOSE

To describe the renal length index (RLI) and evaluate its utility in identifying severe UPJO-like hydronephrosis (HN) suggestive of obstruction.

MATERIAL AND METHODS

A prenatal HN database (2008-23) was reviewed to select patients with unilateral UPJO-like HN. Those with VUR, megaureter, atrophy and other anomalies were excluded. RLI was calculated by using the formula $[100\% \times (\text{Affected Renal Length} - \text{Contralateral Renal Length}) / \text{Affected Renal Length}]$, based on baseline ultrasound. Data points, baseline renal length (RL), MAG3 t $\frac{1}{2}$ drainage time, curve patterns, and surgical interventions (Pyeloplasty) were collected. Obstruction was defined as a t $\frac{1}{2}$ time >30 min and/or a non-descending drainage curve on MAG3 lasix scan. Fischer's t-test and Wilcoxon-sum were used for statistical analysis.

RESULTS

From 465 patients, 226(48.6%) were SFU 3-4, 162(34.8%) showed obstruction on MAG 3, and 129(27.7%) underwent pyeloplasty. The median RLI was 8.6% (IQR:4.3-16.1%). Patients with obstruction had a notably higher median RLI(16.07%[8.2-24.6%]) compared to non-obstructed counterparts (6.8%[3.4-11.8%], p<0.001). The RLI was threefold higher in the surgical group (18.3% [11.1-25.0%] vs 6.9% [3.4-12.0%], p<0.001). In 93(20%) out of 465 cases, the affected kidney was smaller than the contralateral one. This group had a lower median RLI (5.56% [1.96-11.11%] vs 9.405% [4.92-16.67%], p<0.001) and a decreased obstruction rate (14.0%vs 40.1%, p<0.001) compared to the group with larger affected kidneys. Having an affected RL>contralateral RL increased the likelihood of surgery nearly fourfold (OR 3.9, 95% CI 2.0-7.7).

CONCLUSIONS

Higher RLI values are significantly associated with obstruction on MAG 3 lasix renal scan and, consequently, surgical intervention, particularly in patients whose affected kidneys are larger than the contralateral ones.

14:59 - 15:10

Discussion

FOLLOW- UP FROM THE HYDRONEPHROSIS SEVERITY INDEX SILENT TRIAL TO DETERMINE SAFETY OF DISCHARGE FROM CARE VS. HIGH PROBABILITY OF SURGICAL INTERVENTION OR INVASIVE TESTING

Lauren ERDMAN¹, Jethro KWONG², Ihtisham AHMAD², Adree KHONDKER³, Joana DOS SANTOS⁴, Michael CHUA⁵, Jin Kyu KIM³, Armando J LORENZO⁵ and Mandy RICKARD⁵

1) SickKids, Center for computational medicine, Toronto, CANADA - 2) University of Toronto, Division of Urology, Toronto, CANADA - 3) University of Toronto, Urology, Toronto, CANADA - 4) SickKids, Urology, Toronto, CANADA - 5) SickKids, Urology, Toronto, CANADA

PURPOSE

The Hydronephrosis Severity Index (HSI) was developed to use early renal ultrasound images to stratify patients with hydronephrosis (HN) into high, medium, and low risk groups to reduce the invasiveness of investigations for low-risk patients. Herein we present a 2 year follow-up on previously stratified patients to assess longer-term safety of this tool.

MATERIAL AND METHODS

Additional data was collected from the silent trial of the HSI (n = 202). HSI patient stratification was extended to include the original low-risk group (95% sensitive threshold for intervention), and further divided into a medium-risk group (<95% sensitivity, <95% specificity) and a high-risk group (95% specificity). These groups were assessed for future urinary tract infections (UTIs), nuclear scans (NS), and surgery, following HSI calculation.

RESULTS

Among the original 202 silent trial patients, follow-up data was available for 159 patients. Of these 159 patients, 104 were low-risk, 34 were medium-risk, and 21 were high-risk. Within the low-risk group, 1 (1%) had a UTI, 3 (3%) received a NS, 1 (1%) received surgery. In contrast, of the 34 medium-risk patients, 3 (9%) had a UTI, 5 (15%) received a NS, and 3 (9%) received surgery. Finally, among the 21 high-risk patients, 5 (24%) had a UTI, 5 (24%) received a NS, and 15 (71%) received surgery.

CONCLUSIONS

The HSI tool appears to safely and effectively risk-stratify patients into low, medium and high risk levels based on single sagittal and transverse renal ultrasound images, up to 2 years later.

INDICATION OF PYELOPLASTY BASED ON MAG3 EXAMINATIONS: DOES THE PROTOCOL USED (F+/-0 VS. F+20) MAKE A DIFFERENCE?

Bernhard HAID¹, Anna Magdalena BERNSTEINER², Franziska RAMESEDER³ and Josef OSWALD³

1) Ordensklinikum Linz, Hospital of the Sisters of Charity, Pediatric Urology, Linz, AUSTRIA - 2) Ordensklinikum Linz, Hospital of the Sisters of Charity, Department for Pediatric Urology, Linz, AUSTRIA - 3) Ordensklinikum Linz, Hospital of the Sisters of Charity, Department of Pediatric Urology, Linz, AUSTRIA

PURPOSE

Mercaptoacetyltriglycin (MAG3) scans are used to evaluate children with high-grade hydronephrosis. Based on the time point of administration of furosemide, different protocols are in use. This prospective cohort study was accompanying an institution wide protocol-change from F+20 (furosemide after 20') to F+0 (simultaneously injection of tracer and furosemide) in children without voluntary bladder control. We aimed at evaluating the impact of the MAG3 protocol used on time to surgery and number of MAG3 scans performed prior to surgery.

MATERIAL AND METHODS

A total of 63 patients evaluated the first time for isolated, unilateral high-grade hydronephrosis (SFU \geq III) after exclusion of vesicoureteral reflux by a voiding cystourethrography were included. 28 consecutive patients were included before protocol change (F+20), 35 consecutive patients thereafter (F+0). Patients with loss of DRF as indication for surgery were excluded. Demographic data, outcome, ap-diameter as well as time until surgery and number of MAG3 scans prior to surgery were compared between the groups using Mann-Whitney test, Fisher's exact test and students t-test (Prism 10).

RESULTS

The groups (F+0 vs. F+20) were comparable concerning age (mean 5.1 vs. 5.6 months, $p=0.721$) and ap-diameter (1.67 vs. 1.68, $p=0.95$) but not concerning duration of follow-up (median 6.9 vs. 27.7 months, $p<0.001$). 48.5% (17/35) in the F+0 group and 71.4% (20/28) in the F+20 group underwent pyeloplasty due to persistent obstruction ($n=2$) in MAG3 scans. Time from 1st MAG3 scan until pyeloplasty was shorter in the F+0 group (7.4 vs. 13.4 months, $p<0.001$). Children in the F+0 group underwent less MAG3 exams before surgery compared to those in the F+20 group (median 2 vs. 3, $p<0.001$).

CONCLUSIONS

These preliminary results suggest that in patients with high-grade hydronephrosis use of the F+0 protocol is associated with a shorter time until surgery and less MAG3 exams.

15:16 - 15:19

S11-6 (OP)

MR UROGRAPHY IN PEDIATRIC URETEROPELVIC JUNCTION OBSTRUCTION: EVALUATION OF A THRESHOLD FOR POSITIVE AND ETIOLOGICAL DIAGNOSIS.

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Centre Hospitalier Universitaire de Lille - Hôpital Jeanne de Flandre, Imagerie Pédiatrique, Lille, FRANCE

PURPOSE

MR urography with diuretic injection is an increasingly used imaging modality for the evaluation of pediatric ureteropelvic junction obstruction. It provides anatomical and functional data without irradiation. The aim of the study was to analyze the increase in anteroposterior diameter of renal pelvis after furosemide injection in MR urography to determine a threshold for positive diagnosis. The study also evaluated if this increase could contribute to etiological diagnosis and whether MRI reliably detects crossing vessels.

MATERIAL AND METHODS

70 children who underwent surgery and preoperative MR urography were included in this monocentric retrospective study. The increase in anteroposterior diameter of renal pelvis after furosemide injection in MR urography of the healthy side was compared to the pathological side of a same patient to determine a pathological increase threshold. This increase was also compared according to the etiology (intrinsic vs extrinsic). The association between crossing vessels on MRI and during surgery was also evaluated.

RESULTS

The increase in anteroposterior diameter of renal pelvis was significantly greater on the pathological side compared to the healthy side ($p < 0.0001$). The optimal threshold for the prediction of pathological character was 6 mm (Sensitivity = 68.6%, Specificity = 87.1%). There was no significant difference in increase in anteroposterior diameter of renal pelvis depending on etiology ($p = 0.8582$). The association between crossing vessels on MRI and during surgery was statistically significant ($p < 0.001$).

CONCLUSIONS

An increase of more than 6 mm in anteroposterior diameter of renal pelvis after furosemide injection could constitute a MR urography diagnostic criterion for pediatric ureteropelvic junction obstruction.

15:19 - 15:30

Discussion

15:30 - 15:33

S11-7 (OP)

STRONG PARENTAL SATISFACTION WITH THE USE OF MAGNETIC-END DOUBLE-J URETERAL STENT IN CHILDREN

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1) *Hopital Necker Enfants Malades, Department of Pediatric Surgery and Urology, Paris, FRANCE* - 2) *Hôpital Necker Enfants-Malades, Department of Pediatric Surgery and Urology, Paris, FRANCE* - 3) *Hôpital Necker Enfants-Malades, Unité de Recherche Clinique/Centre d'investigation Clinique, Paris, FRANCE*

PURPOSE

Since its inception in 2016, the use of magnetic-end Double-J ureteral stent (MEDJUS) has rapidly become the drainage of choice in paediatric urology at our institution. However, there are no data specifically evaluating parental satisfaction. This study aims to assess parental satisfaction with the use of MEDJUS.

MATERIAL AND METHODS

The EFUJA study was conducted prospectively (NCT04384939) between 12/2021 and 08/2023. A clinical pathway and prospective research protocol were set up to evaluate the parental satisfaction of the use of MEDJUS. A survey tool specifically addressing satisfaction was applied to all parents of children, immediately following MEDJUS removal (by the nurse) and 7 days following this (by a research assistant).

RESULTS

MEDJUS insertion was attempted in 67 children (35 boys). Median age was 5.9 years (IQR:3.2-10.4). Stent insertion was successful in 65 cases (97%). The two failures occurred during robotic-assisted pyeloplasty with antegrade placement. The MEDJUS was successfully removed in the outpatient clinic in 59 children (92%). The median duration of stent removal was 1 min (1-2).

63 parents responded to the survey immediately after stent removal. They were highly satisfied of the information provided by the surgeons and the nurses before the procedure and during the removal (satisfaction scores 10(10-10)). The median overall experience score was 10(8-10). All parents but one would recommend this clinical pathway if a new JJ stent was needed.

CONCLUSIONS

In this prospective study we confirm that the Black-Star® and its magnetic retrieval device can be safely used in paediatric population and demonstrate excellent parental satisfaction for this care pathway.

15:33 - 15:36

S11-8 (OP)

RISK FACTORS FOR THE OCCURRENCE OF LITHIASIS IN THE LONG TERM OF PYELOPLASTIES

Yesica QUIROZ MADARRIAGA, Rocio JIMENEZ and Anna BUJONS
Fundacio Puigvert, Paediatric Urology, Barcelona, SPAIN

PURPOSE

The gold standard for treatment of PUJS is still the Anderson-Hynes technique. However, little is known about the repercussions of residual hydronephrosis that may remain after correction of this malformation. The aim of this work is to determine the risk factors that influence the appearance of lithiasis in the long-term follow-up of patients who undergo pyeloplasty.

MATERIAL AND METHODS

We retrospectively reviewed 144 medical records of patients undergoing pyeloplasty at a single institution. Finally, 72 patients were included in the analysis, from whom demographic data, preoperative data, surgical approach, postoperative drainage, postoperative data, occurrence of lithiasis, need for surgery and follow-up time were collected. A multivariate analysis with logistic regression was performed, as well as a survival analysis with Kaplan Meyer curves and Cox regression.

RESULTS

79.2% were male, with a mean age of 6.7 years and 51.4% with prenatal diagnosis. The 52.8% were taken to open pyeloplasty and the remaining to robotic approach. The mean renal pelvis diameter (RPD) was 33.8mm (12-66mm). The incidence of lithiasis in 10.4 years of average follow-up (1-32.8 years) was 16.7%, in an average of 6.7 years. In the multivariate analysis only RPD prevailed as a risk factor (OR 1.17; $p < 0.023$). Regarding the lithiasis-free survival curves, the oldest age group (>10 years) had the worst survival. In the Cox regression of the predictive model, for each additional millimeter in the preoperative DPR, the risk of occurrence of lithiasis is multiplied by 1.2 ($p < 0.000$; 95% CI 1.085 to 1.315).

CONCLUSIONS

Patients with larger preoperative renal pelvis diameters that do not decrease significantly postoperatively have an increased risk of developing lithiasis during follow-up, and those who tend to do so more rapidly are patients who are taken to surgery after 10 years of age.

15:36 - 15:39

S11-9 (OP)

FOCUS ON THE KIDNEY: PENALIZING PREDICTION OUTSIDE THE ORGAN OF INTEREST, ENABLES VERY SMALL SAMPLE DEEP LEARNING PREDICTION OF SURGICAL INTERVENTION

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PURPOSE

Medical image classification with deep learning is challenging, especially in rare conditions when fewer cases are available to learn from. We show that by forcing our algorithm to focus on the kidney in ultrasound images, surgical intervention for hydronephrosis can be predicted accurately when developed using <5% of our original training data set.

MATERIAL AND METHODS

Five datasets were collected from four quaternary care pediatric hospitals in North America. All datasets include sagittal ultrasound images of pediatric kidneys with hydronephrosis. A sub-dataset of convenience from our full set of 2544 ultrasounds, consisting of 66 samples, were segmented to show kidney region. Multiple deep convolutional networks were developed and compared our limited data set model. Our approach used the ResNet18 architecture with a new loss function, combining the binary cross entropy loss with a penalty for class activation map activation outside the area showing the organ of interest.

RESULTS

We achieved comparable performance (>90% area under the receiver operator curve, AUROC) using both the full data set and only 2.6% of the training data required. We evaluated our approach on four additional datasets from other institutions and show that it transfers well (>80% AUROC) across all institutions. We found improved prediction using far fewer samples, as well as improved attention on the kidney, particularly the calyces in our images.

CONCLUSIONS

Our model demonstrates the ability of this new approach to predict just as accurately with significantly less data and improved focus on the organ of interest than required of typical deep learning prediction.

15:39 - 15:50

Discussion

S12: OBSTRUCTION & HYDRONEPHROSIS 2

Moderators: Gillian Barker (Sweden), JP Capolicchio (Canada)

ESPU Meeting on Thursday 18, April 2024, 15:50 - 16:30

15:50 - 15:53

S12-1 (OP)

COMPARISON OF TWO DIFFERENT APPROACHES IN THE MANAGEMENT OF INFANTS WITH PRIMARY OBSTRUCTIVE MEGAURETERS AND THEIR LONG TERM OUTCOMES

Neehar PATIL¹, Tarun JAVALI² and Padmalatha KADAMABA¹

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PURPOSE

There is paucity of literature in management of infants with primary obstructive megaureters undergoing upfront primary repair (extravesical ureteral reimplantation).

MATERIAL AND METHODS

This was retrospective analysis of a prospectively maintained data (2005 - 2021). Infants <1 year with unilateral primary obstructive megaureter were included. They were in 2 groups: those undergoing upfront extra-vesical ureteric reimplantation during infancy -Primary Repair (PR), and those initially undergoing a low end cutaneous ureterostomy during infancy followed by intravesical ureteric reimplantation after 1 year of age -Delayed staged repair (DSR). Children presenting with sepsis, in whom a diversion was imperative, were excluded. The 1st year and 3rd year followup details after their definitive repair (with a renal ultrasound, diuretic renogram, estimated glomerular filtration rate and assessment of voiding dysfunction if present) were collated and analysed. Failure was defined as persistent obstructive pattern with worsening renal function or presence of high grade reflux with recurrent breakthrough infections; both of which necessitated a redo reimplantation.

RESULTS

There were 18 in Primary repair and 16 in Delayed Staged Repair. Urinary tract infections was the commonest presenting symptom amongst both groups i.e. > 50%. The post operative complication rate was 11% in Primary repair and 31% in Delayed Staged Repair. One child in each of the groups (2 girls) required redo reimplantation (5.8%). At the end of the 3rd year follow up (from definitive repair) there was significant reduction in hydronephrosis, improvement in renal function with no obstruction and improvement in estimated glomerular filtration rate amongst all in both groups which was statistically significant i.e. $p < 0.05$. The success rate was 94.4% -Primary Repair and 93.75% -Delayed Staged Repair. Mean follow up was 9.7 years in Primary Repair, 9 years in Delayed Staged Repair.

CONCLUSIONS

Primary extravesical ureteral reimplantation may be considered as the preferred line of management of unilateral obstructed megaureters during infancy.

15:53 - 15:56

S12-2 (OP)

ENDOSCOPIC CORRECTION OF OBSTRUCTIVE ECTOPIC URETER IN CHILDREN: FIRST LINE OF TREATMENT

Saidanvar AGZAMKHODJAEV ¹, Zafar ABDULLAEV ², Akmal RAKHMATULLAEV ³, Komron KHIDOYATOV ¹ and Sarvar ESHONQULOV ¹

1) National Children's Medical Center Tashkent, Pediatric urology, Tashkent, UZBEKISTAN - 2) National Children's Medical Center, Pediatric urology, Tashkent, UZBEKISTAN - 3) Tashkent Pediatric Medical Institute, Pediatric surgery, Tashkent, UZBEKISTAN

PURPOSE

We aim to assess the results of endoscopic correction in cases of obstructive ectopic ureteral orifice in children

MATERIAL AND METHODS

From 2021 to 2023, we conducted initial procedures on six patients with obstructive ectopic ureters at the National Children's Medical Center. All these patients presented with unilateral megaureter and febrile urinary tract infections. We excluded patients with bilateral megaureters, primary obstructive megaureter without an ectopic orifice, neurogenic bladder, and posterior urethral valves from this study.

After confirming the ectopic location of the ureteral orifice within the bladder neck via cystoscopy, we performed intravesicalization of the ectopic ureteral orifice using a Holmium laser. This procedure involved creating a neo-orifice by incision the anterior wall of the ureter closer to the trigone

RESULTS

The average age of the patients in the study was 8 months, with a follow-up period of 6 months. Following the endoscopic correction procedure, there was a significant reduction in both the diameter of the ureter and the anterior-posterior diameter of the renal pelvis ($p < 0.005$). Differential renal function (DRF) improved in 4 out of 6 patients (66.7%), while 2 patients (33.3%) experienced stabilized function and a decrease in episodes of febrile urinary tract infections post-surgery. In one patient who underwent ureteroneocystostomy (UNC) at the age of 12 months, de novo vesicoureteral reflux (VUR) was observed.

CONCLUSIONS

The endoscopic intravesicalization procedure is a minimally invasive and reliable method that can be considered as the first-line surgical treatment for obstructive ectopic ureteral orifices in children

15:56 - 16:01

S12-3 (VP)

TRANSURETHRAL URINARY DIVERSION AS INITIAL TREATMENT IN OBSTRUCTIVE ECTOPIC URETER

Ruben ORTIZ, Beatriz FERNANDEZ-BAUTISTA, Laura BURGOS, Javier ORDOÑEZ and Jose Maria ANGULO
University Hospital Gregorio Marañón, Pediatric Urology, Madrid, SPAIN

PURPOSE

We propose a transurethral endoscopic urinary diversion (EUD) in the initial management of symptomatic obstructive ectopic ureter in infants.

MATERIAL AND METHODS

Twenty obstructive ectopic in 18 patients were initially treated by EUD between 2006 and 2017. Ectopic ureter was always confirmed by cystoscopy. It was indicated in those patients with high suspicion of ureteral ectopia at preoperative imaging scans (US, URO-MR), with urinary tract dilatation worsening and breaking through UTIs despite antibiotic prophylaxis. When ectopic meatus was not found, EUD consisted in the creation of a transurethral neo-orifice (TUNO) performed by needle puncturing of the ureterovesical wall, under fluoroscopic and ultrasound control. If ectopic meatus was identified in the posterior urethra, "intravesicalization procedure" was done opening the urethral-ureteral wall, creating a new ureteral outlet into the bladder. Follow-up protocol included periodical clinical reviews, US, MAG-3 and VCUG scans

RESULTS

Median age of EUD was 3.2 months (0.5-7), with median operating time of 27.5 minutes (12-60) and hospital stay of 1 day (0.5-9). TUNO was performed in 7 cases and "intravesicalization" in 13, with a median follow-up time of 6.5 years (4.2-14.6). Initial renal function was preserved in all cases, with improvement on renal drainage after EUD. Significant postoperative differences were observed in hydronephrosis grade and ureteral diameter ($p < 0.005$). Postoperative complications were UTI in 7 patients and TUNO stenosis in one, being successfully treated by endoscopic balloon dilation. Secondary VUR was found in 15/20 cases. Definitive treatment was further individualized in each patient after 1 year of life, attending to symptoms and renal function.

CONCLUSIONS

EUD is a feasible and safe less-invasive technique in the initial management of symptomatic obstructive ectopic ureter. It allows an adequate ureteral drainage until the definitive surgery is proposed. It does not invalidate future definitive treatments and other surgical options in case of failure.

16:01 - 16:10

Discussion

16:10 - 16:13

S12-4 (OP)

SHOULD THE PRESENCE OF LOWER POLE REFLUX IMPACT THE DECISION TO PERFORM A URETERO-URETEROSTOMY FOR UPPER POLE OBSTRUCTION

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The Hospital for Sick Children, Urology, Toronto, CANADA

PURPOSE

Uretero-ureterostomy (UU) is an attractive option to address upper pole obstructive ureteroceles or ectopic ureters. There are concerns regarding concomitant ipsilateral lower pole reflux (LPR) as a contraindication for this procedure. Herein we aim to evaluate if LPR should impact the decision for UU.

MATERIAL AND METHODS

We retrospectively reviewed the charts of consecutive patients who underwent UU over a 5 year period. We collected demographic variables, findings on preoperative voiding cystourethrogram (VCUG), including LPR, and postoperative outcomes (urinary tract infections [UTIs], use of continuous antibiotic prophylaxis (CAP) and resolution/improvement of hydronephrosis)

RESULTS

We identified 31 UUs with upper pole obstruction (7 ureteroceles, 24 ectopic ureters; 27 females), of which 11 (35%) had documented LPR (5 low grade, 6 high grade). At a follow-up of 28+/-15 months, there was no statistically significant difference in the incidence of postoperative UTIs, complications, duration of prophylaxis, duration of follow-up or need for additional surgeries ($p > 0.05$) (Table).

	No VUR/unknown(n=20)	Lower-pole VUR(n=11)	p
Age baseline(months)	2+/-1	4+/-5	0.21
Ureteroceles	5(71%)	2(29%)	1
Ectopic ureters	15(63%)	9(37%)	
Upper-Pole Hydronephrosis(baseline)	20(100%)	11(100%)	1
Upper-Pole SFU grade 3/4(high grade)	18(90%)	9(82%)	0.76
Upper-Pole Ureter max diameter(mm)	14+/-5	13+/-4	0.75
Lower-Pole hydronephrosis	5(25%)	4(37%)	0.43
Lower-Pole Ureter max diameter(mm)	7+/-1	9+/-4	0.97
Upper-Pole Hydronephrosis(max follow-up)	17(85%)	8(72%)	0.54
Age at surgery(months):	8+/-5	8+/-6	0.95
PrimaryUU	21+/-11	8+/-1	0.18
After ureterocele incision/ureterostomy			
Preoperative VCUG	18(90%)	11(100%)	0.90
Lower-Pole VUR		5(45.4%)	
Grade1-3		6(54.5%)	
Grade4-5			
Postoperative Complications	3(15%)	2(18%)	1
UTI during postoperative surveillance(not immediate 30days)	3(15%)	4(36%)	0.11
CAP Use	20(100%)	10(91%)	0.34
CAP duration	11+/-6	14+/-8	0.43
Max Follow-Up(months)	28+/-15	26+/-17	0.69

CONCLUSIONS

The presence of LPR should not dissuade providers from offering a UU in selected cases with obstructed upper pole pathology.

OPEN URETEROURETEROSTOMY FOR THE MANAGEMENT OF NON-REFLUXING DUPLICATED COLLECTING SYSTEM IN CHILDREN: MULTICENTRIC STUDY AND LONG-TERM OUTCOMES

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1) *Doctors Hospital at Renaissance, Urology, Edinburg, USA* - 2) *Hospital Exequiel Gonzalez Cortes, Clinica Alemana and Clinica Santa Maria, Pediatric Urology, Santiago, CHILE* - 3) *Centro de Urología Pediátrica y Especialidades, Pediatric Urology, Santo Domingo, DOMINICAN REPUBLIC* - 4) *McMaster University, Pediatric Urology, Hamilton, CANADA* - 5) *Methodist Children's Hospital and Children's Hospital of San Antonio, Pediatric Urology, San Antonio, USA*

PURPOSE

When indicated, ureteroceles and ectopic ureters in duplicated collecting systems can be managed via upper or lower urinary tract approaches, or both. Open ureteroureterostomy(UU) has been described to address these in absence of vesicoureteral reflux (VUR) [Prieto et al. *JUrol.*2009;181:1844-1850]. We report outcomes from multiple centers with long-term follow-ups.

MATERIAL AND METHODS

We retrospectively reviewed 130 children who underwent open inguinal UU for duplicated collecting systems without VUR in institutions from North America, South America, and the Caribbean. Descriptive statistics and univariate analysis were used.

RESULTS

The records of 130 patients were reviewed, 64% were female (n=83) with a mean age at operation of 19.5±28.8 months. Main presentation at surgery included prenatal hydronephrosis (64%, n=83), febrile urinary tract infections (28%, n=37), urinary incontinence or other (8%, n=10). Mean operative time was 78.8 minutes (SD=22.9) in the ureterocele subgroup (n=49) and 90.3 minutes (SD=26.4) in those with ectopic ureter (n=81). Mean hospital stay was 1.1±0.7 days. In our cohort, 3(2%) presented with Clavien-Dindo I, 6(5%) with grade II, and 2(2%) with IIIb complications. No grade IV/V complications. A double J ureteral stent was used in 59 patients (45%), and a Penrose drain was left in 10(8%). A total of (98%, n=125/127) children showed radiographic improvement or resolution of symptoms with stable ultrasound findings, 3/130 patients were asymptomatic but the follow-up ultrasound was unavailable for review; therefore those were excluded from the analysis. There was no difference in surgical success per subgroups, 49/49 patients with ureterocele showed 100% improvement, 76/78 with ectopic ureter showed improvement in 97% of the cases. On univariate analysis, surgical success was not influenced by the use of ureteral stents (p= 0.11). Mean follow-up was 28.2±18.7 months.

CONCLUSIONS

Open ureteroureterostomy is an optimal alternative for the definitive surgical management of ectopic ureters and ureteroceles without VUR. This multicentric study demonstrates that open UU offers high success rates, low morbidity, short surgical times, and hospital stays with satisfactory aesthetic outcomes. Open UU should be considered worldwide as part of the surgical armamentarium for the management of duplicated collecting systems in children.

16:16 - 16:19

S12-6 (OP)

URETERAL LIGATION FOR SYMPTOMATIC NONFUNCTIONING MOIETY IN DUPLEX KIDNEY, IS IT WORTH TO DO IT ?

Camille DUCHESNE, Loriane AQUILINA, Samia LARAQUI, Olivier AZZIS, Benjamin FREMOND, Melodie JURICIC and Alexis P ARNAUD

CHU Rennes, Pediatric Surgery, Rennes, FRANCE

PURPOSE

Polar nephrectomy is the common procedure for renal duplication with complicated nonfunctioning pole, with a 5% risk of lesion of the remaining pole. Ureteral ligation has been described since 2014 as an alternative. We describe the long-term results of our series.

MATERIAL AND METHODS

Bicentric retrospective study between 01/01/2014 and 31/12/2020. Data in median (range).

RESULTS

Twelve ureters were included (7 girls/2 boys): 8 upper poles (1 triplication, 1 bilateral duplication, 4 unilateral duplication) and 4 lower poles (1 bilateral duplication, 2 unilateral duplication). Three girls with ectopic upper ureter presented with urinary incontinence. Two girls with ureterocele had undergone endoscopic incision for recurrent UTI. One girl had recurrent pyelonephritis on a dilated upper moiety. Three patients (2 boys, 1 girl) had a symptomatic refluxing dilated lower pole with recurrent UTI; 1 underwent endoscopic treatment. Preoperative DMSA scan confirmed in all patients the involved nonfunctioning moiety. Ligation was performed at 4.2 years (1.4-16), laparoscopically (11) or retroperitoneoscopically converted to open (1). Four were performed as a day case. At 3 months postoperative, 3 patients experienced recurrent abdominal pain (Clavien Dindo 1) and 5 a dilation increase. One patient developed obstructive pyelonephritis requiring nephrostomy (Clavien Dindo 3b). At 74 months (37-107) of follow-up, 6 ureteral units (50%) (5 patients) required laparoscopic partial nephrectomy (4 robotic and 2 standard laparoscopy), 38 months (2-103) after ligation, for pain (6) +/- pyelonephritis (2). It involved 4 lower pole (100%) and 2 upper pole (25%) tracts.

CONCLUSIONS

Ureteral ligation of nonfunctioning moiety in symptomatic duplex kidney is a feasible technique without risk for the other moiety. However, considering the results in lower poles (100% failure) it should be reserved to upper pole in specific cases.

16:19 - 16:30

Discussion

S13: MINIMALLY INVASIVE SURGERY (MIS)

Moderators: Mohan Gundeti (USA), Maria Escolino (Italy)

ESPU Meeting on Thursday 18, April 2024, 17:35 - 18:15

17:35 - 17:38

S13-1 (OP)

THE INFLUENCE OF POSITIVE AND NEGATIVE INTRAOPERATIVE FEEDBACK IN LAPAROSCOPIC SIMULATION IN PEDIATRIC UROLOGY TRAINING

Nina MARTZ ¹, Amane-Allah LACHKAR ¹, Jean BREAUD ², Liza ALI ¹, Isabelle TALON ³, François BECMEUR ³, Alaa EL GHONEIMI ¹, Valeska BIDAULT-JOURDAINNE ⁴ and Matthieu PEYCELON ¹

1) Department of Pediatric Surgery and Urology, University hospital Robert-Debré, Université Paris Cité, National reference center for rare urinary tract malformations (MARVU), Paris, FRANCE - 2) Department of Pediatric Surgery, Hôpital Universitaire Pédiatrique Lenval, Fondation Lenval Pour Enfants, Nice, FRANCE - 3) Department of Pediatric Surgery, Hôpital de Hautepierre, Hôpitaux Universitaires de Strasbourg, Strasbourg, FRANCE - 4) Department of Pediatric Surgery and Urology, Hôpital Femme Mère Enfant, Groupement Hospitalier Est, Hospices Civils de Lyon, Lyon, FRANCE

PURPOSE

This study aimed to explore whether positive or negative comments on trainees in pediatric urology had an impact on performance during simulation in pediatric laparoscopy.

MATERIAL AND METHODS

Twenty-five students enrolled in a national Pediatric Urology Laparoscopy Simulation Program performed the Fundamentals of Laparoscopic Surgery (FLS) skills using plot-transfer and intracorporeal knot-tying in a randomized study design while under the positive or negative feedback of an attending pediatric urologist. On the first day, all students performed FLS plot-transfer and intracorporeal knot-tying on a pediatric laparoscopic simulator. On the second day, students were randomized and performed FLS tasks with positive or negative comments during the procedure. Task performances, evaluated by task time and errors, were compared between both groups. Statistical analysis: Mann-Whitney U test.

RESULTS

Difference in execution time between exercises with and without feedback was greater in the group that received negative feedback compared to the group that received positive feedback ($p=0.003$). Students who received positive feedback decreased their time by a median of one second while students who received negative comments increased their time by a median of twenty-three seconds.

CONCLUSIONS

Feedback should be delivered in a manner that is supportive, respectful, and focused on improvement rather than discouragement. Understanding these dynamics can inform the development of effective feedback strategies to optimize learning and to improve performance outcomes in training for minimally invasive surgery in pediatric urology.

17:38 - 17:41

S13-2 (OP)

THE RANDOMIZED ROBOT STUDY: FEASIBILITY OF RANDOMIZATION AND BLINDING IN PEDIATRIC PATIENTS UNDERGOING ROBOT ASSISTED LAPAROSCOPIC VS. OPEN PYELOPLASTY

Benjamin WHITTAM¹, Rosalia MISSERI², Joshua ROTH², Konrad SZYMANSKI², Mark CAIN², Richard RINK² and William BENNETT¹

1) Riley Hospital for Children at IU Health, Pediatric Urology, Indianapolis, USA - 2) Riley Hospital for Children at IU Health, Indianapolis, USA

PURPOSE

Robot assisted laparoscopic (RAL) surgery continues to gain popularity among pediatric surgical specialists, particularly for reconstructive procedures such as correction of ureteropelvic junction obstruction (UPJO). Despite excellent clinical outcomes with the open approach, many pediatric urologists are shifting towards newer RAL approaches in the absence of evidence from blinded randomized controlled trials (RCTs). We designed a pilot comparative effectiveness trial of open versus RAL pyeloplasty in pediatric patients.

MATERIAL AND METHODS

Non-obese (<95th% BMI for age) patients age 2 - 8 years old diagnosed with a UPJO were approached by a research assistant regarding enrollment into the RCT. Upon signing consent, patients were randomized to OP or RALP and scheduled for surgery. Patients, families and nursing staff were blinded as to the approach used for the first 24 hours postoperatively. Primary outcomes were ability to randomization patients and effectiveness of blinding to randomization.

RESULTS

Over a 16 month period, 11 patients met inclusion criteria and 10 agreed to randomization (91%): 5 underwent open pyeloplasty and 5 robotic pyeloplasty. All patients were symptomatic with flank pain and associated nausea/vomiting. Mean age was 5.4 years, 7 were male, had an average BMI of 16.7kg/m² and UPJO was on the right in 4 patients. On exit interview at 24 hours after surgery, blinding was deemed adequate by families and nursing staff, with 40% of nurses and families correctly identifying the procedure. There were no intraoperative complication and one 30 day Clavien Dindo 3b complication (a stent removal in the operating room in robotic cohort secondary to internal migration of his extraction string). At last follow-up, all patients remained asymptomatic with stable or improved hydronephrosis.

CONCLUSIONS

We successfully randomized and blinded 10 children to undergo either open or robotic surgery. Using current recruitment strategy and expanding inclusion criteria, we are planning a multi-institutional comparative effectiveness trial comparing open to robotic pyeloplasty in the pediatric population.

17:41 - 17:44

S13-3 (OP)

ROBOT ASSISTED PYELOPLASTY STANDARDIZATION TO IMPROVE EFFICIENCY

Nicolas FERNANDEZ ¹, Diboro KANABOLO ², Jennifer AHN ², Paul MERGUERIAN ² and Daniel LOW ²

1) Seattle Childrens Hospital - University, Urology, Seattle, USA - 2) Seattle Childrens Hospital - University, Seattle, USA

PURPOSE

Introduction:

Adaptation to high surgical demand has placed a premium value on operating room efficiency.

Our aim was to reduce operative time, by reducing total console time in robot assisted pyeloplasty (RP) cases. We hypothesized that process improvement and supply management during RP leads to a significant reduction in operative time.

MATERIAL AND METHODS

Methods:

We chose a family of measures to determine improvement. These included robotic arm activity, and total operative time. Interventions included: standardized OR staff tasks, a priori supply inventory procurement. Baseline RP duration was recorded before any interventions. Intraoperative surgical workflow was reviewed, and routine tasks performed were selected. A clinical standard work (CSW) was developed based on optimization of equipment/supplies. Balancing measures included percentage trainee console use, and OR block start/end time. Baseline data for RP cases performed between 11/2020 and 2/2022 were automatically extracted and analyzed using AdaptX (Seattle, WA).

RESULTS

Results:

Thirty-seven patients underwent RP during the study period. Fifteen cases were performed prior and 22 post intervention. Total console time prior to intervention was 152 vs 109 mins after intervention ($p=0.0002$). Dual instrument inactivity was reduced from 13.1% to 7.1% ($p<0.0001$). Dual consoles were used in 40% vs ~69% pre- vs post- intervention, respectively ($p=0.5000$). No difference in patient age distribution between groups was seen ($p=0.1498$). Trainee operative time did not differ statistically pre- and post-intervention (63.0 vs 48.6%, $p=0.0871$).

CONCLUSIONS

Conclusions:

Decreasing surgical lapses and standardizing intraoperative tasks can consistently facilitate more efficient case completion and increase OR capacity.

17:44 - 17:55

Discussion

17:55 - 17:58

S13-4 (OP)

MAXIMIZING ROBOTIC EXTRAVESICAL URETERAL REIMPLANTATION SUCCESS: THE SYNERGISTIC IMPACT OF URETERAL ADVENTITIA INCLUSION AND ROBUST DISTAL END DETRUSORRAPHY SUTURES.

Sang Hoon SONG, Jaeyoung CHO, Kyunghyun NAM, Homin KANG and Kun Suk KIM

Asan Medical Center, University of Ulsan College of Medicine, Department of Urology, Seoul, REPUBLIC OF KOREA

PURPOSE

We aimed to examine the impact of surgical technique modifications on the success of robotic extravesical ureteral reimplantation.

MATERIAL AND METHODS

We retrospectively evaluated patients undergoing robot-assisted laparoscopic extravesical ureteral reimplantation (RALUR-EV) for vesicoureteral reflux between July 2013 and February 2023. A key technical modification was introduced in June 2021, which involved including ureteral adventitia in detrusorrhaphy and introducing a robust distal end detrusorrhaphy suture as the first suture. We classified patients into Groups 1 and 2 based on the timing of their surgeries relative to this modifications. Success was evaluated by the radiographic resolution of VUR.

RESULTS

The study included 67 pediatric patients, representing 105 ureteral units: 61 in Group 1 and 44 in Group 2. On average, patients underwent RALUR-EV at 48 months, with a 5.5 months follow-up. Both groups showed similar VUR grades preoperatively. Operation duration was notably different, with Group 1 averaging 167 minutes and Group 2 at 145 minutes ($p < 0.001$). The success rate increased from 75.4% in Group 1 to 95.5% in Group 2 with the new technique ($p = 0.006$). The 30-day complications were similar between groups: grade I at 19.7% and grade II at 18.0% for Group 1, compared to 14.3% and 9.5% for Group 2.

CONCLUSIONS

The synergistic impact of ureteral adventitia inclusion in detrusorrhaphy and robust distal end detrusorrhaphy suture as the first detrusorrhaphy suture significantly improved the success rate of robotic extravesical ureteral reimplantation. This modified technique provides a promising strategy to improve patient outcomes without exacerbating postoperative complications in managing vesicoureteral reflux.

17:58 - 18:03

S13-5 (VP)

★ ROBOT-ASSISTED MITROFANOFF PROCEDURE IN CHILDREN: TECHNICAL ILLUSTRATION OF SURGICAL TECHNIQUE

INTRODUCTION

The trans-appendicular continent cystostomy was first described by Mitrofanoff in 1980 (1). Its adaptation for the robot-assisted approach is illustrated step by step in this video.

1. Mitrofanoff P. Trans-appendicular continent cystostomy in the management of the neurogenic bladder. Chir Pediatr. 1980;21:297-305.

PATIENTS AND METHODS

We report our experience in a robot-assisted Mitrofanoff procedure in children. The technique is illustrated in a 7-year-old boy with a history of posterior urethral valves evolving into an atonic bladder.

RESULTS

The patient was positioned in a classical robot-adapted lithotomy position. The camera trocar was placed 2cm above the umbilicus, with two additional 8-mm ports inserted at the mid-clavicular line bilaterally and a 12-mm port on the left-hand side. The appendix was visualized and measured. The appendix was prepared and pediculized. Posterior bladder wall detrusorotomy was performed. The appendix was spatulated, an anastomosis was created between the appendix and the bladder, and the detrusor was closed on the appendix. The total surgical time was 210 min and the hospital stay was limited to 4 days. Aside from hematuria (Clavien-Dindo II) and initial urge incontinence at the appendicovesicostomy level, no postoperative complications were observed within 20 months of follow-up.

CONCLUSIONS

Robot-assisted Mitrofanoff appendicovesicostomy in children is feasible. Further comparison with the classical open procedures is necessary.

18:03 - 18:08

S13-6 (VP)

"GUNDETI'S 10 STEP MODIFICATION" TO THE CONTEMPORARY ROBOTIC ASSISTED LAPAROSCOPIC MITROFANOFF APPENDICOVESICOSTOMY (RALMA)

Neehar PATIL, Parviz HAJIYEV, Kristina GAM, Sean HOU and Mohan GUNDETI
University of Chicago, PEDIATRIC UROLOGY, Bengaluru, INDIA

PURPOSE

To allow children with bladder dysfunctions to achieve social continence, continent catheterizable channels are effective alternatives to inter- mittent self-catheterization . We have aimed to describe our modifications to the contemporary Robotic assisted laparoscopic mitrofanoff appendicovesicostomy (RALMA) and to report the long term outcomes.

MATERIAL AND METHODS

This is a retrospective study of a prospectively maintained database from 2008 - 2023. All children with neurogenic bladder s who have undergone RALMA were included. We have described our 10 step modification to improve the overall outcomes. All children were followed up annually. Failure in our study was described as stomal incontinence at follow up (presence of urine leakage) requiring a surgical revisions.

RESULTS

A total of 69 children were included in our study of which , 34 children underwent our 10 step modification in RALMA . Our technique showed a significant decrease in the length of hospital stay (6.8 days +/-3.6) and operative time(444 min +/-179) . Incontinence at follow up was noted in 6 children ,of which 4 required surgical revisions .Continance rates were 91.2%

CONCLUSIONS

The 10 step modification described by us in RALMA, helps in the optimization of surgical steps further reducing the operative time , making this already safe and effective approach a more sustainable operative modality with good long term outcomes.

18:08 - 18:15

Discussion

S14: PHIMOSIS

Moderators: Sibel Tiryaki (Turkey), Marcel Drlik (Czech Republic)

ESPU Meeting on Friday 19, April 2024, 08:30 - 09:00

08:30 - 08:34

S14-1 (LOP)

THE IMPACT OF PEDIATRIC CIRCUMCISION ON THE PENILE MICROBIOTA

Rachel PENNEY¹, Danny MATTI², Jessica PRODGER², Jeremy BURTON², Peter Zhantao WANG² and Sumit DAVE³

1) LONDON HEALTH SCIENCES CENTRE, SURGERY, London, CANADA - 2) LONDON HEALTH SCIENCES CENTRE WESTERN UNIVERSITY, SURGERY/UROLOGY, London, CANADA - 3) London Health Sciences Centre, Western University, Surgery and Pediatrics (Division of Urology), London, CANADA

PURPOSE

Male circumcision (MC) is performed for religious reasons, treatment of pathological phimosis and for congenital anomalies associated with recurrent UTI's. This prospective cohort study aims to identify the changes to the foreskin microbiota before and after MC.

MATERIAL AND METHODS

We conducted a longitudinal study of pediatric patients undergoing MC and collected penile swabs during surgery and 6 weeks after MC (n=74). Patients were divided into 3 cohorts based on MC indication: pathological phimosis, religious elective MC, and MC for medical reasons. The microbiota before and after MC was characterized using 16S rRNA gene sequencing analysis for the different groups.

RESULTS

The penile microbiota was found to be significantly different between the cohorts prior to MC (p=0.014). After MC, the composition of the penile microbiota changes drastically (p=0.009) and the microbial diversity decreases. Data analysis suggests a preponderance of *Prevotella* sp. in uncircumcised boys, associated with higher T cell and dendritic cell density in the inner foreskin, which are markers for inflammation. The outer foreskin in boys with pathological phimosis showed a higher density of Langerhans cells and Natural killer cells.

CONCLUSIONS

These results suggest a change in the microbiota of the penile skin following MC and a correlation between inflammatory markers and the foreskin phimosis status. This information will increase the understanding of the relationship between the penile microbiota and the host in children and aid further studies to investigate the mechanism underlying the benefits of MC in patients undergoing circumcision electively or for pathological phimosis.

08:34 - 08:37

S14-2 (OP)

PROBIOTICS VERSUS CIRCUMCISION: DO THEY AFFECT THE NATURAL PROGRESS OF PERIMEATAL BACTERIAL COLONIZATION

Alkan OKTAR ¹, Mehmet Fatih ÖZKAYA ², Aykut AKINCI ³, Ezel AYDOĞ ², Efe Semetey OĞUZ ⁴, Murat Can KARABURUN ⁵, Tarkan SOYGÜR ² and Berk BURGU ⁴

1) Ankara Üniversitesi Tıp Fakültesi, Üroloji, Ankara, TURKEY - 2) Ankara University, Urology, Ankara, TURKEY - 3) Denizli State City Hospital, Pediatric Urology, Denizli, TURKEY - 4) Ankara University, Pediatric Urology, Ankara, TURKEY - 5) Denizli Acipayam State Hospital, Urology, Denizli, TURKEY

PURPOSE

Bacterial colonization of the preputial and perimeatal skin is a natural occurrence in children and may play a role in maintaining genital health. This study aims to compare the impact of circumcision and probiotic use on bacterial colonization in uncircumcised children.

MATERIAL AND METHODS

We prospectively investigated children aged 0-3 years between August 2018- June 2019. Bacterial cultures were analysed, results were categorized by non-uropathogenic and uropathogenic bacteria, and compared within and between groups. Irrelevant results were excluded. The subjects were categorized into three groups: Group 1 (n=31), uncircumcised children without probiotic supplementation; Group 2 (n=45), circumcised children; and Group 3 (n=33), consisting of uncircumcised children prescribed with probiotics (*Bifidobacterium animalis*, SSP *lactis* B9) before admitting to our institution for routine check up. Mean age was similar with each group. These children were initially evaluated every 3 months in the first year of life, with subsequent follow-up examinations every six months. Bacterial colonization in the periurethral meatal and glanular sulcus regions was examined during each follow-up visit. Cultures were obtained from both periurethral meatal and glanular sulcus areas by adhering strictly to the rules of obtaining bacterial culture to avoid false-positive or negative culture results. Chi square test was used for statistical analysis.

RESULTS

99 children completed the study. The results revealed compelling findings. Bacterial colonization positivity during follow-ups are %84 (n=26), %31 (n=14), %50 (n=17) for groups 1, 2 and 3 respectively. Group 2 and Group 3 exhibited similar bacterial colonization patterns, with both groups demonstrating lower colonization of gram negative pathogens compared to Group 1 after the initial 6 months. (p value 0.001 and 0.006 respectively).

CONCLUSIONS

These findings suggest that circumcision and probiotic supplementation in uncircumcised children may contribute to a reduction in uropathogenic bacterial colonization. The potential clinical implications of these differences in colonization warrant further exploration.

08:37 - 08:40

S14-3 (OP)

PARENTAL REGRET FOLLOWING DECISION TO PERFORM POST-NEONATAL CIRCUMCISION

Tomer BASHI ¹, Hadas RORMAN ², Ziv SAVIN ¹, Jacob BEN-CHAIM ¹ and Yuval BAR-YOSEF ¹

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PURPOSE

The reasons for performing a circumcision among male children after the neonatal period are characteristically cultural or medical. The aim of this study was to evaluate parental regret and identify factors associated with such regret.

MATERIAL AND METHODS

Included were male patients aged 6 months to 18 years who underwent circumcision under general anesthesia at a single center between 2/2017 and 01/2023. Those who underwent additional surgical procedures during the same session were excluded. Parents responded to the Decision Regret Scale (DRS) questionnaire via telephone. Regret was classified as none (0), mild (1-25), or moderate-to-strong (26-100). Surgical and demographic data were retrieved from the departmental database for comparison to DRS scores.

RESULTS

201 of the 265 suitable patients met the inclusion criteria. Parents of 130 patients (65%) with an average age of 5.06(IQR 1.58,7.53) years completed the DRS questionnaire. The average time since surgery was 41.8(IQR 25.4,59.3) months. Forty parents reported that the surgery was undertaken for cultural reasons, and 90 for medical considerations. Eighteen parents reported regret for the performance of circumcision (15 mild and 3 moderate-to-strong). Time since surgery was the only significant variable in the DRS, with a gap of 33 months since surgery predicting no regret ($p=0.02$ compared to shorter gaps). The reasons for circumcision did not significantly differ between the regret and the no-regret groups ($p=0.23$).

CONCLUSIONS

Post-neonatal circumcision was regretted by 13.8% of parents, and the passage of time since surgery was found to significantly influence reduction of parental negative attitudes.

08:40 - 08:43

S14-4 (OP)

A FREQUENT PROBLEM IN CIRCUMCISED POPULATION: MEATAL STENOSIS. CAN DILATATION OR STEROID OINTMENT REDUCE THE NEED FOR MEATOPLASTY?

Aykut AKINCI ¹, Murat Can KARABURUN ², Mehmet Fatih OZKAYA ³, Tarkan SOYGUR ³ and Berk BURGU ³

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PURPOSE

Meatal stenosis can be seen frequently after circumcision. In this study, we aimed to compare the results of patients who received only steroid cream and patients who received steroid cream applied to the catheter.

MATERIAL AND METHODS

Between January 2020 and June 2023, patients who presented at the outpatient clinic with suspicion of meatal stenosis following circumcision and abnormal uroflowmetry findings were included in the study. Patients with neurogenic diseases, hypospadias, or a history of trauma were excluded from the study. The patients were randomly assigned to two groups. In the first group, Clobetasol propionate 0.05% was applied twice daily for four weeks. In the other group, in addition to this treatment, parents applied a steroid, which had been applied to the tip of an 8F catheter, into the distal urethra once daily. Uroflowmetry evaluation was conducted before and after the procedure, and the rates of referral for meatoplasty surgery were compared. For the evaluation of categorical data, the chi-square test was employed, and for the comparison of numerical values, the Student's t-test was used, all analyzed using SPSS 25.0.

RESULTS

53 patients were included in the study (27 steroid/26 steroid+catheter). The steroid and steroid+catheter groups were similar in terms of age (7.89 ± 1.71 vs 8.50 ± 1.42 p 0.16). Qmax at presentation (6.63 ± 1.47 vs 7.00 ± 0.56 p 0.23) and postvoid residual (29.81 ± 5.63 vs 32.12 ± 6.80 p 0.18) were similar. Post-treatment qmax (7.89 ± 1.65 vs 8.54 ± 2.28 p 0.24) and postvoid residual (23.52 ± 9.58 vs 19.42 ± 7.78 p 0.09) were similar between the groups. Meatoplasty surgery was required in 20 patients (74%) in the steroid group and 16 patients (61%) in the steroid+catheter group due to poor uroflowmetry results (p 0.32).

CONCLUSIONS

Steroid administration may reduce the need for surgery in post-circumcision meatal stenosis. Although steroid and catheter administration gave numerically better results, it was not reflected in the statistical result.

08:43 - 08:46

S14-5 (OP)

ONSET OF SEXUALITY IS IMPAIRED IN YOUNG MEN WITH A PERSISTENT CONGENITAL PHIMOSIS

Alaa CHEIKHELARD¹, Marc GALIANO², Bruno D'ACREMONT³, Frédéric GIRARD³, Bertrand GIOVANSILLI³, Jean-Marc CASANOVA³ and Pierre DESVAUX⁴

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PURPOSE

Phimosis is a narrowing of the preputial orifice that hinders complete and painless foreskin retraction onto the glans. It is physiological in children but should be resolved at puberty. Some men reach adulthood with a persistent congenital phimosis (PCP) that can impair their sexuality. The literature is abundant on circumcision, but little attention is paid to phimosis.

We aimed to evaluate the impact of PCP on sexuality in early adulthood.

MATERIAL AND METHODS

Inclusion criteria: men over 18 years of age who reached adulthood with PCP.

Methods: Descriptive study based on an online questionnaire (37 questions) addressing medical history, emotional experience and sexual function (including a personal adaptation of the Sexual Complaint Screener for Males).

RESULTS

435 men were contacted, 80 completed the questionnaire, 67 were included.

79% had impaired sexual onset, 69% had significant anxiety, 66% avoided sex, and 46% avoided a romantic relationship. Desire and arousal were impaired in only 20% and 15%. Sexual function was more impaired during penetration than during masturbation, in the domains of arousal (erectile dysfunction 36% vs 13%) and orgasm (rapid ejaculation 28% vs 20%, delayed ejaculation 18% vs 3%). 67% were dyspareunic.

60% realized they had a problem before 18 years, but 82% did not seek medical advice until after 20, half of them after 25. The mode of revelation was comparison with others (porn and peers) (36%), selfobservation (33%), sexual encounter (28%).

There was no traumatic experience of foreskin retraction in childhood and 55% recommended prevention in adolescents.

CONCLUSIONS

Despite heterogeneity of the population, declarative nature of the data and absence of a control population, this descriptive study is the first to report that unresolved PCP in adolescence alters penetrative but not masturbatory sexuality, leads to avoidance of romance and penetration, with delay in seeking treatment. Preventive systematic andrological consultation should be proposed to adolescents.

08:46 - 09:00

Discussion

S15: HYPOSPADIAS 1

Moderators: Anne Françoise Spinoit (Belgium), Haytham Badawy (Egypt)

ESPU Meeting on Friday 19, April 2024, 09:00 - 10:05

09:00 - 09:03

S15-1 (OP)

PREVALENCE AND AGE AT DIAGNOSIS OF MALES WITH HYPOSPADIAS - A POPULATION-BASED NATIONWIDE EPIDEMIOLOGICAL STUDY

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PURPOSE

The presumed multifactorial etiology of hypospadias remains incompletely understood. Secular trends in disease patterns may elucidate associated risk factors. The reported prevalences of hypospadias present conflicting findings.

We aimed to assess the prevalence of hypospadias and its secular trend in Denmark.

MATERIAL AND METHODS

Males with a hypospadias diagnosis in the Danish National Patient Registry (DNPR) initiated in 1977 were identified. Information from the birth cohorts in Denmark (1901-2019) was used to calculate the prevalence (number of males with hypospadias per 100,000 newborn boys). For males born after 1977 the first recording in the DNPR defined the diagnostic age. Temporal trends were analyzed by linear regression.

RESULTS

From 1977, n=9,187 males, born from 1901-2019, were recorded with hypospadias in the DNPR. The prevalence rose until 1977. From 1977-2006, the mean prevalence rose to 502.6 (95% CI 440.4-564.9, p<0.001) and peaked at 847.2 in 2007. From 2008-2018, the mean prevalence stabilized at 773.8 (95% CI 738.1-809.5, p=0.3231). The mean diagnostic age (1977-2019) was 1.9 years (95% CI 1.8-2.0) and showed a slight decreasing temporal trend (p<0.001).

CONCLUSIONS

This study reports a high prevalence of hypospadias currently around 800 per 100,000 newborn boys. Similar prevalences have been reported in Sweden and in some states in the USA. Multiple studies have reported lower

prevalences. Methodological heterogeneity between studies challenges the reported differences across the world. Successful surveillance reflecting true estimates depends on consistent and effective ascertainment as is the case in Denmark.

09:03 - 09:06

S15-2 (OP)

RELATIONSHIP OF HYPOSPADIAS AND SOURCES OF POLLUTION IN A STATIC COMMUNITY IN NEW ENGLAND

Borivoj GOLIJANIN, Emily BARRY, Rachel GREENBERG, Anthony CALDAMONE and Hsi-Yang WU
The Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, Urology, Providence, USA

PURPOSE

It is thought that endocrine disrupting environmental factors, which may increase risk for hypospadias, can be found industrial waste storage and processing facilities. This study investigates whether hypospadias in an industrial region in New England has a geographic distribution that is related to sources of pollution.

MATERIAL AND METHODS

All hypospadias cases at a single hospital system from 2015 to 2018 were retrospectively reviewed. These years were selected due to the availability of pollution records. Cases were categorized into type (proximal, midshaft, distal), and then geocoded and mapped. Regional waste storage and processing facilities were also mapped including. Geographic distribution of cases was compared to the distribution of the pollution sites. Correlation between type of hypospadias with proximity of pollution sites was evaluated.

RESULTS

Types of hypospadias (n=113) included 20.4% proximal, 10.6% midshaft, and 69% distal. There was no significant association of incidence of cases and pollution source. Stratifying by type of hypospadias, 48.4% of clusters were comprised of distal hypospadias cases only, they were found farther from the sites of pollution. 51.6% of clusters were comprised of proximal and midshaft cases only. Although non-significant, they were found in areas closer to sources of pollution, compared to distal cases.

CONCLUSIONS

Although distance to an environmental pollutant was not significant, there is a clear geographic separation of the type of hypospadias found in this region. Additional study of the causes of hypospadias, including amount of exposure, and genetic factors, is warranted to explain the geographic separation and etiology of this congenital anomaly.

09:06 - 09:09

S15-3 (OP)

★ UROLOGICAL CANCER RISK IN CHILDREN AND ADULTS BORN WITH HYPOSPADIAS USING A SWEDISH REGISTER-BASED COHORT

Lottie PHILLIPS ¹, Cecilia LUNDHOLM ², Catarina ALMQVIST ², Anna SKARIN NORDENVALL ² and Agneta NORDENSKJÖLD ¹

1) Karolinska Institutet, Women's and Children's Health, Solna, SWEDEN - 2) Karolinska Institutet, Medical Epidemiology and Biostatistics, Stockholm, SWEDEN

PURPOSE

The risk of urological cancer in individuals with hypospadias could be increased due to different mechanisms including mutual aetiology, androgen dysfunction, and recurring inflammation or infection. We therefore aimed to investigate whether urological cancer risk is increased in children and adults born with hypospadias.

MATERIAL AND METHODS

We used national Swedish register data to study a population-based cohort of individuals born 1964-2018, as well as adults born from 1940. Outcomes were defined using diagnostic- and morphological codes for cancer subtypes. Associations were measured using Cox proportional-hazards regression analysis.

RESULTS

In total, we identified 4 284 902 individuals, including 17 549 with a diagnosis of hypospadias. In children, we found an association with Wilms' tumour which may relate to shared genetics. Throughout life, we found an increased risk of testicular cancer in boys and men with hypospadias (hazard ratio 2.04, 95% confidence interval 1.42-2.92). The risk increase was greater in those with proximal hypospadias and the association remained when only studying those without cryptorchidism. In adults, we further found an increased risk of bladder and urethral cancer, but no statistically significant association with prostate cancer. However, the absolute risk of cancer in individuals with hypospadias was low, which was reflected by the small number of men with both conditions.

CONCLUSIONS

Hypospadias, especially proximal hypospadias, is associated with an increased risk of testicular cancer that is not explained by a co-occurrence with cryptorchidism. Our results further indicate an increased risk of lower urinary tract cancers which merits further investigation. More research is needed to understand which specific subgroups of individuals may be at risk and why.

09:09 - 09:12

S15-4 (OP)

MECHANISTIC ASSESSMENT OF PENILE BLOOD FLOW FOLLOWING CAUDAL BLOCK

Adam ADLER ¹, Vinaya BHATIA ², Arvind CHANDRAKANTAN ¹ and Paul AUSTIN ³

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PURPOSE

In adults, neuraxial anesthesia cause hypotension primarily due to blockade of sympathetic nerve fibers which result in peripheral vasodilation. These hemodynamic changes have not been seen in young children and we

hypothesize that penile blood flow would not be altered from caudal block administration. Our objective is to perform a mechanistic assessment to characterize penile arterial and venous blood flow in association with caudal block given the past controversial association with hypospadias surgery.

MATERIAL AND METHODS

A prospective study was conducted in children undergoing penile surgery. The penile artery and venous flow velocity were assessed using Doppler ultrasound pre and post caudal block. Exclusion criteria included: patients with allergy to local anesthetic, patients with cardiovascular issues including the use of cardiac medications, contradictions to caudal block (sacral dimple or local rash or infection), inability to attain ultrasound velocity measurements due to anatomic limitations of the penile vasculature and parental refusal.

RESULTS

Ten healthy patients were included in the study with a mean age and weight of 1.3 years and 10.7 kg respectively. There was no significance difference in mean arterial blood flow velocity 0.18 m/s, (95% CI: -1.55, 1.92; p=0.81) or mean dorsal penile vein flow velocity 0.11 m/s, (95% CI: -1.12, 1.33; p=0.84) prior to and following caudal block in our pediatric cohort. There was no correlation in the direction of change between the arterial flow and venous flow from before and after caudal block (R²=0.03)

CONCLUSIONS

Despite previous controversy surrounding the use of caudal block in children undergoing hypospadias correction, we did not identify an association between penile arterial or venous blood flow and performance of caudal block in children undergoing penile surgery. Our study presents encouraging findings that no significant hemodynamic change appears to result from caudal block.

09:12 - 09:25

Discussion

09:25 - 09:28

S15-5 (OP)

WHAT IS THE INCIDENCE OF CHORDEE IN DISTAL HYOSPADIAS?

Melissa MCGRATH ¹, Yaqoub JAFAR ¹, Ziyad ALZHRANI ¹, Bruno LESLIE ¹ and Luis H. BRAGA ²

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PURPOSE

The implications of chordee measurement in distal cases and its impact on the choice of surgical technique and outcomes have yet to be objectively studied. We aimed to determine the rate of chordee in distal hypospadias and how its severity affected the decision-making to proceed with single vs staged repair.

MATERIAL AND METHODS

Prospective study(2016-2022) of consecutive boys with distal hypospadias based on the initial meatal location. All patients had erection test to measure the degree of chordee using a photograph angle app. We captured age at surgery, meatal location, glans groove depth, degree of chordee before and after degloving, midline raphe deviation(MRD) and ventral skin deficiency(VSD).

RESULTS

Of 318 cases, 237 had distal penile, 58 coronal, and 23 glanular hypospadias. Chordee was identified in 68% (216/318) patients, 12% had flat/no glans groove and 25% VSD. Before degloving, chordee was <30 in 78%, 30-70 in 20%, >70 in 2%. After degloving, 75% had no chordee, 19% had<30, and 6% had>30. Of those with chordee>30 after degloving (mean=36±8.6), all had flat/no glans groove, 10(71%) had MRD, 4(29%) VSD and 6(43%) proximal division of spongiosum. 75% of them underwent a dorsal inlay graft(DIG) or staged repair.

CONCLUSIONS

A minority(6%) of distal hypospadias patients have chordee >30(mean=36) after degloving. 70% of them had flat/no glans groove and MRD, which is suggestive of a more severe(proximal) phenotype, calling for urethral plate augmentation(DIG or staged repair). Be aware of these "distal" hypospadias with hidden proximal characteristics, as failure to identify these phenotypes may result in inadequate chordee correction and worse outcomes.

09:28 - 09:31

S15-6 (OP)

COMPARISON OF HYPOSPADIAS PHENOTYPE PIXEL SEGMENTATION TO GMS SCORE

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1) Seattle Childrens Hospital - University, Urology, Seattle, USA - 2) Seattle Childrens Hospital - University, Seattle, USA

PURPOSE

Introduction:Glans-Urethral Meatus-Shaft (GMS) score has been adopted to standardize hypospadias classification. While extremely subjective, GMS has been widely used to classify the severity of the phenotype to predict surgical outcomes. The use of digital image analysis has proven to be feasible. Nonetheless, the creation of these image recognition algorithms is subjective. To reduce a subjective input, we propose a novel approach using digital image pixel analysis comparing it the GMS score. Our hypothesis is that pixel cluster segmentation can discriminate between favorable and unfavorable anatomy.

MATERIAL AND METHODS

Methods:A total of 148 patients with different types of hypospadias were classified independently by experts following the GMS score into "favorable", "moderately favorable" and "unfavorable". From there, 592 images were generated using digital image segmentation. 584 were included for final analysis. For each image, the region of interest was segmented into "glans," "urethral plate," "foreskin" and "periurethral plate". Values obtained for each segmented region using statistical pixel k-means cluster analysis were compared to the GMS score using an ANOVA analysis.

RESULTS

Results: Analysis of image segmentation demonstrated that k-means pixel cluster analysis discriminated “favorable” vs “unfavorable” urethral plates. There was a significant difference between scores when comparing the GG and GM groups ($p = 0.03$) and GG and GP groups ($p = 0.05$). Pixel cluster analysis could not discriminate between “moderately favorable” and “unfavorable” urethral plates.

CONCLUSIONS

Conclusions: We found significant pairwise difference between favorable and unfavorable anatomy. Digital image segmentation and statistical k-means cluster analysis can discriminate anatomical features following GMS score principles.

09:31 - 09:34

S15-7 (OP)

PLATE OBJECTIVE SCORING TOOL (POST); CORRELATION WITH POST-HYPOSPADIAS REPAIR COMPLICATIONS

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PURPOSE

The Plate Objective Scoring System (POST) has been shown to reflect the configuration of urethral plate quality in distal hypospadias, serving as an assessment guide. Here we aim to appraise its correlation with post-distal hypospadias repair complications.

MATERIAL AND METHODS

Data were prospectively obtained from prepubertal boys who underwent primary hypospadias repair between January 2020 and February 2023. Both POST and GMS scores were measured by three different reviewers in triplicate and correlation with post-distal hypospadias repair complications was evaluated.

RESULTS

The POST ratios were strongly correlated with post- hypospadias repair complications in 121 patients. POST score values mean was 1.10 (range 0.5-1.62). The average total GMS score was 5.29 ± 1.36 , and the medians of G, M, and S scores were 2, 2, and 1, respectively. Bivariate correlation analysis showed that the POST score was strongly accurate in predicting the chances of having complications, with a Pearson correlation coefficient of $r = 0.821$ (0.724-0.918) 95% CI. The cutoff value of POST with the highest specificity for the presence of post-operative complications was 1.2 and complications' incidence was 4.4% (2/45) in $POST \geq 1.2$ and 25 % (19/76) in $POST < 1.2$.

CONCLUSIONS

This study highlights the significance of the POST proportion as a surrogate sign for urethral plate quality for objectivity and accuracy in urethral plate evaluation, which in turn serves as an independent factor impacting outcomes in distal hypospadias repair. We demonstrated a statistically significant increase in the likelihood of any postoperative complication with a decrease in POST score.

09:34 - 09:45

Discussion

09:45 - 09:48

S15-8 (OP)

IMPROVING THE NURSING CONTRIBUTION TO HYPOSPADIAS SURGERY

Ellen BULLMAN¹, Hazem MOSA², Massimo GARRIBOLI¹, Anu PAUL¹, Arash TAGHIZADEH¹ and Pankaj MISHRA¹

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PURPOSE

Hypospadias is a common penile congenital anomaly that affects 1:200 boys. Hypospadias surgery has both short- and long-term complications. A significant nursing contribution is often required in the first post operative week. We aimed to improve the nursing knowledge and confidence about providing care to patients who recently underwent hypospadias surgery.

MATERIAL AND METHODS

A 7 question Questionnaire identifying staff nurses experience and knowledge of hypospadias nursing using a 5-point Likert scale. A structured nursing-centred workshop with emphasis on two clinical scenarios: hypospadias dressing removal and receiving a phone call from a parent of a hypospadias patient asking for advice. Training was delivered to band 5 (newly qualified) nurses on the nephro-urology ward of a tertiary paediatric urology centre over the period of 2 weeks.

RESULTS

15 nurses participated in the hypospadias training workshop. Questionnaire responses pre and post training were collected. Statistical analysis was performed using an independent t-test to compare responses pre and post training. A significant improvement in responses to the 7 questions was noted (table 1). An instructional video demonstration of hypospadias dressing removal by a paediatric urology clinical nurse specialist was produced to ensure continuity of the quality improvement initiative. A flow chart of the dressing removal procedure was also produced.

	Pre-training	Post-training	P value	Question theme
Question 1	1.5	4.5	0.00	Types of hypospadias
Question 2	1.5	4.4	0.00	Hypospadias operations

Question 3	2.8	3.9	0.01	Dressing removal
Question 4	2.1	4.2	0.00	Short-term complications
Question 5	2.3	4.2	0.00	Managing postoperative complications
Question 6	2.3	4.2	0.00	Giving phone advice
Question 7	2.2	4	0.00	Hypospadias referral for escalation
Free text response	0.1	0.8	0.00	

CONCLUSIONS

A focused nursing-centred training can increase nursing staff knowledge and confidence about managing patients with hypospadias. A sustainable mode of training delivery is needed to ensure training of newly qualified nurses.

09:48 - 09:51

S15-9 (OP)

A SIMPLE NOVAL TRICK TO PREVENT THE DRESSING FROM STOOL CONTAMINATION IN CHILDREN UNDERGO HYPOSPADIAS SURGERY: HYPOSPADIAS PAD

Abdurrahman ONEN

Dicle University Medical Faculty, Pediatric Surgery and Urology, Sur, TURKEY

PURPOSE

The clinical indication of a specific dressing is based upon the protective function and mechanical barrier of the tissues against contamination and reduction of infection in children underwent genital surgery. The correct choice of dressing is still challenging. The most important point is to prevent contamination of the surgical area with stool. We developed a special noval pad to prevent stool contamination in infant under go hypospadias repair.

MATERIAL AND METHODS

It is specially designed for infants who has not toilette training and wear diaper. The size of the this noval pad is 15 x 10 cm and has two adhesive wings each 10 cm. One adhesive wing is attached to perineum and distal part of scrotum, while the opposit wing is attached to the diaper. The adhesive long side of the pad is attached to each leg. We have educated and participated parent regarding this pad. Indications of our hypospadias pad is all kind of genital surgeries include hypospadias, epispadias, bladder exstrophy, burried penis, circumcision etc.

RESULTS

We prospectively used this special genital pad in 221 infants; 124 hypospadias, 13 epispadias, 16 burried penis, 5 bladder exstrophy and 63 circumscicion. We compared this group with 214 control infants who we did not use

this pad that underwent a genital surgery. Stool contamination was observed in 4/221(1.8%) special pad group while it observed in 37/214(17.3%) control group.

CONCLUSIONS

The proposed material (hypospadias pad) seems to be a highly satisfactory alternative in improving post-operative care after hypospadias surgery. Its use is adequate for prevention of stool contamination after all kind of genital surgeries.

09:51 - 09:55

S15-10 (LOP)

★ ROS SCAVENGERS MAY IMPROVE GENITAL SKIN HEALING IN BOYS WITH HYOSPADIAS

Angela LUCAS-HERALD¹, Samra HUSSAIN¹, Kirsty MCGINLEY¹, Rheure ALVES-LOPES¹, S Basith AMJAD², Martyn FLETT³, Boma LEE³, Mairi STEVEN³, Stuart O'TOOLE³ and S Faisal AHMED¹

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PURPOSE

Surgical repair of hypospadias is associated with high rates of surgical complications, including wound dehiscence. Boys with hypospadias have previously been demonstrated to have increased reactive oxygen species (ROS) compared to healthy controls. Our aim was to identify if cell migration and proliferation in genital skin is altered in boys with hypospadias, and whether this can be altered by antioxidants.

MATERIAL AND METHODS

Genital skin (GS) samples were collected from boys undergoing hypospadias repair (cases) or routine circumcision (controls). GS fibroblasts were grown until 80% confluence. Cells were imaged using an EVOS XL Core microscope immediately after a wound was made and 48 hours later, in the presence/absence of the ROS scavenger, Tempol. Cell migration was determined using ImageJ software. Cell proliferation was measured using a commercial Cell Count Kit-8 (Abcam, UK).

RESULTS

Twenty four cases (median age (range) 1.8 (1.2, 6.3) years) and 28 controls (median age 1.6 (1.2, 6.1) years) were recruited. Location of hypospadias were distal in 14 (58%), proximal in 9 (38%) and midshaft in 1 (4%). Boys with hypospadias had impaired cell migration with reduced % wound closure at 48 hours (2.0 fold, $p < 0.0001$) and reduced cell proliferation (1.3 fold, $p = 0.01$). External Masculinisation Score was positively correlated with % wound closure ($r = 0.5$, $p < 0.0001$) and cell proliferation ($r = 0.3$, $p = 0.002$). Exposure to Tempol improved wound closure (1.5 fold, $p = 0.02$) and cell proliferation (1.5 fold, $p = 0.02$).

CONCLUSIONS

There is an association between wound healing and virilisation of the external genitalia in boys. ROS scavengers improve cell migration and proliferation in boys with hypospadias.

09:55 - 10:05

Discussion

S16: HYPOSPADIAS 2

Moderators: Alex Springer (Austria), Antonio Macedo (Brazil)

ESPU Meeting on Friday 19, April 2024, 10:35 - 11:50

10:35 - 10:38

S16-1 (OP)

BEYOND EFFICIENCY: DEVELOPMENT AND VALIDATION OF AN EX-VIVO ORGAN MODEL FOR OBJECTIVE EVALUATION OF SURGICAL SKILLS ACQUISITION OF HYPOSPADIAS RECONSTRUCTION

Tariq Osman ABBAS ¹, Sibel TIRYAKI ², Ali TEKIN ², Nicolas FERNANDEZ ³, Mohamed FAWZY ⁴, Ibrahim ULMAN ⁵, Alp NUMANOGLU ⁶, Ahmed HADIDI ⁴, Iqbal HASSAN ⁷ and Muhammad CHOWDHURY ⁸

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PURPOSE

The assessment of surgical proficiency in the context of hypospadias procedures is crucial for educating novice surgeons. Our goal was to objectively assess individual's technical skills gain following a short hands-on cadaveric supervised Hypospadias training.

MATERIAL AND METHODS

The study utilized a combination of subjective (questionnaires and recorded videos) and objective (surface electromyography (EMG)) methodologies to examine the development of skills following completion of a hands-on urethroplasty course using ex-vivo cadaveric calf penises. The study included a cohort of twenty surgeons with varying degrees of expertise, categorized as novices (n = 11), intermediates (n = 12), and experts (n = 3). Four key skills were assessed: urethral mobilization, dorsal inlay graft harvest and implantation, meatal based flap urethroplasty and dorsal plication. We further employed machine learning methodologies to determine the essential attributes necessary for precise performance assessment.

RESULTS

The identification of skill level was found to be significantly influenced by variables associated with movement complexity. Significant differences were seen in EMG-based metrics, total time, dominant frequency, and cumulative muscle workload among the three skill groups. Additionally, it was observed that nonlinear movement variability characteristics, such as correlation dimension and Lyapunov exponent, exhibited distinct trends among the three skill groups.

CONCLUSIONS

The results of this study indicate that both economy of motion factors and nonlinear movement variabilities are influenced by the level of surgical experience. The utilization of wearable sensor signal analysis has the potential to enable the objective assessment of urethroplasty proficiency at regular intervals during the duration of a training program.

10:38 - 10:41

S16-2 (OP)

CUMULATIVE REOPERATION RATES DURING FOLLOW-UP AFTER HYPOSPADIAS REPAIR

Annaleena ANTTILA¹, Tuija LAHDES-VASAMA¹, Niklas PAKKASJÄRVI² and Seppo TASKINEN²

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PURPOSE

To evaluate cumulative unplanned reoperation rates after hypospadias repair.

MATERIAL AND METHODS

The study included 299 consecutive patients who had surgery before the age of 5 years and who had at least 2 years of postoperative follow-up. Among these patients, 24 were operated on for isolated chordae, 166 for distal hypospadias, 34 for midshaft hypospadias, and 75 for proximal hypospadias. Data on the types of re-operations were collected, and the risk for re-operation was assessed with Kaplan-Meier analysis.

RESULTS

The median age at the time of the primary operation was 1.4 years (IQR 1.1-1.9), with a follow-up duration of 14.4 years (IQR 12.2-15.1). The Nesbit procedure was performed on 100 (33.4%) patients. Unplanned re-operations were performed for 138 (46.2%) patients, with the problem leading to repeat surgery identified during the initial three-month post-operative control in 69 of these patients (50%). The risks of unplanned re-operation at the 5-year and 15-year follow-ups were 37.0% and 49.6% for any re-operation, 14.2% and 18.7% for fistula, 12.3% and 17.1% for urethral stricture, 2.8% and 4.8% for re-curvature, and 17.5% and 24.6% for any other reason (glans dehiscence, unsatisfactory cosmesis, megalourethra), respectively. At the 5-year and 15-years follow-ups, the risk was 17.7% and 22.5% for isolated chordae, 31.2% and 42% for distal hypospadias, 26.8% and 46.8% for midshaft hypospadias, and 61.7% and 71.9% for proximal hypospadias, respectively (Logrank <0.01).

CONCLUSIONS

The risk for unplanned re-operation following hypospadias repair consistently increases with the length of follow-up, even in distal hypospadias. Notably, the most severe cases exhibited a higher risk for re-surgery.

10:41 - 10:44

S16-3 (OP)

INCIDENCE AND TIME TO COMPLICATIONS FOLLOWING HYPOSPADIAS REPAIR: RESULTS FROM A POPULATION BASED RETROSPECTIVE COHORT STUDY, ONTARIO, CANADA 2002-2017.

Noam BAR-YAAKOV ¹, Andrew MCCLURE ², Melody LAM ³, Peter Zhantao WANG ¹, Blayne WELK ² and Sumit DAVE ⁴

1) London Health Sciences Centre, Western University, Surgery and Pediatrics, London, CANADA - 2) London Health Sciences Centre, Western University, Surgery, London, CANADA - 3) London Health Sciences Centre, Western University, ICES Western, London, CANADA - 4) London Health Sciences Centre, Western University, Surgery and Pediatrics (Division of Urology), London, CANADA

PURPOSE

The duration and frequency of follow-up after hypospadias repair is not well described. This study aims to assess this variation in follow-up based on the incidence and time to postoperative complications and investigate predictors of secondary intervention.

MATERIAL AND METHODS

Through a retrospective population-based cohort study, patients who underwent hypospadias repair between April 2002 and March 2017 were analyzed at ICES. Baseline variables included demographics, surgical variables, and a composite variable to capture post-operative complications. The primary outcome was secondary surgical intervention and patients were followed for up for a minimum of 5-years. Regression analyses were performed to predict secondary intervention beyond 2 years of follow-up.

RESULTS

The study included 3349 patients with a mean age of 1.28 years (SD,1.84): 299 (8.9%) were proximal, 1700 (50.8%) were distal, and 1350 (40.3%) were categorized as unknown. A total of 753 (22.5%) patients experienced an early complication within 6-months of repair, including 32 (1.0%) who had a related ER visit. Secondary intervention rate over 5 years was 20.5%: 16.2% for distal, 50.2% for proximal, and 19.5% for unknown. Among these patients, 77.0% overall and 90 % of distal hypospadias had their last intervention within 3 years of surgery. Proximal location (OR=3.8, p<0.001) and post-operative complication (OR=1.39, p=0.02) were associated with intervention beyond 2 years after surgery.

CONCLUSIONS

Results from this study suggest that a minimum of 3 years of follow-up is needed after distal hypospadias repair. Proximal location and post-operative complication are likely to require secondary intervention more than 2 years after surgery.

10:44 - 10:55

Discussion

10:55 - 11:00

S16-4 (VP)

SELEIM'S TOPOGRAPHY-GUIDED ANATOMICAL REASSEMBLY (STAR) FOR THE PENILE HYPOSPADIAS WITHOUT SIGNIFICANT CHORDEE: COMPREHENSIVE ILLUSTRATION AND MIDTERM RESULTS

Hamed SELEIM

Tanta University, Pediatric Surgery, Cairo, EGYPT

PURPOSE

to report a comprehensive illustration of the newly introduced "topography-guided anatomical reassembly" approach for distal penile hypospadias, as well as the mid-term outcomes of an extended series.

MATERIAL AND METHODS

This is a prospective cohort study of all cases presenting to the author's facility with distal penile hypospadias between June 2018 and January 2023. Cases with non-preservable plates (i.e. significant chordee $>30^\circ$), circumcised cases, and redo cases are excluded. The procedure follows the most recently introduced principle of a topography-guided anatomical reassembly approach for distal penile hypospadias, that is, the zipping-up of the unfolded spongiosal plate.

RESULTS

During the study's inclusion period, 97 boys with distal hypospadias were enrolled. The hypospadias meatus was coronal or sub-coronal in 35 boys, distal penile in 45 boys, and mid-penile in 17 boys. The mean age at the time of the surgical correction was 8.11 months (within the range of 6-32 months). The operative time was 40-90 min (a mean of 66.7 min). Five urethrocutaneous fistulae were reported after a mean follow-up of 24.2 months: three glanular and two sub-coronal. Meatal disfigurement with a downward stream deviation was reported in two more patients. Two more occurrences of meatal recession were identified, yet surgical correction was not necessary. The overall reoperation rate was settled at 7%.

CONCLUSIONS

The proposed topography-guided anatomical reassembly technique for distal hypospadias is shown to be simple, effective, and superiorly feasible at mid-term follow-up of the given series. Maintaining the integrity of the well-developed penile tissues (such as the glans penis and lateral shaft skin) eliminates the possibility of unforgivable tissue damage and challenging revision procedures.

11:00 - 11:05

S16-5 (VP)

★ THE GUDPLAY TECHNIQUE: A SHIFT IN THE PARADIGM OF GLANS RECONSTRUCTION BY MIDSHAFT AND PENOSCROTAL HYPOSPADIAS: INTRODUCING A NEW APPROACH (VÍDEO)

Gilmar DE OLIVEIRA GARRONE, Sérgio LEITE OTTONI, Marcela LEAL DA CRUZ, Raul GARCIA ARAGON, Rafael JORDAN BALLADARES, Taiane ROCHA CAMPELO, Renata ALVES CORREA, Emanuelle LIMA MACEDO and [Antonio MACEDO JR.](#)

FEDERAL UNIVERSITY OF SÃO PAULO, NUPEP/CACAU PEDIATRIC UROLOGY, São Paulo, BRAZIL

PURPOSE

Midshaft and penoscrotal hypospadias with moderate ventral curvature can be treated in one stage with preservation of urethral plate by a Duplay tubularization, an onlay flap or also an inlay graft and tubularization. After gaining 5 years experience with the GUD technique: glanular urethra disassembly for coronal and subcoronal hypospadias, we present the GUDplay technique, incorporating the Duplay tubularization of the plate till the coronal area and disassembling the glans aggressively, to treat the curvature and refurbish the glans and down rotating it (GUD).

MATERIAL AND METHODS

After penile degloving with an U-shape incision at the urethral plate, we dissect spongy flaps laterally to the plate as suggested by Bhat. We then disassembly the distal urethra or in this case the urethral plate to the corpora and completely detach the glans from the corpora. The glans is opened in an inverted Y incision in two wings, producing great mobility of the glans. Two anchor sutures are made with 5.0 PDS bringing the urethral plate cranially. A 6.0 PDS non interrupted running subepithelial suture is made to tubularize the plate and create the neourethra, followed by the spongioplasty and a dartos second barrier layer. The urethra is sutured to the glans and the wings are joined in the midline by 6.0 PDS sutures. An indwelling 10Fr silicone tube is left for 7-10 days

RESULTS

Patient had an excellent outcome without any complications

CONCLUSIONS

We believe that the GUDplay technique may be a promising alternative to midshaft and some penoscrotal hypospadias adding the GUD technique principles to the classic Duplay technique.

11:05 - 11:08

S16-6 [WITHDRAWN] SIMPLIFIED PATIO TECHNIQUE FOR URETHROCUTANEOUS FISTUL AFTER HYPOSPADIAS REPAIR: EXPERIENCE FROM A TERTIARY REFERRAL HOSPITAL

11:08 - 11:16

Discussion

11:16 - 11:19

S16-7 (OP)

TWO-STAGE REPAIR FOR RE-DO HYPOSPADIAS: RESULTS OF OVER 5-YEAR FOLLOW-UP

Orhan ZİYLAN ¹, İsmail SELVİ ², M. İrfan DÖNMEZ ¹, Barış AYDIN ¹ and Tayfun OKTAR ¹

1) İstanbul University, İstanbul Faculty of Medicine, Department of Urology, Division of Pediatric Urology, İstanbul, TURKEY - 2) İstanbul University/Faculty of Medicine, Department of Urology, Division of Paediatric Urology, İstanbul, TURKEY

PURPOSE

We aimed to analyze long-term clinical outcomes in patients underwent two-stage re-do hypospadias repair.

MATERIAL AND METHODS

Files of 122 boys who underwent two-stage surgery for re-do hypospadias repair between June 2001 and October 2017 with >5 years of follow-up were retrospectively reviewed. Demographics, preoperative clinical characteristics, postoperative complications, and the hypospadias objective scoring evaluation (HOSE) score at the last clinical visit were noted.

RESULTS

Patients have undergone median 2 (range 1-8) prior surgeries. Median age at the time of first-stage and second-stage were 72 (range 12-288) and 82.8 (range 18-296) months, respectively. Of those, 44.3% had penoscrotal hypospadias, 9% had scrotal or perineal hypospadias, while 46.7% had mid penile hypospadias but a poor urethral plate/uncorrectable chordee. Topical dihydrotestosterone was used in 10.7% of cases due to glans diameter <14mm. Lower lip (78, 63.9%), upper lip (9, 7.4%) cheek (14, 11.5%), and a combination of cheek and lower lip (21, 17.2%) mucosae were used as the graft.

After median 121 (range 66-204) months of follow-up, overall complication rate was 36.8%, while 23.8% underwent another repeat intervention. The most common complication was glans dehiscence (12.3%) followed by urethrocutaneous fistula (10.7%), meatal stenosis (10.7%), residual chordee (6.6%), buried penis or skin deformities (6.6%), distal urethral dehiscence (4.9%), graft contracture after first-stage (2.5%), urethral stricture (1.6%), complete urethral dehiscence (0.8%), and urethral diverticulum (0.8%). Median time from second-stage to the repeat intervention for complications was 10 (range 4-30) months. According to HOSE score, 87.7% of the parents denoted functional and cosmetical acceptable outcomes.

CONCLUSIONS

Two-stage repair is a viable alternative for the most challenging hypospadias cases with almost 90% of parental satisfaction and a quarter needing reintervention.

11:19 - 11:22

S16-8 (OP)

★ AN OBJECTIVE ANALYSIS OF OVER 600 PAIRED GRAFT MEASUREMENTS: PREPUTIAL VS ORAL RESULTS

Nicol BUSH ¹, Hazem MOSA ² and Warren SNODGRASS ¹

1) Hypospadias Speciality Center, The Colony, USA - 2) Jenny Lind Children's Hospital, Paediatric urology, Norwich, UNITED KINGDOM

PURPOSE

Determining urethroplasty graft health and survival has been subjective, making comparative analysis difficult. We used standardized measurements to determine graft area and compared outcomes in primary (prepuce) and reoperative (oral) graft repairs.

MATERIAL AND METHODS

Consecutive proximal hypospadias patients had graft measurements prospectively recorded from 2014-2023. Graft length and widths at the corona, midgraft, and urethrostomy were determined at placement and at tubularization performed ≥ 6 months later. Graft area and % graft contracture were calculated, with $\geq 50\%$ loss considered graft failure. Perioperative Hyperbaric Oxygen Therapy (HBOT) was recommended on a protocol. Primary and reoperative (\pm HBOT) outcomes were compared using unpaired t-test and Chi-square.

RESULTS

627 grafts were analyzed, with results summarized (Table). Primary prepuce grafts had 7% overall graft area contraction with 9% graft failure. Reoperations without HBOT had significantly more contraction (18%) and graft failure (15%, $p=0.014$). Despite numerous failed prior surgeries, oral grafts treated with HBOT had similar contracture rates (9%) to primaries, and less graft failures (5%, $p=0.041$).

	Prepuce(n=298)	Oral without HBOT (n=81)	Oral with HBOT (n=248)
Median Age in months (+/-SD)	18 (+/-34)	95 (+/-160)	146 (+/-183)
Median No. previous surgeries (+/-SD)	0.1(+/-0.5)	1.6 (+/-1.0)	3.1 (+/-1.8)
HBOT n (%)	41(14%)	0 (0%)	248 (100%)
Mean % contracture (+/-SD)	7% (+/-30%)	18% (+/-31%)	9% (+/-27%)
Graft failure n (%)	27 (9%)	12 (15%)	12 (5%)

CONCLUSIONS

Objective graft measurements found similar graft contraction and low rates of failure in primary prepuce grafts and reoperative oral grafts when HBOT was used. Reoperations without HBOT had more graft contracture and graft failures.

11:22 - 11:25

S16-9 (OP)

★ GRAFT AND SKIN COMPLICATIONS IN 342 PRIMARY PROXIMAL HYPOSPADIAS REPAIRS: STAG VS STAC

Warren SNODGRASS and Nicol BUSH
Hypospadias Specialty Center, Frisco, USA

PURPOSE

STAC (3-stage) graft repair seeks to improve graft and skin healing compared to STAG (2-stage). We report respective graft and skin complications in 332 consecutive primary proximal hypospadias patients.

MATERIAL AND METHODS

220 STAG repairs were completed from 2014-2020. After mid-2020, all patients instead underwent STAC. All had ≥ 30 degrees ventral curvature straightened by 3 ventral corporotomies. Nearly all had prepuce grafts,

with dimensions measured prospectively at placement and the subsequent procedure. Graft complications were $\geq 50\%$ loss requiring patch or total regrafting, or less contracture managed by inlay graft or notched transection of focal scar. Skin complications were need for scrotal flaps or Cecils to close the penile shaft, or a subsequent operation to revise scars or excise them with skin grafting.

RESULTS

The groups had similar extents of hypospadias, mean age, and glans width; STAC had greater mean ventral curvature (73 vs 57 degrees, $p=0.0001$). Graft contractures occurred in 50(23%) STAG (37 patch or regrafting, 3 inlays, 10 scar releases) versus 8(7%) STAC (6 patch or regrafting, 1 inlay, 1 scar release), $p=0.0001$.

Skin complications developed in 17(8%) STAG (2 scrotal flaps, 8 Cecils, 5 revisions, 2skin grafts), vs 10(8%) STAC. All STAC complications occurred after stage 1 in association with other congenital skin anomalies (penile torsion, single midline humps), and were corrected before urethroplasty grafting. No STAC required scrotal flaps, Cecils or external skin grafts.

CONCLUSIONS

Despite having worse ventral curvature, only 1 of every 14 STAC patients had graft complications, versus 1 of every 4 STAG patients. The rate of overall skin complications was similar, but were less severe in STAC and did not require non-penile flaps or external skin grafts, which can impact aesthetic outcome. These data support straightening curvature and correcting ventral skin deficiency, then allowing for healing before urethroplasty grafting.

11:25 - 11:36
Discussion

11:36 - 11:41
S16-10 (VP)

EXTENDING THE GRAFT HARVESTING AREA IN A SEVERE PENOSCROTAL HYPOSPADIAS: THE RAINBOW TECHNIQUE

Yaqoub JAFAR ¹, Ziyad ALZHRANI ¹, Melissa MCGRATH ¹, Bruno LESLIE ¹ and Luis H. BRAGA ²

1) McMaster University, Surgery-Urology, Hamilton, CANADA - 2) McMaster University - McMaster Children's Hospital, Department of Surgery / Urology, Hamilton, CANADA

PURPOSE

In this video, we introduce a novel technique for preputial skin harvesting in cases of proximal hypospadias where a longer graft is needed.

MATERIAL AND METHODS

A 2-year-old was referred for penoscrotal hypospadias. Examination revealed a scrotal meatus, bifid scrotum, and severe chordee (>90) with descended testicles. The karyotype was 46XY and the hormonal profile was normal.

During the first stage, chordee was corrected by dividing the urethral plate and 3 transverse corporotomies, creating a ventral penile defect of 6 cm to be grafted. As the inner prepuce diameter was only 4 cm long, we could not perform the conventional rectangular preputial skin graft technique. A semicircular rainbow-like incision was marked on the dorsal preputial hood, with a minimum of 2 cm from the foreskin edge, creating a graft harvesting area of 7 cm, which was used to cover the entire penile ventral surface.

RESULTS

The tie-over dressing was removed on postoperative day 4. 6-month follow-up showed a healthy graft with no contraction. The child is awaiting second-stage hypospadias repair.

CONCLUSIONS

This technique serves as a valuable alternative when the conventional rectangular preputial graft harvest falls short in providing sufficient graft length for the first-stage hypospadias repair eliminating the need for buccal mucosa.

11:41 - 11:44

S16-11 (OP)

COMPARING TAIPEI TECHNIQUE WITH DIFFERENT FLAPS IN PENILE CURVATURE CORRECTION

Cynthia Sze-Ya Ting TING and Pei-Yeh CHANG

Chang Gung Memorial Hospital, Pediatric Surgery, Taoyuan, TAIWAN

PURPOSE

In this study, we examine the effectiveness of TAping Inbetween PE Nile Incisions(TAIPEI) for correcting penile curvature following transection of urethral plate(UP) in conjunction with two different staged flap techniques and report the follow-up data.

MATERIAL AND METHODS

Our prospective study included patients with primary hypospadias who underwent two types of staged flap repairs involving UP transection and TAIPEI. Curvature angles were objectively measured during artificial erection after degloving, after UP transection, and at stage 2. After stage 2, curvature assessments were conducted either with natural erection photos or artificial erection whenever patients returned to the operating room.

RESULTS

We analyzed data from 64 eligible patients. In the first stage, all patients underwent UP transection alone. Of these, 19 patients received Transverse Preputial Island Flap, while 45 patients underwent Byar's Flap. The median curvature angle was 55° after degloving, 52° after UP transection, and 0° in the second stage after TAIPEI. There was no significant difference in the success rate of curvature correction between the two flap groups. Nineteen patients had their curvature reassessed under artificial erection at least six months post-second stage, all but 4 patients had curvature less than 30°. With an average follow-up duration of 19.3 months after stage 2, no significant recurrent/persistent curvature was observed based on available data.

CONCLUSIONS

TAIPEI technique following UP transection alone corrects curvature in either transverse preputial island flap or Byar's flap. Long-term follow-up is indicated for these patients to comprehensively assess the durability of this approach.

11:44 - 11:50

Discussion

S17: GENITALIA

Moderators: Barbara Ludwikovski (Germany), Marie Andersson (Sweden)

ESPU Meeting on Friday 19, April 2024, 12:20 - 13:10

12:20 - 12:23

S17-1 (OP)

PEDIATRIC OBESITY AND DEVELOPMENT OF THE PENIS AND TESTIS

Jae Min CHUNG ¹, Sang Don LEE ¹ and Won Yeol CHO ²

1) Pusan National University Children's Hospital, Urology, Yangsan, REPUBLIC OF KOREA - 2) Dong-A University Hospital, Urology, Busan, REPUBLIC OF KOREA

PURPOSE

Pediatric obesity is increasing in many countries as socioeconomic status improves and the consumption of high calorie food increases. Thus, effect of obesity on genital development is an important topic. This study aimed to determine relationships of BMI with penile parameters and testicular volume in pediatric patients without penile or testicular abnormalities.

MATERIAL AND METHODS

Data from 1,499 pediatric patients from our center were analyzed. Patients with penile or testicular abnormalities were excluded. Their age ranged from 2 to 18 years. These patients were divided into two groups based on their BMI: normal BMI (< 85th percentile) and high BMI (≥ 85th percentile). Factors used in analysis included age, anthropometric indicators, baseline penile length (BPL), stretched penile length (SPL), penile circumference, and average testicular volume. These same parameters were analyzed for different age groups.

RESULTS

Pediatric patients with normal BMI showed longer BPL and SPL than patients with high BMI ($p < 0.05$). However, penile circumference and average testicular volumes showed no significant difference between the two groups. BPL was significantly longer in the normal BMI group starting at ten years of age. SPL was significantly longer in the normal BMI group starting at eleven years of age.

CONCLUSIONS

Pediatric obesity was confirmed to affect penile length during puberty in this study. However, no significant relationship was found between BMI and testis volume in any age. Results of this study suggest that obesity might affect the metabolism of testosterone, which in turn can affect penile length and growth during puberty.

12:23 - 12:26

S17-2 (OP)

FACTORS THAT AFFECT HCG STIMULATION TEST IN PREPUBERTAL CHILDREN WITH MICROPENIS OR SMALL TESTIS

PURPOSE

Micropenis is a condition that affects the quality of life in men due to its association with low self esteem. Thus, it is important to treat this condition early in childhood. This study aimed to investigate the factors that influence the results of hCG stimulation test in pediatric patients with micropenis.

MATERIAL AND METHODS

A total of 346 boys with micropenis (less than -2.0 SD) between the ages of 5 to 12 years, without any chromosomal anomalies and other genital disorders, were examined retrospectively. Body mass index (BMI) with body weight and height, penile parameters including baseline and stretched penile length (BPL, SPL respectively), and penile circumference (PC), and average testicular volumes were measured before the first injection. These patients were divided into two groups based on the hCG stimulation test results : low group (testosterone increase rate <4 fold) and high group (testosterone increase rate ≥4 fold).

RESULTS

The mean age of patients was 113.0±25.5 months (50-156 months). In hCG stimulation test, 244 patients (70.5%) showed testosterone increase by greater than or equal to 4 fold. Age and BMI was found to be significantly higher in the low response group (p=0.001), while SPL was significantly longer in the high response group (p=0.003). Testis volume showed no significant difference between 2 groups.

CONCLUSIONS

Our results suggest that old age, obesity and penile size before injection of hCG have an effect on the results of hCG stimulation test. Thus, our study can help physicians when making therapeutic decisions for pediatric micropenis patients.

12:26 - 12:32

Discussion

12:32 - 12:35

S17-3 (OP)

GETTING GUIDELINES TO WORK: DSDCARE IN GERMANY

Lutz WÜNSCH ¹, Susanne KREGGE ², Raimund STEIN ³, Felicitas ECKHOLDT ⁴, Andreas HEIDENREICH ⁵ and Ulla DOEHNERT ⁶

1) University of Lübeck, Pediatric Surgery, Lübeck, GERMANY - 2) Essen City Hospital, Essen, GERMANY - 3) University of Mannheim, Department of Urology, Mannheim, GERMANY - 4) University Hospital Jena, Department of Pediatric Surgery, Jena, GERMANY - 5) University of Lübeck, Epidemiology, Lübeck, GERMANY - 6) UKSH, Department of Paediatrics, Lübeck, GERMANY

PURPOSE

Medical care for persons with DSD in Germany is characterized by both over- and under-treatment, with a wide fluctuations in quality. In 2016, an interdisciplinary guideline has been agreed but was adopted inconsistently. In order to improve the structural and procedural aspects of care, a network with 9 centers was founded. A center-based implementation and evaluation study was carried out from 2021 to 2023. A surgical work group developed information materials for patients and medical staff and agreed on outcome parameters and quality indicators.

MATERIAL AND METHODS

Outcome parameters and quality indicators were developed during interdisciplinary discussions, including representatives from patient support groups. The inclusion criteria were a DSD diagnosis according to the Chicago classification and consent to participate. Then the resulting criteria were applied and the overall process subjected to quality control.

RESULTS

During the study period, 596 patients were included. 108 surgical procedures were carried out on 97 patients. Interdisciplinary case conferences between treatments centers took place in 35 cases. Peer counselling was offered to all, 4 families accepted. 53 of 108 received psychological counseling. Eight surgical complications were recorded. Follow-up examination protocols are currently available for 37 patients. Further results are under evaluation.

CONCLUSIONS

Our study represents the first attempt to establish a guideline based nationwide framework of care for persons with DSD in Germany. Patient support groups and quality control systems were integrated from the beginning. It became apparent that the surgical centers care for different patient populations and that their activities complement each other well. This was particularly advantageous for highly specialized care issues and for the transition of children and adolescents with DSD to adult medicine.

12:35 - 12:38

S17-4 (OP)

HOW TO MANAGE PATIENTS WITH DSD IN A LOW-INCOME COUNTRY

Daisy AKURETE, Cecilia PAOLI, John YIGA, Beatrice PERCIVALE, Pierpaolo OCCORSO, [Uchenna KENNEDY](#) and Rita GOBET

Children's Surgical Hospital Entebbe, Entebbe, UGANDA

University Children's Hospital Zurich, SWITZERLAND

PURPOSE

We developed an algorithm for management of DSD patients in a sub-Saharan African country with minimal endocrinology/genetic evaluation and report our experience.

MATERIAL AND METHODS

All patients were clinically and sonographically assessed. Endocrinological review was recommended. Exploratory Laparotomy and Cysto-Vaginocopy was performed according to international guidelines. Psychosocial assessment was implemented.

RESULTS

Between 4/2021- 3/2023 63 patients were assessed. Sex assigned by the families was 27 female, 33 male and 3 uncertain. Age ranged from 3d- 16 7/12, EGS from 1-7.5 (n=12). Karyotyping (n=14) and endocrinological assessment (n=7) and treatment was impossible in almost all cases. US in 54 patients with non palpable gonads was consistent with CAH in 19 patients. Laparotomy and biopsies allowed a more precise diagnosis in the other patients.

Diagnosis	n	Sex assigned	Management
CAH	19	All female	-
Ovotesticular DSD	19	14 m, 3 f, 2 uncertain prognosis	Masc.surgery 10 including 2 mastectomies and oophoro-hysterectomies 2 pat are on Testosterone suppl.
Mixed gonadal dysgenesis	5	5 m	Masc. surgery 5 including gonadectomy/orchidopexy
Perineal hypospadias with Mullerian remnant +/- inguinal testis	8	8 m	Hypospadias repair
CAIS/PAIS	2/2	2f/1 f and 1 m	-/waiting
MRKH	1	1 f	-
Turner	1	1 f	-
Virilizing tumor	1	1 f	Unilat.tumoradnexectomy
Cloaca with clitoromegaly	1	1 f	Repair
Ambiguous genitalia lost to follow up	4	?	-

CONCLUSIONS

Although our follow up is short we conclude that clinical, psychosocial and surgical assessment of DSD patients allows a pragmatic approach to the challenging management of DSD patients in a low income country except for CAH patients. CAH patients need endocrinological management. All patients and families face severe stigmatism and are in desperate need for help.

12:38 - 12:41

S17-5 (OP)

★ COMPARATIVE STUDY OF THE LEGAL FRAMEWORK FOR THE MEDICAL CARE OF PEOPLE WITH DIFFERENCES OF SEX DEVELOPMENTAL (DSD) ACROSS THE WORLD

Nicolas KALFA ¹, Beth DRZEWIECKI ², Luis BRAGA ³, Marco CASTGNETTI ⁴, Jacques BIRRAUX ⁵, Magdalena FOSSUM ⁶, Alexander SPRINGER ⁷, Anka NIEUWHOF-LEPPINK ⁸, Clementine VIALLA ⁹, Françoise PARIS ¹⁰ and Francois VIALLA ⁹

1) *Hopital Lapeyronie, CHU Montpellier and National Reference Center for Genital Development, Montpellier, FRANCE* - 2) *MassGeneral Hospital for Children, Boston, USA* - 3) *McMaster University, Hamilton, CANADA* - 4) *Ospedale Pediatrico Bambino Gesù, Roma, ITALY* - 5) *Hôpitaux Universitaire de Genève, Geneve, SWITZERLAND* - 6) *Karolinska Institutet, Stockholm, SWEDEN* - 7) *Medical University Vienna, Vienna, AUSTRIA* - 8) *University Medical Center Utrecht, Utrecht, NETHERLANDS* - 9) *Université de Droit de*

PURPOSE

Some countries have introduced legislation to regulate medical practices regarding DSD. We performed an international comparative law study to better understand how to integrate our medical decisions into these regulations.

MATERIAL AND METHODS

With an international medical law research unit 1- we extracted legislative texts, decrees, ministerial recommendations from different countries 2- we sent a questionnaire to surgeons caring for DSD-children to understand the medical decision-making procedures.

RESULTS

Data from 19 countries and 8 US states were analyzed. Legislation was enacted in only 6 countries and ministerial orders or case-law were issued in 6. Legislation is still in preparation in 11 countries while 4 have none. Laws range from a ban on surgery (Malta, Iceland) to the establishment of a multidisciplinary decision-making circuit in case of medical necessity. The decision is made at the local level (14 cases: Belgium, Italy...), at the national level (8 cases: Nordic countries, France...) or after a court decision (Germany, Australia). Most countries recognize the person's consent as essential and the parents' decision cannot replace it (23/27). Age of consent varies from 5 to 18 years but most texts do not stipulate clear limits or defer to the child's maturity. Risks of sanctions for practitioners are most often unspecified, of a professional medical board nature (n=8) or rarely criminal (n=2). Posterior hypospadias are included in this process in 61% of cases, either systematically or when non isolated (Switzerland, Australia, France).

CONCLUSIONS

Rarely has a medical activity been subject to such legislative framework while medical data and long-term studies remain sparse. This illustrates the special position pediatric urologists occupy at the interface of society, law and scientific knowledge and profoundly changes the way we practice, think and make therapeutic decisions.

12:41 - 12:44

S17-6 (OP)

★ IMPACT OF THE CREATION OF NATIONAL DSD REFERENCE NETWORK IN THE MANAGEMENT OF GERMINAL TUMOR RISK IN DSD PATIENTS

Amane-Allah LACHKAR ¹, Frédérique DIJOURD ², Pierre MOURIQUAND ¹, Valeska BIDAULT ¹, Patricia BRETONES ³, Aude BRAC ⁴ and Daniela GORDUZA ⁵

1) Hôpital Femme Mere Enfant, Department of Pediatric surgery and urology, Bron, FRANCE - 2) Hôpital Femme Mere Enfant, Department of Pathology, Bron, FRANCE - 3) Hôpital Femme Mere Enfant, Department of Pediatric Endocrinology, Bron, FRANCE - 4) Hôpital Louis Pradel, Department of Endocrinology, Bron, FRANCE - 5) CHU Saint-Etienne, Department of Pediatric surgery and urology, Saint Priest En Jarez, FRANCE

PURPOSE

To assess the impact of DSD Reference Network creation in France (2006) on the occurrence of the germinal tumor in sample of gonadectomies for DSD patients.

MATERIAL AND METHODS

Retrospective monocentric study including DSD patients who underwent gonadectomy between 1990-2005 (group 1), and 2006-2022 (group 2).

Gonadoblastomas and dysgerminomas were considered as pathological lesions. Data collected: Demographics, DSD diagnosis according to Chicago classification, indication of gonadectomy, imagery, histology, follow up. Statistics: Descriptive and univariate analysis.

RESULTS

We included 142 gonads from 75 patients (whose 62 raised as girls) with a median follow-up of 17,2 years. The karyotype was 46 XY for 53 (74,7%), 46XX-SRY+ for 1 (1,3%) and 21 patients (28%) had gonadal mixt dysgenesis.

Before 2006, the mean age at surgery was significantly lower (42,4 months group 1 vs 121,8 months group 2; $p < 0,01$) and patients had less pathological lesions (9,1% group 1 vs 30,9% group 2; $p = 0,021$) since the gonadectomies were significantly more systematic (72,7% group 1 vs 16,67% group 2; $p < 0,01$),

Imagery allow the preoperative diagnosis only in two cases.

Pathological lesions were present in 21 (14,8%) gonads in 15 patients: 12 (57,1%) were gonadoblastomas, 9 (42,9%) were dysgerminomas.

Patients with lesions had sex chromosome DSD (3), complete (9) and partial (3) gonadal dysgenesis. We regret 2 deaths due to dysgerminomas (DSD was unknown before tumor discovery)

CONCLUSIONS

Since the creation of the DSD Reference Network, gonadectomy decision is taken later in life, after national multidisciplinary staff allowing a better acceptance of gonadal surgery but with higher risk of germinal tumor.

12:44 - 12:58

Discussion

12:58 - 13:01

S17-7 (OP)

TRANSITION OF CARE OF DSD PATIENTS RAISED AS FEMALES: OUR PROPOSAL

Arianna LESMA¹, Federica PASSARELLI² and Andrea SALONIA²

1) Ospedale San Raffaele, Urology, Milano, ITALY - 2) IRCCS SAN RAFFAELE, Urology, Milano, ITALY

PURPOSE

A multidisciplinary management is crucial for the transition of DSD patients from pediatric to adult healthcare system. This transition represents an emerging issue and to our knowledge a standardized protocol does not exist. Aim of our study is elaborate a protocol of transitional care for these demanding patients in order to improve their clinical outcomes and quality of life.

MATERIAL AND METHODS

Our transitional care starts when patients are close to menarche. The program includes 4 steps: 1) patient identification; 2) joint visit with pediatric and adult team: 3) day hospital to perform urethrovaginostomy, endocrinological evaluations and constructed interviews 4) transitional care to adult multidisciplinary team, composed of adult gynecologist, endocrinologist and psychologist.

RESULTS

Of 139 DSD patients raised as female followed at our Institute, a cohort of 48 patients entered transitional care program. Major complaints were: vaginal stenosis (38%), psychological support (25%), poor endocrinological management (16%), LUTS (11%), unsatisfied cosmetic results (8%), obesity (8%). Vaginal stenosis was managed by adult gynecologist with at home dilatations (22%) / surgery (50%) / watchful waiting (28%).

CONCLUSIONS

We have explored main needs expressed by these patients and examined the challenges encountered in the pathway of care. Our investigation allowed to establish how to allocate time and resources, understand how to schedule a dedicated agenda, identify the composition of the multidisciplinary team, involving both pediatric and non-pediatric specialists, and outline a feasible protocol of transition of care with the goal of improving their quality of life.

13:01 - 13:04

S17-8 (OP)

A NOVEL MODIFICATION FOR CAH CASES WITH HIGH CONFLUENCE: ANTERIOR SAGITAL TRANSRECTAL APPROACH (ASTRA) WITH ANTERIOR PERINEAL FLAP

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1) Marmara University School of Medicine, Department of Pediatric Surgery, Division of Pediatric Urology, Paediatric Urology, Istanbul, TURKEY - 2) Marmara University School of Medicine, Department of Pediatric Surgery, Division of Pediatric Urology, Pediatric Urology, Istanbul, TURKEY

PURPOSE

Most challenging cases during urogenital sinus (US) mobilization (USM) are patients with high vaginal confluence. The most important measurement is urethral length which is usually accompanied with long common channel. In cases with short urethra we prefer ASTRA procedure with a novel modification. The aim of this paper is to present this novel modification of ASTRA.

MATERIAL AND METHODS

Cases with urethra shorter than 1.5 cm was selected to perform this procedure. Cliterolaboplasty was performed as a first session. In the second session, procedure started in the lithotomy position with partial USM. Then the

patient was turned to prone position. Anterior wall of the rectum was opened in the midline. In classical ASTRA procedure, midline incision is performed from anorectum till the orifice of the US with splitting midline totally. In our modification, we performed this splitting partially with preserving anterior perineal flap. The US was pulled from this incision and under excellent exposure vaginal confluence dissected. Vagina was separated from the sinus and sinus was repaired. Further dissection was performed for vaginal pull though. Proximal part of the sinus was used as urethra, distal part of it was opened dorsally and fold. US flap was used to augment anterior wall of the vagina and perineal flap was used to augment the posterior wall of the vagina.

RESULTS

This procedure was performed on two patients with CAH, aged 3.5 and 8, without complications. Postoperative follow up period was 31 and 14 months

This procedure provides a chance to use the perineal flap to augment the distal of the vagina which is frequently narrow. In original ASTRA there is not such chance for perineal flap. The technique will be explained in video if accepted.

CONCLUSIONS

It is a novel and usefull modification of ASTRA, without splitting perineal body totally with preserving perineal flap.

13:04 - 13:10

Discussion

S18: TIPS & TRICKS

Moderators: Emilio Merlini (Italy)

ESPU Meeting on Friday 19, April 2024, 13:10 - 13:45

13:10 - 13:15

S18-1 (T&TP)

BLADDER NECK CLOSURE: MY PREFERRED APPROACH TO ACHIEVE CONTINENCE IN NEUROGENIC BLADDER WITH LOW DLPP AND BLADDER EXSTROPHY

Antonio MACEDO JR.

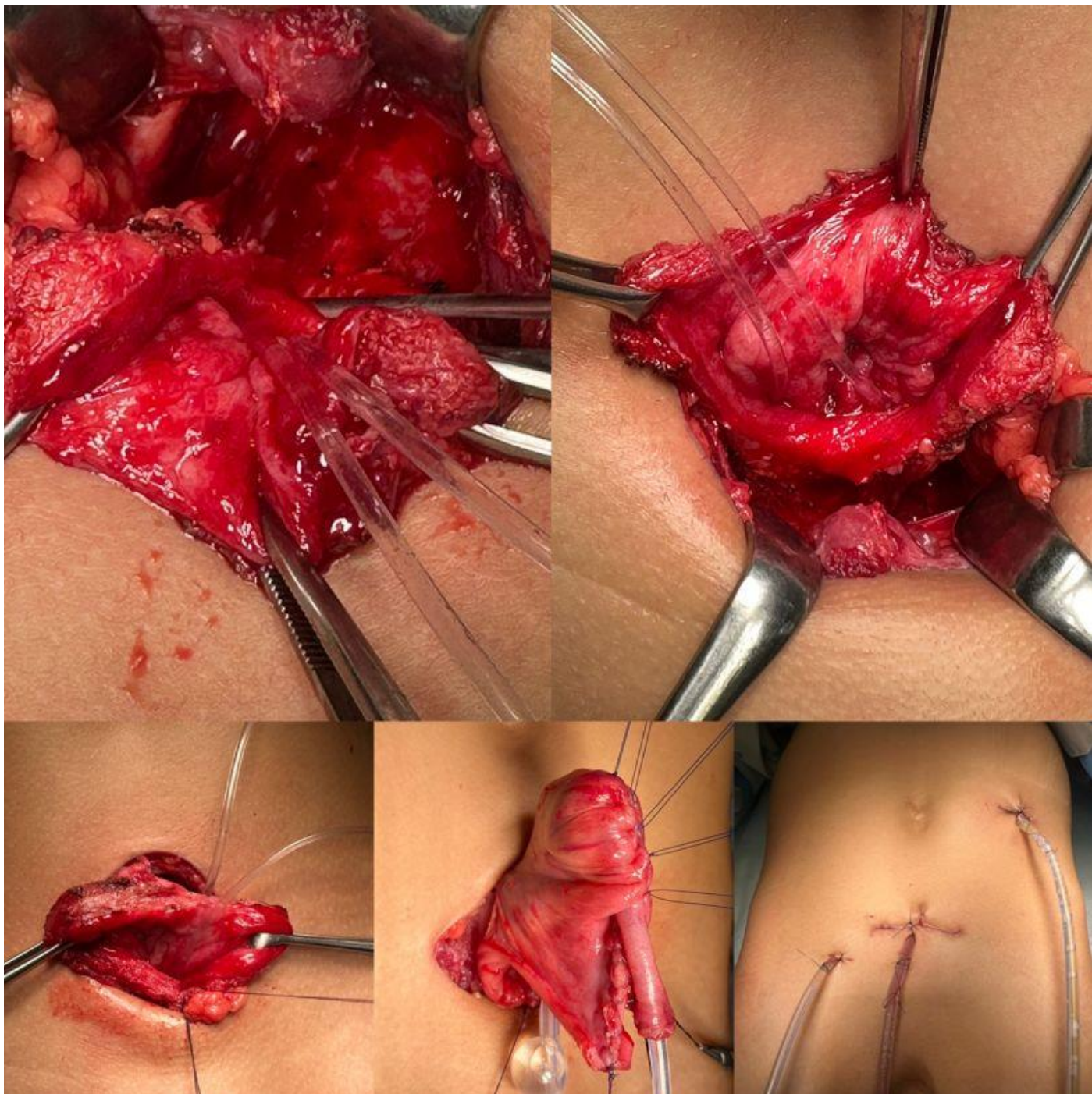
Federal University of São Paulo, Pediatrics/ Pediatric Urology, São-Paulo, BRAZIL

INTRODUCTION

Urinary incontinence due to urethral sphincter insufficiency and for later surgery after initial bladder exstrophy closure is a major challenge in pediatric urology. We want to present our strategy for such cases aiming for the highest probability of success possible.

METHODS

When facing the two previous described clinical conditions we explain to families that a combined procedure of bladder augmentation and bladder neck resistance surgery is always required. We then present them the expected results with bladder neck plasty (50%) and bladder neck closure (95%). My own experience supports preference of second procedure according to patient's and surgeon practice. We start by dissecting the anterior bladder wall and opening it in midline, accessing the trigonal area and bladder neck from inside. We place and fixate two 4 Fr plastic tubes in ureteral meatus for security and identification of the transection plane. A Foley tube allows secure circumcision of the proximal urethra at bladder neck level. We then define the two flaps of bladder posterior wall to be dissected from the Denonvilliers flaps with electrocautery and to be lifted up until they are fully mobile and not tensioned. Next step is to close the bladder neck with two planes of vicryl 3.0 sutures and get the transected bladder ready for a clam enterocystoplasty. Since 1998 we have used the Macedo catheterizable ileum reservoir in combination with it. The same principle is applied to bladder exstrophy (Macedo A Jr et al, J Pediatr Urol. 2020 Aug;16(4):506-507)



RESULTS

In a recent review from just part of our personal experience in a non-teaching hospital (in publication), we identified 12 cases similar to the ones demonstrated above in the picture with 100% of urethral continence.

CONCLUSIONS

We are therefore convinced that bladder neck closure associated with enterocystoplasty with abdominal stoma is the best approach for urinary incontinence associated with low DLPP. In a recent publication of our series of incontinent neurogenic patients after in-utero MMC closure we have also demonstrated the natural history of this devastating condition (In utero myelomeningocele repair: The natural history of patients with incontinent pattern (sphincteric deficiency: leakage below 40 CMH20).

Macedo A Jr et al: Neurourol Urodyn. 2020 Nov;39(8):2373-2378)

BLADDER NECK CLOSURE WHEN ASSOCIATED WITH BLADDER AUGMENTATION: THE USE OF THE INTESTINAL SEGMENT FOR A SAFE CLOSURE

Alaa EL-GHONEIMI, Annabel PAYE-JAOUEN, Amane-Allah LACHKAR and Matthieu PEYCELON

Department of pediatric surgery and urology, National Reference center for Rare Urinary Tract Malformations (MARVU), University Hospital Robert Debre, APHP, University of Paris, Paris, FRANCE

OBJECTIVES

Bladder Neck closure is rarely indicated in children to treat urinary incontinence. Post-operative fistula or re-opening are still major complications. We describe here our preferred method for BNC when associated with bladder augmentation using part of the intestinal segment for the closure.

METHOD

We describe step by step the procedure in a nine-year-old male born with bladder exstrophy. He had already five bladder surgeries including two failed cervicoplasties. He was incontinent and had a large pubic fistula and 30ml bladder capacity. The decision was to perform bladder neck closure, bladder augmentation and Mitrofanoff channel.

Bladder augmentation was a W-configuration ileal segment.

The bladder was opened on the midline in a bi-valve pattern. The posterior wall of the bladder was incised then dissected to have free 1 cm edge. The urethra was not closed. The de-tubularized W-configuration ileal segment was sutured to the posterior wall of the bladder. The free edge at the midline of the ileal segment was then sutured directly to the free edge of the posterior wall of the bladder neck with running 4/0 monofilament resorbable suture. A multi-tubularized drain, without suction, was left near to the suture line. The full procedure was done entirely by Robotic-assisted laparoscopy using 4-arms Da Vinci Xi system.

An indwelling catheter through the Mitrofanoff and a suprapubic catheter were left on free drainage for three weeks before starting CIC. The night drainage was maintained for 6 weeks.

RESULTS

At 40 months of follow-up, the patient has no urine leak, CIC (Ch 14) 5 times/day through the Mitrofanoff new-umbilical stoma. The upper urinary tract is normal, and maximal bladder capacity is 500ml.

CONCLUSIONS

Bladder neck closure is a challenging procedure specifically when done in a multi-operated fragile bladder. Incorporating a well-vascularized intestinal segment might have the advantage of improving the healing process of the BNC. This procedure can be done through a robotic assisted approach while duplicating the already known open surgery technique.

"HORSESHOE" BLADDER NECK MOBILIZATION FOR SUCCESSFUL CLOSURE AND AVOIDING POSTERIOR INJURY

Mohan GUNDETI

University of Chicago Medicine, Paed Urology, Chicago, USA

SUMMARY

During robotic bladder neck closure, sharp transection of the bladder neck after identifying the ureteral orifices (UOs) does not allow for proper mobility of the posterior wall of the bladder neck for proper closure. Often there is too much tension and the tissues are not healthy, leading to a rate of dehiscence and leak of about 40%.

We suggest mobilizing the posterior wall of the bladder neck beyond the insertion of the UOs in the shape of a horseshoe. Once this is complete, the posterior wall is then brought anteriorly and the bladder neck is closed above the level of UOs. This will create a new, healthy and dependent area for proper healing of the bladder neck. In addition, we recommend buttressing the anastomosis with omentum if possible or peritoneum, alternatively. This has reduced the leak rate significantly.

Another tip is to avoid creating the plane between the bladder neck and the vagina in girls and rectum in males as there is potential for injury to these posterior strictures in young children. We proceed directly to division of the posterior wall of bladder neck with monopolar cautery layer by layer.

We have performed this with both open and Robotic laparoscopic approaches and will be able to show the video during our presentation.

13:25 - 13:30

S18-4 (T&TP)

ROBOTIC ASSISTED LAPAROSCOPIC BLADDER NECK CLOSURE: TIPS AND TRICKS

Daniel DAJUSTA, Molly FUCHS and Rama JAYANTHI

Nationwide Children's Hospital, Section of Urology, Columbus, USA

ABSTRACT

Robotic-assisted laparoscopic surgery has proven to be a game changer for pelvic surgery, in particular, surgeries in the deep pelvis requiring reconstruction. This is due to the advantages associated with the robot of small instruments that work like the wrist and can easily reach the deep pelvis, providing good dexterity for dissection and reconstruction. Additional benefits include lower blood loss and decreased post-operative pain due to smaller incisions and faster recovery. Robotic radical prostatectomy is a prime example of the many benefits of the robotic technique, as it has now become the preferred surgical method. Recently, the robotic technique has been applied to surgeries in children for urinary incontinence to reconstruct or close the bladder neck, hoping to obtain some of the same benefits. Bladder neck closure is often done after other surgical interventions have failed. Thus, when doing a bladder neck closure, one will likely encounter a scarred previously operated field, making good dissection with meticulous tissue handling imperative. The robotic technique can offer the surgeon precisely what is needed to perform the procedure successfully. In addition, it might provide many of the above-mentioned post-operative benefits. We aim to show tips for this innovative technique, which follows steps like those of the traditional open counterpart.

13:30 - 13:45

Discussion

S19: LOWER URINARY TRACK OBSTRUCTION

Moderators: Seppo Taskinen (Finland), Tony Herndon (USA)

ESPU Meeting on Friday 19, April 2024, 15:05 - 16:15

15:05 - 15:08

S19-1 (OP)

AI-ENHANCED DIAGNOSIS OF POSTERIOR URETHRAL VALVES

Saidul KABIR ¹, Rusab SARMUN ², Elias RAMÍREZ-VELÁZQUEZ ³, Anil TAKVANI ⁴, Muhammad E. H. CHOWDHURY ⁵ and Tariq Osman ABBAS ⁶

1) University of Dhaka, Department of Electrical and Electronic Engineering, Dhaka, BANGLADESH - 2) University of Dhaka,, 2Department of Electrical and Electronic Engineering,, Dhaka, BANGLADESH - 3) Hospital Infantil de México Federico Gómez, Pediatric Urology Department, Mexico, MEXICO - 4) Takvani Kidney Hospital,, Takvani Kidney Hospital, Gujarat, INDIA - 5) Qatar University,, Department of Electrical Engineering, Doha, QATAR - 6) Sidra Medicine, Urology, Doha, QATAR

PURPOSE

Posterior Urethral Valves (PUV) is a major cause of bladder outlet obstruction in boys and is associated with kidney disease. Traditional diagnosis relies on subjective interpretations of imaging techniques, introducing variability. The study proposes an AI-based approach for automated PUV detection from voiding cystourethrography images, aiming to reduce subjectivity and improve accuracy.

MATERIAL AND METHODS

The urethra region was segmented from 183 VCUG images, and a variety of image preprocessing techniques were used to enhance visibility. Urethral ratios were computed by identifying anterior and posterior regions through morphological operations. Data augmentation enriched the training dataset, and multiple segmentation networks were trained. Combining different encoders with UNet and UNet++ architectures was done. A mask combination and postprocessing step was also used to improve segmentation performance.

RESULTS

Dice score coefficient (DSC) is a metric readily used to evaluate segmentation performance. DenseNet201 combined with Unet achieved the best DSC of 66.15, out of all encoder decoder combinations. The optimal cutoff urethral ratio for PUV detection was determined at 2.01. Masks with ratios above and below the cutoff were classified as "PUV" and "Non PUV" respectively, achieving an overall accuracy of 81.52%.

CONCLUSIONS

This study is the first of its kind to enhance Posterior Urethral Valve (PUV) detection in VCUG images through automated segmentation and processing, reducing subjectivity and workload for clinicians. The approach lays the foundation for future research to fully automate VCUG assessment and PUV diagnosis and management. Improved interrater agreement speeds up detection and minimizes diagnostic discrepancies.

"ATYPICAL" PRESENTATION OF LOWER URINARY TRACT OBSTRUCTION: A CASE FOR HEIGHTENED LEVEL OF SUSPICION AND USE OF THE TORONTO NOMOGRAM

Franziska Juliane RICHTER ¹, Hayley GOOD ², Michael E. CHUA ¹, Jin K. KIM ¹, Joana DOS SANTOS ¹, Armando J. LORENZO ¹, Tim VAN MIEGHEM ³, Shiri SHINAR ³ and Mandy RICKARD ¹

1) The Hospital for Sick Children (SickKids), Division of Urology, Toronto, CANADA - 2) University of Toronto, Faculty of Medicine, Toronto, CANADA - 3) Mount Sinai Hospital, Division of Maternal and Fetal Medicine, Department of Obstetrics and Gynecology, Toronto, CANADA

PURPOSE

In absence of "classic" ultrasound features, some cases of lower urinary tract obstruction(LUTO) are misclassified. Herein, we explore the ultrasound features associated with a higher likelihood of a missed prenatal LUTO diagnosis, report postnatal outcomes and validate a previously described risk stratification tool for detection of prenatal LUTO.

MATERIAL AND METHODS

A chart review of pregnancies with prenatally-suspected or postnatally-confirmed LUTO-cases was conducted at a high-risk fetal center and tertiary pediatric center between 2009 to 2022. We excluded fetuses without prenatal ultrasounds, postnatal follow-up or unknown postnatal diagnosis. Ultrasound features of false negative and true positive diagnosed LUTO fetuses were compared to detect predictors associated with a higher risk of a missed diagnosis. The Toronto Nomogram was utilized to predict the probability of LUTO in atypical cases based on initial ultrasound features.

RESULTS

Out of 130 postnatally confirmed LUTO cases, 19 were misclassified prenatally as hydronephrosis(HN), hydroureteronephrosis(HUN), duplication anomalies, MCDK, or renal agenesis (14.6%). Missed LUTO patients had a later gestational age at initial prenatal consult (28 weeks of gestation; IQR 17, 38; $p=0.0018$) and at postnatal management (21.0 days; IQR 5, 1143; $p=0.0199$). The risk of a false negative diagnosis was higher in fetuses with unilateral HUN ($p=0.0130$ and $p=0.0148$) and decreased for fetuses with megacystis or the keyhole sign ($p=0.0022$ and $p<0.0001$). The Toronto nomogram classified 90.7% (117/129) of fetuses correctly as LUTO (probability > 65%) and misclassified (< 30% probability) the remaining 9.3% (12/129). Postnatally, atypical LUTO fetuses required less diversions ($p=0.02$) and no renal replacement therapies.

	False negative(n=19)	True positive(n=111)	p-value
Postnatal deaths(%)	11.1(2/19)	5.4(6/111)	0.3308
IUFD/Stillbirths(%)	0.0(0/19)	5.4(6/111)	0.5917
Termination of pregnancy(%)	5.6(1/18)	36.9(41/111)	0.0067*
Age initial management(days)	21.0(IQR 5, 1143)	9.0(IQR 2, 313)	0.0199*
Dialysis/transplantation	0.0(0/15)	11.9(12/111)	0.3575

CONCLUSIONS

Prenatal detection of atypical LUTO cases remains challenging due to heterogeneous ultrasound findings. These findings call attention to the need for heightened suspicion in cases that lack classic features. The

utilization of AI-tools could not detect all atypical prenatal LUTO cases, however, it contributed to higher detection rates. Further work is required to refine our algorithm to improve prenatal LUTO detection.

15:11 - 15:14

S19-3 (OP)

NADIR CREATININE AS A PREDICTOR OF RENAL OUTCOMES IN PUVS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Davide MENEGHESSO ¹, Nicola BERTAZZA PARTIGIANI ¹, Rachele SPAGNOL ¹, Alessandra Rosalba BRAZZALE ¹, Alessandro MORLACCO ² and Enrico VIDAL ¹

1) Azienda Ospedale-Università di Padova, Pediatric Nephrology, Padova, ITALY - 2) Urology Clinic, Urology, Padova, ITALY

PURPOSE

Posterior urethral valves (PUVs) represent the most severe paediatric obstructive uropathy, responsible for chronic renal failure in up to 65% of cases and progression to end-stage kidney disease (ESKD) in about 8%-21% of patients. Postnatal nadir creatinine seems to accurately predict long-term renal prognosis, but there is no definitive evidence to support this finding. We performed a systematic review with meta-analysis to analyse the predictive value of nadir creatinine on long-term renal function in infants with PUVs.

MATERIAL AND METHODS

We conducted this systematic review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed and Cochrane Library were systematically searched for studies published from January 2008 to June 2022. All the articles were checked independently by two reviewers in two steps.

RESULTS

A total of 24 articles were screened, and 13 were included for data extraction. Data from 1,731 patients with PUVs were analysed, with a mean follow-up of 5.5 years; of these, on average, 37.9% developed chronic kidney disease (CKD) and 13.6% developed ESKD. All the articles evaluated nadir creatinine as a predictor of CKD, most using a level of 1 mg/dL, with statistical significance at the 5% level. The relative risk of developing CKD in patients with creatinine values higher than the nadir cutoff considered was 7.69 (95% CI: 2.35-25.17, I² = 92.20%, p < 0.001).

CONCLUSIONS

Nadir creatinine is the best prognostic factor for long-term renal function in patients affected by PUV. A value above the cutoff of 1 mg/dL should be considered a significant predictor for the risk of CKD and ESKD. Further studies are needed to define different nadir creatinine cutoffs for better stratification of the different CKD stages and for the development of reliable scores, which include the association of several variables.

15:14 - 15:17

S19-4 (OP)

★ FURTHER EXTERNAL VALIDATION OF THE POSTERIOR URETHRAL VALVE RISK OF CHRONIC KIDNEY DISEASE (PURK) SCORE: A NEW PROGNOSTIC TOOL IN PEDIATRIC UROLOGY

Jin Kyu (Justin) KIM¹, Priyank YADAV², Daniel KEEFE³, Chris BITCON³, Michael CHUA¹, Mohd Sualeh ANSARI², Adree KHONDKER¹, Juliane RICHTER¹, Joana DOS SANTOS¹, Armando LORENZO¹ and Mandy RICKARD¹

1) The Hospital for Sick Children (SickKids), Urology, Toronto, CANADA - 2) Sanjay Gandhi Postgraduate Institute of Medical Sciences, Urology, Lucknow, INDIA - 3) Dalhousie Medical School, Urology, Halifax, CANADA

PURPOSE

We aim to validate a posterior urethral valves (PUV) scoring system using clinical variables at presentation to identify risk categories to individualize follow up and upper/lower urinary tract optimization.

MATERIAL AND METHODS

Patients who presented with posterior urethral valves diagnosed prior to June 2022 from institution 1 (Canada) were included. The outcomes were eGFR at 1- and 5-year endpoints. We performed univariate analysis to determine potential predictors of CKD stage ≥ 3 at 5-years (defined as $p \leq 0.1$). Based on the β value of the significant variables in backward logistic regression, a scoring system was developed. We performed external validation on a cohort of from institution 2 (India) and institution 3 (Canada).

RESULTS

From institution 1, 120 patients had 1-year eGFR data and 117 patients had 5-year eGFR data. Based on this data, a new scoring system (PURK Score) was developed (Table). The PURK score risk-stratified patients at risk of CKD stage ≥ 3 at 1-year and 5-years of follow up. For institution 1, the model had excellent AUROC of 0.907 for 1-year and 0.873 for 5-year CKD ≥ 3 prediction. External validation of institution 2 showed AUROC of 0.932 and 0.960 for 1-year (n=11) and 5-year CKD ≥ 3 (n=9) predictions. External validation of institution 3 showed AUROC of 0.885 and 0.786 for 1-year (n=17) and 5-year CKD ≥ 3 (n=8) predictions. On combined analysis of all three institutions, AUROC was 0.900 and 0.887 for 1- and 5-year predictions ($p < 0.0001$).

Clinical variable at presentation	Points
Baseline Cr >150umol/L	+2
Failure to thrive	+2
High grade VUR on US	+1
Renal dysplasia on US	+1
Total score	/6

CONCLUSIONS

PURK score, internally validated/developed from a large quaternary referral centre and externally validated from two institutions, provides accurate stratification of patients who are at risk of CKD stage ≥ 3 . Further multi-institutional evaluation is underway for routine use in clinical practice.

15:17 - 15:30

Discussion

LONG-TERM KIDNEY FUNCTION IN BOYS WITH POSTERIOR URETHRAL VALVES AND A SOLITARY FUNCTIONING KIDNEY

Silvia PECORELLI ¹, Mathilde GLENISSON ², Matthieu PEYCELON ³, Etienne SUPLY ⁴, Marc-David LECLAIR ⁵, Nicolas KALFA ⁶, Pauline CLERMIDI ⁷, Alexis ARNAUD ⁸, Alice FAURE ⁹, Quentin BALLOUHEY ¹⁰, Nadia BOUDAUD ¹¹, Yann CHAUSSY ¹², Thomas BLANC ¹³ and Luke HARPER ¹⁴

1) *CHU Pellegrin-enfants, Pediatric urology, Bordeaux, FRANCE* - 2) *Necker enfant-malades, Pediatric surgery, Paris, FRANCE* - 3) *Hopital robert debre, Pediatric surgery, Paris, FRANCE* - 4) *CHU de La Reunion, Saint-Denis, FRANCE* - 5) *CHU Nantes, Pediatric surgery, Nantes, FRANCE* - 6) *CHU Montpellier, Pediatric surgery, Montpellier, FRANCE* - 7) *Hopital Trousseau, Pediatric surgery, Paris, FRANCE* - 8) *CHU rennes, Pediatric surgery, Rennes, FRANCE* - 9) *CHU Marseille, Pediatric surgery, Marseille, FRANCE* - 10) *CHU Limoges, Pediatric surgery, Limoges, FRANCE* - 11) *CHU Reims, Pediatric surgery, Reims, FRANCE* - 12) *CHU Besançon, Pediatric surgery, Besançon, FRANCE* - 13) *Necker enfants-malade, Pediatric surgery, Paris, FRANCE* - 14) *CHU Pellegrin-Enfants, Pediatric Surgery, Bordeaux, FRANCE*

PURPOSE

It has been suggested that patients with Posterior urethral valves (PUV) and a solitary functioning kidney have poorer long-term renal function than those with 2 functioning kidneys. We compared long-term eGFR of PUV patients with and without solitary kidneys.

MATERIAL AND METHODS

We used the CIRCUP database, which included only patients with prenatally suspected, postnatally confirmed PUV, born between 2012 and 2017. Standard follow-up included the diagnostic and control cystograms as well as an early DMSA scan performed between 1 and 6 months of age. We retrospectively compared long-term eGFR (>5 years of age) between those with or without findings of solitary functioning renal-unit (<10% differential function of a renal unit). We also looked at whether these solitary units had reflux or not. eGFR was calculated using the updated Schwartz formula. Comparison between groups was done using the Mann-Whitney U-test. The study respects our national ethics regulations.

RESULTS

48 PUV patients were included, of which 9 had a solitary kidney. There were no differences in baseline characteristics between both groups, nor in timing of DMSA scan or latest follow-up.

DMSA was performed at a median 60 days of life (IQR: 39-72). Median nadir creatinine was 31 µmol/l (IQR: 22-56). The latest creatinine was recovered at a median 77 months of age (IQR: 64-91).

There was no statistical difference in eGFR between both groups. eGFR was respectively 92 (IQR: 58.5-107.5) and 104 (IQR: 64.5-120) for those with 2 or 1 functioning kidney.

2/9 patients had reflux in the solitary kidney on the initial cystogram and 0/9 on the control cystogram.

CONCLUSIONS

In our series we found no difference in long-term eGFR between boys with PUV and one or two functioning kidney. Relative function on DMSA alone is insufficient to determine decreased renal reserve.

LONG-TERM KIDNEY OUTCOMES IN CHILDREN WITH POSTERIOR URETHRAL VALVES: A POPULATION-BASED COHORT STUDY

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PURPOSE

To determine the risk of major adverse kidney events (MAKE) among PUV patients.

MATERIAL AND METHODS

Population-based retrospective cohort study of all males (0-2-years) diagnosed with PUV between 1991-2021 in Ontario, Canada, identified by diagnostic codes in province-wide administrative health databases. Control cohorts were: 1) male general population and 2) male pyeloplasty patients (both 0-2-years, without PUV). The primary outcome was time-to-modified MAKE (death, chronic kidney replacement therapy (KRT; dialysis or kidney transplant), or de novo chronic kidney disease (CKD)). We censored for death, provincial emigration, or Mar 2022.

RESULTS

We included 727 PUV, 855 pyeloplasty, and 1,013,052 general pediatric controls with a follow-up time of 16.6 years (IQR 8.6-24.5). Age at PUV diagnosis was 40 days (IQR 10-196). Throughout follow-up, 32.3% PUV patients developed MAKE vs. 0.8% of general controls. The aHR for MAKE among PUV patients was 36.6 (95%CI 31.6-42.4, p<0.001) vs. general controls. The risks of CKD, KRT, hypertension, and AKI were all higher among PUV patients (Table).

Outcome	PUV patients n=727 n(%)	Pyeloplasty patients n=855 n(%)	General pediatric controls n=1,013,052 n(%)	Adjusted HR(95% CI) (PUV vs. general controls)
Major adverse kidney event (MAKE)	235 (32.3)	50 (5.8)	8198 (0.8)	36.6 (31.6-42.4)
All-cause mortality	17 (2.3)	Not reported (NR) for privacy due to small cell size	4355 (0.4)	2.9 (1.7-4.8)
Kidney replacement therapy (dialysis or transplant)	61 (8.4)	6 (0.7)	155 (<0.01)	130.7 (78.3-218.2)
Chronic kidney disease	198 (27.2)	44 (5.1)	4017 (0.4)	82.0 (70.8-94.9)
Hypertension	133 (18.3)	48 (5.6)	29445 (2.9)	5.7 (4.7-6.8)
Acute kidney injury	145 (19.9)	32 (3.7)	4513 (0.4)	27.9 (22.8-34.2)

CONCLUSIONS

PUV patients are at increased long-term risks of CKD, KRT, hypertension, and AKI. This justifies greater kidney function and BP surveillance among children and adults with a PUV history

15:36 - 15:39

S19-7 (OP)

IS THE ESTIMATED GFR AS GOOD AS THE MEASURED (IOHEXOL) GFR FOR ASSESSING RENAL OUTCOME IN BOYS WITH PUV?

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PURPOSE

Posterior urethral valves are a congenital bladder outlet obstruction affecting boys, causing elevated pressures in the urinary system, resulting in impaired bladder and kidney function.

Glomerular filtration rate (GFR), used to monitor the trajectory of the renal function, can be measured through invasive tests or estimated based upon serum creatinine and body surface. Measured GFR is more accurate but, also, a more invasive test.

The aim of the study is to assess if the estimated GFR could provide as accurate values as the more invasive measured GFR in boys with posterior urethral valves through their childhood.

MATERIAL AND METHODS

We retrospectively collected demographic and iohexol GFR, serum creatinine and height at 5, 10 and 15 years of age (both performed as per internal protocol). The estimated GRF was calculated by our laboratory validated formula: $(\text{height (in cm)} \times 31) / \text{creatinine}$. A one-sample T-test was used to assess if mean difference between eGFR and GFR at 5, 10 and 15 years were statistically significant.

RESULTS

A total number of 134 patients' data were reviewed.

The mean difference (-/+ SD) between eGFR and GFR at 5, 10 and 15 years were -5.99 (18.2), -11.79 (17.2) and -21.06 (16.79) mL/min/1.73m². These differences were all statically significant ($p < 0.001$).

Neither the Ethnicity nor the time of initial resection seemed to influence the results

CONCLUSIONS

eGFR seems to significantly underestimate GFR in boys with PUV, regardless of their ethnicity. The magnitude of this underestimation increases with age, and at 15 years of age, the average difference is 21.06 mL/min/1.73m²

★ EFFECT OF OVERNIGHT BLADDER DRAINAGE ON POSTERIOR URETHRAL VALVE SEQUELAE: A RANDOMIZED CONTROLLED TRIAL

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PURPOSE

To evaluate the effect of overnight bladder drainage using catheter (OBD) on upper urinary tracts and bladders of boys post posterior urethral valve (PUV) ablation.

MATERIAL AND METHODS

In a randomized controlled trial, boys who had persistent hydronephrosis (HN) at least one year after PUV ablation were included. Those who underwent urinary diversion, had infravesical obstruction or refused to participate were excluded. Patients were randomly allocated into OBD (catheter placement in bladder for 8-12 h every night) or no intervention. Timed voiding every 3 h, anticholinergics drugs and antibiotic prophylaxis were offered for both groups. After 12 months of starting treatment, patients were evaluated for compliance to OBD, daytime continence (>3 h dry), febrile urinary tract infections (UTIs), renal function evaluation by serum creatinine (SCr) and dimercaptosuccinic acid (DMSA) scan, improvement in HN, vesicoureteral reflux (VUR) and bladder morphology assessed by renal & bladder ultrasound and voiding cystourethrogram.

RESULTS

A total of 99 patients; 47 patients underwent OBD and 52 patients had no intervention, were included between August 2021 and September 2022 followed by 12 months of follow up. Compliance to OBD was reported in 78.72% of patients. Daytime dryness was more significantly noted in the OBD patients (63.8% vs. 44.2%, $p=0.04$). No significant difference was found between both groups regarding febrile UTIs or renal function affection estimated by SCr and DMSA scan. There was significant improvement in HN and VUR resolution in OBD group. Bladder capacity and outline were also significantly better in OBD group. However, bladder wall thickness and post-void urine residual showed no significant difference between both groups.

CONCLUSIONS

OBD might improve daytime continence, HN, VUR and abnormal bladder morphology that persist after PUV ablation. Yet, compliance to OBD remains a matter of concern.

15:42 - 15:55

Discussion

15:55 - 15:58

S19-9 (OP)

COPING WITH POSTERIOR URETHRAL VALVES: THE IMPACT ON FAMILY AND PARENTAL QUALITY OF LIFE

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PURPOSE

To explore the impact of PUV on quality of life of families and compare them to healthy controls published in the literature.

MATERIAL AND METHODS

From December 2022-Oct 2023 we distributed the family impact module(FIM) of the PedsQL Inventory, to parents of patients with PUV. The FIM measures the impact of chronic illness on the parent and family as a whole. The maximum score is 100, with higher scores reflecting a lower illness impact. We conducted subgroup analyses to determine family impact based on age, initial surgical intervention, catheterizations (CIC) and CKD

RESULTS

A total of 100 families completed the questionnaire. The mean age of the child with PUV was 7+/-5 years. The overall FIM score was 74+/-19, the impact on parent was 77+/-21 and the family impact 80+/-21. Scores were significantly lower for families with children <2y (63+/-28 vs. 78+/-16; p<0.01) and while not significant, family scores were lower for children on CIC (74+/-23 vs. 83+/-19; p=0.07). The reported FIM score for a community sample was 74+/-14, which was not different from our PUV cohort (p=0.19).

	Total			Parent			Family		
	Yes	No	p	Yes	No	p	Yes	No	p
CIC (n=26)	71+/- 21	77+/- 19	0.26	76+/- 22	78+/- 20	0.85	74+/- 23	83+/- 19	0.06
UTIs (n=42)	71+/- 21	80+/- 17	0.08	74+/- 22	80+/- 19	0.24	76+/- 22	85+/- 17	0.08
Urinary Diversion (n=34)	71+/- 21	77+/- 19	0.22	74+/- 23	79+/- 19	0.31	76+/- 20	82+/- 20	0.25
CKD (>3) (n=18)	72+/- 16	76+/- 20	0.56	74+/- 18	78+/- 21	0.53	77+/- 17	80+/- 21	0.56
Age63+/-2878+/-16<0.0169+/- 2680+/-170.0272+/-2783+/-170.03									

CONCLUSIONS

The impact of PUV diagnosis appears to impact families of children less than 2years of age; and, while not significant, those on CIC report lower scores compared those who are not. These data may support additional mental health and social work support for these families.

15:58 - 16:01

S19-10 (OP)

SOCIAL DETERMINANTS OF HEALTH FOR PATIENTS WITH POSTERIOR URETHRAL VALVES

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Cincinnati Children's, Division of Pediatric Urology, Cincinnati, USA

PURPOSE

Social determinants of health (SODH) influence clinical outcomes and account for variation in outcomes for patients with posterior urethral valves (PUV). The patient's family plays a pivotal role in maintaining optimal care for a child with PUV. We have studied the family as a SODH in the outcome of patients with PUV.

MATERIAL AND METHODS

An IRB approved prospective study was performed on Pts with PUV treated between 2018 and 2023. We administered the family management measure questionnaire (FaMM), after obtaining consent. The patients were divided into three cohorts, PUV Pts with native kidneys and voiding (Group 1), PUV Pts with native kidneys that catheterized (CIC) or were diverted (Group 2) and PUV Pts that had been transplanted (Group 3). The data was statistically analyzed for significance with linear regression and two tailed t-Test.

RESULTS

A total of 79 families were enrolled, (n = 25 Group 1), (n = 35 Group 2) and (n = 19 Group 3). The impact on daily life domain scores were significantly different for all groups ($p < 0.001$) with group 3 having the most impact. There was significant differences on the family's life difficulty score between all three groups ($p < 0.001$) with group 1 being the least difficult to care for. There was no difference in the family's perception of their ability to manage their child's condition, but they did report a significantly higher effort score for Pts that required CIC ($p < 0.001$).

CONCLUSIONS

Family stress and burden of care impose adverse impact on the health of Pts with PUV. FaMM scores permit real-time identification of vulnerable families and 'at risk' PUV patients. This enables implementation of interventions that include referrals to Social Worker and Psychologists. Commitment to family centered care will positively impact the long-term outcome of PUV Pts.

16:01 - 16:04

S19-11 (OP)

ANTERIOR URETHRA VALVES: SURGICAL MANAGEMENT AND LONG-TERM PROGNOSIS - A MULTI-INSTITUTIONAL EXPERIENCE REPORTING THE UNFAVORABLE EFFECT OF ASSOCIATION OF ANTERIOR AND POSTERIOR URETHRAL VALVES

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PURPOSE

Due to the low incidence of anterior urethral valves (AUV), little is known about management and prognosis. We aim to evaluate management and long-term outcomes after AUV endoscopic ablation.

MATERIAL AND METHODS

Children born with AUV were retrospectively identified in three institutions (2000-2023). Diagnosis was confirmed by urethrocystoscopy. Parameters included: prenatal data, imaging, age at diagnosis, pre- and postoperative creatinine. We compared patients with AUV (A) and those with AUV and PUV (B). Endpoint: CKD. Statistics: descriptive, comparative

RESULTS

19 patients (39.7 (38-41) GW, 3378g (2859-3640) BW) were included with 6 (32%) having concomitant PUV. Eleven (58%) had a prenatal suspicion (7/13 (54%) vs. 4/6 (66%), $p>0.20$), all presenting with bilateral ureterohydronephrosis. At late presentation, symptoms included poor urinary stream (N=12 (63%)) and retention (N=4 (21%)).

Preoperative imaging found an enlarged bladder (N=11 (58%)), bilateral ureterohydronephrosis (N=9 (47%)), diverticular bladder (N=9 (47%)), urethral diverticulum (N=6 (32%)), and vesicoureteral reflux (N=6) (bilateral N=4). Diagnosis and valves ablation was performed at a median (IQR) age of 6 months (0.2-60) (neonatal period (N=8/19)) (7 vs. 4.5, $p>0.2$).

Median (IQR) pre and postoperative creatinine was 0.89 (0.7-1.6) (A, 0.84 vs. B, 1.84, $p=0.02$) (over the maximal range in 8/19 cases) and 0.57 (0.4-0.9) mg/dL (A, 0.54 vs. B, 1.11, $p=0.09$) respectively and decreased significantly after section ($p=0.01$). After a follow-up of 4 years (2-8), four children reported recurrent UTIs. 68% (13/19) had no evidence of CKD (92% vs. 17%, $p=0.003$) and 16% (3/19) had CKD II. CKD>2 was only reported in case of PUV association (11% (2/19) III, 5% (1/19) IV). No patient required dialysis or transplantation.

CONCLUSIONS

The severity of AUV, defined by the CKD status, seems to be associated with the concomitant identification of PUV.

16:04 - 16:15

Discussion

S20: RENAL TRANSPLANT

Moderators: Pedro Lopez Perreira (Spain), Matthieu Peycelon (France)

ESPU Meeting on Friday 19, April 2024, 16:15 - 16:40

16:15 - 16:18

S20-1 (OP)

SIMULTANEOUS LIVER-KIDNEY TRANSPLANTATION IN CHILDREN WITH PREFORMED DONOR-SPECIFIC ANTIBODIES. A CASE-CONTROL STUDY.

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PURPOSE

Prefomed donor-specific antibodies (pDSA) in kidney transplant recipients cause postoperative antibody-mediated rejection and lower long-term kidney allograft survival compared with that observed in transplanted patients without pDSAs. Our aim was to compare the long-term outcomes according to the presence of pDSA in children with simultaneous liver-kidney transplantation (SLKT).

MATERIAL AND METHODS

A retrospective case-control single-center study was conducted in children who underwent SLKT between 1997-2022. We analyzed demographic, clinical and laboratory data collected pre-transplantation and postoperatively. Patients were divided into two groups based on the presence or absence of pDSA.

RESULTS

Twenty-one patients were included, with a median age of 10.2 years (Q1-Q3: 8.5-14.5 years) and median long-term follow-up of 13.5 years (Q1-Q3: 1.5-24.3 years). Eighteen patients (85.7%) had neither class I nor II pDSA, while 4 patients had pDSA prior to SLKT, with a corresponding negative cross-match. In all patients both grafts were obtained from the same cadaveric donor, who had the same blood type as the recipient. After SLKT, pDSA became undetectable in these 4 patients, with a median time of 10 weeks after transplantation (Q1-Q3: 1-24 weeks). No differences in postoperative complications were observed between both groups ($p=0.21$). At long-term follow-up, the graft survival and overall survival rates were 100% and 100%, respectively, in patients with pDSAs, and 92.8% and 100% in patients without pDSAs.

CONCLUSIONS

SLKT can be considered as a successful alternative to transplant highly sensitised patients in the absence of an antibody compatible donor. Preimplantation of the liver may protect the subsequent kidney transplant by adsorption of donor HLA-specific antibodies, with no observed differences when compared to patients without pDSA.

TRANSPLANT URETEROSTOMIES A GOOD TEMPORARY OPTION FOR UNSAFE BLADDERS

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PURPOSE

Ureterostomy of the transplant kidney is performed when the bladder is deemed unsafe at the time of transplant as a temporising measure until bladder reconstruction. We aimed to review our experience with this technique with particular focus on complications and long-term outcome.

MATERIAL AND METHODS

The charts of patients receiving a transplant ureterostomy at two tertiary Paediatric Urology centres were studied. Outcome measures were stomal stenosis and need for revision/reinterventions.

RESULTS

11 patients who received ureterostomy of the transplant kidney were reviewed. Median age at transplant was 35 months(26-47 months).

7 have already undergone bladder reconstruction with reimplantation of the transplant ureter after a median of 51 months(46-55 months). 6 had Ileocystoplasty, 1 had Mainz pouch. Of these, 6 had no stomal issues prior to reimplantation. 1 of them required a dilatation 12 months post-transplant but worked well until ileocystoplasty.

4 patients still have the transplant ureterostomy that has lasted for a median of 35 months (9.25-25 months) without needing revision. Among these, 1 patient had a temporary stent for 3 months for a rise in Creatinine, but obstruction was ruled out on a retrograde study.

CONCLUSIONS

With the limitation of the small cohort, our results suggest that transplant ureterostomy is a feasible and safe option to consider as temporary approach to renal transplant in patients with unsafe bladder awaiting bladder reconstruction.

★ OBESITY IN PEDIATRIC KIDNEY TRANSPLANT PATIENTS IS NOT ASSOCIATED WITH HIGHER RISK OF POSTOPERATIVE COMPLICATIONS - A 10-YEAR SINGLE CENTER EXPERIENCE

Franziska Juliane RICHTER ¹, Fabian DOKTOR ², Mandy RICKARD ¹, Priyank YADAV ³, Jin K. KIM ¹, Michael E. CHUA ¹ and Armando J. LORENZO ¹

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PURPOSE

Childhood obesity is increasing and may be considered a relative contraindication to perform pediatric kidney transplantation due to suboptimal outcomes. Herein we aimed to determine if pediatric patients with elevated body-mass index (BMI) (>85thpercentile) are at higher risk for short-term complications.

MATERIAL AND METHODS

After review of our transplant database (2010-2020), patients >2 – 18 years were assigned to groups based on BMI percentiles at the time of surgery: A (normal; 5th-85th percentile; n=120) and B (obesity and overweight; >85thpercentile; n=60). Patients underwent a 1 to 2 ratio nearest-neighbor matching with propensity score based multivariable logistic regression model adjusting for age, sex and underlying diagnosis.

RESULTS

Of 180 included patients, group B underwent transplantation significantly earlier in life (p=0.0041) than group A (66.5 months;IQR25,221 vs. 130.0 months;IQR24,209), with lower creatinine levels at 3 and 6 months as well as 1 year postoperatively. There was no difference in OR times, warm ischemia time, time to nadir creatinine, severity of and time to complications (p>0.05). However, more patients in group B required intraoperative blood transfusions (p=0.0063) with comparable blood loss and stayed longer at the hospital (LOS,p=0.0149).

Table1.Characteristics of both groups.

Variable	Group A (n=120)	Group B (n=60)	p-value
BMI percentile	49.2(IQR5.3,84.0)	93.3(IQR85.1,99.9)	<0.0001*
Male/female	68/52	37/23	0.6307
Rejections (%)	8.4(10/120)	8.33(5/60)	>0.9999
Creatinine 1 year postoperatively(µmol/L)	60.5(IQR22,783)	41.0(IQR21, 344)	0.0024*
Nadir creatinine (µmol/L)	36.0(IQR10,145)	26.0(IQR6,120)	0.0046*
Time to nadir creatinine (days)	7.0(IQR1,679)	9.0(IQR1,690)	0.1143
LOS(days)	15.0 (IQR7, 49)	18.0 (IQR9, 133)	0.0149*
Intraoperative blood transfusion(%)	33.4(40/120)	55.0(33/60)	0.0063*

CONCLUSIONS

The results of this study confirm that obesity in pediatric kidney transplant patients does not lead to higher likelihood of postoperative complications or worse graft function on early postoperative monitoring. Findings related to increased use of blood products and longer hospital stay deserve further evaluation.

16:24 - 16:27

S20-4 (OP)

RISK FACTOR ANALYSIS FOR LONG-TERM GRAFT SURVIVAL FOLLOWING PEDIATRIC KIDNEY TRANSPLANTATION: THE IMPORTANCE OF PRETRANSPLANTATION TIME ON DIALYSIS AND DONOR/RECIPIENT AGE DIFFERENCE

Marios MARCOU ¹, Matthias GALIANO ², Anja TZSCHOPPE ², Katja SAUERSTEIN ², Sven WACH ³, Helge TAUBERT ³, Bernd WULLICH ³, Hendrik APEL ³ and Karin HIRSCH-KOCH ³

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PURPOSE

Recognizing risk factors that may negatively affect long-term graft survival following pediatric kidney transplantation is a key element in the decision-making process during organ allocation.

MATERIAL AND METHODS

We retrospectively reassessed all cases of pediatric kidney transplantation performed in our center in the last 20 years with the aim of determining baseline characteristics that could be identified as prognostic risk factors for long-term graft survival.

RESULTS

Between 2001 and 2020, a total of 91 kidney transplantations in children under the age of 18 years were undertaken in our center. Early graft failure was observed in six of the 91 patients (7%). The median follow-up of the remaining 85 children was 100 months, and the overall kidney graft survival rates at five, ten, fifteen and twenty years were 85.2%, 71.4%, 46.0% and 30.6%, respectively. Small children with a body surface area of <1m² were significantly associated with better long-term graft survival outcomes, while adolescents aged more than twelve years showed poorer graft survival rates than younger children. Body surface area of the recipient of ≥1m², pretransplantation duration of the recipient on dialysis ≥18 months and donor/recipient age difference of ≥25 years were significantly associated with poorer long-term graft survival.

CONCLUSIONS

Importantly, the pretransplantation recipient time on dialysis was associated with the highest risk of graft failure.

16:27 - 16:40

Discussion

17:05 - 17:08

S21-1 (OP)

★ IS A KIDNEY AND BLADDER ULTRASOUND (USKUB) NEEDED AFTER A FIRST PEDIATRIC FEVERISH UTI? A RANDOMISED PROSPECTIVE MULTICENTER TRIAL

Zeno ADRIAENSSENS¹, Lise VAN HOVE², Jolan KINT², Laura GIELEN², Nathalie SEGERS³, Ann BAEL³, Nele VANHAMEL⁴, Denis LIBEERT⁵, Wim VERGAUWEN⁶, Geert VAN LOMMEN⁷, Dominique HAENTJES⁸, Loes LAMBRECHT⁹, An HUYBRECHTS¹⁰, Els VERLINDEN¹¹, Frederic DE MEULDER¹², Emmi VAN DAMME¹³, Miet JAMERS¹⁴, Karen DE BAETS¹⁵, Gunter DE WIN¹ and Koenraad VAN HOECK¹⁶

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PURPOSE

To investigate the value of a USKUB after a first febrile UTI for the prevention of recurrent UTI.

MATERIAL AND METHODS

Children (6m-16yrs) with a first low risk febrile UTI (based on NICE guidelines) were randomized in a prospective multi-centre trial with a non-inferiority design. Known risk factors for recurrence were assessed. In the intervention group, a kidney and bladder ultrasound (USKUB) was performed (with subsequent further management based on an agreed protocol). In the control group a USKUB was only performed in case of recurrent feverish UTI. Outcome was based on recurrence of a febrile UTI within the first year of follow up.

RESULTS

12 hospitals participated. One year follow-up was available for 242 children (29M/213F) with median age 1 year and range 6m - 10 yrs. 119 were assigned to the control group, 123 to the intervention group. There was no statistical difference in baseline demographic characteristics (age, sex and risk factors) between the two study arms. Recurrent UTI was seen in 42 patients (17%), with a recurrence of 13.8% (17) in the control group and 21.0% (25) in the intervention group. When stratified for age, sex and risk factors, no statistical difference was

seen between both study groups. Based on a delayed USKUB in the control group, 3 high grade VUR and one trabeculated bladder were found.

CONCLUSIONS

Not performing a USKUB after a first low risk feverish UTI is safe and doesn't increase the risk of recurrence.

17:08 - 17:11

S21-2 (OP)

THE EXPERIENCE OF PARENTS OF CHILDREN WITH A FIRST FEVERISH UTI DURING THE DIAGNOSTIC PROCESS OF OUR RCT AND THE INFLUENCE ON THEIR PREFERRED STUDY GROUP

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PURPOSE

To understand parent's perception and study-arm preferences when their children after a first feverish UTI were randomized.

MATERIAL AND METHODS

A prospective multi-centre trial was organized looking at the value of US KUB after a first febrile UTI. Children were randomized in an intervention group (in which a USKUB was performed) or a control group (where US KUB was only performed in case of disease recurrence) With a standardized questionnaire at the start and at one year follow up, parents' preferences were questioned. Semi-structured interviews until data saturation within four weeks of inclusion were performed for a more in depth analysis.

RESULTS

97 parents filled in the standardised questionnaire at the start, 141 after one year follow up. At the start, 57% of parents in the intervention group and 42% in the control group had a preference for a USKUB after the first feverish UTI. The remaining had no preference. None of the respondents (in both study groups) had a preference for the control group.

At one year, 38% of parents in the control group would have preferred a USKUB, and none of the parents of the

intervention group would have preferred the control group.

Interviews were analysed across three themes (experiences before or during the study, and information provided). Parents look for reassurance about the situation of their child through imaging. Parents who are well-informed don't feel the need for extra investigations.

CONCLUSIONS

Reassuring and informing parents (rather than extra imaging) is the key for positive parents experiences after a first feverish UTI.

17:11 - 17:14

S21-3 (OP)

★ TRANSITIONAL OUTCOMES OF CHILDREN WHO HAVE UNDERGONE COHEN URETERONEOCYSTOSTOMY FOR THE TREATMENT OF VESICoureTERAL REFLUX TO ADULTHOOD

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PURPOSE

We aimed to analyze the transitional outcomes of children who underwent Cohen ureteroneocystostomy (UNC) due to vesicoureteral reflux (VUR).

MATERIAL AND METHODS

Files of patients who underwent UNC between January 2003 and December 2013 and had >10 years of follow-up were retrospectively reviewed. Demographic and clinical data before surgery were noted. Lower urinary tract dysfunction (LUTD) status was assessed via ICIQ M/F-LUTS, voiding diary and uroflowmetry in all patients. Renal functions, hypertension, proteinuria, febrile/afebrile urinary tract infections (UTIs), and complications associated with pregnancy were noted.

RESULTS

There were 241 patients (140 girls, 58.1%). Forty-five patients (18.7%) had bilateral, and 91 (37.8%) had unilateral renal scars. UNC was performed at median 6.5 years (3-14) of age (57.7% bilateral, 42.3% unilateral repair). Median follow-up was 15 years (range 10-20). Median patient age at the last clinic visit was 21 years (range 18-31) and LUTD was detected in 69 (28.6%). Bilateral surgery, female gender, history of childhood LUTD, presence of renal scar, and older age (>7 years) at the time of surgery significantly increased the likelihood of LUTD in adulthood.

Median creatinine level at last clinic visit was 0.61 (0.42-1.21) mg/dl. Febrile UTI was detected in 7.9% (19/241) following surgery, whereas six needed subureteral injection due to persistent low-grade VUR. Further, 11 (4.6%) patients developed hypertension and 7 (2.9%) had proteinuria. Of 67 sexually active female patients, 10 (14.9%) had febrile UTIs. Forty-nine women had pregnancy, 4 (8.1%) had febrile UTIs, 7 (14.2%) had afebrile UTIs and

two(4.1%) had preeclampsia during pregnancy, but none had a miscarriage. Girls with renal scar and LUTD as well as bilateral disease were risk factors for these undesirable issues.

CONCLUSIONS

Despite VUR control, febrile UTIs were detected in 8% and preeclampsia in 4% during pregnancy. In addition, a quarter of patients face LUTD when they reach adulthood. Female patients with bilateral disease, renal scar, and previous LUTD have higher risks for these clinical problems.

17:14 - 17:17

S21-4 (OP)

MULTI-INSTITUTIONAL VARIATIONS IN RADIATION EXPOSURE DURING VOIDING CYSTOURETHROGRAM: CAN WE DO BETTER?

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PURPOSE

The purpose of this study is to investigate and quantify the substantial differentiations in fluoroscopy time during VCUG procedures across three high-volume pediatric centers.

MATERIAL AND METHODS

We identified all patients aged 6 months to 5 years who underwent VCUG imaging at one of three participating centers between January 2018 and December 2020. We retrospectively reviewed electronic health records to gather demographic and clinical information, as well as fluoroscopy data. Multivariate regression analysis was conducted to assess variations in fluoroscopy time and the requirement for multiple VCUG exams based on demographic factors, indication for imaging, and the imaging center.

RESULTS

During the study, 2,195 VCUGs were performed on 1,942 patients, with 64% females and 36% males, aged 1.4 years, and weighing 11.9 kilograms. The majority (71%) of patients were identified as white. Median fluoroscopy time was 1.03 minutes (IQR: 0.5, 1.57), and the median number of images obtained during fluoroscopy was 14 (IQR: 10, 20). Linear regression analysis revealed significant variation in both fluoroscopy time and the number of images obtained among the centers. Subgroup linear regression analysis confirmed that gender and ethnicity had significant impacts on radiation exposure surrogates. Logistic regression analysis indicated that females, older children, and patients requiring VCUG for post-operative evaluation or PUV were more likely to undergo multiple VCUGs during the study period compared to others.

CONCLUSIONS

Significant radiation exposure variations during VCUG are linked to gender, indication, ethnicity, and the performing center. Further research is essential to enhance standardization, reduce radiation risk, and provide better pre-VCUG counseling to families.

17:17 - 17:30

Discussion

17:30 - 17:33

S21-5 (OP)

SUCCESS OF COHEN AND LICH-GREGOIR TECHNIQUES FOR URETERAL REIMPLANTATION IN PRIMARY UNILATERAL HIGH GRADE VESICoureTERAL REFLUX IN CHILDREN: AN INTERNATIONAL MULTICENTER STUDY OF CLINICAL OUTCOMES.

Khadija ISMAIL ¹, Mohamad MOUSSA ², Christian KRUPPA ³, Anthony KALLAS CHEMALY ⁴, Bilal AOUN ⁵, Mohamad ABOU CHAKRA ⁶, Katrin SCHUCHARDT ³, Alexandra WILKE ³, Pascale SALAMEH ⁷ and Amal AL-HAJJE ⁸

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PURPOSE

Open ureteral reimplantation using Cohen and Lich-Gregoir techniques effectively manages high-grade unilateral primary vesicoureteral reflux (VUR), achieving clinical success rates between 68 and 100%. The aim of our study is to assess success rate and complications using these techniques.

MATERIAL AND METHODS

This is a multicenter retrospective cohort study including 377 children who had recurrent urinary tract infections (UTIs), diagnosed with unilateral VUR grade III-V, and treated surgically either by open Cohen or Lich-Gregoir ureteral reimplantation between 2010 and 2022. The success rate was defined by the absence of postoperative UTIs, and the complication rates were compared in both groups. Data analyses were performed using bivariate tests, event-free survival curves, and Cox regression analysis.

RESULTS

Among the children, 183 (48.5%) underwent the Cohen technique, and 194 (51.5%) received Lich-Gregoir ureteral reimplantation. VUR grade V, IV and III were seen in 59.4%, 31.3% and 9.3% of the patients respectively. Preoperative renal scars were observed in 18.3% of all cases, with a higher prevalence in the Cohen group (35.7%) compared to Lich-Gregoir (2.1%). Postoperative UTI rates showed no significant difference between the two techniques, with an unadjusted 1-year UTI-free rate of 76% for Cohen and 65% for the Lich-Gregoir ($p=0.106$), and this held even after controlling for demographic and clinical variables. Acute complications such as pain and hematuria were more common in the Cohen group (54.1% vs 27.8%, $p<0.001$, 47% vs 15.5%, $p<0.001$ respectively). Ureteral obstruction as long-term complication was higher in the Lich-Gregoir group (7.7% vs 1.1%, $p=0.002$), necessitating re-operation.

CONCLUSIONS

In high unilateral primary VUR, the open Cohen and Lich-Gregoir techniques achieved the same success rate. The Cohen technique was associated with decreased long-term morbidity, highlighting its true efficiency.

17:33 - 17:36

S21-6 (OP)

DIFFERENTIAL RENAL VOLUME MEASURED BY ULTRASOUND AS A PREDICTOR OF DIFFERENTIAL RENAL FUNCTION IN PATIENTS WITH UNILATERAL VESICoureTERAL REFLUX

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PURPOSE

Renal scintigraphy is routinely used to study renal impairment in patients with vesicoureteral reflux (VUR), but it is invasive and requires radiation exposure. The aim was to analyze whether differential renal volume (DRV) measured with ultrasound (US) was a good predictor of differential renal function (DRF) measured with DMSA scan.

MATERIAL AND METHODS

A retrospective review of all patients with VUR diagnosed in our hospital between January 2008 and May 2023. We registered: gender, VUR grade, laterality, comorbidities, US renal volume (measured as an ellipsoid volume), US differential renal volume (US-DRV) and DMSA-DRF. We excluded patients with bilateral reflux or comorbidities. The correlation between US-DRV and DMSA-DRF was studied.

RESULTS

A total of 921 patients were reviewed, of whom 147 had unilateral primary VUR and no comorbidities (83 females and 64 males): 81 were low grade (I-III) and 66 high grade (IV-V). The mean of DMSA-DRF was 32.9% (SD: 13.2) and the mean of US-DRV was 34.4 (SD: 13.1). US-DRV strongly correlated with DMSA-DRF, with an Intraclass Correlation Coefficient (ICC) of 0.94 (95%CI: 0.92-0.96), $p<0.001$. US-DRV overestimated DMSA-DRF by only 1.5% (95%CI: -10.4 to 13.5). The efficacy of US-DRV in predicting a DMSA-DRF<40% had an area

under the ROC curve of 0.94 (95%CI: 0.90-0.97), with a sensitivity of 89.3% and a specificity of 89% using a cutoff point of US-DRV \leq 39.7%.

CONCLUSIONS

In patients with unilateral primary VUR, US-DRV seems to be a good predictor of DMSA-DRF. In this group of patients, US-DRV could be enough to predict the DRF, reserving DMSA scan for doubtful cases.

17:36 - 17:39

S21-7 (OP)

VISUAL ASSESSMENT OF ENDOSCOPIC VUR TREATMENT FAIL TO PREDICT OUTCOMES

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PURPOSE

The guidelines lack clarity on follow-up criteria after endoscopic therapy(ET) of VUR, especially regarding the need for VCUG. Risk-based approaches that consider patient characteristics, disease severity or factors related to the surgery itself, such as mound appearance or surgeon's experience could reduce the use of VCUG and the associated radiation exposure, but a satisfactory predictive model has not yet been established. Therefore, this study aims to evaluate if experts assessing surgical videos and other risk factors can predict treatment outcomes, potentially reducing the need for VCUG.

MATERIAL AND METHODS

Clinical data of 50 patients (75 renal units) from 2015-2021 were analyzed. Detailed medical history(including DMSA,USG,VCUG reports,voiding symptoms,presence of febrile UTI, etc.) and video records of the procedure were submitted to 5 expert surgeons with experience in over 1000 reflux cases. Experts rated the injection volume(IV), needle placement site (NPS), and the mound appearance (MA) on a 1-5 Likert scale and predicted the operation's obstruction and success(yes/no).

RESULTS

Consistent responses were observed for NPS ($p < 0.01$), but not for IV and MA ($p = 0.055$, $p = 0.077$, respectively, Friedman test). The scores provided by all evaluators for NPS, IV, MA were consistent with their predictions for success ($p > 0.05$ for all). However, none of the scores given by the evaluators for the three parameters were consistent with success ($p > 0.05$ for all). Using the Cohen's Kappa score, it was observed that none of the evaluators could predict success or obstruction ($p > 0.05$ for all).

CONCLUSIONS

Visual assessment of the operation, even with a comprehensive medical history, does not aid in predicting outcomes and cannot replace VCUG. Our study highlights the need for better criteria to be able to recommend individualized management strategies following ET of VUR to reduce the use of VCUG and the associated radiation exposure.

17:39 - 17:42

S21-8 (OP)

RISK OF UTI AFTER CYSTOGRAPHY IN A CONTEMPORARY PEDIATRIC POPULATION

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PURPOSE

Voiding cystourethrogram (VCUG), radionuclide cystogram (RNC) and contrast-enhanced voiding urosonography (CEUS) are associated with post-cystography urinary tract infection (PCUTI). We sought to determine the incidence of and risk factors for PCUTI in a contemporary population.

MATERIAL AND METHODS

A retrospective review of 1656 unique patients who underwent VCUG/RNC/CEUS at our institution (02/01/2021 – 08/15/2022) was performed. We excluded charts without access to regional primary provider records (n=681) and patients with at least 50,000 CFU/mL on urine culture from catheterization at time of cystography (n=60). PCUTI was defined as strict (fever + pyuria on urinalysis + at least 50,000 CFU/mL on urine culture) or pragmatic (included patients with high clinical suspicion for PCUTI prompting treatment) within 30 days of cystography. Clinical data were tabulated based on pragmatic definition of PCUTI and associations analyzed using chi-square and Fisher's exact test.

RESULTS

Analysis included 913 patients with median age of 1.42 years (IQR 0.2 to 4.3). Seventeen patients (1.9%) met strict definition for PCUTI and 33 (3.6%) met the pragmatic definition. Patient with PCUTI were more likely to have parenchymal abnormalities on pre-cystography ultrasound (41.4% vs 22.4%, p=0.017) and have vesicoureteral reflux (VUR) but not be on continuous antibiotic prophylaxis (CAP) at the time of cystography (33.3% vs. 19.1%, p=0.035).

CONCLUSIONS

PCUTI occurs in 3.6% of patients within 30 days of undergoing cystography. Parenchymal abnormalities on prior ultrasound and having VUR but not being on CAP is associated with developing PCUTI. Identifying these risk factors will allow for improvement in our counseling and management of patients undergoing cystogram.

17:42 - 17:55

Discussion

S22: STONE 1

Moderators: Sadaf Aba Umer (Pakistan), Naima Smeulders (UK)

ESPU Meeting on Saturday 20, April 2024, 08:20 - 09:00

08:20 - 08:23

S22-1 (OP)

UROLITHIASIS RISK IN MENKES DISEASE

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PURPOSE

Menkes disease (MD) is a rare X-linked disorder of copper-absorption and transport with an incidence of 1:300,000 live-births in Europe. Recognised urological abnormalities include bladder diverticula, neuropathic bladder and VUR. This study explores any association between urolithiasis and MD.

MATERIAL AND METHODS

With institutional approval, all MD-patients on the prospective metabolic medicine database (2011-2022) were reviewed for urinary tract anomalies and urolithiasis. Data is presented as the median and range.

RESULTS

Six boys were diagnosed with MD at median 4.5months (1-17months). UTIs commenced from age 1month-5years (median 27months). Bladder-diverticula were demonstrated in all from 1-3years (median 1.5years), despite previous normal imaging of the bladder in 2. Only 1 had unilateral VUR, managed conservatively. No renal scarring was evident on ultrasound, or DMSA performed in 3. Due to large post-void residuals and recurrent UTI, five required assisted-bladder drainage (3-CIC, 2-Suprapubic catheter).

Urolithiasis was identified in 3(50%), two following symptoms (haematuria-1, pain secondary to obstruction-1) but 1 was an incidental finding on follow-up imaging (impacted PUJ-stone). Stone locations were bilateral upper tract stones in all, with additional layering debris observed within bladder diverticula. Two required emergency intervention for obstruction. Two were eventually managed palliatively after multi-disciplinary discussion. Urinary metabolic assessment showed hypercalciuria-1 and hyperoxaluria-2.

CONCLUSIONS

Urological abnormalities developed in all MD patients. Half also acquired urolithiasis. In order to prevent emergency presentations with complications of renal stones, early and regular ultrasound-screening with urological involvement in a multi-disciplinary team is essential for this complex and rare cohort of patients.

★ EFFECT OF LUMASIRAN TREATMENT IN A LATE PRETERM BABY WITH ANTENATAL DIAGNOSIS OF PRIMARY HYPEROXALURIA TYPE 1

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PURPOSE

Primary hyperoxaluria type 1 (PH1) is a rare disease with autosomal recessive transmission, characterized by increased renal excretion of calcium oxalate resulting in chronic renal failure secondary to recurrent urolithiasis and nephrocalcinosis, and accumulation of oxalate in various organs and tissues. Since 2020, an innovative pharmacological approach, Lumasiran, has been added to the therapeutic armamentarium. The efficacy has been demonstrated by international clinical trials but there is still limited experience with the use in very young patients. We describe the effect of Lumasiran initiated very early in a patient with prenatally diagnosed PH1.

CASE MANAGEMENT

A female received a prenatal diagnosis of PH1 based on family history. Her brother had the onset of disease at 2 months of age and underwent liver transplantation from a deceased donor at 13 months of age, and kidney transplantation at 8 years of age. She was born via spontaneous labor at 36 weeks + 4 days of gestation. The newborn was immediately started on therapy with Lumasiran for compassionate use administered on the tenth day of life. MS presented nephrocalcinosis at 3 months of age, and then two kidney stones at 9 months of age. At 12 months of age, MS shows normal urinary oxalate values and plasma oxalate values under the value of oversaturation. Renal function appears to be normal and the last ultrasound scan shows improvement in nephrocalcinosis and persistence of the two left kidney stones, unchanged from the previous examination. MS presently shows no signs of systemic oxalosis.

CONCLUSIONS

Early use of Lumasiran in young patients who do not yet show signs of the disease represents a therapeutic challenge for the pediatric nephrologist to date. In fact, while the therapy is shown to be excellently tolerated, some issues need to be clarified such as the ability of the drug to act on the hepatocyte of the newborn, and the most appropriate dosage to be used in this category of patients.

STONE FREE STATUS. OUTCOME OF EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY (ESWL) IN CHILDREN. DOES CHILD'S AGE AND LOCATIONS OF RENAL STONE EFFECT

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PURPOSE

To compare the safety, efficacy, and outcome (stone clearance, number of ESWL sessions, and complications) between different age groups and locations of renal stone by ESWL.

MATERIAL AND METHODS

Records of 562 children (603 renal units) with single-renal-stones in different locations (pelvis, upper, middle, and lower calyces) managed by ESWL (StorzModulith®SLX-F2) between January 2014 to December 2020 were reviewed. Renal units were divided into two age groups: group-I, 0-5 years (n=329), and group-II, >5-14 years (n=274). Clinical records were reviewed for age, gender, stone-laterality, location, size, number of ESWL-sessions, stone-clearance, and complications. Statistical analysis was done on SPSS v.20.0. ANOVA independent t-test and Chi-square test were used for statistical analysis. p value < 0.05 was considered significant.

RESULTS

M:F 2:1

Location stone	Stone N=603 Stone size (cm)	Renal Unit(M/F:2:1) N=603			Stone clearance		
		Group I (<5yrs) (Mean age 2.9+/- 1.4yrs) n=329	Group II (>5-14yrs) (Mean age 8.7+/- 2.3yrs) n=274	P=value	Group I <5yrs n=329	Group II >5-14yrs n=274	P=value
Upper Calyx	Stone no	13	15		92.3%	86.7%	0.55
	Stone size	1.03+/-0.25	0.98+/-0.27	0.6			
Mid Calyx	Stone no	52	51		92.3%	82.4%	0.14
	Stone size	0.89+/-0.22	0.91+/-0.28	0.64			
Lower Calyx	Stone no	100	129		81%	85.3%	0.24
	Stone size	0.87+/-0.26	0.87+/-0.24	0.81			
Pelvis	Stone no	164	79		87%	86.1%	0.47
	Stone size	1.03+/-0.24	1.1+/-0.26	0.02			
Overall	Stone no	329	274		86.3%	83.9%	0.24
	Stone size	0.96+/-0.26	0.96+/-0.28	0.87			
Stone clearance with CIRF					94.8%	93.1%	0.39
ESWL Sessions.					1.19+/- 0.39	1.24+/- 0.42	0.11

The overall stone-size, as well as the stone-size with respect to stone-locations, is comparable in both groups. Overall complication (Clavian-Dindo-I)108(17.8%), and (Clavian-Dindo-III)32(5.3%), with no significant difference in the two age groups.

CONCLUSIONS

The study showed that both groups had excellent stone-clearance with acceptable complication rates. The age of children did not effect the stone-clearance viz-a-viz stone-size and stone-location

08:28 - 08:40

Discussion

08:40 - 08:43

S22-4 (OP)

FIRST WORLDWIDE REPORT ON SAFETY AND EFFICACY OF USING SMALL 7.5 FR SCOPE FOR PEDIATRIC URETEROSCOPY: PROSPECTIVE PILOT SERIES FROM EUROPE.

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PURPOSE

Technological advances have led to miniaturization of instruments especially in the form of single use scopes. These smaller single use scopes seem to be advantageous especially in cases with difficult access to the renal pelvis due to challenging anatomy and might therefore be a valuable asset in the endoscopic stone treatment in children. We have conducted a multicenter study to analyze the outcomes of pediatric patients treated with the Pusen 7.5 Fr single use scopes at our institutions.

MATERIAL AND METHODS

The study was conducted at two large European tertiary endourology centers that specialize in pediatric kidney stone management. We included pediatric patients with urinary stones treated with the small Pusen 7.5 Fr single use ureteroscope. Patient data and outcomes were prospectively collected, and analysis was performed regarding patient demographics, stone parameters, as well as stone free rate (SFR), operating time, and complications.

RESULTS

In this pilot study, 26 patients were included with a median age of 12 years (7.0 - 16.0) and a male to female ratio of 14:12. The mean cumulative stone size was 15.15 mm (SD± 11.1) and multiple stones were present in 9 (34.6%) patients. 12 (46.2%) patients had a preoperatively inserted stent in place. During the procedure a ureteral access sheath (UAS) was used in 23 (88.5%) cases, being smaller in all cases, with respect to the UAS

previously used in the institution. The median operative time was 47 minutes (IQR: 40.0 - 63.8). 24 (92.3%) patients were stone free, while no intra or postoperative complications were observed.

CONCLUSIONS

Our study demonstrates that the use of the small 7.5 single use ureteroscope is safe and efficient for the treatment of urinary stones in pediatric patients with high stone-free rates and no complications noted in our series. To confirm and validate our findings further studies with larger cohorts are warranted.

08:43 - 08:46

S22-5 (OP)

COMPARATIVE ANALYSIS OF URETERAL CALCULI PRESENTATION AND MANAGEMENT IN CHILDREN AND ADULTS

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1) Schneider Children's Medical Center, Urology, Tel Aviv, ISRAEL - 2) RABIN MEDICAL CENTER, Urology, Petah Tikva, ISRAEL - 3) Schneider children's hospital, Urology, Petah Tikva, ISRAEL

PURPOSE

The prevalence of children presenting with renal colic is significantly lower than adults. The presentation as well as the chances of spontaneous expulsion and the rate of intervention may differ between the age groups. The aim of the current study was to assess such potential differences.

MATERIAL AND METHODS

We retrospectively assessed data of a consecutive group of children and adults presenting to the emergency department and diagnosed with a ureteral stone. Clinical characteristics, radiological exams, and the rate of intervention spontaneous stone expulsion were compared between the adult and children cohorts.

RESULTS

106 children were compared to 99 adults who visited the ER for symptomatic ureteral stones. The median stone size was similar between the children and adult group (5 vs. 4.5 mm [IQR 3-6 mm], respectively). Flank pain as the presenting symptom was less common in children compared to adults (67% vs. 88% [X² p<0.001]), while moderate or severe hydronephrosis was observed more frequently in children compared to adults (35% vs. 17% [X² p<0.001]). In patients treated conservatively the rate of spontaneous stone expulsion was similar between the groups (72% and 73% in the children and adult population, respectively [X² P=0.8]). However, the rate of immediate intervention was higher in the children group (36% vs 11%, respectively [X² p<0.001]).

CONCLUSIONS

The current study highlights differences between children and adults presenting to the ER with a ureteral stone. Diagnosis in children requires a higher index of suspicion as presentation may be less typical as evident by the lower rate of flank pain and a higher rate of hydronephrosis that may suggest delayed diagnosis. Children are more likely to undergo immediate intervention probably due to difficulties in pain management. However when allowed expectant therapy, the rate of spontaneous stone expulsion is similar between the groups.

ACCURACY OF SHEAR WAVE ELASTOGRAPHY IN THE EVALUATION OF PEDIATRIC RENAL SCARRING AFTER MINIMALLY INVASIVE INTERVENTION FOR UNILATERAL STONE DISEASE

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PURPOSE

Shear Wave Elastography (SWE) is a noninvasive technique that gives a numerical value to show the stiffness. After a minimally invasive procedures such as PCNL and ESWL, the tissues become stiffer. Our aim is to evaluate the value of ultrasound elastography in detection of renal scars in such group of patients.

MATERIAL AND METHODS

We included 120 renal units (49 which had ESWL and 71 which had PCNL) at our center between 2014-2021. The elasticity at the intervention site was evaluated by SWE and compared to the normal contralateral kidney which was carried out by a single radiologist. Also, evaluation of the renal function using DMSA scan was done. All patients were ≤ 18 years old. Exclusion criteria included patients with other congenital anomalies of the urinary system e.g (UPJO), patients with augmentation ileocystoplasty and patients who underwent bilateral stone intervention.

RESULTS

Renal scarring was detected in 19 renal units by DMSA scan (6 which had ESWL(12.24%) and 13 which had PCNL(18.3%)). Out of these 19 patients, 14 (73.68%) patients showed increased renal stiffness which is statistically significant. The sensitivity and specificity of the elastography was 73% and 87% respectively. There was insignificant difference between SWE in the treated units compared to the control units (2.94 ± 1.14 m/s compared to 2.30 ± 0.62 m/s in ESWL group ($P = 0.15$) and 2.6 ± 1.2 m/s compared to 2.30 ± 0.62 m/s in PCNL group ($P = 0.2$)).

CONCLUSIONS

Shear wave elastography can be a valuable tool in detection of renal scar tissue post ESWL or PCNL with a high sensitivity and specificity. It is cost effective and may replace the risky radiation exposure from radioisotope studies.

S23: STONE 2

Moderators: Anna Bujons (Spain), Sharjeel Saulat (Pakistan)

ESPU Meeting on Saturday 20, April 2024, 09:45 - 10:25

09:45 - 09:48

S23-1 [WITHDRAWN] TIPS & TRICKS HOW TO AVOID ADDITIONAL ACCESS DURING PERCUTANEOUS NEPHROLITHOTOMY (PCNL)

09:48 - 09:51

S23-2 (OP)

★ HOW MUCH REDUCTION IN RADIATION TIME AND DOSE CAN ULTRASOUND GUIDED FLUOROSCOPY TECHNIQUE ACHIEVE IN MINI- PCNL IN CHILDREN?

Mahmoud ELSABBAGH, Amr SALAMA, Waleed DAWOOD, Ahmed FAHMY, Haytham BADAWY and Mohamed YOUSSEF

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PURPOSE

Ultrasound (US) guidance has shown its advantages over fluoroscopy-only in renal access. The main aim of this study is to assess the reduction in fluoroscopy time using fluoroscopy (FL) assisted (US) guidance compared to the mere use of fluoroscopy in mini-PCNL in children.

MATERIAL AND METHODS

Prospective randomized study was performed on 50 consecutive patients undergoing mini-PCNL from July 2022 to August 2023. Patients were divided into 2 groups (25 each). In (Group 1), patients underwent fluoroscopy only guided puncture while in (group 2) patients had (FL) assisted (US) guided puncture. Demographic data, puncture time, fluoroscopy time, stone-free rate and complication rate were analyzed.

RESULTS

Median age in group 1 compared to group 2 was (7.0 (5.75-10.0) vs. 7.50 (5.0-11.0)) years. Fluoroscopy time was significantly reduced when ultrasound guidance was added; from (157.9 ± 68.54) seconds in group 1 to (29.44 ± 17.01) seconds in group 2 ($p < 0.05$). Radiation dose was reduced from (32.35 ± 13.79) mGy in group 1, to (6.07 ± 3.57) mGy in group 2 ($p < 0.05$). Time to puncture was reduced from (136.6 ± 50.78) (sec) in group 1, to 52.20 ± 33.20 (sec) in group 2 ($p < 0.05$). Global Stone free rate was 95.3% with no statistical difference. Complications rate in group 1 was 32% compared to 20% in group 2 with no statistical difference ($p 0.653$).

CONCLUSIONS

(FL) assisted (US) guidance in renal access is a safe and efficient technique compared to fluoroscopy only technique in mini PCNL in children.

09:51 - 09:54

S23-3 (OP)

FLUOROLESS VERSUS FLUOROSCOPIC GUIDED MINI-PERCUTANEOUS NEPHROLITHOTOMY IN CHILDREN: A RANDOMIZED TRIAL

Ahmad A ELDERWY¹, Islam F ABDELKAWI¹, Ahmed SERAG¹, Islam F ABDELKAWI¹, Ayman ELQADY¹, Hassan ABOULELLA¹, Mohamed Atef ABDELAZIZ¹, Guohua ZENG² and Ahmed SHAHAT¹

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PURPOSE

To evaluate the feasibility of ultrasound-only-guided mini-percutaneous nephrolithotomy (mini-PNL) and to compare it to standard mini-PNL in pediatric patients.

MATERIAL AND METHODS

This randomized comparative trial (NCT03250559) included 60 renal units in 57 children ≤ 14 years with renal stones >1 cm. Mini-PNL was done under ultrasound guidance in 30 renal units and under fluoroscopy guidance in the other 30. The two groups were compared regarding baseline criteria, operative details and postoperative outcomes. Stone free rate (SFR) was defined as ≤ 3 mm residual fragments according to post-operative non-contrast computed tomography (NCCT) scan. The patients were followed for at least 2 years.

RESULTS

In the ultrasound group (USG); fluoroscopy was needed in 4 cases while in the fluoroscopy group (FG); ultrasound was needed in two cases ($p=0.67$).

Both groups were comparable regarding baseline criteria and operative details except that the USG had significantly more dilated tracts ($p=0.021$), and more supra-costal tracts ($p=0.002$).

As revealed by the initial postoperative NCCT, 66.7% in the USG and 83.3% in the FG were rendered stone-free ($p=.23$). After exclusion of Guy III cases (5 cases), the initial SFR increased to 76.9% in the USG and 86.2% in the FG ($p=.49$). Although both intra-operative and postoperative complications were comparable between the two groups, hospital stay was significantly longer (2.5 vs. 2 days) in the USG ($p=.010$).

CONCLUSIONS

Solo ultrasonographic guidance of mini-PNL in children is feasible and yields comparable outcomes to fluoroscopic guidance specially for Guy I/II cases. On-demand fluoroscopy should be always accessible to cover the shortcomings of ultrasonography in tract dilation and detection of residuals.

09:54 - 10:05

Discussion

ULTRASOUND V/S FLUOROSCOPY-GUIDED PRONE MINI PCNL IN CHILDREN

Bashir AHMED ¹, Sadaf ABA UMAR ², Sajid SULTAN ² and Adib-UI-Hassan RIZVI ²

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PURPOSE

To compare the safety, efficacy and outcome of Ultrasound V/S fluoroscopy-guided prone mini PCNL in paediatric age group.

MATERIAL AND METHODS

Retrospective analysis of medical Records of children who underwent Prone mini PCNL under ultrasound-guidance and fluoroscopy-guidance from 15thJune 2022 to 16thJune 2023. In all 92 renal units(88 patients) were included both Group I ultrasound-guided and Group II fluoroscopy-guided had 46 renal units each record were reviewed and compared for age, gender, stone-laterality, single or multiple stones, puncture-site, operative-time, blood-transfusion, complication, hospital-stay, and stone-clearance. Statistical analysis was done on SPSSv.20.0. Independent t-test, and Chi-square test were used for statistical analysis. p-value<0.05 was considered significant.

RESULTS

M:F 1.3:1

	Ultrasound-guided Group I	Fluoroscopy-guided Group II	P=Value
Mean age	Mean age 6.1+/-2.6yrs N=46	Mean age 6.1+/-2.7yrs N=46	
Stone size (cm)	2.2+/-0.67	2.3+/-0.76	0.61
Single stones	30(65%)	27(59%)	0.83
Multiple stones	16(35%)	19(41%)	
Supracostal puncture	23(50%)	18(39%)	0.29
Subcostal puncture	23 (50%)	28(61%)	
Posterior Superior calyx puncture	33(72%)	13(28%)	

Posterior Inferior calyx puncture	33(72%)	12(26%)	0.22
Posterior superior & inferior calyces	00	1(2.1%)	
Operative time (min)	66.45+/-24.7	63+/-28.3	0.26
Stone clearance	43(93.5%)	39(85%)	0.18
Mean hospital stay (days)	2.7+/-1.0	3.4+/-3.3	0.073
Postoperative blood transfusion	9(19.5%)	8(17.3%)	0.78
Postoperative complication	15(32%)	15(32%)	1.0

The stone-size and stone-free rates are comparable between the groups. Over all complications clavian Dindo(I) 22(24%) clavian Dindo(II) 9(9.7%) and clavian Dindo(III) 4(4.39%).

CONCLUSIONS

This study showed that ultrasound-guided mini PCNL has a similar efficacy and complication rate to fluoroscopy-guided mini PCNL. However, ultrasound-guided puncture gives real-time simultaneous bi-plane tracking of the route of puncture into the desired calyx and prevents the hazard of radiation to the patient, and operative team.

10:08 - 10:11

S23-5 (OP)

COMPARISON OF RESULTS OF PERCUTANEOUS MINI-NEPHROLITHOTOMY <15F (MINI-NLPC) BETWEEN CHILDREN >6 YEARS AND CHILDREN <6 YEARS IN THE MANAGEMENT OF COMPLEX RENAL STONES: A SINGLE-CENTER STUDY

Thomas LOUBERSAC ¹, Fabrizio VATTA ², Hortense ALLIOT ², Karim BRAIK ³, Xavier DELFORGE ⁴, Marc BARRAS ⁵, Sebastien FARAJ ² and Marc-David LECLAIR ²

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PURPOSE

Percutaneous surgery is the recommended treatment for kidney stones >2cm. Results seem worst in children under 6 years of age. We wanted to compare the results of mini-PCNL for the treatment of kidney stones >2cm between children >6 years (group A) and children <or=6 years (group B) in our centre.

MATERIAL AND METHODS

We prospectively included all children who underwent surgery at our centre from 2018 to 2023. of mini-PCNL<15F for renal calculi >2cm (or>10mm for inferior calculi) and analysed retrospectively. We compared outcomes and complications between between group A and group B.

The primary endpoint was 3-month stone free(SF) status, defined as the absence of a residual fragment >4mm on post-operative imaging.

RESULTS

33 procedures (group A n=15 and group B n=18) were performed in 25 patients (group A n=13 and group B n=12 with 2 patients had bilateral procedures). The demographic were not statistically different between the two groups except for age and weight. The median(IQR) age in group A was 12 years (11;14) and in group B 3years (2;4). Median(IQR) cumulative stone size was 26mm (19;34) in group A and 35mm (25;50) in group B (p=0.05).

The SF rate after one procedure was 66% (10/15) in group A and 66% (12/18) in group B (p=0.8). Median(IQR) Length of procedure (Group A n= 139min (94;152) and Group B n=128min (110;158)) , hospital stay and follow-up (Group A n= 25 months(15;39) and Group B n=19 months(14;28)) were not statistically different between the two groups . There were 2 complications in group A and 3 complications in group B > or= Clavien 3.

CONCLUSIONS

According to our series, the results of mini-PCNL in children > or < 6 years of age appear to be comparable and would allow a high rate of SF with few complications despite large stone sizes.

10:11 - 10:14

S23-6 (OP)

FIRST WORLD SERIES OF PEDIATRIC ECIRS: CLINICAL RESULTS FROM TWO EUROPEAN REFERENCE CENTERS.

Yesica QUIROZ MADARRIAGA¹, Stefania FERRETTI², Davide CAMPOBASSO², Claudia GATTI², Francesca CARAVAGGI², Rocio JIMENEZ¹, Erika LLORENS¹ and Anna BUJONS¹

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PURPOSE

Endoscopic combined intrarenal surgery (ECIRS) is a combination of both retrograde and antegrade approaches for treatment of large or complex renal stones in one procedure, that are currently being treated with multiple tracts or sessions of PCNL, increasing the complications. The aim of our study is describe the clinical outcomes of ECIRS in a pediatric population.

MATERIAL AND METHODS

A retrospective study was performed in pediatric patients with lithiasis disease treated with ECIRS between 2006 and 2023 in 2 referral centers in Europe. Demographic data, clinical data, stone size and location, laser settings, intraoperative variables, stone- free rate (SFR) and complications were collected. Student's t-test, Fisher's test and Mann Whitney U test, were performed.

RESULTS

30 patients were included. The mean age was 9,7 years, 56,7% girls. The mean size of the stone was 21,7mm (12-77 mm), 53,33% were multiple. Ureteral access sheath (UAS) was used in 93,3% of the surgeries and only 36,7% had preoperative JJ stent. 86,7% of percutaneous access were MiniPCNL (14-20Fr). High power laser (HPL) was the most frequent energy source for lithotripsy, including TFL. The most commonly used settings were 10-30Hz and 0.8-3J. The mean operative time was 162 minutes. There was one perforation of the collecting system that was managed with JJ stent and in the postoperative period 83.33% of the patients had no complications. 3 presented fever, 1 developed urinary sepsis and 1 required reintervention. The SFR was 70% and the lithiasis size was statistically significant (p 0.018).

CONCLUSIONS

ECIRS is a feasible, safe and efficient procedure in children with complex renal lithiasis, decreasing the number of procedures needed for stone free. Multicenter studies are required to validate these results on a population scale.

10:14 - 10:25

Discussion

S24: FUNCTIONAL VOIDING DISORDERS 1

Moderators: Erik Van Laecke (Belgium), Simona Gerocarni Nappo (Italy)

ESPU Meeting on Saturday 20, April 2024, 10:50 - 11:35

10:50 - 10:53

S24-1 (OP)

MICROBIOME MODIFICATION AS A POSSIBLE CAUSE OF OVERACTIVE BLADDER: FIRST APPROACH

Lucas MORATILLA-LAPEÑA ¹, Borja NAVA ¹, María SARMIENTO ¹, María SAN BASILIO ¹, Arturo ALMEYDA ¹, Virginia AMESTY ², Roberto LOBATO ², Susana RIVAS ², Isabel GARCÍA ³, Maria José MARTÍNEZ-URRUTIA ², Jesús MINGORANCE ³ and Pedro LÓPEZ-PEREIRA ³

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PURPOSE

Overactive bladder (OAB) is a frequent disease affecting up to 10% of healthy children, however, its cause is not entirely clear, being associated with neurological alterations in the micturition mechanism. Recent articles in adults focus on the importance of the microbiome in the development of lower urinary tract symptoms. The aim of our study is to find out if there is variation in urinary microbiome in paediatric patients with OAB and whether it is involved in the pathogenesis.

MATERIAL AND METHODS

Prospective cohort study of male children with diagnosis of OAB and matched controls between 5-11 years, during 2020-2023. Urinary samples were collected. Samples were sent for conventional urine culture and urinary microbiome study using Nanopore kit and sequenced in the MinION system using FLONGLE cells. Exclusion criteria were urinary tract infection, antibiotic during the last month, dysfunctional voiding, surgery of the urinary tract and use of anticholinergic drugs.

RESULTS

We studied 15 males with OAB and 8 controls. Age was similar between groups ($9,19 \pm 2,19$ vs $8,35 \pm 2,92$; $p=0,386$). Among all children, most frequent bacteria in urinary microbiome were *Campylobacter urealyticus* (32%), *Ezakiella massiliensis* (22%) and *Peptoniphilus harei* (20%) with an increase in the alpha-diversity index in OAB patients, which was not significant. Nevertheless, when we analysed the urotypes, we saw more prevalence of *Streptococcus*, *Sthapylococcus* and *Anaerococcus* in OAB patients with no growth of them in control patients.

CONCLUSIONS

Increase of alpha diversity and opportunistic bacteria population in the microbiome in OAB patients may be implicated in the pathogenesis of the disease as the cause of OAB symptoms.

OBESITY AND AND LOWER URINARY TRACT SYMPTOMS(LUTS) IN CHILDREN AND ADOLESCENTS : A SYSTEMATIC REVIEW AND META-ANALYSIS

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PURPOSE

We performed this meta-analysis to assess the association between overweight and lower urinary tract symptoms(LUTs) in children and adolescents.

MATERIAL AND METHODS

We conducted extensive searches on the PubMed, Cochrane Library to identify all articles. We make the searching strategy combining the Mesh term and specific words to target the article which is related to obesity, overweight and LUTs in pediatrics and adolescent including "obesity", "overweight", "body mass index", "enuresis", "wetting", "urination", "lower urinary tract symptoms" and "lower urinary tract dysfunction".

RESULTS

11 studies with 48,293 patients were included. Among them, There are 8 studies related to enuresis, 3 studies related to overactive bladder (urgency and urge incontinence). Patients with obesity had higher rate of enuresis (odd ratio [OR] =4.02; 95% CI, 3.15-5.13; p< 0.001). Obese children were more likely to have overactive bladder than normal children (OR =4.86; 95% CI, 3.83-6.18; p<0.001), and the prevalence of daytime urinary incontinence was also higher in obesity (OR =15.60; 95 CI, 3.91-62.26; p<0.001).

CONCLUSIONS

The study suggested that obesity may be one of the risk factors for LUTs in children and adolescents. The correlation between enuresis and obesity has been confirmed, and a stronger correlation between obesity and overactive bladder (or daytime urinary incontinence) has been demonstrated.

ASSESSMENT OF LOWER URINARY TRACT SYMPTOMS IN PAEDIATRIC POPULATION WITH OVERWEIGHT AND OBESITY

Aneta PIOTROWSKA-GALL ¹, Małgorzata WÓJCIK ², Aneta CYGAN ³, Ewa SZCZUDLIK ², Anna STĘPNIEWSKA ², Barbara DOBROWOLSKA-GLAZAR ⁴ and Rafał CHRZAN ⁴

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INTRODUCTION

The aim of this study was to evaluate the prevalence of lower urinary tract (LUT) symptoms among children with obesity.

PATIENTS AND METHODS

In this prospective clinical study, children undergoing evaluation for overweight and obesity complications in the endocrinology setting were assessed for LUT and bowel function using a bespoke questionnaire covering the whole spectrum of symptoms according to the ICCS definitions. Ambiguous or incomplete questionnaire responses were clarified through phone interviews with guardians. Patients were recruited from a single center between March 13th and October 6th, 2023.

RESULTS

A total of 101 children participated in the study. The median age was 13.5 years (range 8-17 years; SD 2.4), with a median BMI of 32.5 (range 22.6-48.8; SD 5.2), and a median BMI z-score of 2.2 (range 1.2-2.8; SD 0.4). The cohort comprised 46 boys and 55 girls.

LUT dysfunction was detected in 28 (27,7%) patients, necessitating further evaluation in an outpatient urology clinic. Daily incontinence was observed in 18 cases (17,8%), enuresis in 5 (4.9%), and remaining 5 (4.9%) exhibited multiple symptoms as a result of LUT disorder (e.g., frequent UTIs, urgency, holding manoeuvres, abnormal voiding frequency or urinary stream).

Notably, there was a statistically significant difference in age ($p=0.04$) and fat percentage ($p=0.01$) among children with obesity who also had LUT disorders.

CONCLUSIONS

This preliminary study shows that children with obesity may be at an elevated risk for lower urinary tract dysfunction. These findings necessitate further investigation with comprehensive urological assessments.

10:59 - 11:02

S24-4 (OP)

IMPACT OF BEHAVIORAL SEXUAL DIMORPHISM ON BOWEL FUNCTION IN CHILDREN

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PURPOSE

Gender difference in the incidence of bladder-bowel dysfunction or chronic constipation has been reported, though exact reason of the difference is obscure. Because there is dimorphic brain development between genders as well as anatomical difference in the pelvic organs, we speculated that the difference in development of central nerve system may have some impact on defecation. In the present study, impact of sexual dimorphic brain development on bowel function was investigated.

MATERIAL AND METHODS

Survey sheets including Pre-school Activities Inventory (PSAI) and defecation frequency (days/week) were sent to 1503 children's mothers who agreed to participate when children became 3 years old. PSAI is a questionnaire in which parents indicate their child's involvement in various sex-type behaviors and in which higher scores were designed to represent masculine-typical behavior. Relationship between status of DF and score of PSAI were investigated using Chi square test, Student's t test and linear regression analysis.

RESULTS

Among 990 children who returned the survey sheets (65.9%), 818 children (435 boys and 383 girls) were available for analysis. Score of PSAI was significantly higher in boys (56.8±8.2) than in girls (29.4±8.6) ($p < 0.0001$). Score of PSAI in girls with 4 or more days of defecation was significantly higher than those with less than 4 (29.8±8.6 vs 26.5±8.2, $p = 0.01$). A linear regression analysis revealed a positive relationship that as defecation frequency increased, score of PSAI was higher in girls even after adjusted by presence of elder sisters or elder brothers or age at survey (β (95%CI): 0.014 (0.005, 0.023), $p = 0.003$). These differences were not observed in boys.

CONCLUSIONS

The present study demonstrated that defecation frequency was related to behavioral sexual dimorphism in girls. These findings suggest that factors affecting developing sexual dimorphic brain development may also affect the bowel function and risk of constipation.

11:02 - 11:15

Discussion

11:15 - 11:18

S24-5 (OP)

ASSESSING HAND DEXTERITY AND UPPER EXTREMITY PERFORMANCE IN CHILDREN WITH BLADDER BOWEL DYSFUNCTION

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PURPOSE

Lower urinary tract disorders and constipation are common symptoms of bladder and bowel dysfunction(BBD) although several studies have shown that children with BBD also have challenges with social and behavioral development,motor coordination,and development. However, no studies have examined fine motor skills or performance in children with BBD. This study aimed to compare hand dexterity and upper extremity performance of children with BBD and healthy controls.

MATERIAL AND METHODS

The study included 38 healthy children(22 girls,16 boys) and 34 children with BBD(21 girls,13 boys) diagnosed by a pediatric urologist between the ages of 5-12 years.Age, gender, physical activity level and body mass index(BMI) were recorded.The Nine-hole peg test(NHPT) was used to assess hand dexterity and the T-shirt wearing test was used to assess upper extremity performance.

RESULTS

The demographical data of both groups were similar($p>0.005$).Physical activity duration was significantly lower in children with BBD than in healthy children($p=0.001$).There were statistically significant differences between the dominant and non-dominant hand NHPT times and T-shirt wearing times of healthy controls and the BBD group($p=0.08$; $p=0.07$ and $p=0.030$,respectively).

Variable	Healthy Group(n=38) Mean(SD)	BBD(n=34) Mean(SD)	p*
Age(year)	8.53(0.98)	7.94(1.98)	0.550
Gender n(G/B)	22/16	21/13	0.738
Weight(kg)	25.18(5.05)	29.74(12.73)	0.455
BMI(kg/m ²)	15.11(1.64)	16.81(3.54)	0.087
PA duration(h/day)	4.01(1.48)	1.78(2.21)	0.001**
NHPT Dominant hand(sn),Min-Max	21.63(2.97) (17-28)	24.82(5.72) (13.48-39.83)	0.008*
NHPT Non-dominant hand(sn),Min-Max	24.10(3.11) (18-31)	26.54(4.43) (14.58-34.45)	0.007*
T-shirt Wearing Time(sn),Min-max	9.88(3.74) (4-23)	12.41(5.45) (5.3-25.0)	0.030
T-shirt Removing Time(sn),Min-max	8.58(4.31) (3.0-21.0)	7.58(4.14) (2.68-22.86)	0.432

(Mann Whitney U Test,* $p<0,05$;** $p<0,01$)

CONCLUSIONS

Children with BBD had lower hand dexterity and upper extremity performance than healthy controls.We think that a multidisciplinary approach and follow-up programs are critical in increasing the functional abilities of children with BBD and their accompanying conditions.

11:18 - 11:21

S24-6 (OP)

DO FOOT POSTURES AFFECT PELVIC FLOOR MUSCLE ACTIVATION IN CHILDREN WITH LOWER URINARY SYSTEM DYSFUNCTION?

Ebru KAYA MUTLU ¹, Ece Zeynep SAATÇI ² and Halil TUĞTEPE ²

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PURPOSE

Some studies in the literature have revealed that poor foot biomechanics (flat feet and hyperpronation) can affect the alignment of the pelvis in adults and potentially cause pelvic floor dysfunction. Our aim is to evaluate foot posture between children with Lower Urinary System Dysfunction (LUTD) and healthy children and to examine the existence of a relationship between foot posture and pelvic floor muscle activation.

MATERIAL AND METHODS

Voluntary participants meeting inclusion criteria were divided into two groups: LUTD group (n=43) and control group (n=43). Foot posture and pelvic floor muscle activity of participants was evaluated with Foot Posture Index (FPI-6) and NeuroTrac-Myoplus4Pro device, respectively.

RESULTS

There was a significant difference between the LUTD group and the control group and FPI-6. The FPI-6 right and left mean values of the LUTD group were 4.37 and 4.32, while the healthy group was 1.81 and 1.13. No relationship was found between FPI-6 values and pelvic floor muscle activation values between the two groups ($p>0.05$).

CONCLUSIONS

The high FPI-6 score in the group with LUTD is an indicator of increased pronation in these children. Pronation at the ankle, which is the last link of the lower extremity chain; Disposition of the knee and hip joint may cause increased flexibility. We recommend that when evaluating children, we should approach the body as a whole, not just focusing on the pelvic floor muscles, and that future studies should include larger sample groups.

11:21 - 11:24

S24-7 (OP)

THE RELATIONSHIP BETWEEN VOIDING PATTERN AND PELVIC FLOOR MUSCLE ACTIVITY IN CHILDREN WITH LOWER URINARY TRACT DYSFUNCTION

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PURPOSE

Lower urinary tract dysfunction (LUTD) is a common problem in children. Besides bladder and rectum dynamics, pelvic floor muscle activities (PFMA) play an important role in the pathophysiology of lower urinary tract dysfunction (LUTD) in children. In this study, we aimed to determine the contraction and relaxation functions of PFMA in children with LUTD.

MATERIAL AND METHODS

Among 79 children diagnosed with LUTD, 19 were intermittent, 33 were staccato, and 27 were bell shaped voiding patterns during uroflowmetry. PFMA were measured using superficial electrodes in the postvoid period, which is the resting phase of the pelvic floor muscles. During the measurement, 5 seconds of contraction and 5 seconds of relaxation were performed, and the average values of the 50-second period were recorded.

RESULTS

The mean PFMA values in the contraction and relaxation periods according to the voiding pattern are shown in the Table. The relaxation function was lower in children who voided intermittently and staccato than those with bell curve, and there was statistical significance between those who voided staccato and bell curve ($p=0.001$). Contraction function was worst in children who voided intermittently, better in staccato voiders, and best in those who voided bell curve, and the difference between intermittent and bell-shaped voiding was statistically significant ($p=0.013$). When the difference between contraction and relaxation (contraction amplitude) was evaluated, both intermittent and staccato voiding had statistically significantly less contraction amplitude than bell curve voiders ($p=0.001$; $p=0.002$).

CONCLUSIONS

PFMA measurement is a noninvasive and easy method that can be used to evaluate pelvic floor contraction and relaxation functions and to understand the pathophysiological mechanism. In children with dysfunctional voiding, as the voiding pattern worsens by shifting from staccato to intermittent, pelvic floor muscle contraction and relaxation ability decreases

11:24 - 11:35

Discussion

S25: FUNCTIONAL VOIDING DISORDERS 2

Moderators: Yazan Rawashdeh (Denmark), Giovanni Mosiello (Italy)

ESPU Meeting on Saturday 20, April 2024, 11:35 - 12:15

11:35 - 11:38

S25-1 (OP)

CHALLENGES IN E-HEALTH: THE EFFECT OF DIGITALIZATION OF FREQUENCY VOIDING CHARTS ON COMPLIANCE. RANDOMIZED CONTROLLED TRIAL COMPARING DIGITAL AND HARD COPY FREQUENCY VOIDING CHARTS.

Liesbeth DE WALL ¹, Elisabeth KRAGT ¹, Eline VAN DE WETERING ¹, Johanna COBUSSEN-BOEKHORST ¹, Joyce MANTEL- VAN STEL ², Barbara KORTMANN ¹, Charlotte BOOTSMA-ROBROEKS ³ and Wout F FEITZ ¹
1) Radboudumc, Amalia children's hospital, Department of Urology, Nijmegen, NETHERLANDS - 2) University Medical Center Groningen, Department of Paediatric Urology, Groningen, NETHERLANDS - 3) University Medical Center Groningen, Department of Paediatric Nephrology, Groningen, NETHERLANDS

PURPOSE

Frequency voiding charts (FVCs) are commonly used to gain better insight into the voiding and drinking behaviours of patients with voiding symptoms. Non-compliance when filling out a chart is known to be high. The use of a digital application might increase adherence, but little research has been conducted on this topic. The aim of this study is to compare the quality (number of correctly filled out charts) and quantity (number of complete charts) of digital versus paper FVCs among children and their parents.

MATERIAL AND METHODS

A multi-centre parallel randomised controlled trial was conducted. Participants were assigned either a 48-hour digital FVC or a 48-hour paper FVC. Completion rates were scored based on a predefined scoring method and transcribed into a percentage. Secondary objectives included user friendliness, feasibility, degree of the child's participation and attractiveness. Trial registry data: NTR NL9383.

RESULTS

Ninety-seven patients were randomised to either a digital (N = 53) or paper (N = 44) FVC. No significant difference in complete and accurately filled out FVCs was seen between the groups, with 35% (N = 18) for digital and 50% (N = 22) for paper, $p=0.12$. Subjects considered the digital application more appealing, more educative and more inviting compared to the paper chart ($p < 0.05$).

CONCLUSIONS

In this underpowered study, no significant difference appeared between the groups in the number of complete and accurately filled out FVCs. Implementation of e-health did not seem to improve compliance. In daily practice, personal preference might offer the best solution.

THE ROLE OF CONSERVATIVE MANAGEMENT ADJUNCTS IN BLADDER AND BOWEL DYSFUNCTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

Adree KHONDKER ¹, Ihtisham AHMAD ¹, Zwetlana RAJESH ¹, Sabrina BALKARAN ², Zizo AL-DAQQAQ ¹, Jin Kyu KIM ¹, Natasha BROWNRIGG ¹, Abby VARGHESE ¹, Michael CHUA ¹, Mandy RICKARD ¹, Armando LORENZO ¹ and Joana DOS SANTOS ¹

1) *The Hospital for Sick Children, Urology, Toronto, CANADA* - 2) *The Hospital for Sick Children, Toronto, CANADA*

PURPOSE

To determine the effect of conservative adjuncts (non surgical, non pharmacological) to standard urotherapy in pediatric bladder and bowel dysfunction (BBD).

MATERIAL AND METHODS

Five databases were systematically searched (MEDLINE, EMBASE, CINAHL, Scopus, and the Cochrane Library) from study conception to June 2023. Comparative studies of conservative adjuncts versus conventional urotherapy were included. The primary outcomes included lower urinary tract symptoms, recurrent urinary tract infections (UTIs), and uroflowmetry variables.

RESULTS

Eighteen studies were included (15 RCTs and three comparative observational studies), generating a total of 1228 children with a median age at presentation of 7 years and a median follow-up of 9 months. Conservative adjuncts included home education (5 studies, 27%), biofeedback or cognitive behavioral therapy (7 studies, 39%), pelvic-floor physiotherapy or exercise-based treatment (5 studies, 27%), or miscellaneous (2 studies, 11%). When compared to urotherapy alone, conservative adjuncts were associated with reduced incontinence (OR 0.33, 95%CI 0.21, 0.51; $p < 0.01$), reduced rates of recurrent UTI (OR 0.60, 95%CI 0.37, 0.96; $p = 0.03$), and reduced rates of abnormal uroflowmetry (OR 0.11, 95%CI 0.06, 0.19; $p < 0.001$). The overall risk of bias was low, moderate, and severe for 8 (44%), 8 (44%), and 2 (11%) studies, respectively.

CONCLUSIONS

Conservative adjuncts are associated with reduced urinary symptom burden, reduced rates of UTI, and reduced rates of abnormal uroflowmetry findings. These findings support the introduction of these interventions in a stepwise approach before embarking on more invasive or pharmacological strategies. Given the considerable variability in the definition of BBD and reporting heterogeneity, well-designed prospective studies are required to validate these findings.

★ CAN CONNECTIVE TISSUE MASSAGE BE AN EFFECTIVE APPROACH IN CHILDREN WITH LOWER URINARY TRACT DYSFUNCTION?

PURPOSE

Nowadays in treating LUTD, alongside pharmacology and surgery, conservative and easy-to-apply methods like urotherapy and physical therapy are increasingly prominent. Among the physical therapy approaches applied are pelvic floor muscle rehabilitation(PFMR) and connective tissue massage(CTM), which has recently started to be applied. CTM is a manual skin reflex treatment that locally affects mast cells in connective tissue through short and long tractions. This study aimed to compare CTM+PFMR with PTMR alone on uroflowmetry parameters, symptoms and quality of life.

MATERIAL AND METHODS

40 children (31 boys, 9 girls), diagnosed with LUTD were divided into two groups using block randomization. Group A (G.A.) had PFMR only, supervised by a physiotherapist three times a week for eight weeks, while Group B (G.B.) had PFMR+CTM. Pre/Post-treatment uroflow parameters (volume,Qmax,Qave,flow time,EMG activation) were evaluated with EMG-Uroflowmetry,symptoms score with Dysfunctional voiding and incontinence scoring system(DVISS),and quality of life with Pediatric Incontinence Questionnaire(PIN-Q).

RESULTS

Children's physical and demographic characteristics in both groups were similar($p>0.05$).When the difference analysis of the groups was made in pre/post-treatment evaluations, G.B. showed more improvement in DVISS and Pin-Q scores compared to G.A.($p=0.001$; $p<0.01$).When comparing uroflowmetry parameters between the groups, difference was found in Qave($p=0.001$; $p<0.01$). When the groups were evaluated within themselves as pre and post-treatment, it was found that both groups showed significant improvements in DVISS, Pin-Q scores, and uroflowmetry parameters in the post-treatment period($p=0.001$; $p<0.01$).

CONCLUSIONS

PFMR has positive effects on uroflowmetry parameters, symptoms and quality of life when applied both alone and with CTM. CTM applied in addition to PMFR can be more effective on certain uroflow parameters,symptoms score and quality of life by restoring the balance between the sympathetic and parasympathetic systems.In LUTD children,CTM can be applied in addition to PFMR as an accessible technique without side effects.

11:44 - 11:55

Discussion

11:55 - 11:58

S25-4 (OP)

SACRAL NEUROMODULATION IN BLADDER AND BOWEL DYSFUNCTION: EARLY INSIGHTS FROM THE FIRST CANADIAN PEDIATRIC COHORT

PURPOSE

To present the inaugural Canadian experience using sacral neuromodulation (SNM) as therapeutic option for children with refractory bladder and bowel dysfunction (BBD).

MATERIAL AND METHODS

Patients <18y with refractory BBD were prospectively followed from 2018 to present. Preoperative evaluation included spinal MRI and videourodynamics. Refractory BBD was defined by symptom persistence after 6 months of conservative and >3 months of optimized combined medical therapy. Two-stage SNM implantation was executed with a minimum 2-week Stage-1 trial. Functional outcomes and complication rates were measured following institutional protocols. Data presented as median(range).

RESULTS

P t	Sex	Age at surgery	Comorbidities	Indication	UDS	Anorectal manometry	Medical therapy
1	Female	9	ADHD	UI,OAB	Detrusor overactivity(DO),low compliance,decreased capacity		Anticholinergic,B3 agonist,laxative
2	Male	8	ADHD	UI,OAB,FI,constipation	DO,low compliance,decreased capacity	Normal	Anticholinergic,B3 Agonist, laxative,enema
3	Female	11	ADHD	UI,OAB,FI,constipation	Normal		B3 Agonist,alpha-blocker,laxative
4	Male	10	None	UI,OAB,FI,constipation	DO,low compliance,decreased capacity	Abnormal	Anticholinergic,B3 Agonist,alpha-blocker,laxative
5	Female	15	None	UI,OAB,FI,constipation	DO,decreased capacity	Normal	Anticholinergic,B3 Agonist,laxative, enema

Five patients completed Stage-2 implantation at 10years (8.2-15). Indications included urinary incontinence(UI), overactive bladder(OAB), Fecal incontinence(FI)/encopresis. All had normal spinal MRI and attempted biofeedback/pelvic floor physiotherapy(Table 1). Baseline Dysfunctional Voiding Scoring System(DVSS) score was 11.5(10-16). At 6months follow-up, only one patient required adjunct bladder medication. DVSS at 1-year follow-up was 4(0-7). Symptomatic resolution was noted in 40%(2/5) at 6 months, sustained over 12 months. Early surgical complications were reported in 1(infection) and late complications in 3(lead fracture/battery depletion/non-traumatic malfunction), requiring SNM reimplantation at 37.5 months(36-49) post-implantation.

CONCLUSIONS

SNM offers promising results for refractory BBD in Canada. The significant improvement in symptoms highlights the treatment's potential which must be balanced against the high need for revision detected at 3years. This study establishes the feasibility of introducing SNM for selected refractory pediatric patients with BBD.

11:58 - 12:01

S25-5 (OP)

BNP AND ADH HORMONAL PROFILE IN ENURETIC CHILDREN WITH AND WITHOUT AIRWAY OBSTRUCTION: A COMPARATIVE CLINICAL TRIAL

Andre RIBEIRO ¹, Liliana OLIVEIRA ², Lidyane DA SILVA ², Davi ALVES ³, Hanny FRANCK ³ and José Murillo NETTO ¹

1) Hospital Universitário da Universidade Federal de Juiz de Fora, Surgery, Juiz De Fora, BRAZIL - 2) Hospital Universitário da Universidade Federal de Juiz de Fora, Pediatrics, Juiz De Fora, BRAZIL - 3) Hospital Universitário da Universidade Federal de Juiz de Fora, Nursing, Juiz De Fora, BRAZIL

PURPOSE

Introduction: Upper Airway Obstruction (UAO) is a common Pediatric condition (27% of prevalence); nocturnal enuresis (NU) is related to UAO in 8 to 47% of these children. The pathophysiology of this association isn't so clear yet, but there seems to be a connection between Brain Natriuretic Peptide and Anti Diuretic Hormone secretion throughout sleep. The aim of this study is to compare hormonal profiles and dry night diaries between two groups of enuretic children: with and without UAO, before and after airway surgery (AS) and urotherapy (UROTH).

MATERIAL AND METHODS

Methods: Comparative clinical trial between unuretic children with and without UAO, from 5 to 14 years, recruited voluntarily at enuresis outpatient in a tertiary hospital from May 2018 to August 2023. Blood samples were collected for measurement of BNP and ADH, before and 90 to 120 days after each group therapy. We also collected a dry night diary before and after the same time in each group. Data was analyzed before and after therapies; after application of normality test, we applied t test / Mann-Whitney – Wilcoxon

RESULTS

Results: intergroup analysis: average difference between ADH pre therapy (3,75 UROTH and 5,88 AS) and dry nights after therapy (14,20 UROTH and 22,62 AS). Intragroups analysis: in AS group we noticed an increase of BNP (116,52 @ 156,21) and dry nights (9,67 @ 22,62); in UROTH group we didn't notice any difference.

CONCLUSIONS

Conclusion: The hormone profile between groups is different in ADH pre therapy and in dry nights after therapy. For AS group, surgery was effective to improve number of dry nights throughout 30 days.

12:01 - 12:04

S25-6 (OP)

EVALUATION OF PELVIC FLOOR MUSCLE ACTIVITIES ACCORDING TO THE FREQUENCY OF ENURESIS IN CHILDREN WITH PRIMARY MONOSYMPTOMATIC NOCTURNAL ENURESIS

PURPOSE

We evaluated pelvic floor muscle (PFM) activities before and after specific urotherapy treatment according to the frequency of enuresis in children with primary monosymptomatic nocturnal enuresis (PMNE).

MATERIAL AND METHODS

A total of 54 children over the age of 5 with PMNE were included in the study. PMNE frequency and quality of life were recorded before and after treatment. PFM activities were measured before and after treatment with the NeuroTrac MyoPlusPro device during contraction and relaxation. During PFM activities measurement, 10 consecutive repetitions of 5 seconds of contraction and 5 seconds of relaxation were performed and the average values at 50 seconds were recorded. Each patient had standard urotherapy, alarm therapy and individualized PFM rehabilitation.

RESULTS

The average age was 10.37 ± 3.4 and the gender distribution was 41 boys and 13 girls (Table. 1) The frequency of enuresis was 6-7 nights a week in 59% of the patients, 3-5 nights a week in 31% and 1-2 nights a week in 9%. Before treatment, PFM contraction value decreased by frequency of enuresis, but it was not statistically significant ($p > 0.05$) (Figure 1)(Table. 2). PFM values were similar between groups ($p > 0.05$) (Figure 1)(Table 2). The average of individualized pelvic floor muscle rehabilitation sessions was 10.93. There was no statistically significant relationship between the number of sessions and the frequency of PMNE, age and pelvic floor muscle variables ($p > 0.05$)(Table 1). After treatment PFM rest average, work average; frequency of enuresis, and quality life were improved ($p = 0.0001$, $p = 0.0001$, $p = 0.0001$, $p = 0.0001$, respectively)(Table 1).

CONCLUSIONS

PFM contraction strength decreases by frequency of enuresis in children with PMNE. After specific urotherapy (standard urotherapy, alarm therapy with PFM rehabilitation), PFM contraction and relaxation improve and normalize. Randomized controlled studies are needed.

12:04 - 12:15

Discussion

VD: VIDEO DISPLAY

VD-1 (VD without presentation)

PERCUTANEOUS CYSTOLITHOTOMY IN AN AUGMENTATION CYSTOPLASTY WITH MITROFANOFF

Yesica QUIROZ MADARRIAGA, Lucia DIEGUEZ, Rocio JIMENEZ and Anna BUJONS

Fundacio Puigvert, Paediatric Urology, Barcelona, SPAIN

PURPOSE

The gastrointestinal segments are the tissues of choice when performing an augmentation cystoplasty, however they have long-term consequences such as the appearance of bladder stones or even malignancy. Our objective is to describe the surgical technique of percutaneous cystolithotomy in a patient undergoing colcystoplasty.

MATERIAL AND METHODS

We present the case of a 16-year-old female patient with a history of severe abdominal polytrauma in childhood, who at the age of 7 years required a colcystoplasty with Mitrofanoff and bladder neck closure. Since then she has presented multiple episodes of cystolithiasis and during the last controls there is evidence of recurrence of lithiasis. Renovesical ultrasound and abdominal radiography showed multiple lithiasis, the largest of 15mm in diameter. It was decided to perform a percutaneous cytolithotomy. In supine position and under general anesthesia a Mitrofanoff cystoscopy was performed. 7 bladder stones were identified, the biggest one almost 2cm.

Guided percutaneous puncture is performed under direct vision with chiba needle and progressive dilatation is performed on Amplatz guide. A balloon dilator is introduced, which is insufflated up to 20 Atmospheres and a 30Fr sheath is advanced. Nephroscope passage and extraction of small lithiasis with N-Perc forceps. To achieve the stone fragmentation a 500micras Holmium: YAG laser fiber (2J-10Hz) was used. A Mitrofanoff catheter (14Fr) was placed

RESULTS

The operative time was 150minutes and blood losses were virtually absent. There were no intra- or post-operative complications and the patient was discharged at the 2 day. After 3 weeks the Mitrofanoff catheter was removed having a stone free status

CONCLUSIONS

Percutaneous cystolithotomy is a plausible procedure in patients with bladder enlargement and closed bladder neck, being only necessary to catheterize through the Mitrofanoff in the postoperative period to avoid the appearance of fistulas, maintaining good urine drainage and closing the percutaneous access in planes.

VD-2 (VD without presentation)

SINGLE-STAGE PRIMARY REPAIR OF BLADDER EXSTROPHY-EPISPADIAS COMPLEX: IS IT PREFERRED AT DELAYED AGE?

Maria ESCOLINO¹, Paolo CAIONE², Annalisa CHIODI¹, Claudia DI MENTO³, Fulvia DEL CONTE³, Mariapina CERULO³, Vincenzo COPPOLA¹ and Ciro ESPOSITO¹

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PURPOSE

In the last 2 decades, single-stage repair of bladder exstrophy-epispadias complex (BEEC) has been proposed at neonatal age or within the first 2 months. We herein report single-stage primary repair of BEEC to demonstrate feasibility and advantages at older patient's age.

MATERIAL AND METHODS

A newborn with prenatal diagnosis of BEEC was followed conservatively till 5 months of age. The parents were instructed to manage the exstrophy plate and maintain it moist using gel and wet gauze. The patient received hormonal stimulation using single im administration of testosterone enanthate at 3 months. Ultrasound (US) showed mild right hydronephrosis and X-ray confirmed wide pubic diastasis (5.5 cm). Surgery was planned at 23 weeks of age and 9.250 kg body weight.

RESULTS

Complete bladder-urethro-genital repair was performed, including bilateral posterior iliac osteotomy, bilateral ureteral reimplantation, bladder closure, bladder neck lengthening and plasty, urethral plate tubularization, periurethral musculature and soft tissue reassembly, with anterior pelvic floor reconstruction, according with personal technique. Surgery lasted approximately 8 hours. The post-operative course was uneventful. Immobilization of lower limbs, adducted at 90° and infra-rotated, was maintained for 4 weeks postoperatively. Suprapubic catheter was removed 5 weeks postoperatively. At 4-month follow-up, the patient was asymptomatic and had intermittent, spontaneous, valid micturition. US showed resolution of hydronephrosis.

CONCLUSIONS

Complete bladder-urethro-genital repair is feasible as single procedure for management of BEEC. Surgery can be postponed from neonatal to older patient's age, influencing positively the surgical outcome. Delayed repair allowed to minimize risk of penile vascular injury, reduce surgical complications and post-operative intensive care.

VD-3 (VD without presentation)

★ STAGED Y-TYPE URETHRAL DUPLICATION RECONSTRUCTION (SUPINE URETHRAL MOBILIZATION + STAG): A DETAILED STEP BY STEP VIDEO

Javier RUIZ, Felicitas LOPEZ IMIZCOZ, Nicolas ROSIERE, Luciana DIAZ ZABALA, Otilia BLAIN, Santiago WELLER, Cristian SAGER, Carol BUREK, Yesica GOMEZ, Tobia SEBASTIAN, Esteban GALLINO and Juan Pablo CORBETTA

Hospital de Pediatría Prof. J. P. Garrahan, Urology, Buenos Aires, ARGENTINA

PURPOSE

Y-type urethral duplication (Effman IIA 2 “y-type”) represents a wide spectrum of urogenital malformations in which the common finding is the presence of an orthotopic steno-atresic urethra and a functional ectopic ventral urethra that ends at the anal margin. The aim of this video is to illustrate a staged reconstruction performing a radical mobilization of the functional ventral urethra in a first stage and posteriorly an autologous graft tubularization (STAG).

MATERIAL AND METHODS

We present a 4-year-old boy with postnatal diagnosis of “y-type” urethral duplication with anal voiding and no other comorbidities. In the first stage the patient was placed in a supine position and the ectopic urethra was separated from the anal margin and then dissected proximally to its prostatic part. A disposable flexible ureteroscope was used in an antegrade way through a cystostomy trocar as a guide during the urethral dissection. The ventral urethra was placed in a peno scrotal position. Six months later, a STAG procedure was performed using preputial and buccal mucosal grafts. The dorsal urethra was not resected, and it was anastomosed to the neourethra near to the glans. After 10 months tubularization of the neourethra was performed.

RESULTS

No major complications were registered. After 6 months follow-up the patients is voiding through a glandular meatus

CONCLUSIONS

Staged reconstruction with the use of autologous grafts is a feasible option in the management of y-type urethral duplication. Supine position can be used for a greater mobilization of the functional urethra to a perineal or peno-scrotal position. Dorsal urethra can be anastomosed distally to the neourethra avoiding dilatations and more complex procedures.

VD-4 (VD without presentation)

INTRAOPERATIVE INDOCYANINE GREEN FLUORESCENCE NAVIGATION FOR ROBOT-ASSISTED HEMINEPHRECTOMY IN CHILDREN

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PURPOSE

We describe the use of indocyanine green during robotic-assisted heminephrectomy (RAHN) in 4 cases of upper or lower moiety exclusion. This technique aims to better understand vascular anatomy of excluded moiety while preserving the remnant renal pole and ureteral vascular supply.

MATERIAL AND METHODS

A retrospective analysis of three pediatric patients(4 renal units) who underwent RAHN with ICG were performed in a mean age of 2.3y (range 1-7). After habitual patient positioning and trocars placement, we performed artery branch clamping of the excluded pole, administered ICG (0.2mg/kg), and activated the Da Vinci Xi's FireFly

system. After confirming anatomical integrity of upper pole vascular supply, we conducted heminephrectomy with ureterectomy.

RESULTS

All four RAHN procedures were completed successfully without intraoperative complications. In one case, the ICG showed abnormal vascularity between upper and lower pole and allowed better control during surgery. This technique enabled clear preservation of vascular supply for the remaining renal moiety and ureteral vascularization. ICG use allowed for precise identification of vascular supply, predicting minimizing the risk of major bleeding linked to anomalous vasculature. No immediate postoperative complications, adverse events or major blood loss were observed. Postoperative recovery was uneventful.

CONCLUSIONS

We describe use of ICG during RAHN in pediatric patients with pole moiety exclusion in 4 surgeries. The technique effectively prevents vascular lesions related to anomalous vasculature and ensures excellent surgical outcomes. Nevertheless, further studies involving larger patient cohorts and long-term follow-up are imperative to confirm the reproducibility and long-term benefits of this approach.

VD-5 (VD without presentation)

LAPAROSCOPIC NEPHRON-SPARING TREATMENT OF FRALEY'S SYNDROME IN A PAEDIATRIC PATIENT

Javier RUIZ, Felicitas LOPEZ IMIZCOZ, Juan Pablo CORBETTA, Santiago WELLER, Nicolas ROSIERE, Luciana DIAZ ZABALA, Otilia BLAIN, Cristian SAGER, Carol BUREK and Yesica GOMEZ
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PURPOSE

Fraley's syndrome is a rare cause of extrinsic compression of the upper pole infundibulum secondary to a renal vascular variant. Surgical treatment with nephron-sparing procedures is indicated only in symptomatic cases and only few cases have been published in the literature. The aim of this video is to illustrate in a step-by-step fashion the diagnosis and minimally invasive management of this rare entity in a paediatric patient.

MATERIAL AND METHODS

We present a 4-year-old boy with a 6-month history of recurrent left flank pain and isolated upper calix dilation on ultrasound. Nuclear Scan demonstrated tracer retention in the left upper pole and CT scan showed anterior and posterior branches of the apical renal artery. Patient was positioned in a Galdakao-modified supine Valdivia position. A retrograde pyelogram confirmed an obstructed and long upper pole infundibulum. A transperitoneal laparoscopic caliconeopyelostomy was performed ventrally to the upper pole vessels.

RESULTS

Operative time was 90 minutes. Patient was discharge after 48 h. Double-J ureteral stent was removed after 1 month. There were no complications with reduction of the upper pole dilation on ultrasound and resolution of symptoms during follow-up.

CONCLUSIONS

Fraley's syndrome is rare cause of upper pole obstruction and should be suspected in the presence of recurrent flank pain, haematuria, or urinary tract infection with an isolated upper calix dilatation on images. Laparoscopic nephron-sparing surgery is a feasible option and should be the first line of treatment in paediatric patients.

VD-6 (VD without presentation)

★ LAPAROSCOPIC RETROPERITONEAL NEPHRECTOMY FOR AUTOSOMAL-RECESSIVE POLYCYSTIC KIDNEY DISEASE (ARPKD) IN NEONATES AND INFANTS

Paul AUSTIN

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PURPOSE

Massively enlarged kidneys with autosomal recessive polycystic kidney disease (ARPKD) may impact feeding and respiration in neonates and infants necessitating nephrectomy(ies). Additionally, nephrectomy is necessary to create space for peritoneal dialysis (PD) and bridging prior to kidney transplantation. The purpose of this video is to demonstrate the feasibility and value of a laparoscopic retroperitoneal approach for nephrectomy(ies) in neonates and infants with ARPKD.

MATERIAL AND METHODS

Key surgical steps are described in the video. The neonate is placed in lateral position and key landmarks are marked: a) 11th & 12th ribs, b) iliac crest and c) paraspinal muscle. Three triangulated 5 mm ports are placed in the retroperitoneal space using the landmarks for the dissection. The kidney is morcellated and removed over a 2.5 cm incision off the lateral port site.

RESULTS

Important techniques learned with the limited working space include using insufflation to expand the working space, utilization of a laparoscopic Kittner dissector and usage of bipolar diathermy-based device to seal and divide the vessels. Patient recovery and PD usage was expedited in all cases, and we have successfully used this technique in 3 neonates and 2 infants for stabilization in the NICU and PD implementation.

CONCLUSIONS

The retroperitoneal approach for laparoscopic nephrectomy(ies) in neonates and infants with ARPKD is a good surgical strategy that facilitates recovery and early PD and bridging for future renal transplantation.

VD-7 (VD without presentation)

LAPAROSCOPIC URETEROCALICOSTOMY: A SURGICAL TECHNIQUE TO CONSIDER WHEN PERFORMING LAPAROSCOPIC PYELOPLASTY

Javier ROJAS-TICONA, Maria RAMIREZ-PIQUERAS, Veronica MARIJUAN SAHUQUILLO, Esperanza HERNANDEZ ANSELMÍ, Tania MORATALLA JAREÑO, Alba LARA VALTUEÑA, Carlos DE-LA-SEN-

PURPOSE

Main indications for ureterocalicostomy are: prior failure of pyeloureteral surgery, severe fibrosis at the pyeloureteral junction, large proximal ureteral stenosis that may compromise a tension-free pyeloureteral anastomosis, and an intrarenal pelvis with significant hydronephrosis. We present a case of a patient treated with laparoscopic ureterocalicostomy.

MATERIAL AND METHODS

A 10-year-old male followed up by pediatric nephrology for right megacalycosis. He was referred to our Service due to flank pain and hydronephrosis. He had no UTIs or antibiotic prophylaxis. Ultrasound showed significant dilation of renal calices and the right pelvis. A contrast CT scan revealed signs of pyeloureteral junction stenosis with thinning of renal parenchyma. The DTPA renogram assessed an obstructive hydronephrosis with decreased right renal function (17%).

RESULTS

Laparoscopic surgery was performed through transperitoneal approach. A perirenal dissection was carried out identifying the right ureter, a mildly dilated renal pelvis and lower posterior and anterosuperior polar vessels. The kidney showed thinning of the parenchyma. The stenosis at the pyeloureteral junction appeared intrinsic to the section. Due to the anatomical difficulty in performing pyeloplasty, an ureterocalicostomy to the lower renal calyx was decided. A 4.5 Fr double-J stent was left transanastomotic and removed after a month. Currently under clinical follow-up, there is sonographic improvement in dilation.

CONCLUSIONS

Laparoscopic ureterocalicostomy is a feasible treatment option when anatomy is inadequate for direct pyeloureteral continuity reconstruction.

VD-8 (VD without presentation)

PNEUMOVESICOSCOPIC TREATMENT IN PARAURETERAL BLADDER DIVERTICULUM

Sonia PÉREZ-BERTÓLEZ, Isabel CASAL-BELOY, Ángel GALLEGO, Oriol MARTÍN-SOLÉ, Xavier TARRADO and Luis GARCÍA-APARICIO

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PURPOSE

A bladder diverticulum is a herniation of the bladder mucosa between fibers of the detrusor muscle. They are most commonly observed adjacent to the ureteral orifice. We aim to report a pneumovesicoscopic bladder diverticulectomy in a child and describe some key points of the technique.

MATERIAL AND METHODS

A 9-year-old boy referred to the pediatric urology office of our center for recurrent urinary tract infection and hematuria. Ultrasonogram revealed a bladder diverticulum arising from right posterolateral wall. Voiding cystourethrogram (VCUG) confirmed the large bladder diverticulum and showed no abnormality in urethra nor vesicoureteral reflux.

RESULTS

The procedure was carried out under general anesthesia. Initially, cystoscopy was performed and a double J stent was placed in the right ureter for intra-operative identification. The bladder was fixed to the abdominal wall with two percutaneous stitches, one 5mm and two 3mm trocars were inserted under cystoscopic vision. A 10Fr Foley urethral catheter was placed. Then, in supine position, cystoscopic insufflation of the bladder with carbon dioxide was done. The neck of the diverticulum was marked with a monopolar hook and dissection was done carefully inverting the diverticulum. After the excision, the resulting defect in the posterior wall of the bladder and trocar orifices were closed with interrupted absorbable sutures. Patient was discharged on first postoperative day with the Foley catheter. Postoperative ultrasound and VCUG were normal.

CONCLUSIONS

Pneumovesicoscopic diverticulectomy is a feasible procedure. It is associated with shorter hospital stay and rapid recovery with good cosmetic result.

VD-9 (VD without presentation)

ROBOT-ASSISTED DISMEMBERED EXTRAVESICAL URETERAL REIMPLANTATION FOR ECTOPIC MEGAURETER ENDING INTO VAGINA.

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PURPOSE

Robotic surgery is particularly well-suited to reconstructive surgery involving delicate structures like the ureter. Robotic approach provides excellent visualization and access to the ureter at all levels. We report surgical technique of robot-assisted dismembered extravesical ureteral reimplantation for vaginal ectopic megaureter.

MATERIAL AND METHODS

A 4-year-old girl came to our attention with prenatal diagnosis of right megaureter. At birth right refluxing megaureter with concomitant extravesical ureterocele was confirmed. Hypofunction of right kidney (split renal function <20%) was demonstrated on renal scan. Endoscopic puncture of ureterocele was performed, with mild decompression of the dilated upper tract. At 3 years of age, she developed urinary pseudo incontinence and breakthrough urinary infections. Magnetic resonance imaging showed right vaginal ectopic megaureter. Reconstructive robotic surgery was planned.

RESULTS

A 4-trocar approach was used. The ectopic megaureter was isolated downwards till to the origin from the vagina, ligated and disconnected. Following the detrusorotomy with creation of ureteral flaps, ureteroneocystostomy was

performed, ensuring to place a double-J stent before completing the anastomosis. The ureteral flaps were closed over the ureter to create extravesical anti-refluxing tunnel. Post-operative course was uneventful and double-J stent was removed at 4 weeks postoperatively. At 9-month follow-up, the patient is toilet-trained, continent, and asymptomatic.

CONCLUSIONS

Distal ureter and bladder reconstruction using the robotic technique is feasible, safe, and effective to restore the normal anatomy and function. It should be considered a valid minimally invasive alternative to open reconstructive surgery.

VD-10 (VD without presentation)

ROBOTIC ASSISTED TRANS-VESICOSCOPIC URETERIC REIMPLANTATION IN CHILDREN: ANALYSIS OF ERGONOMICS RELATED TO MUSCULOSKELETAL ISSUES

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PURPOSE

We sought to evaluate the feasibility of robotic assisted trans-vesicoscopic ureteric reimplantation in children and surgeons' work-related musculoskeletal symptoms in comparison to open surgery

MATERIAL AND METHODS

The children under 12 years of age with vesicoureteric reflux (VUR) underwent open (Group I) and vesicoscopic robotic assisted ureteric reimplantation (VRAUR) (Group II). Four ports (Two 8-mm working ports were placed in a straight line drawn along the anterior superior iliac spine and one endoscopic (middle) 12 mm [Intuitive Surgical, Sunnyvale, CA], was placed 2 cm above the same line and the fourth assistant port of 3 mm was placed 2 cm below the line.

The surgeons related ergonomic parameters recorded in both the groups were generalised pain, neck and back strain/pain along with lower extremity exertion to surgeons. Success was defined as the absence of VUR on direct radionuclide cystogram at 12 weeks.

RESULTS

The two groups had 33 and 21 patients with the mean age of 72 and 84 months in groups I and II respectively. The grades of VUR was comparable in both the groups. The VRAUR procedure could be accomplished in all the cases without any slippage of robotic ports or clashing of arms except in 2-year-old that without any conversion. The 2-yr-old child with bladder capacity of 150 cc posed little difficulty due to space restriction and slight clashing of arms that lengthened the procedure but could be completed successfully. The Surgeons' musculoskeletal symptoms recorded were substantially more in Group I as compared to Group II (p value 0.001, CI 95%.

CONCLUSIONS

Robotic assisted laparoscopic ureteral reimplantation is feasible and offers success rate comparable to open surgery. The procedure follows the anatomical principles thus minimizing the possibility of neuro urological damage and subsequent bladder dysfunction. The surgical ergonomics related to musculoskeletal symptoms are more substantial in open surgery.

VD-11 (VD without presentation)

ROBOTIC REMOVAL OF SEMINAL VESICLE CYST (PATIENT WITH ZINNER SYNDROME)

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PURPOSE

To present robotic removal of seminal cyst in a child with Zinner syndrome

MATERIAL AND METHODS

An 11 year old boy presented with dysuria and lower abdominal pain.

Medical history - the patient underwent repair of coarctation of the aorta, orchiopexy, and also has celiac disease.

US and MRI revealed single left kidney and cystic lesion posterior to the urinary bladder.

On cystoscopy- the urethra, bladder neck and the bladder, all were within normal limits.

Most plausible differential diagnosis following the evaluation, was either a rt. Atrophic kidney or a seminal vesicle cyst.

The boy was scheduled for a robotic assisted procedure.

During the operation course, the cyst was identified, the peritoneum was divided from the cyst.

The vas deferens was identified and was separated from the cyst.

To try to reduce the risk of damaging adjacent structures, and to preserve the vas deferens, we decided to perform unroofing of the cyst, rather than removing it en-bloc. The roof of the cyst was carefully resected. The opening of the seminal cyst that created the cyst was continuously sutured.

The base of the remained the cyst was coagulated, and the roof of the cyst was left open.

RESULTS

Postoperative recovery was uneventful, and the boy was discharged on day 2.

Follow-up one month after the procedure was normal, and the symptoms of dysuria and abdominal pain have disappeared.

US of the urinary tract showed no evidence of the cyst.

CONCLUSIONS

This case present a child with Zinner syndrome which is a rare congenital abnormality of mesonephric duct consisting of:

Unilateral renal agenesis.

Ipsilateral seminal vesicle cyst.

Ipsilateral ejaculatory duct obstruction.

ROBOTIC REPAIR OF REFRACTORY CONGENITAL VESICO-URETHRO-VAGINAL FISTULA SECONDARY TO CECOURETEROCELE IN 12 YEARS OLD GIRL

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PURPOSE

We report here the case of a 12-year-old female patient who underwent robotic-assisted laparoscopic surgery for a vesico-urethro-vaginal fistula.

MATERIAL AND METHODS

The girl underwent a left nephro-ureterectomy at the age of one year for a symptomatic non-functioning kidney with ureterohydronephrosis. At the age of three she developed total urinary incontinence. Endoscopy revealed a ceco-ureterocele with a vesico-vaginal fistula. Reconstructive surgery was performed with transvesical closure of the vesico-vaginal fistula and urethro-cervicoplasty. Total urinary incontinence recurred at the age of five years. Endoscopy confirmed the recurrence of the vesico-vaginal fistula. Further surgery was performed at the onset of puberty for vulvovaginitis secondary to the fistula. A uro-MRI revealed a vesico-urethrovaginal fistula. Robotic laparoscopic repair of the fistula with omentum interposition was proposed.

RESULTS

The operation was performed under general anaesthesia in the lithotomy position with tredelenburg of 20°. The operation began with a urethrocytoscopy which revealed the fistulous orifice between the vagina, urethra and bladder. A 13F Cystodrain was placed through the fistula between the vagina and the bladder then a 14F urethral catheter.

We began by laparoscopy, dissecting between the bladder and the vagina to the fistula. The fistula was easily found with the cystodrain. The cystic cavity and fistulous tract are resected. The posterior surface of the urethra, bladder and vagina were closed. The robot was placed in the upper abdominal position to free the omentum, which is then interposed between the urethra and vagina. The operation lasted 241 minutes and the patient was discharged on D2. The urethrovesical catheter was removed at D14 after cystography had checked that there was no residual fistula. At 6 months, there was no recurrence of the fistula or urine leakage.

CONCLUSIONS

The cure of vesico-urethro-vaginal fistula by robot-assisted laparoscopy, even after urethro-cervicoplasty, seems possible in children.

★ ROBOTIC SURGERY IN PEDIATRIC UROONCOLOGY: RADICAL CYSTOPROSTATECTOMY

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PURPOSE

Publications on robotic surgery applications in pediatric urooncology are limited. However, the technical advantages of robotic systems may be advantageous in pediatric tumors. The video presents technical details of robot-assisted laparoscopic radical cystoprostatectomy, extended lymph node dissection, and ileal loop for bladder embryonal rhabdomyosarcoma.

MATERIAL AND METHODS

The patient is a 26-month-old male patient with macroscopic hematuria. Radiologic evaluation (urinary ultrasound and magnetic resonance imaging) revealed a 3 cm mass lesion originating from the bladder. Although there was a hypointense area in the sacral bone suggesting metastatic involvement, no lymph node of pathologic size was detected. Diagnostic cystoscopy showed that the mass extended from the right half of the trigone to the bladder dome and distally to the prostatic urethra. A double collecting system anomaly was diagnosed on the left. The mass with embryonal rhabdomyosarcoma histology partially responded to chemotherapy.

RESULTS

In this case, the operative time was 450 minutes; the estimated blood loss was 35 cc, transfused during the operation. The length of hospital stay was eight days. No postoperative complications were seen. The patient was tumor-free after the surgery.

CONCLUSIONS

Robot-assisted laparoscopic surgery presents an effective and safe treatment option for bladder tumors in pediatric age. However, a more significant number of reports are needed to assess its reliability.

VD-14 (VD without presentation)

★ STAGED ROBOT ASSISTED BILATERAL URETEROSTOMY UN-DIVERSION FOR SAFE BLADDER "RE-FUNCTIONALIZATION"

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PURPOSE

VIDEO attached.

Patients with early bilateral supravescical diversion to treat bladder outlet obstruction present a challenge for reconstruction and un-diversion as the bladder becomes defunctionalized with a severely reduced bladder capacity. In this case, we present a staged robotic approach to ureteral un-diversion that can be considered for safe bladder "re-functionalization."

MATERIAL AND METHODS

An 11-month-old male referred with a history of posterior urethral valves required bilateral end cutaneous ureterostomies in the neonatal period. On initial evaluation, his bladder capacity was 15 ml. After failing bladder cycling via suprapubic tube, he was recommended staged robot assisted ureteral side to side ureterocystostomy un-diversion while maintaining cutaneous ureterostomies. . The robot-assisted staged operations were completed 10 months apart.

RESULTS

Stage 1: completion of the left side-to-side ureterocystostomy was safely accomplished with a console time of 90 minutes. Six months later, his ultrasound showed stable hydronephrosis and urine within the partially distended bladder. Ten months after stage 1, he presented for stage 2: Videourodynamics and ligation of the left ureterostomy and right side-to-side ureterocystostomy while maintaining the right ureterostomy. Urodynamics demonstrated stable filling with a new capacity of 50 ml from 15ml. Stage 2 was safely completed with a console time of 105 minutes. Four-weeks later, the ultrasound showed stable upper tract with a distended bladder. Normal bladder cycling with no discomfort and volitional voiding. Stable kidney function.

CONCLUSIONS

A staged approach to un-diversion and natural bladder cycling resulted in a 3-fold increase in bladder capacity. This approach demonstrates feasibility in carefully selected patients.

VD-15 (VD without presentation)

LAPAROSCOPIC APPENDICOSTOMY: A NOVEL TECHNIQUE FOR APPENDICEAL STOMA CREATION

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PURPOSE

After appendicostomy for laparoscopic ACE Malone or Mitrofanoff, stomal stenosis has been reported to occur in 12% to 45% of patients. The objective of this investigation is to analyze outcomes after the utilization of a novel stoma technique that preserves the appendiceal tip and vessels and opens the lumen in a more proximal and vascular area to improve perfusion and decrease stenosis.

MATERIAL AND METHODS

Medical records of patients who underwent the novel stoma technique during ACE or urinary diversion were retrospectively evaluated. Variables such as open or laparoscopic approach, age, gender, body mass index, antegrade continence enema or urinary diversion, cecal and appendiceal adhesions, retrocecal position, cecal imbrication, technique, frequency of catheterization and stenosis were recorded. Stenosis is defined by need for revision surgery and/or indwelling catheter for any length of time. Cox proportional hazards analyses were performed to determine association of covariates.

RESULTS

A total of 44 patients met inclusion criteria with a median age of 9.0 years. The appendix was imbricated in 10% of ACE procedures and all continent diversions. No patient has developed stomal stenosis or obstruction after a median follow up of 4.8 years (range 1 to 10 years). There was no association of stenosis with any variable including surgical approach, laparoscopic or open.

CONCLUSIONS

Stomal stenosis after appendicostomy is lessened by preservation of the distal appendiceal vasculature and tip and opening the lumen in a more proximal location.

VD-16 (VD without presentation)

ENDOSCOPIC BALLOON DILATION OF PRIMARY OBSTRUCTIVE MEGAURETER WITH ASSOCIATED PARAURETERAL DIVERTICULUM

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PURPOSE

To present the technical features and outcomes of endoscopic balloon dilatation (EBD) of primary obstructive megaureter (POM) with associated ipsilateral paraureteral diverticulum.

MATERIAL AND METHODS

Sixteen POM cases with associated paraureteral diverticulum were treated by EBD between 2004 and 2021. In cases of large diverticulum, a careful endoscopic inspection with a ureteral catheter and a hydrophilic guidewire is essential to identify the ureteral meatus. Then the guidewire is introduced into the tortuous ureter and the dilation of the vesicoureteral junction is performed using high-pressure balloon catheters (3F) with a minimum balloon diameter of 5 mm followed by temporary Double-J stent placement. Complications and outcomes were analyzed with a mean follow-up of 7.2 ± 4.4 years.

RESULTS

Median age at treatment was 5 months (2-44) with a median operating time of 15 minutes (10-30) and hospital stay of 1 day. No perioperative complications occurred. Initial renal function was preserved in all cases and 13 ureters showed a non-obstructive pattern on the MAG-3 renogram after the EBD. Three cases presented persistent postoperative hydroureteronephrosis with obstructive pattern and needed another EBD months later. Secondary VUR was identified in 7 cases and treated by endoscopic subureteral injection. Ureteral reimplantation was required in 3 ureters (1 re-stenosis recurrence, 1 persistent VUR, and 1 non-symptomatic persistent hydroureteronephrosis whose parents demanded surgical treatment). The endoscopic approach of POM with associated diverticula had a long-term success rate of 81.25% (13/16).

CONCLUSIONS

The presence of paraureteral diverticulum seems to be a poorer prognostic factor for the success of endoscopic treatment of POM, leading to a higher rate of secondary reflux. Nevertheless, it was a safe and feasible technique with acceptable long-term results.

★ ROBOT-ASSISTED LAPAROSCOPIC PYELOPLASTY OF A KIDNEY WITH A DUPLICATED SYSTEM

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INTRODUCTION

Duplication of the kidney can lead to lower pole ureteropelvic obstruction. We present a surgical video depicting a left lower pole pyeloplasty without the use of retrograde pyelogram or preoperative stent placement.

MATERIAL AND METHODS

We describe a case of an 11-year old male who presented with abdominal pain and was found to have a duplicated left kidney with grade 3 hydronephrosis of the lower pole. The MAG3 scan showed delayed washout of the left lower pole. The VCUg was negative for vesicoureteral reflux.

The patient is placed in left flank position. All pressure points are padded. The robotic ports are placed as depicted in the image. The colon is dissected away from the left kidney. Gerota's fascia is incised to reveal the left kidney. The two ureters are identified lying adjacent to each other. The pelvis is hitched up with the hitch suture. The UPJ is transected and tunneled out from under the crossing vessel. The ureter is spatulated and the posterior UPJ is reconstructed in the standard fashion. An indwelling stent is introduced through an angiocath. The UPJ reconstruction is then completed.

RESULTS

The patient recovered well and was discharged home the next day. The ureteral stent was removed after 4 weeks. The patient reported he was pain free. The follow up renal ultrasound showed improvement of the left lower pole hydronephrosis.

CONCLUSIONS

Our video presents a lower pole pyeloplasty without requiring the use of retrograde pyelogram or preoperative stent placement.

★ SYMPTOMATIC RIGHT UPPER POLE URETEROPELVIC JUNCTION OBSTRUCTION IN ADOLESCENTS: AN IDEAL INDICATION FOR A ROBOTIC APPROACH?

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PURPOSE

Obstruction of an upper pole moiety in duplex kidneys is a relatively rare entity. It is typically caused by vascular obstruction, patients might become symptomatic only in later childhood or adolescence. Because of the need for vascular exposure and more on the right side than on the left side, a ventral, transperitoneal access might of advantage compared to classical, open retroperitoneal surgery. The Intuitive DaVinci Xi robotic surgical system allows for unmatched ease of preparation and reconstruction as well as ideal exposure. This video aims at displaying surgical technique and potential advantages of the laparoscopic, robotic assisted access.

MATERIAL AND METHODS

Two patients, a 13 year old girl and a 11 year old boy presented with symptomatic right upper pole obstruction in duplex kidneys and well-functioning right upper moieties. Both underwent robotic assisted pyeloplasty using a Intuitive Da Vinci Xi platform with three robotic and one assistant trocar (each 8mm) as well as the AirSeal System with a pressure of 7mmHg.

RESULTS

In both patients, as well accessory lower pole vessels as also a compression by the renal vessels were underlying the symptomatic obstruction. In both cases, mobilization and reconstruction of the concerned ureteropelvic junction ventral to the vessels could be achieved.

CONCLUSIONS

Especially in adolescents and for the repair of an upper pole ureteropelvic junction obstruction, a ventral, transperitoneal laparoscopic access might be of advantage. The DaVinci robotic surgical system allowed for an ideal preparation and reconstruction.