

Dear friends and colleagues,

I would like to welcome you all with great pleasure to the 2<sup>nd</sup> Hypospadias World Congress on October 3-5, 2018. Thanks to your active support and contribution, we have about 200 participants coming from 43 countries in 5 continents. This is a major achievement that shows the interest and the need to invest more time on research, to standardize classification & surgical techniques, to exchange experience and to learn from each other.

*Basic science and future research* are major aims of the HIS society. With this in mind, two sessions have been dedicated to basic research and Basic Research Prize of 5000 € for the best basic research. Long Term results is our ultimate goal! The lecture” Short term results can be long term failure- 40 years’ experience” is a highlight of the congress. The congress, over two days, provides an update on all related topics including Epidemiology, Genetics, Hormonal therapy, Urethral Plate, Chordee, classification, Surgical Techniques, long term results as well as panels on Distal and Proximal Hypospadias.

*No surgery can humble a surgeon like Hypospadias Surgery!* The Live Surgery day is an important integral part of the HIS Congress. It is planned to demonstrate surgical techniques for Glanular, Distal, Proximal, Perineal and complicated hypospadias. A professional company was hired to ensure high quality transmission from the operating room to the lecture hall. It is hoped that surgeons attending the live-workshop, may learn new tips and tricks that would help them in their daily practice.

Frankfurt is a vibrant international city. *The social program* will give us the chance to get to know each other and to plan for future cooperation and joint research projects. You will be able to experience German hospitality and delicious food. The Gala Dinner on a beautiful ship will give you the chance to explore Frankfurt from a different perspective.

This congress is the result of a team work; Professor Dr. Emir Haxhija, Frau Anita Vidovic, Frau Petra Hadidi, Dr. Michael Sennert and the Organizing Company, Eventlab, have worked hard round the Clock to ensure the success of the congress.

We are Looking forward to welcoming you all in Frankfurt in October during the 2<sup>nd</sup> Hypospadias World Congress

On behalf of the Organizing Committee,

Kind regards,

*Ahmed Hadidi*



# 2<sup>nd</sup> Hypospadias World Congress

Offenbach, Frankfurt, Germany

03.10 - 05.10.2018

## Tuesday, 02.10.2018

Venue: Büsing Palais, Offenbach Sheraton Hotel, Offenbach, Frankfurt

14:00-17:00 Registration

17:00-18:00 Welcome Reception (with Canapées and Drinks)

All participants are cordially invited

The 2<sup>nd</sup> Hypospadias World Congress was approved by the Hessen Medical Council and participants would get 6 Continuous Medical Education (CME) points.

## Wednesday, 03.10.2018

Venue: Büsing Palais, Offenbach Sheraton Hotel, Offenbach, Frankfurt

07:30 Registration

08:30- 09:00 Opening Ceremony

### 09:00-11:00h Session 1 Basic Science: Epidemiology, Genetics & Research

**Chairs:** Mark Zaontz, Nicolas Kalfa, Darius Bägli, Loes van der Zanden

**O01 09:00-09:12 Epidemiology of Hypospadias; An Update**

Loes van der Zanden (Netherlands)

**O02 09:15-09:27 Prenatal diagnosis of genital defects: Clinical spectrum and predictive factors for severe forms**

Nicolas Kalfa (France)

**O03 09:30-09:50 Research in Hypospadias**

Darius Bägli (Canada)

**O04 10:00-10:08 Androgen receptor expression in relation to age in dartos tissue of hypospadias and controls**

Authors: Lloyd Tack, Marleen Praet, Anne-Françoise Spinoit (Belgium)

**O05 10:10-10:18 Hormonal Therapy in Hypospadias; Literature update and experimental study .**

Özlem Çöloğlu, Murat Alkan (Turkey)

**O06 10:20-10:28 Role of Androgen in Penile Development; review of literature and future research**

Alexander Springer (Austria)

**O07 10:30-10:38 The Effect of Xenoestrogens on Foreskin Fibroblasts and The Etiology Of Hypospadias**

Darius Bägli (Canada)

**O08 10:40-10:43 Tissue Engineered Urethral constructs created from bladder washingharvested urothelial cells in a rabbit model**

Amesty MV, Sanz B, Rivas S, Lobato R, Martínez-Urrutia MJ, López-Pereira P (Spain)

**O09 10:45-10:48 Ano-Scrotal Distance (ASD); is it a marker of the severity of Hypospadias?**

Sennert M, Haxhija E, Hadidi A (Germany)

**O10 10:50-10:53 Hypospadias Repair; does the size matter?**

Sennert M, Haxhija E, Hadidi A (Germany)

**Coffee Break 1: 11:00-11:30**

**11:30-12:30 Session 2: Urethral Plate & Chordee**

**Chairs: Chris Long, Ibrahim Ulman, Darius Bägli, Laszlo Pirot**

**O11 11:30-11:45 Embryology, Anatomy and Pathogenesis of hypospadias; What do we know? The Urethral Plate & Chordee: Fact & Fiction**

Ahmed Hadidi (Germany)

**O12 11:50-11:58 The Urethral Plate & deep Chordee: A Histological & Histochemical study**

Ann Nozohoor Ekmark, Einar Arnbjörnsson, Henry Svensson, Emma Hansson, David Gisselsson (Sweden)

**O13 12:00-12:12 Management of Chordee in Hypospadias**

Chris Long (USA)

**O14 12:15-12:22 Monk's Hood deformity in Hypospadias; A landmark for anatomical penile skin reconstruction**

Ibrahim Ulman (Turkey)

**O15 12:25-12:28 ULTRASTRUCTURE OF URETHRAL PLATE IN HYPOSPADIAS PATIENTS: LITERATURE REVIEW**

Olivia Stanciu, Laura Balanescu, Radu Balanescu, Ahmed Hadidi (Romania, Germany)

**12:30-13:00 Session 3: Classification & Assessment of Hypospadias**

**Chairs: Ahmed Hadidi, Luis Braga, Alexander Springer, Asaad Matar**

**O16 12:30-12:38 European Registry of Hypospadias**

Alexander Springer (Austria)

**12:40-13:00 Hypospadias International Classification & Assessment (20 min.)**

International committee

**13:00-14:00 Lunch Break 1**

**14:00-15:00 Session 4: Glanular Hypospadias**

**Chairs: Antonio Macedo, Marco Castagnetti, Saber Wahib, Laura Balanescu**

**O17 14:00-14:10 Should we operate on Glanular hypospadias? How to achieve a slitlike meatus?**

Ahmed Hadidi (Germany)

**O18 14:15-14:22 Urethral mobilization and Partial glandar disassembly for distal hypospadias repair; A prospective preliminary analysis**

Antonio Macedo Jr, Felipe Silveire Dini, Sergio L Ottoni, Gilmar Garrone, Riberto Ligouri, Ricardo M de Mattos, Pedro Leite, Marcela Da Cruz (Brasil)

**O19 14:25-14:32 FEASIBILITY, RISKS, AND RELEVANCE OF PREPUTIAL RECONSTRUCTION DURING PRIMARY DISTAL HYPOSPADIAS REPAIR**

Marco Castagnetti (Italy)

**O20 14:35-14:42 Glans substitution and frenuloplasty: A novel technique for restoring the normal glanulo-frenular complex**

Satish Kumar Aggarwal<sup>1</sup>, Aparajita Mitra<sup>1</sup>, KA Rashid (India)

**14:45-15:00 Discussion**

**15:00-16:30 Session 5: Distal Hypospadias**

**Chairs: Moneer Hanna, Emir Haxhija, Obaidullah, Enaam Roboei**

**O21 15:00-15:15 Musings about Distal Hypospadias**

Mark Zaontz (USA)

**O22 15:20-15:27 Complications of TIP procedure for Hypospadias- Experience of a Pediatric Surgery Clinic in Bucharest; Romania**

T. Enache, A. Moga, AM. Sorescu, L. Balanescu (Romania)

**O23 15:30-15:37 The use of an autologous platelet-rich fibrin membrane in urethroplasty for cases of distal hypospadias: a randomized control study**

Hesham Elsaket, Mahmoud Tarek (Egypt)

**O24 15:40-15:43 “ERLANGER TECHNIQUE” FOR DISTAL AND MIDSHAFT HYPOSPADIAS REPAIR – SURGICAL PROCEDURE AND OUTCOME**

Hein S., Kraske S., Schwaiger B. , Hirsch K. (Germany)

**O25 15:45-15:52 Comprehensive Evaluation of Grafting the Incised Poor Plate in Virgin or Redo Hypospadias Surgery**

Sherif N. Kaddah, Hamed M Seleim<sup>1\*</sup>, Yousef Abdalazeem<sup>2</sup>, Mohammed S ElSheemy<sup>3</sup>, Ahmed M Shouman<sup>3</sup>, Ahmed E Fares<sup>4</sup>, Hesham M Elsaket<sup>2</sup>, Hisham El Saket<sup>2</sup>, and Mohamed M Elbarbary (Egypt)

**O26 15:55-15:58 Calibration and dilatation with fluocinolone gel in the treatment of stenosis of neourethral meatus after TIP repair**

Obaidullah,(Pakistan)

**O27 16:00-16:03 Subpreputal Meatal-pedicled Flap, New Technical Challenge of the Megameatus Hypospadias Variant.**

Saber Waheeb, Mohamed Abdelmalak (Egypt)

**O28 16:05-16:08 Poor uroflow after distal hypospadias repair: A marker for fixed obstruction of the neourethra?**

Aparajita Mitra, Satish Kumar Aggarwal, Rajat Piplani (India)

**O29 16:10-16:13 Congenital urethrocutaneous fistula**

A.Gamal Abdelmalek (Egypt)

**O30 16:15-16:18 The consultant learning curve: An analysis of the first 100 consecutive one stage hypospadias repair performed by a single surgeon at a regional centre**

Nicholas Wilson Jones, Dianne Carlos, Juliana Hughes (UK)

**16:20-16:30 Discussion**

**16:30-17:00 Coffee Break 2**

**17:00-18:30 Panel 1: Distal Hypospadias: How do we correct it - different views from around the world!**

**Chairs: Seref Etker, Mark Zaontz, Peter Cuchow, Ibrahim Ulman**

**O31 17:00-17:07 Urethral advancement for distal Hypospadias- Beck's Technique**

Emir Haxhija (Germany)

**O32 17:10-17:17 TIP urethroplasty in Albania**

Dritan Alushani. UHC " Mother Tereza (Albania)

**O33 17:20-17:27 Role of Buck's fascia repair with glanuloplasty in hypospadias surgery**

Dr. Aejaz Ahsan Baba (India)

**O34 17:30-17:37 The impact of modified Snodgrass technique with the use of dartos flaps on the decrease in frequency of postoperative fistulas in operating distal and midshaft hypospadias**

Sasa Milivojevic, Zoran Radojicic, Jelena Milin Lazovic (Serbia)

**O35 17:40-17:47 Reconstruction of frenulum & Septum Glandis: Improved technical skills and results in hypospadias repair with the glanular-frenular collar (GFC)**

**technique** Hüseyin Özbey (Turkey)

**O36 17:50-17:57 The Slit-Like Adjusted Mathieu (SLAM) technique for distal and midshaft hypospadias**

Ahmed Hadidi (Germany)

**Discussion (30 min)**

## **Thursday, 04.10.201**

**Venue: Büsing Palais, Offenbach Sheraton Hotel, Offenbach, Frankfurt**

### **08:00-09:00 Session 6: General Assembly of Hypospadias International Society (HIS) General Assembly)**

#### **08:00-08:20 State of Hypospadias International Society ; President Report**

Ahmed Hadidi (Germany)

#### **08:20-08:40 3<sup>rd</sup> Hypospadias World Congress, Philadelphia 30.10.2019**

Mark Zaontz, President Elect (USA)

#### **08:40-09:00 Discussion: (e-Journal. Hypospadias Master Courses, joint research, Hypospadias International registry)**

### **09:00-10:30 Session 7: Proximal, Perineal Hypospadias & Surgery in Adults**

**Chairs: Chris Long, Tiago Rosito, Anne-Francoise Spinoit, Sherif Kaddah**

#### **O37 09:00-09:15 Hypospadias - from birth to adulthood, the experience of an adult Urologist**

Tiago E. Rosito Brasil

#### **O38 09:20-09:27 ADULTS UNDERGOING PRIMARY OR REDO HYPOSPADIAS REPAIR HAVE INCREASED RISK FOR DEVELOPING COMPLICATIONS: RESULTS OF A LONG-TERM RETROSPECTIVE STUDY**

*Lander Heyerick, Erik Van Laecke, Piet Hoebeke and Anne-Françoise Spinoit (Belgium)*

#### **O39 09:30-09:40 Perineal hypospadias: why a separate entity?**

Ahmed Hadidi (Germany)

#### **O40 09:45-09:53 REVISITING THE RISK FACTORS FOR COMPLICATIONS POST-TUBULARIZED INCISED PLATE URETHROPLASTY**

Melissa McGrath<sup>1-3</sup>, Smruthi Ramesh<sup>2</sup>, Kornelia Palczek<sup>3</sup>, Luis H. Braga (Canada)

#### **O41 09:55-10:03 Urethral Calibre in Penoscrotal hypospadias: A comparative study of TIP versus Onlay technique**

Darius Băgli (Canada)

#### **O42 10:05-10:13 Lengthening Coproplasty with artificial graft**

Ibañez L.Fernando, Mieleles Moises J (Spain)

#### **O43 10:15-10:18 Laparoscopic resection of a Prostatic Utricle cyst in a patient with proximal hypospadias**

Mihaela Pîrvu, Laura Bălănescu, Radu N. Bălănescu (Romania)

**O44 10:20-10:28 Urethral reconstruction using the “Onlay-Tube” in patients with severe Hypospadias**

A.K. Faizulin, S.M.Sharkov, P.A.Kolosova, A.G.Burkin(Russia)

**10:30-11:00 Coffee Break 3**

**11:00-12:30 Session 8: Complications of hypospadias repair**

**Chairs: Mark Zaontz, Emir Haxhija, Tiago Rosito, Hüseyin Özbey**

**O45 11:00-11:30 Hypospadias Surgery; Short Term Success can be Long Term Failure (40 years experience)**

Moneer Hanna (USA)

**O46 11:30-11:40 Unsolved Hidden Problems in Hypospadias Management: Challenging the Unknown Unknowns**

Ibrahim Ulman (Turkey)

**O47 11:45-11:55 A Strategy for Management of Ischemic Tissues and Skin Flaps in Re-Operative and Complex Hypospadias Repair**

Christine M. White, Moneer K. Hanna (USA)

**O48 12:00-12:03 Urethrocutaneous fistulae after hypospadias repair; evaluation of 34 cases**

Süleyman Arif Bostancı, Tuğrul Tiryaki (Turkey)

**O49 12:05-12:08 Re-operative management after failed repairs of proximal hypospadias in Children**

Dina Manasherova, German Kozyrev, Vasily Nikolaev, Fuad Abdullaev, Gamzat Abdulkarimov, (Russia)

**O50 12:10-12:13 Re-do Circumcision; Buried penis may be there!**

A.Zaghloul (Egypt)

**O51 12:15-12:18 Urethroplasty failures in Tartu University Hospital in 1990-2017**

Viljo Kübarsepp<sup>1</sup>, Mircea-Aurel Ardelean<sup>2</sup>, Karin Varik (Estonia & Austria)

**O52 12:20-12:23 Management of Challenging Rare Cases in Hypospadias: case presentation and literature review**

Raboei E, Ghallab A, Alsaggaf A, Zidam M, Owivi Y, A Zeinelabdeen, Fayez M, Atta A, Sait A, Fallatah R (Saudi Arabia)

**O53 12:25-12:28 Management of Hypospadias Patients with associated skin disorders and autoimmune diseases**

Rusalim A, Chiriac-Babei C., Balanescu L (Romania)

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<sup>1</sup> Plastic Surgery Division, Departement of Surgery, University of Indonesia

## 12:30-13:00 Poster Walk

**Chairs:** Mark Devenport, Dritan Alushani, Hisham El Saket

### **P1 Urethral advancement according to KOFF**

L.Sekhri Zeggar, A. Youcefi, Karoum, F.Feitha, A.Sebia, W.Benmastoura, S.L.Touabti (Algeria)

### **P2 The scrotal tube: a new operative technique for urethroplasty in proximal hypospadias using non hair bearing scrotal skin described as the scrotal plate.**

Saber Waheeb , Hazem Ahmed (Egypt)

### **P3 Characteristics of hypospadias patients in plastic surgery division *at the national Hospital CIPTO MANGUNKUSUMO JAKARTA***

Chaula L. Sukasah<sup>1</sup>, Indri Aulia<sup>1</sup>, Evanti Kusumawardani<sup>1</sup>

### **P4 Creation of an experimental model of proximal hypospadias in rabbits to test novel urethroplasty techniques**

Amesty MV, Sanz B, Rivas S, Lobato R, Martínez-Urrutia MJ, López-Pereira P.(Spain)

### **P5 Proximal hypospadias: Looking beyond the urethra**

Aparajita Mitra, Satish Kumar Aggarwal, Rupa Banerjee, Gaurav Singh, Muni Varma, Sugandh Aggarwal Department of Pediatric Surgery, Sir Ganga Ram Hospital, New Delhi, India

### **P6 The Y-duplication of the urethra: One anomaly, myriad presentations**

Satish Kumar Aggarwal, Aparajita Mitra, Rupa Banerjee, Gaurav Singh Department of Pediatric Surgery, Sir Ganga Ram Hospital, New Delhi, India

## 12:30-13:30 Lunch Break 2

## 13:30-15:00 Session 9: Assessment & Long Term follow up.

**Chairs:** Luis Braga, Obaidullah, Moneer Hanna, Marie Andersson

### **O54 13:30-13:45 Evidence Base for Hypospadias: Fact or Fiction?**

Mark Davenport (UK)

### **O55 13:45-13:55 Long term follow up of hypospadias: why we need to meet the challenge?**

Chris Long (USA)

### **O56 14:00-14:10 Penile appearance after hypospadias repair: differences in patients and surgeons perspective**

Marco Castagnetti, Italy

**O57 14:15-14:22 Patient and parental satisfaction and long term psychosexual outcome after hypospadias surgery**

Lloyd JW Tack<sup>1</sup>, Anne-Françoise Spinoit<sup>2</sup>, Piet Hoebeke<sup>2</sup>, Erik Van Laecke<sup>2</sup>, Ahmed Mahmoud<sup>3</sup>, Stefan Riedl<sup>4,5</sup>, Manuela Hiess<sup>6</sup>, Ursula Tonnhofer<sup>7</sup>, Alexander Springer<sup>7</sup>, Martine Cools and Eline Van Hoecke (Belgium)

**O58 14:25-14:28 Family education seminar for hypospadias surgery. A powerful preoperative tool -7yr outcomes**

Ernest Azzopardi , Elayne Azzopardi, Nicholas Wilson Jones (UK)

**O59 14:30-14:37 Parental Perception & attitudes towards disclosure of hypospadias repair**

Melissa McGrath, Udi Blankstein, Luis H. Braga (Canada)

**O60 14:40-14:47 Urological, Cosmetic & Psychological results in Adloescence after surgery for proximal hypospadias in Childhood**

Marie Andersson , Spec läk Kirurgi & Barnkirurgi, Sahlgrenska (Sweden)

**O61 14:50-14:57 Comparison of short & Long term results of severe proximal hypospadias surgery** Deliağa Hasan, Tosun Halil, Karabulut Bilge, Tiryaki H. Tuğrul (Turkey)

**15:00-15:30 Session 10: Videos. How I do it**

**Chairs: Peter Cuchow, Mark Devenport, Emir Haxhija**

**V1 15:00-15:10 Modified Thiersch Technique for distal hypospadias**

Mark Zaontz (USA)

**V2 15:10-15:20 Urethral mobilization and Partial glandar disassembly**

Antonio Macedo (Brasil)

**V3 15:20-15:25 TIP Urethroplasty with a graft and tunica vaginalis cover**

Satish Kumar Aggarwal (India)

**V4 15:25-15:30 The Glanular- Frenular Collar (GFC) technique to reconstruct the frenulum and septum Glandis**

Hüseyin Özbey(Turkey)

**15:30-16:00 Coffee Break 4**

**16:00-17:30 Panel 2: Proximal and Perineal Hypospadias: How do we correct it - different views from around the world!**

**Chairs: Ahmed Hadidi, Moneer Hanna, Ibrahim Ulman, Antonio Macedo**

**O62 16:00-16:10 Two stage repair; Why do it?**

Peter Cuchow (UK)

**O63 16:10-16:20 Two stage repair for penoscrotal hypospadias with severe ventral curvature**

Luis H Braga, Melissa McGrath (Canada)

**O64 16:20-16:30 One stage versus Two stages for complex primary hypospadias repair: the three -in-one technique versus flap as a graft two stage repair**

Macedo Nicanor (Brasil)

**O65 16:30-16:35 Single-repair for primary proximal hypospadias. Lessons learned after 196 primary repairs**

Prat-Ortells J\*, Garcia-Aparicio L, Martín-Solé O, Correa J, Muñoz E, Castañón M (Spain)

**O66 16:35-16:40 One-stage repair for proximal hypospadias: 10 years' experience**

A-A. Lachkar, I Talon, R. Moog, F. Becmeur (France)

**O67 16:40-16:45 Proximal Hypospadias: A New algorithm to improve outcome**

Saber Waheeb, Mohamed Abdelmalak (Egypt)

**O68 16:45-16:50 Surgical approach of posterior hypospadias using the Koyanagi Technique**

L Sekhri Zeggar, Karroum T, Youcefi A, Sebia A Feitha F, Ben Mastoura W Touabti SL (France)

**O69 16:50-16:55 Experience with CEDU Technique for perineal hypospadias in Hungary**

Pirot L, Mona T (Hungary)

**O70 16:55-17:00 Experience with CEDU two stage repair for Perineal and recurrent hypospadias in Romania**

Andreea Moga, Laura Balanescu, Radu N. Bălănescu (Romania)

**O71 17:00-17:05 Hypospadias Repair: Initial Experience with CEDU Technique in Pakistan**

Irfan U Khattak (Pakistan)

**17:05-17:30 Discussion**

**18:30 Gala Dinner & Main River Cruise**

**Meeting point: 18:30 in front of Offenbach Sheraton Hotel**

## Friday, 05.10.2018 Live Hypospadias Surgery

Venue: "Sana Klinikum Offenbach"

**07:15** meeting point in front of Offenbach Sheraton & walk to Sana Klinikum Offenbach

**08:00- 08:15** Welcome by the Hospital Medical Director: Prof. Dr.(Med) Norbert Rilinger

**Moderation:** Emir Haxhija

**Operative session 1**

**Expert panel:** Mark Zaontz, Seref Etker, Laura Balanescu

**08:15-11:00** Surgery for Glanular and Distal Hypospadias

**Operative session 2**

**Expert panel:** Peter Cuchow, Chris Long, Nicolas Kalfa

**11:00-13:00** Surgery for Proximal Hypospadias

**Operative session 3**

**Expert panel:** Luis Braga, Antonio Macedo, Laszlo Pirot

**13:00-15:00** Surgery for Perineal Hypospadias

**Operative session 4**

**Expert panel:** Moneer Hanna, Saber Wahib, Hüseyin Özbey

**15:00-17:00** Surgery for complicated Hypospadias

**Coffee and Refreshments will be available throughout the day.**

**Discussions with the surgeon will be possible during the surgeries and in between the surgeries.**

**Presentation of the Hadidi prize of 5000€ to the best basic research presentation**

**Presentation of the Hanna prize of 1000€ to the best clinical research presentation**

**17:00-17:30 Closing Remarks & Distribution of Certificates**

*Wir versichern, dass die Inhalte der Fortbildung produkt- und/ oder dienstleistungsneutral gestaltet sind sowie potenzielle Interessenkonflikte des Veranstalters, der wissenschaftlichen Leitung und der Referenten in einer Selbstauskunft gegenüber der Teilnehmer offen gelegt werden. Die Höhe der Gesamtaufwendung für die oben genannte Veranstaltung belaufen sich auf 50.000 €.*  
*Folgende Firmen treten als Sponsoren auf:*

*CLS Behring GmbH mit 500 €, Dufner Instrumente GmbH mit 2000 €, Karl Storz SE & Co. KG mit 2000 €,*

*Kessel medintim GmbH mit 1500 €, Milupa Nutricia GmbH mit 1000 €, Hipp GmbH & Co. Vertrieb KG mit 500 €.*

# Abstracts Oral Presentations

## Session 1 Basic Science: Epidemiology, Genetics & Research

### O01

#### **Epidemiology of Hypospadias; An Update**

*Loes van der Zanden (Netherlands)*

Hypospadias affects approximately 0.5% of male births. It was suggested that the prevalence of hypospadias is increasing, but whether or not this is true cannot be concluded based on the currently available literature. Hypospadias shows familial clustering, and familial occurrence seems to be more common for distal and middle forms of hypospadias than for proximal types. The chance that a brother of an affected boy or that a son of an affected father will also have hypospadias is approximately 13%. In 30% of the patients with the proximal form of hypospadias a cause can be identified, but in the majority of patients the aetiology remains unknown and is likely to be multifactorial. Development of the male external genitalia is dependent on the balance between androgens and estrogens. Although endocrine disrupting chemicals have the potential to induce hypospadias, it is debatable whether exposure levels in humans are high enough to exert this effect. The consistent association of hypospadias with low birth weight, maternal hypertension, preeclampsia, and absence of nausea in early pregnancy suggests that placental insufficiency may be a major risk factor for hypospadias, possibly through inadequate provision of hCG to the foetus. In addition, maternal intrauterine DES exposure, high maternal BMI, use of anti-epileptic drugs, prolonged time-to-pregnancy, pregnancies resulting from ICSI, primiparity, and multiple pregnancies seem to be associated with hypospadias. Other potential environmental risk factors were not, or not consistently, associated with hypospadias or studied too infrequently to draw conclusions.

### O02

#### **Prenatal diagnosis of genital defects: Clinical spectrum and predictive factors for severe forms**

*Nicolas Kalfa (France)*

**Background and objectives:** Prenatal identification of genital defects remains challenging. Predictive factors to screen the most severe forms are still lacking. We aimed to report the clinical spectrum of defects diagnosed before birth, to determine the rate of associated malformations and to identify predictive factors for severe phenotypes at birth.

**Methods:** A retrospective study (2008-2017) of 4580 fetal abnormalities evaluated by our Reference Center for Fetal Medicine included cases with direct visualization of

genital defect or uncertainty of fetal sex determination. Familial, prenatal and postnatal data were collected through a standardized questionnaire.

**Results:** Sixty-one fetuses were included. The positive predictive value was 90.1%. Most cases were 46XY-undervirilized boys (68.8%, midpenile or posterior hypospadias n=29, anterior n=9, epispadias, micropenis, scrotal transposition, buried penis n=1 each). 46XX-virilized girls were identified in 11.5% (congenital adrenal hyperplasia n=4, isolated clitoromegaly n=1, ovotestis n=1). Other defects included Prune-Belly syndrome and persistent cloaca (n=6). Early detection during the second trimester (58.1% vs 18.8%, p=0.03), intra-uterine-growth-restriction (IUGR) (45.2% vs 9.1%, p=0.06) and curvature of the penis (38.7% vs 0%, p=0.02) were more frequently related to severe defects in male newborn. Associated malformations (n=14, 22.9%) and genetic defects (n=6) were frequent in undervirilized boys.

**Conclusion:** Prenatal diagnosis of genital defects leads to a wide range of phenotypes at birth. Its positive predictive value is high and extra-urinary malformations are more frequent than expected. Early diagnosis during the second trimester, associated IUGR and curvature of the genital bud should raise suspicion on a severe phenotype and may justify a delivery near a multidisciplinary DSD team.

## O03

### Research in Hypospadias

*Darius Bägli (Canada)*

After years of clinical and basic science research, and a high volume of publications, our knowledge appears to have stagnated regarding this common condition. It is possible that is related to a parallel stagnation in research methodology. Retrospective reviews, focusing on ill-defined patient populations, and limited by subjective assessment or analysis of short-term complications is the rule rather than something to be avoided. The results are at best difficult to understand and reproduce, and in the end, of questionable utility. However, a root cause compromising advances in this field, the elephant-penis in the room, is poor classification.

Traditional assessment of hypospadias continues to rely on coarse labels (distal, midshaft or proximal) based on apparent location of the urethral meatus, while overlooking and failing to take into account a multitude of differences between patients' penile anatomy. These include status of the urethral plate and maldirected spongiosum, the size and shape of the glans, the configuration of the skin deficiency, and the degree of curvature. Additional factors invisible to the naked eye may also be crucial. If we accept for a moment that these factors are a) important to hypospadias management and outcome, b) that lumping together such truly heterogeneous cases based on at best a disorganized consideration of such factors is perhaps biologically naive, and c) that all such cases should not necessarily be addressed with a single surgical procedure or approach simply because it appears they can be, it becomes clear that we will not advance the field until we determine how to describe and classify these variables in an unbiased way with that eliminates inter-observer variability. Moreover these variables are not necessarily amenable to a simple classification or

grading system. Some novel approaches to these challenges are described that may provide a vision for future clinical and basic science hypospadias research.

## O04

### **Androgen receptor expression in relation to age in dartos tissue of hypospadias and controls**

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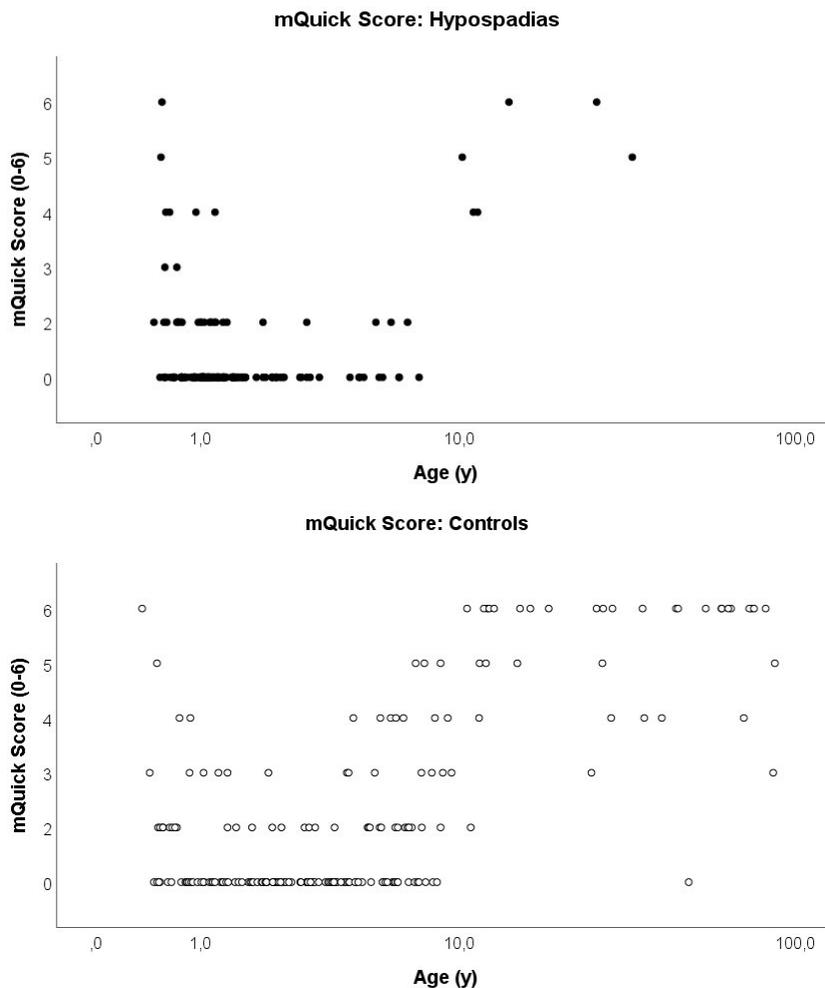
2 Department of pathology, Ghent University Hospital, Ghent, Belgium

3 Department of pediatric urology, Ghent University Hospital, Ghent, Belgium

**Aim of the study:** To quantitatively assess immunohistochemical androgen receptor (AR) expression in smooth muscle fibers of dartos tissue (DT) in hypospadias and controls.

**Methods:** 180 foreskin samples were obtained during hypospadias surgery, as well as 198 circumcision samples serving as controls. AR staining (mono-clonal mouse anti-human AR antibody, Clone AR441, Dako™, Denmark, dilution 1:10) was quantitatively studied, using a modified quick score (mQuicks) (0-6), assessing the intensity (0-3) and proportion (0-3) of stained smooth muscle fibers. Results were compared between cases *versus* controls and proximal *versus* distal hypospadias in each age group (6-8 months; 8-24 months; 2-6 years; 6-11 years; >11 years). **Main results:** AR expression in DT shows a bimodal distribution in both hypospadias and controls. The first peak is seen between 6 and 12 months of age, with half of the samples showing positive AR staining, and a second peak coinciding with puberty. No samples of boys younger than 6 months were available, to determine if AR expression is induced during minipuberty. No significant differences in mQuicks were found between hypospadias and controls or between proximal and distal hypospadias in all age groups.

**Conclusion:** AR expression in DT shows a bimodal distribution which coincides with physiological androgen production. AR expression in DT is not different between hypospadias and controls or between proximal or distal hypospadias.



## O05

### Hormonal Therapy in Hypospadias; Literature update and experimental study

*Ozlem Duras Cologlu<sup>1</sup>, Murat Alkan<sup>1</sup>, Emine Bagir Kilic<sup>2</sup>, Seyda Erdogan<sup>2</sup>*

*Cukurova University Faculty of Medicine, Adana, Turkey*

*1 Department of Pediatric Surgery and Division of Pediatric Urology*

*2 Department of Pathology*

**Aim of the study:** The purpose of this study is to observe structural and histopathological changes of hormone stimulation therapy methods in the healthy (without hypospadias) animal model and evaluate the ideal surgical time period after hormone stimulation.

**Material and methods:** 50 Wistar Albino rats, 4-6 weeks old, were used. Rats were divided into 5 groups as parenteral human chorionic gonadotropin (hCG), parenteral testosterone (pT), topical dihydrotestosterone (tT) and control groups of parenteral and topical treatment groups. Penil sizes were measured throughout the study. Biopsies were taken from preputium for histopathological examinations and evaluated for vascularity, epithelial thickness, inflammation and fibrosis.

**Main results:** Increase of the penile length, penile diameter and number of vessels observed in the group of hCG, pT and tT, respectively, of which statistically significant when compared to the control groups. The optimum time for surgical repair starting from the end of hormone administration was found as after the 4th, 6th and 1st week in hCG, pT, and tT groups, respectively.

**Conclusions:** This study has shown that all treatments are useful in increasing penile size and tissue quality before hypospadias surgery. The ideal surgical time period is; 4th, 6th and 1st week after the administration of hCG, pT, and tT, respectively.

## O06

### **Role of Androgen in Penile Development; review of literature and future research**

*Alexander Springer (Austria)*

Androgens are natural or synthetic steroid hormones which regulate the development and maintenance of male characteristics. This includes the embryological development of the external genitalia, and the development of male secondary sex characteristics at puberty. Androgens are synthesized in the testis and adrenal glands. Pathogenesis of hypospadias and is closely linked to androgen exposure and action during pregnancy. In this review, the biochemical background of androgens is explained. Moreover, current clinical and experimental studies on androgen action are presented. Last but not least, future developments and scientific questions are outlined.

## O07

### **The Effect of Xenoestrogens on Foreskin Fibroblasts and the Etiology of Hypospadias**

*Darius Bägli (Canada)*

Although the developmental etiology of hypospadias is still the subject of intense biologic investigation, it has been suggested that hypospadias is linked to environmentally altered gene expression. In addition, links may exist between environmental endocrine disruptors and epigenetic changes. While many candidate genes have been implicated in the etiology of hypospadias, a few candidates including Hoxa13, Wnt5a, shh, the ephrins, and fgfr's have been studied mechanistically, particularly as they relate to more syndromic or familial cohorts of hypospadias. There is also evidence that the incidence of isolated hypospadias is on the rise in some geospatial regions, while the incidence may be more stable in other regions perhaps having already reached levels similar to the latest levels of rising incidence areas. This supports the notion that environmental gene disruptors may be epigenetically modulating the function of critical hypospadias genes. Proofs of concept studies are described for Wnt and Hox genes to support this concept.

**O08**

## **Tissue Engineered Urethral constructs created from bladder washing-harvested urothelial cells in a rabbit model**

*Amesty MV, Sanz B, Rivas S, Lobato R, Martínez-Urrutia MJ, López-Pereira P.(Spain)*

**AIM:** Urethral tissue engineering is a developing option for hypospadias repair. Our aim is to create tissue-engineered urethral constructs, using cells obtained by bladder-washing from a rabbit model and cultured on a decellularized porcine small intestine submucosa (SIS) matrix, for use in urethroplasties.

**METHODS:** To harvest urothelial cells, 10 giant-New-Zealand rabbits from a hypospadias model study were used. Urethral catheterization and saline bladderwashing were performed, collecting fluid rich in urothelial cells. These were cultured, expanded and seeded on a SIS matrix to create urethral constructs. Bladder-washing yield of viable cells was assessed. Matrix adequacy and optimal culture techniques were evaluated by histological study of constructs. Surgical resistance was also determined.

**RESULTS:** Urothelial cultures were established in all cases with the bladder-washing technique. In 4/10 it was necessary to repeat the washing due to not colony formation (1,42+/-0,52 washings/rabbit). Bladder-washing liquid was centrifuged and re-suspended, obtaining different cell types (25,810,000+/-30,817,893 cells/washing), which were seeded in recombinant-laminin coated wells. There was no relationship between cells amount and colony formation success, but laminin-coating was essential. First colonies appeared at 10(8-11)days. After cell expansion (5.5(47)days), cells were seeded on the matrix in air-liquid interface. Cell adhesion was achieved in 100%, forming stratified urothelial constructs (3-5 layers), without metaplasia or atypia in all cases. Culture time for stratification was 3 weeks. The constructs showed adequate surgical manipulation resistance.

**CONCLUSIONS:** Bladder washing is a reliable source of urothelial cells for culture. Its seeding on SIS matrix allows creation of stratified constructs similar to native urethra and suitable for urethroplasties.

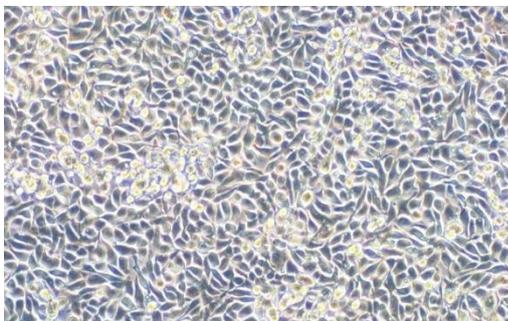


Figure 1: Urothelial cell culture from bladder-washing



Figure 2: Urethral construct using cells obtained by bladder-washing from a rabbit model and cultured on a decellularized porcine small intestine submucosa matrix.

## O09

### **Ano-Scrotal Distance (ASD); is it a marker of the severity of Chordee?**

*Sennert M., Haxhija E., Hadidi A. (Germany)*

**Aim:** recent studies recognised Ano-Genital Distance (AGD) as a marker of in-utero androgen action and reported a correlation with the severity of Hypospadias [1,2,3]. This is probably the first study to evaluate the relationship between the severity of chordee and Ano-Scrotal Distance (ASD).

**Methods:** boys younger than 2 years undergoing hypospadias repair between January 2015 and December 2017 were included. ASD was measured from the Anal verge to the scrotum. 321 boys with hypospadias and 25 age-matched controls undergoing circumcision (median age 1.17 years, range 0.8-1.9) had ASD measured under anaesthetic. The patients were grouped according to the Hypospadias Grades (Fig 1); Grade I (glanular, n= 86), Grade II (distal, n=135), Grade III (proximal, n= 69) and Grade IV (perineal, n= 31). Chordee was classified into 3 groups; no chordee, superficial chordee corrected by degloving and severe chordee requiring additional procedures for correction.

**Results (Fig 2):** The median ASD for controls was 4.2 cm (range 3-5.5). The median ASD for Glanular hypospadias was 3.8 cm (range 2-5), for distal was 3.6 (range 2-5) for proximal was 3 cm (range 2-5) and for perineal 2.5 cm (range 1.5-4) , (Table 1). Considering chordee, 10 boys with glanular hypospadias (11%) had severe chordee and ASD was < 3cm, 7 with distal hypospadias (5%) had severe chordee and ASD < 3cm, 24 with proximal hypospadias (35%) had severe chordee and ASD distance < 3 cm and 17 patients with perineal hypospadias (55%) had ASD < 3 cm (Table 2).

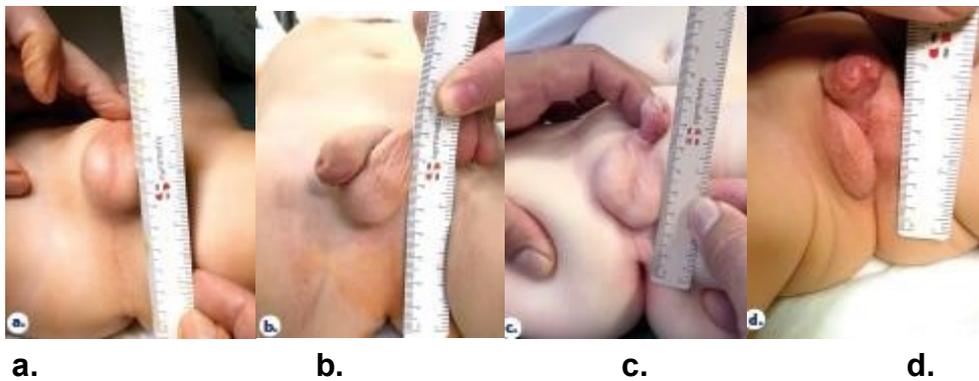
**Conclusion:** Proximal hypospadias is commonly associated with shorter ASD. Boys with ASD < 3 cm are likely to require additional procedures to correct chordee. This suggests that arrested distal migration of the urethra plays a role in the aetiology of hypospadias and chordee.

The aetiology of hypospadias is unknown. Hypoplasia and arrested distal migration of the meatus is a reported hypothesis . Arrested distal migration of the urethra may lead to penile curvature and chordee and logically can be associated with short ASD.

Clinically, if the ASD is less than 3cm, one may expect the child to have severe

chordee. **References**

- 1- Cox K, Kyriakou A, Amjad B , O'Toole S, Flett ME, Welsh M, Ahmed SF , Cascio S: Shorter anogenital and anoscrotal distances correlate with the severity of hypospadias: A prospective study. J Ped Urol 2017;13:e1-57e.
- 2- Hsieh MH, Eisenberg ML, Hittelman AB, Wilson JM, Tasian GE, Baskin LS. Caucasian male infants and boys with hypospadias exhibit reduced anogenital distance. Hum Reprod 2012;27: 1577-80.
- 3- Thankamony A, Lek N, Carroll D, Williams M, Dunger DB, Acerini CL, et al. Anogenital distance and penile length in infants with hypospadias or cryptorchidism: comparison with normative data. Environ Health Perspect 2014;122:207e11.



**Fig.2 Ano-Scrotal Distance (ASD) in different grades of Hypospadias: a. Glanular Hypsopadias, b. Distal Hypsopadias, c. Proximal Hypsopadias, d. Perineal hypsopadias**

Table 1. ASD and the severity of hypospadias					
	<2cm	2-3cm	3-4cm	4-5cm	Total
<b>glanular</b>		10	34	42	86
<b>distal</b>		7	51	77	135
<b>proximal</b>	1	23	24	21	69
<b>perineal</b>	1	16	10	4	31
					321

	< 3cm	%
<b>glanular</b>	10	11%
<b>distal</b>	7	5%
<b>proximal</b>	23	35%
<b>perineal</b>	16	55%

**Table 2. 11% of glanular hypospadias and 5% of distal hypospadias and 35% of proximal hypospadias and 55% of perineal hypospadias had ASD less than 3 cm and were associated with severe chordee that required additional procedures for the correction of chordee**

## O10

### **Hypospadias Repair; does the size matter?**

*Sennert M., Haxhija E., Hadidi A. (Germany)*

**Purpose:** There are no reports of systematically measured penile dimensions in boys with different grades of hypospadias. To determine the impact of the penile dimensions on the functional and cosmetic outcome of hypospadias repair, we prospectively measured 3 dimensions of the glans and the penile length before and after hypospadias repair and evaluated the outcome.

**Methods:** The Penile Length (PL), Dorsal Vertical Length (DVL), the Ventral Vertical Length (VVL) of the glans and the maximum Glans Width (GW) were measured in a prospective study in boys admitted for hypospadias repair. These 4 dimensions were measured again 6 months after surgery and the cosmetic and functional results were documented. Mean follow up was 8 months (range 6-12 months).

**Results:** Data were obtained in 353 boys referred with hypospadias. The mean age was 10 months (range 6-24m). They were 81 glanular, 166 distal, 78 proximal without severe chordee and 28 proximal and perineal with severe chordee (Fig.1). Interestingly, the DVL was equal to the GW in 317 cases + or minus 2mm (95%). GW was classified into 3 Groups (Table 1): A: 16-18mm, B: 13-15mm and C:10-12 mm. VVL was classified into 2 Groups (Table 2): I: more than 6 mm and group II less than 6 mm in length. Flacid Penile Length (PL) was classified into 2 Groups (Table 3): Group 1 (25mm or longer) and Group 2 (shorter than 25mm). 11% of glanular hypospadias, 18% of distal hypospadias, 44% of proximal hypospadias and 79% of perineal hypospadias belonged to GW Group C (10-12mm). Similar findings were found in relation to VVL and PL (Fig. 2).

**Discussion:** To date, hypospadias is classified according to the location of the meatus and the severity of chordee. One publication compared the glans meatus proportion in Hypospadias versus normal. Another publication reported that Glans Width (GW) less than 14 mm is associated with higher incidence of complications after TIP repair. The present study suggests that VVL less than 6 mm is associated with less satisfactory cosmetic and functional results.

**Conclusion:** There is a direct relation between the severity of the hypospadias and chordee with the Penile Length (PL), Dorsal Vertical Length (DVL), maximum Glans Width (GW) and Vertical Ventral length (VVL). DVL was equal to GW in the majority of patients. VVL was half of that of the GW or DVL. Boys with VVL less than 6 mm had significantly less satisfactory cosmetic and functional results (Fig.3).

**Refernces:**

- 1- Babu R: Glans meatus proportion in hypospadias versus normal: does marking reference points impact outcome? J Pediatr Urol 10: 459, 2014.
- 2- Bush NC, Villanueva C, Snodgrass W: Glans size is an independent risk factor for urethroplasty complications after hypospadias repair. J Pediatr Urol 11: 355, 2015.

## Session 2: Urethral Plate & Chordee

### **O11**

#### **Embryology, Anatomy and Pathogenesis of hypospadias; What do we know? The Urethral Plate & Chordee: Fact & Fiction**

*Ahmed Hadidi (Germany)*

Standard textbooks suggest that the human penile urethra is formed by fusion from lateral to medial and that glanular urethra is formed either by ectodermal intrusion theory or by endodermal transformation. Clinical findings and recent research challenge these theories and suggest “*The Distal Migration Hypothesis*” for urethral development.

Clinical and histological findings show that the glans penis is well developed in hypospadias even in patients where the corpus spongiosum is hypoplastic or absent. This contradicts the classic teaching that the glans penis is the distal part of the corpus spongiosum.

It has been postulated that hypospadias is due to “failure of fusion” of the lateral edges of the urethral plate. However, this does not explain the presence of chordee, torsion and the whole spectrum of anomalies seen in hypospadias. Hypospadias seems to result from hypoplasia and failure of distal migration of the ventral penile structures.

The urethral plate has become the basis of many recent techniques for hypospadias repair. However, there are different embryological, anatomical and clinical definitions of the urethral plate. Furthermore, the urethral plate may even vary in width and maturity in different parts of the penis in the same individual.

## O12

### The Urethral Plate & deep Chordee: A Histological & Histochemical study

*Ann Nozohoor Ekmark<sup>1,2</sup>, Einar Arnbjörnsson<sup>2,3</sup> Henry Svensson<sup>1,4</sup> Emma Hansson<sup>1,4</sup>, David Gisselsson<sup>5,6</sup>*

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<sup>2</sup> *Department of Paediatric Surgery, Skåne University Hospital, Lund, Sweden*

<sup>3</sup> *Department of Clinical Sciences Lund, Lund University, Lund, Sweden*

<sup>4</sup> *Department of Plastic and Reconstructive Surgery, Skåne University Hospital, Sweden*

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<sup>6</sup> *Division of Clinical Genetics, Department of Laboratory Medicine, Lund University, Lund, Sweden*

**Aim of the study:** Chordee is common in hypospadias. However, the true nature and etiology of Chordee remain unknown. Furthermore, the role of chordee in the pathogenesis of hypospadias and the importance of its excision is unclear. We aimed to examine the cellular structure of chordee and urethral plate. We also aimed to examine and compare chordee in unoperated hypospadias with that in symptomatic re-operative patients.

**Methods:** Tissue samples, otherwise discarded during surgery, from ten patients were fixed, embedded in paraffin, stained and sectioned according to standard histological methods. For immunohistochemistry, sections were cut and subjected to heat-induced antigen retrieval before incubation with primary antibodies and automated staining.

**Results:** The microscopic analysis of the six urethral plate biopsies and the nine deep chordee biopsies all showed similar tissue characteristics. Squamous epithelial cells covered the surface of the tissue. Sub epithelially, there were regional dermal infiltrates of T-cells, B-cells and smaller numbers of macrophages. Focally, T cells could be seen infiltrating the squamous epithelium. All urethral plate biopsies showed small cystic structures with cuboidal urothelium. The cystic structures were infiltrated and surrounded by lymphocytes and occasional macrophages. The deep chordee was characterised by connective tissue with only a few inflammatory cells.

Deeper down, fibrous tissue, with few cells without signs of active inflammatory processes, was seen. The grade of vascularisation was moderate to rich. Also, sparse bundles of smooth muscle cells crossed through the fibrous stroma but only slender, sparse nerve bundles were observed.

**Conclusions:** Histopathological and histochemical analysis of the urethral plate and the deep chordee suggest that this tissue constitute a unique entity: a hypoplastic fibro-vascular plate with small cystic structures of metaplasia in the surface epithelium.

## O13

### **Correcting penile curvature: anatomic considerations for surgical approach.**

*Christopher J. Long, Children Hospital of Philadelphia, USA*

Introduction: Hypospadias severity is typically defined by the location of the urethral meatus. The degree of penile curvature is emerging as an indication for a staged repair, due to concerns for recurrence or persistence after inadequate prior repair.

Methods: The literature is reviewed on the correction of penile curvature, its methods, and failure rates. We reviewed our database for correction of penile curvature and present penile length, degree of penile curvature, and the approach to correction.

Results: Review of the literature suggests higher recurrence rates for penile curvature when dorsal plication is used for severe penile curvature when compared to ventral lengthening procedures. Persistence of penile curvature of 30 degrees or more after penile degloving is an indication for a ventral lengthening procedure.

Conclusion: Proper correction of penile curvature is a key component of hypospadias repair. Severe penile curvature correction is more effective with ventral lengthening procedures. Penile length can be a surrogate measure of the degree of penile curvature and to ensure proper correction.

## O14

### **Monk's Hood deformity in Hypospadias; A landmark for anatomical penile skin reconstruction**

*İbrahim Ulman*

*Ege University, Faculty of Medicine, İzmir (Turkey)*

The anomaly in hypospadiac penis is not a vertical midline separation, but an elliptical defect subsequent to maldevelopment of soft tissues in multiple layers. Simple midline approximation of tissues adjacent to the defect does not end up with a normal penis unless the anatomy is restored to normal. Instead, available local tissues can be used to replace missing ones. In itself, hypospadias anomaly seems to offer a compensation for the absent ventral tissues by stocking some extra on the dorsum. This may be due to migration of ventral soft tissues to the dorsum giving the hunch-back (hump) appearance to hypospadiac penis. This is usually accompanied by the so-called cobra-eyes or monk's hood deformity of the dorsal prepuce. We believe cobra-eyes can serve as a landmark pointing the dorsal end of the embryopathologic folding line of dorsal penile skin caused by defective ventral development. We hypothesize that these two lateral suture lines ending with the cobra eyes on the dorsum, and joining ventrally and proximally to continue as normal median raphe down the scrotum are formed by the absence of bilateral triangular skin fragments on the ventrum and attachment of the free side-lines during fetal development. During hypospadias repair, incision along

these lines is safe since there are no crossing vessels. The skin distal to cobra-eyes is dorsal prepuce. Between cobra eyes there is thick, bulky subcuticular dartos tissue that is frequently raised as a subcuticular flap and utilized as a protective cover over the neourethra in most current repair techniques. This does not only serve as a protective layer, but together with spongioplasty, restores the anomaly to normal as much as possible.

## O15

### **Ultrastructure of Urethral Plate in Hypospadias patients: Literature review**

*Olivia Stanciu M.D.1, Laura Balanescu M.D. Ph.D.1, Radu Balanescu M.D. Ph.D.1,*

*Ahmed T. Hadidi M.D. Ph.D.2*

*1 „Grigore Alexandrescu” Emergency Hospital for Children, Bucharest, Romania*

*2 Chairman of Pediatric Surgery Dept. Hypospadias Center Sana Klinikum Offenbach & Emma Klinik, Germany*

**Aim of the study:** Hypospadias is one of the most common anomalies of male genitalia. Successful repair depends on an accurate understanding of the anatomy. As a result, several articles have been published concerning the microscopic features of the urethral plate and the underlying tissue. The aim of this review is to critically and systematically analyse the published results of histological studies of specific components of hypospadias.

**Methods:** A review of the English literature was performed via the database Pubmed from January 1998 to June 2018. Full text hard copies of relevant abstracts were retrieved. The bibliographies of all relevant articles were analysed for other missed pertinent citations.

**Main results:** The oldest study we identified was published by Baskin. The most recent publication found was from a group from Brazil in 2013. A total of five studies were included in the review with 78 patients. Four studies analysed the urethral plate and only one exclusively studied the tunica albuginea. All studies concluded that the urethral plate is composed of smooth muscle and collagen interspersed with blood vessels and nerves. The most relevant study was published by a group in Japan in 2011 and emphasised the importance of collagen subtypes found in the urethral plate.

**Conclusions:** Unfortunately, the literature is sparse when considering this subject and solid conclusions are yet to be delineated. Microarchitecture in hypospadias is an important issue to be considered when analysing the surgical technique and followup of the patient.

## [Session 3: Classification & Assessment of Hypospadias](#)

## O16

### European Registry of Hypospadias

*Alexander Springer (Austria)*

### Hypospadias International Classification & Assessment (20 min.)

*International committee*

## Session 4: Glanular Hypospadias

## O17

### Should we operate on Glanular hypospadias? How to achieve a slit-like meatus?

*Ahmed Hadidi, Emma & Offenbach Hospitals, Offenbach, Germany*

**Aim o the work:** Historically, glanular hypospadias was not repaired routinely because of the high complication rate and, in some, the unsatisfactory cosmetic outcome. A myriad of procedures for glanular hypospadias have been developed during the last 30 years based on the principle of urethral mobilization first described by Beck in 1898.

**Technique:** An inverted Y incision is designed around the meatus distally to open the glans to the tip. A second Y incision is made proximal to the meatus down to the coronal sulcus to complete mobilisation of the mobile urethra that is then fixed to the tip of the glans penis.

**Materials:** One hundred eighty three children with glanular hypospadias and mobile meatus were operated on using this technique in the period from January 2003 to January 2018. Mean age of patients was 12 (range, 4-60) months.

**Results:** Patients were discharged home within 3 days. The operation resulted in a slit-likemeatus. Follow-up ranged from 8 months to 15 years (mean, 45 months). Good cosmetic and functional results were obtained in 177 patients. Complications occurred in 6 patients (3%). Four patients experienced meatal stenosis. This was corrected using ventral meatotomy. Two patient suffered from dehiscence of the wound and retraction of the meatus. The meatal retraction was corrected using the slit-Like Adjusted Mathieu (SLAM) technique.

**Conclusions:** The double Y glanuloplasty technique is suitable for carefully selected patients with glanular hypospadias and mobile meatus. It provides a cosmetically natural vertical slit at the tip of the glans.

## O18

### Urethral mobilization and Partial glandar disassembly for distal hypospadias repair; A prospective preliminary analysis

*Antonio Macedo Jr<sup>1,2</sup>, Felipe Silveira Dini<sup>1</sup>, Sergio Leite Ottoni<sup>1</sup>, Gilmar Garrone<sup>1</sup>, Riberto Liguori<sup>1</sup>, Ricardo Marcondes de Mattos<sup>1</sup>, Pedro Henrique Borba Leite<sup>1</sup>, Marcela Leal da Cruz<sup>1</sup>.*

<sup>1</sup>Department of Urology, CACA-NUPEP, São Paulo, Brazil

<sup>2</sup>Department of Pediatrics, Federal University of São Paulo, São Paulo, Brazil

**Introduction:** We present consecutive data on an alternative method of hypospadias repair based on urethral mobilization and partial glandular disassembly.

**Methods:** The technique consists of subcoronal circumcision, the entire penis shaft is degloved and chordee tissue resected. The Buck's fascia is incised on both sides of distal urethra and glans to create two glandular wings, that are widely mobilized and disassembled from corpora cavernosa. After glans partial disassembly, the urethra normally can easily advance cranially and can be repositioned distally by two interrupted anchor 5.0 vicryl sutures, one each side. Then both glandular wings can embrace the distal repositioned urethra and the glans will show a more conical conformation.

**Results:** We treated 57 patients at a median age at the surgery of 36 months (1 to 184 months). The meatal position after degloving the penis was coronal at 43 cases, 13 were subcoronal and 1 presented with megameatus and intact foreskin. Two patients (3,5%) had mild penoscrotal transposition in addition to hypospadias. Eight patients were treated as a secondary repair (14%). We found complications in only 4 patients (7,01%) consisting of three fistulas (5.3%) and three glans dehiscences (5.3%), since two patients had both complications. The follow up was 7.19 months (1 to 23 months) and the median was 7 months.

**Conclusion:** Based on our results, the proposed technique can be regarded as a viable alternative to TIP repair. We believe that the wide disassembly of glans keeping only a small bridge of the urethral plate to the tip of glans is essential for a good result. An improvement of the conformation is a secondary strength of the technique. We acknowledge the need of long term data to confirm this preliminary good report.

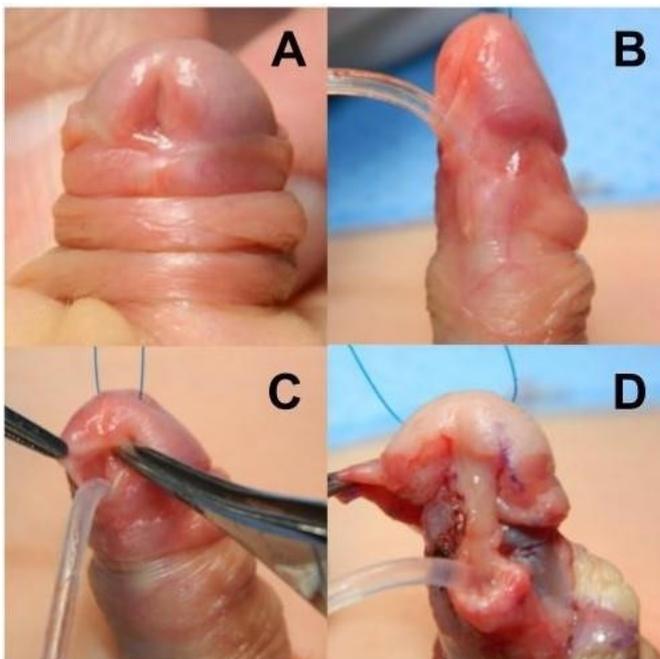


Fig 1

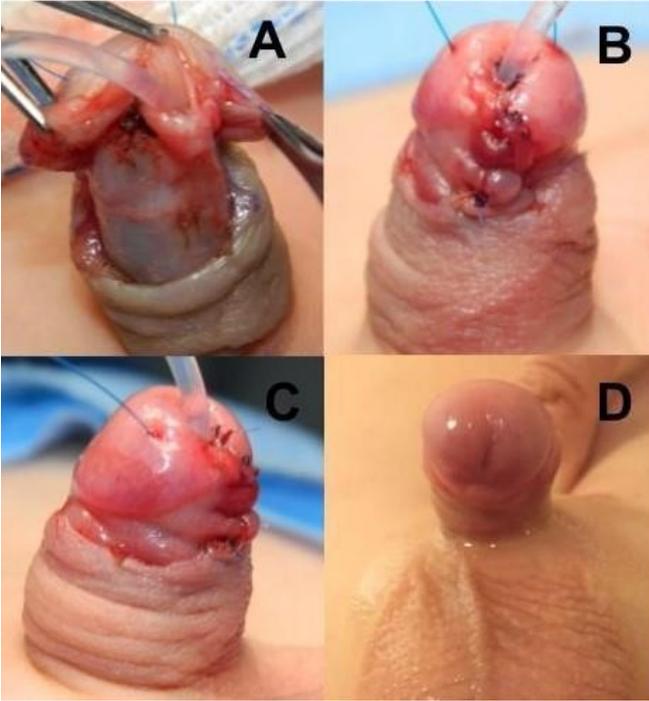


Fig 2



Fig 3

Fig 4

## Legends

Fig 1: Distal hypospadias with thin membranous distal urethra and immediate aspect after partial disassembly of the glans maintaining a urethral plate bridge with the tip of it

Fig 2: The urethra is mobilized and anchored to the tip of glans and the two glandar wings can easily embrace the urethra. Late result showing the nice urethral meatus aspect

Fig 3: The combination of two steps of surgery produce a more conical aspect of glans

Fig 4: Notice that glandar disassembly correct nicely the shape of glans that had initially a predominance of width over height that was corrected with surgery.

## O19

### **Feasibility, risks and relevance of preputial reconstruction during primary distal hypospadias repair**

*Marco Castagnetti*

*Pediatric Urology Unit, University Hospital of Padova, Padua, Italy*

**Aim of the Study:** Preputial reconstruction (PR) during hypospadias repair (HR) is controversial for the concern that the procedure could increase the failure rate of hypospadias repair and yield poor cosmetic results. In this lecture we aim to determine feasibility, risks, and relevance for the patient of PR.

**Methods:** This lecture will be based on a non-systematic review of pertinent literature.

**Main results:** PR is feasible in patients undergoing primary distal HR unless the prepuce is extremely asymmetrical or ventral transposition of preputial skin is required to address a ventral skin deficiency causing penile curvature.

PR neither increases urethroplasty complications nor the secondary surgery rate of HR, particularly if it is combined with the tabularised urethral plate urethroplasty. Specific complications occur in 8% of patients and include preputial dehiscence (partial or complete), and secondary phimosis. The latter is more difficult to assess and long-term data are actually scant. In order to prevent secondary phimosis, the prepuce should be easily retractile at the end of surgery.

Cosmetically, reconstructed prepuces can be asymmetrical, but the abnormality could be less important for patients and their parents than having a circumcised penis.

**Conclusions:** PR can be offered to many patients undergoing primary distal hypospadias repair. PR does not seem to increase significantly the second surgery rate of hypospadias repair. Ensuring retractility of the reconstructed prepuce at the end of surgery is paramount. For some patients having a non-circumcised penis could be more relevant than the presence of some residual symmetry after PR.

## O20

### **Glans substitution and frenuloplasty: A novel technique for restoring the normal glanulo-frenular complex**

Satish Kumar Aggarwal\*, Aparajita Mitra\*, KA Rashid#

\*Department of Pediatric Surgery, Sir Ganga Ram Hospital, New Delhi, India

# Department of Pediatric Surgery, Government Medical College, Srinagar, India

**Background:** In hypospadias repair, a tight ventral glans closure often leads to ischemic complications like fistula and dehiscence. The concept of septum glandis and frenulum separating the ventral glans wings has recently been proposed. The conventional ventral glansplasty does not conform to this concept. We used a robust dartos flap with inner foreskin to recreate the glanulo-frenular complex (GFC) simulating normal anatomy.

**Materials and Methods:** Between January 2010 and December 2017, **276** new cases of hypospadias (age range 6 months to 11 years) were operated. Redo cases and proximal hypospadias were excluded. The degree of glans malformation was estimated by the distance between the glanular hillocks. Glans wings were raised. Urethroplasty was performed by standard TIP technique with a free inner preputial skin graft over the raw surface. The GFC was recreated using a pedicled flap of dartos on preputial skin tailored to the dimensions of the defect with dartos providing soft-tissue substitution and skin replacing the frenulum.

**Results:** The procedure was successful in all cases with a follow up of 6 months to 8 years. Complication rate was **2.1%** [fistula formation in **3** (**one** Clavien-Dindo grade 3b), skin necrosis in **2** (healed spontaneously), meatal stenosis in **one** (responded to dilatation)]. Cosmesis was satisfactory to the parents and the surgeon. Uroflowmetry data from **140** patients ( $\geq 3$  years) showed normal flow patterns in **70%**.

**Conclusion:** This is a useful technique to achieve tension free glansplasty, particularly where the glans anatomy does not allow tension free ventral closure.

## Session 5: Distal Hypospadias

### O21

#### **Musings about Distal Hypospadias**

Mark R. Zaontz, MD,FACS, Perelman School of Medicine, University of Pennsylvania

This talk discusses the author's thoughts regarding how to be successful performing distal hypospadias reconstruction. This talk reviews what works best in the author's hands and highlights those operations including the technical nuances of each procedure in short video snippets. Techniques to safely correct the milder forms of chordee will be reviewed.

Additionally the use of testosterone and the author's theory on what constitutes the "real" urethral plate will be discussed. Finally the author's preferences for the use of stents, dressings and post op care will be mentioned.

## O22

### **Complications of TIP procedure for Hypospadias-Experience of a Pediatric Surgery Clinic in Bucharest; Romania**

*T. Enache<sup>1</sup>, A. Moga<sup>1,2</sup>, AM. Sorescu<sup>2</sup>, L. Balanescu<sup>1,2</sup>*

**Aim of the study:** The aim of our study was to evaluate the complication rate after using Tubularized Incised Plate (TIP) in hypospadias patients in “Grigore Alexandrescu” Clinical Emergency Hospital for Children in Bucharest, Romania.

**Methods:** We performed a retrospective, observational study which included all patients diagnosed with hypospadias and admitted between July 2012 and June 2018. Patients who were not previously operated on and who underwent a TIP procedure were included. We collected data from patients’ medical records, operating theater logbooks and from postoperative assessment records. For data analysis Chi-square and Pearson tests in IBM SPSS Statistics 20 were used. The study received the approval of the local ethical committee.

**Main results:** We reviewed data from 104 patients. Mean age at the time of the surgery was 48 months. Following the procedure, in 67,3% of the patients no complication was seen. From those who suffered complications, 73,5% developed stenosis while other 11,8% fistula. Other complications seen in these patients were: wound dehiscence (8,8%), chordee (2,9%) and urethral diverticulum (2,9%). For the 34 patients with complications we found the following correlations: 52% of the patients with stenosis presented with distal hypospadias, 50% of the patients with fistula presented with mid-shaft hypospadias and all the patients with wound dehiscence had a mid-shaft hypospadias.

**Conclusions:** In conclusion, meatal stenosis was the most frequent complication after TIP repair of the patients in our study and the most frequent complication in distal hypospadias patients. This was followed by urethral fistula, while wound dehiscence was present only in mid-shaft hypospadias patients.

## O23

### **The use of an autologous platelet-rich fibrin membrane in urethroplasty for cases of distal hypospadias: a randomized control study**

*Hesham Elsaket, Mahmoud Tarek, Moutaz M. Ragab*

*The Department of Pediatric Surgery, Cairo University Specialized Pediatric Hospital, Faculty of Medicine, Cairo University*

Hypospadias surgeries are one of the challenging operations in pediatric surgery, urethrocutaneous fistula represents the most common complication after repair and many procedures were invented to avoid and overcome these problem, Platelets rich fibrin membrane one of the methods aiming to improve this problem, PRF preparation is an easy one derived from the sera of the patient and already used in plastic and

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<sup>1</sup> „Grigore Alexandrescu” Clinical Emergency Hospital for Children (Romania)

<sup>2</sup> „Carol Davila” University of Medicine and Pharmacy (Romania)

reconstructive surgeries with good results as it markedly improve the healing power and reduce infections, Our study is to evaluate the use of this autologous membrane in improving the healing power and minimizing the incidence of fistula in de novo cases, Between February 2017 to February 2018, eighty patients with distal hypospadias underwent TIP repair in a prospective controlled randomized trial, PRF was applied in 40 patients, the mean follow up period was 6 (range 2 to 10) months, the results were better in the group of study, four cases had urethrocutaneous fistula with incidence 10% versus 9 cases had fistula for the cases without PRF with incidence (22.5%). The PRF membrane offer a new safe and easy modality in hypospadias repair with lower fistula rate compared to those repaired without PRF.

## O24

### **“Erlanger Technique” for distal and midshaft hypospadias repair – surgical procedure and outcome**

*Hein S., Kraske S., Schwaiger B. , Hirsch K.*

*Urologische und Kinderurologische Klinik, Universitätsklinik Erlangen*

**Aim:** Presenting our “Erlanger – Technique” for distal and midshaft hypospadias repair, surgical technique and outcome.

**Methods:** Retrospective analyze of 123 boys (mean age 22 months) who underwent our surgical procedure for distal and midshaft hypospadias repair between 2011 and 2015. Main principle of our technique is to create a tunica dartos flap out of inner prepuce to cover the suture lines of the neourethra.

**Surgical Technique:** U-shaped skin-incision around the meatus. Complete degloving of the penile shaft to straighten the penile shaft. Artificial erection is performed followed by correction of a penile curvature, if needed either by correction of the chordee or even by corporoplasty. Tubularization of the urethral plate is done. A good vascularized dartos flap is gained from the excess prepuce and is rotated tension free to the ventral aspect of the penis for additional coverage of the suture lines of the neourethra. Symmetrical penile shaft coverage is done.

**Main results:** Over all complication rate was 7 %. 4 urethrocutaneous fistulas (3%), 1 urethral stenosis, 1 postoperative hematoma, 1 penile rotation and persisting curvature in 2 boys. Cosmesis was similar to circumcised boys.

**Conclusion:** Covering the neourethra with vascularized tissue reduces the rate of urethral stenosis and urethrocutaneous fistulas. Gaining the dartos flap from the excess prepuce instead of the penile shaft skin avoids circulatory disorder of the penile shaft skin.

“Erlanger Technique” for distal and midshaft hypospadias repair is a safe and relatively simple procedure with a low rate of complications, good cosmetic results and functional outcome.

## O25

### **Comprehensive Evaluation of Grafting the ‘Incised Poor Plate in Virgin or Redo Hyposadias Surgery**

*Sherif N. Kaddah<sup>2</sup>, Hamed M Seleim<sup>1\*</sup>, Yousef Abdalazeem<sup>2</sup>, Mohammed S ElSheemy<sup>3</sup>, Ahmed M Shouman<sup>3</sup>, Ahmed E Fares<sup>4</sup>, Hesham M Elsaket<sup>2</sup>, Hisham El Saket<sup>2</sup>, and Mohamed M Elbarbary<sup>2</sup>*

<sup>2</sup>*Pediatric Surgery Unit, Cairo University Specialized Pediatric Hospital, Cairo, Egypt.*

<sup>3</sup>*Pediatric Urology Unit, Cairo University Specialized Pediatric Hospital, Cairo, Egypt.*

<sup>4</sup>*Pediatric Surgery Unit, Fayoum University.*

**Objectives:** To evaluate the impact of dorsal inlay graft urethroplasty (DIGU) for repair of virgin and redo hypospadias with poor plate, on the risk of neourethral stenosis.

**Materials and Methods:** Consecutive children with penile hypospadias with poor plate (width  $\leq 8$  mm) were evaluated prospectively between August 2014 and August 2017. We stratified the included poor plates into narrow (4 - 8 mm) and very narrow (< 4 mm) plates. All cases were approached by tubularized incised plate urethroplasty, augmented by dorsal inlay grafting (inner-face prepuce). Cases with significant chordee and circumcised cases were excluded.

**Results:** A 104 hypospadias cases were included; 93 virgin cases and 11 redo cases. The follow up ranged between 6 and 40 months, and was done by an independent out-patient nurse. Among the group with narrow plate (n=81), there was no reported need for post repair urethral dilations, and only one case (1.2%) developed urethrocutaneous fistula. Meanwhile, among the group with very narrow plate (n=23), 11 cases (48%) needed post-repair urethral dilations, and another 8 cases (35%) developed urethrocutaneous fistula.

Surgical repair of the reported 9 cases with fistulae, revealed an augmented healthy neourethral wall; disclosing a well-taken graft.

**Conclusions:** The presented study confirmed that urethral plate width less than 4mm is likely to result in neourethral stenosis, in virgin or redo hypospadias repair. Although grafting the incised plate in such cases did not nullify neourethral stenosis completely; it offered a valuable neourethral wall that proved indispensable when redo surgery deemed necessary.

## O26

### **Calibration and dilatation with fluocinolone gel in the treatment of stenosis of neourethral meatus after TIP repair**

*Obaidullah (Pakistan)*

**Objective:** To compare Snodgrass and Snodgrass repairs of hypospadias with calibration using intraurethral topical fluocinolone gel.

**Patients and Methods:** Between January 2016 and December 2017, 96 boys

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<sup>1</sup> *Pediatric Surgery Unit, Tanta University, Egypt.*

(median age 19 months, range 6-48) had a distal hypospadias repair using either a Snodgrass or Snodgraft urethroplasty. The neourethra was calibrated 15 days after removal of urethral tube. The patients with meatal stenosis were divided into three groups. Group A consisted of both Snodgrass and Snodgraft repairs and was only treated with calibration using silicone catheter size 6-8 French. Group B consisted of Snodgrass repair and Group C of Snograft (using preputial graft). Both the latter groups were calibrated in the same way but using additional Fluocinolone Gel once daily.

**Results:** The mean (range) follow-up was 10(6-30) months; Group A had maximum number of stenosis and fistula formation. Group B and C had minimum number of the complications, C with slightly less number of stenosis and fistula as compared to B group but there was no statistical difference.

**Conclusion:** Early calibration and dilatation of stenotic neourethra after hypospadias repair is a useful method for the early treatment including prevention of fistula formation. Calibration with regular use of topical intraurethral Fluocinolone gel prevents stricture and resulting fistula formation more effectively.

## O27

### **Subpreputal Meatal-pedicled Flap, New Technical Challenge of the Megameatus Hypospadias Variant.**

*Saber Waheeb, Mohamed Abdelmalak (Egypt)*

**Background:** Incidence: One of 300 boys has hypospadias; 8% of their fathers had been suffered from hypospadias, while 14% of male siblings are affected,.The incidence of MIP variant shows an overall incidence of 3% of all cases of hypospadias, The combination of a megameatus and an intact prepuce (MIP) represents an unusual hypospadias variant, Knowledge of the megameatus variant of distal hypospadias is of utmost importance, since it is often hidden by an intact prepuce.

**Objective:** The study objectives were to assess the validity as well as diagnostic power of the created clinical criteria in reducing the number of undescended testes indicated for laparoscopic intervention.

**Methods:** In this study, 455 children with MIP variant were admitted in Alexandria Hospitals "Elshatby and others", in the period between June 2000 and May 2014 we present a new simple technique for treating MIP variant, which depends on the use of a ventral flap obtained from the prepuce, and based upon a meatal pedicle. there is no chordee with the variant, which in combination with an intact prepuce frequently remains unrecognized until after circumcision.

#### **Results:**

- Follow-up duration: 6 months.
- No oedema of the prepuce.
- No urethro-cutaneous fistulae.
- No disruption

Calibration was done Three times during 6 month postoperatively to assess the repair. No stenosis was encountered in the course of the follow-up visits. In the non-circumcised cases, circumcision was done 1 to 2 months later. All cases after 2005 “300 case” circumcision had done as the last step of the repair.

**Conclusion:** This advocated technique, involving the use of preputial meatal based flap, is an easily applicable procedure, that can be done for all cases of MIP variant..

## O28

### **Poor uroflow after distal hypospadias repair: A maker for fixed obstruction of the neourethra?**

*Aparajita Mitra, Satish Kumar Aggarwal, Rajat Piplani*

*Department of Pediatric Surgery, Sir Ganga Ram Hospital, New Delhi, India*

**Background:** Abnormal uroflowmetry (UFM) curves are inherent to hypospadias in approximately 50% of cases, however, a normal pre-operative but abnormal postoperative flow may be suspicious for an obstructive complication. In our previous study, the best flow rates were observed when a circumferentially epithelialized urethra was constructed as opposed to only incising the urethral plate. We have further studied the pre- and post-operative flow rates in hypospadias undergoing repair with TIP with graft and glans substitution and frenuloplasty.

**Materials and Methods:** **Thirty** children ( $\geq 3$  years) were operated between February 2016 and January 2018. Glans substitution is a novel technique to re-create a natural glanulofrenular complex (GFC) with an intact symphysis glandis. Pre-operative and post-operative UFM (at 3 and 6 months) was done. Maximum flow rate ( $Q_{max}$ ), average flow rate ( $Q_{av}$ ), total voided volume, voiding time and type of curve were seen.

**Results:** Of the thirty cases evaluated **17(56.6%)** had normal UFM at 3 months (of these, **7** previously had abnormal curves). **Thirteen** had poor post-operative flow of which **6** also had abnormal pre-operative UFM but no worsening. The latter group was subjected to more active surveillance with repeat UFM, ultrasonic post-void residue measurement and parental observation of urinary stream. Of the 7 who were normal pre-operatively but had poor flow after surgery, **3** improved, **1** remained abnormal and **3** are yet to be evaluated at the 6 month follow-up.

**Conclusions:** Abnormal flow rates after surgery are not synonymous with obstructive complications. Reconstruction of circumferentially epithelialized urethra, well supported by soft tissue (dartos and corpus spongiosum) and avoidance of constriction at the level of the glans by way of our novel technique of preserving the symphysis glandis and frenuloplasty provides grounds for improved post-operative flow rates.

## O29

### **Congenital urethrocutaneous fistula**

*A. Gamal Abdelmalek (Egypt)*

**Aim of the study:** During an ongoing study on the management of Anorectal malformation, a rare case found with urethroscrotal fistula which has no connection with the rectal pouch. This raised a question of which one should be corrected first.

**Methods:** Anorectal anomaly was chosen to be corrected first, and the patient was monitored for complications.

**Results:** The patient had many infective complications which made the repair of the urethroscrotal fistula is so challenging, in addition to its effect on the anoplasty.

**Conclusion:** Anterior urethral anomalies which are associated with anorectal anomalies are better to be corrected first provided that colostomy is present.

## O30

### **The consultant learning curve: An analysis of the first 100 consecutive one stage hypospadias repair performed by a single surgeon at a regional centre**

*Mr Nicholas Wilson Jones <sup>2</sup> (Presenter/Senior), Ms Dianne Carlos <sup>1</sup>; Ms Juliana Hughes <sup>2</sup>;*

*1: University of Wales, College of Medicine*

*2: Welsh Centre for Burns and Plastic Surgery, Swansea*

**Introduction:** Studies in hypospadias surgery often come from established centres with few papers originating from plastic surgeons in the UK, less still discuss the learning curve associated with complex surgery.

**Aim:** To analyse the first 100 cases of primary one-stage hypospadias repair by a single surgeon, comparing complication rates with worldwide standards.

**Method:** A retrospective notes analysis collected data on age at surgery, severity of hypospadias, technique and complications. Results were compared with published complication rates. Two cohorts, Group A (first consecutive 50 patients) and Group B (second 50 patients), were analysed to evaluate the consultant learning curve.

**Results:** The first hundred patients were operated on between March 2009 and Feb 2015, increasing to 25 primary one stage cases per year by 2012.

The mean age of surgery was 23 months with mean length of follow up of two years. 90% had a Tubularised Incised Plate, 8% Meatal Advancement Glansplasty and 2% Duplay procedures. 96% were distal repairs.

Complication rate was 11%: 5 fistulas, 3 haematomas and 3 stenoses.

Comparing groups A & B showed a marked reduction in all complications. 75% improvement in fistula and 50% improvement in haematoma and stenosis rate.

**Conclusion:** The complication rates are comparable with pooled worldwide results. Demonstrated is clear evidence of a consultant learning curve at the beginning of practice in hypospadias surgery. Multiple small changes in surgical practice can provide significant improvements.

This study will provide a realistic comparator for senior trainees and new consultants with a hypospadias practice.

## Panel 1: Distal Hypospadias: How do we correct it – different views from around the world!

### O31

#### **Urethral advancement for distal Hypospadias – Beck's Technique**

*Emir Haxhija (Germany)*

Urethral advancement technique for correction of distal hypospadias has been firstly described by Beck in 1898. This technique relies on the elongation ability of the mobilised healthy urethra with healthy corpus spongiosum and can be applied in glanular, coronal and/or subcoronal hypospadias bridging the urethral gap of a 1 – 2 cm in length.

In contrast to other techniques for correction of distal hypospadias which rely on various skin flaps, and/or tubularisation and incision of the urethral plate the technique of urethral advancement brings the boys native urethra to the tip of the glans. A number of minor modifications of this procedure have been described since its introduction.

The operative technique of the urethral advancement will be illustrated and the review of the current literature presented. Although this technique requires advanced surgical skills and may appear maximally invasive due to the complete separation of the urethra from the corpora cavernosa reports about the use of urethral advancement technique in children with distal hypospadias are maximally positive about the final results of this technique and advocate its' use.

### O32

#### **TIP urethroplasty in Albania**

Dritan Alushani. UHC "Mother Tereza", Tirana, Albania.

**Objective:** Reviewing our experience on TIP urethroplasty and showing some tips and hints which in the experience of author have had a good impact in the general outcome. We discuss in this work the incidence of fistulas in cases with a one layer and two layer urethroplasty. Furthermore, we discuss the incidence of glandular dehiscence and appearance, as well as urinary jet, trying to draw some conclusions on stenosis of the neourethra.

**Patients and methods:** We have included in our study 367 of TIP urethroplasties performed from 2014 to 2017. Age range has been from 6 months to 16 years old. The hypospadias severity ranged from subcoronal to proximal penile. A urethral catheter was kept in place for 6-8 days. The follow-up of patients has been from 6 months to 3 years.

**Results:** We have had 29 fistulas for 280 TIP urethroplasties with one layer anastomosis (10%) compared with only 4 fistulas for the 87 with two layers

anastomosis (5%). The development of fistulas in our experiences changes also according to the severity of hypospadias and age of the child at the time of the operation. The majority of fistulas was repaired successfully 6-12 months after the primary surgery. In 7 cases repeated fistulas resulted in meatal and/or urethral stenosis and required further surgery to be solved. In 7 patients we had a glandular dehiscence - all of them at ages under 1 years old.

**Conclusions:** We consider TIP urethroplasty a very good technique for correcting the majority of hypospadias. We find it more suitable and successful for distal and mid-penile hypospadias, and less successful for proximal one in terms of fistula formation and urethral stricture. We also consider it easy to learn for the young surgeons. However, there are some tips which everybody needs to apply in order to have success and less complications. Although there are complications in different hands this technique has also the advantage of a good appearance as the skin usually remains intact during the operation.

### O33

## Role of Buck's fascia repair with glanuloplasty in hypospadias surgery

*Aejaz Ahsan Baba (India)*

**Background:** Hypospadias is a common problem encountered in surgical practice Urethro-cutaneous fistula is the most common postoperative complication. Different types of intermediate protective layers have been used in attempts to decrease UCF formation; however, no single surgical technique is ideal.

**Objective:** The aim of this study was to compare use of dartos fascia and Buck's fascia as intermediate layers in prevention of the formation of UCF.

**Study design:** This was a prospective, comparative study conducted over a period of 2 years from January 2014 to December 2015. Patients with primary hypospadias without or with mild ventral penile curvature were included in the study. Patients were categorised into two groups, A and B, with alternate patients assigned to each group. Patients in group A underwent Snodgrass repair with urethroplasty by two-layer subepithelial closure and dartos tissue as an intermediate layer. Patients in group B underwent a urethral repair followed by Buck's fascia repair as intermediate layer and glanuloplasty after excision of a triangular skin strip on either side of the urethral plate (fig ).

**Results:** The age of patients ranged from 1 year to 4.6 years, with a mean age of 1.8 years. Postoperative complications are listed in the table with fistula rate significantly lower in Buck's fascia group.

**Conclusion:** We recommend the use of Buck's fascia as an intermediate layer to cover the neourethra to reduce incidence of postoperative complications and improve results.

Complications	Group A(n=80)		Group( n=80)		p- value
	Number	Percentage	Number	Percentage	
UCF	10	12.5	2	2.5	0.036

Meatal Stenosis	3	3.7	1	1.2	0.620
Glans dehiscence	2	2.5	Nil	-	
Total	15	18.7	3	3.7	



Fig

**O34**

### **The impact of modified Snodgrass technique with the use of dartos flaps on the decrease in frequency of postoperative fistulas in operating distal and midshaft hypospadias**

*Sasa Milivojevic MD <sup>1</sup>, Zoran Radojicic PhD MD <sup>1</sup> and Jelena Milin Lazovic MD <sup>2</sup>.  
University Children's Clinic Belgrade <sup>1</sup>, Institute for Medical Statistics and Informatics,  
Faculty of Medicine, University of Belgrade, Serbia <sup>2</sup>.*

**Aim of the Study:** To prove the impact of the modified Snodgrass technique with the use of dartos flaps on the decrease in frequency of postoperative fistulas in operating distal and midshaft hypospadias.

**Methods:** The research was carried out over the 2010–2018 period. The first group includes 58 patients who underwent surgery with the modified Snodgrass technique with the use of dartos flaps. The second group includes 57 patients who underwent surgery with the classical Snodgrass technique. In the postoperative procedure we followed up the frequency of these postoperative complications: urethrocutaneous fistula, meatal stenosis, urethral stenosis, glans dehiscence, urethral diverticulum or urethrocele, cosmetic issues, hair-bearing urethra and penile curvature. The followup period was 40.9 months, with the shortest period being 12, and the longest 60 months.

**Main results:** There was no statistical difference between the two groups regarding these parameters: preoperative and intraoperative considerations, regarding the age at which the patients underwent surgery, preoperative androgen therapy, as well as the follow-up period ( $p > 0.05$ ). In the group where the Snodgrass technique with dartos flaps was used, 2 patients (3.4%) had postoperative fistulas, whereas in the group treated with the classical Snodgrass technique, 11 patients (19.3%) had postoperative fistulas ( $p = 0.007$ ). Compared with all the other observed postoperative complications, there was no statistical difference between the observed groups ( $p > 0.05$ ).

**Conclusions:** The modified Snodgrass technique with the use of dartos flaps considerably decreases the frequency of postoperative fistulas in operating distal and midshaft hypospadias when compared with the classical Snodgrass technique.

## O35

### **Reconstruction of frenulum & Septum Glandis: Improved technical skills and results in hypospadias repair with the glanular-frenular collar (GFC) technique**

*Hüseyin Özbey (Turkey)*

*Department of Pediatric Surgery, Division of Pediatric Urology, Istanbul Medical Faculty, Istanbul University*

**Aim of the study:** In normal human penis anatomy, the glans wings are in apposition in the midline ventrally, and are separated by the “septum glandis” in conjunction with the “frenulum”. The frenulum is also included in the formation of the distal urethra. An additional series of patients are presented with the technical improvements of a previously described hypospadias repair technique (GlanularFrenular Collar; GFC), with better results.

**Methods:** There were 48 patients, 36 with distal to midpenile, 12 with proximal penile/penoscrotal hypospadias (3 with severe chordee, > 45°). The mean age at surgery was 32 months (6 months - 7 years). Mean duration for hospitalization was 6 days (5-10 days).

**Main results:** All but 4 patients had GFC as primary repair. At a mean follow-up of 8 months, three patients had meatal retraction (that resulted in coronal meatus, without stenosis), one had urethrocutaneous fistula. A slit meatus and a neo-frenulum between the split wings of the glans penis were obtained in all but two patients. All patients had cosmetically satisfying appearance with a wave-like flow pattern of micturition.

**Conclusions:** In hypospadias surgery, tubularization of the neourethra over a catheter or stent and approximation of the dissected glans wings on the midline to enclose the neourethra has been the standard method for decades. However, the male urethra is NOT a tubular structure with uniform configuration and diameter. A fibrous tissue (septum glandis) surrounds the glanular urethra (fossa navicularis), connects the upper and lower median septum and holds the glanular urethra in the midline as a suspensory ligament. The GFC technique takes into account, for the first time, the anatomical features of the glanular urethra. Technical improvements in the formation of a frenulum and septum glandis result in a better outcome than our previous reports.

## O36

### **The Slit-Like Adjusted Mathieu (SLAM) technique for distal and midshaft hypospadias**

*Ahmed Hadidi, Emma & Offenbach Hospitals, Offenbach, Germany*

**Aim of the work :**The Mathieu technique has withstood the test of time for 90 years, with a study reporting a 100% success rate in 204 consecutive patients. The major

drawback of the original Mathieu technique is the final appearance of the meatus (a fish-mouth meatus that is not at the tip of the glans). The technique has become less popular during the past 15 years in favour of the tubularized incised plate (TIP) technique partly because of the slit-like meatus that could be achieved with the TIP technique. However, the TIP technique has a complication rate of 36% in long term follow up.

**Technique:** A converging incision, multiple-layer suturing technique and V excision from the distal neourethra result in a slit-like meatus with Mathieu technique while maintaining a wide new urethra and low complication rate.

The SLAM technique has become our standard technique for correction of distal and mid-penile hypospadias with persistent good results since 2005. It avoids the drawbacks of the classic Mathieu (a transverse rounded meatus that is not terminal). Multiple-layer closure and careful attention to technical details contributed to a 5% complication rate in primary distal and mid-penile hypospadias.

## Session 7: Proximal, perineal Hypospadias & Surgery in Adults

### O37

#### **Hypospadias – from birth to adulthood, the experience of an adult Urologist**

*Tiago E. Rosito (Brasil)*

Hypospadias are complex malformations that can impact a man's life for decades. It is well known that there are more than 200 techniques developed throughout history to correct this defect. Despite the complexity of surgical correction in the first years of life seems to be clear and with well-established criteria that help in the therapeutic definition in one or two stages.

Greater therapeutic complexity exists in older patients, late adolescence and adulthood where aesthetic and functional details become more important and unfortunately the most difficult surgeries.

Knowledge of alternative techniques for correction of primary defects or late complications is essential. The Group of Reconstructive and Infantile Urology (GURI) of Hospital de Clínicas of Porto Alegre, Brazil integrates a team with extensive experience in the treatment of urethral pathologies from birth to adult life. The aim of this lecture is to show the applicability of techniques initially developed for urethroplasties (Barbagli, ASOPA, Kulkarni) in the correction of cripple hypospadias or in late complications as well as exposing the main tips and tricks for a correct preparation of free grafts and flaps for the creation of urethral plaques suitable for correction in two stages of complex hypospadias (Staged tabularized autograft repair).

### O38

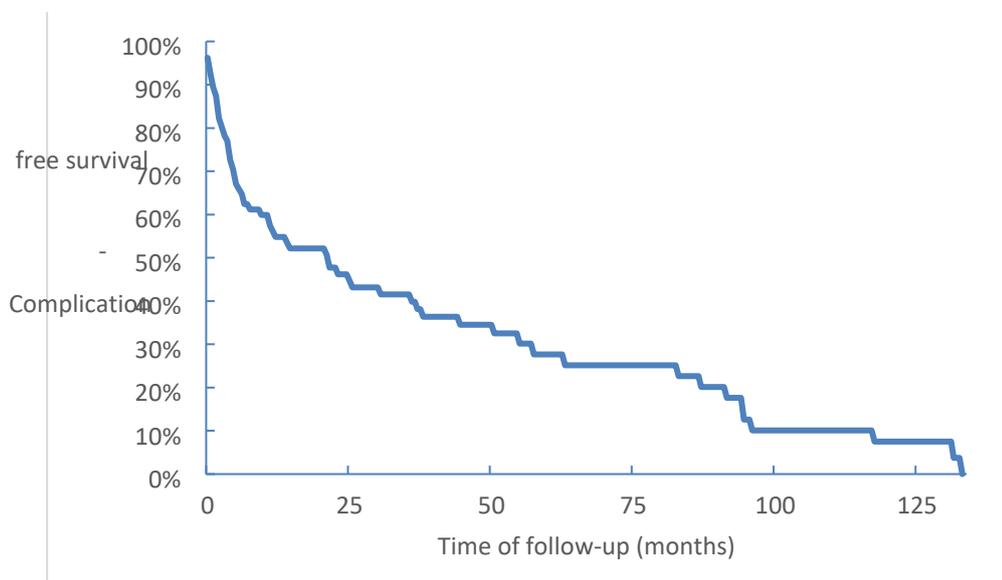
#### **Adults undergoing primary or redo hypospadias repair have increased risk for developing complications: Results of a long-term retrospective study**

**Aim of the study:** To assess long-term outcomes and identify prognostic factors of primary and redo hypospadias repair in adult patients in a tertiary care centre, and to compare these results with literature data on childhood hypospadias repair.

**Methods:** Adult patients (>16 years) being at least operated once for hypospadias were recruited retrospectively. Clinical history, charts and surgery reports were evaluated for several patient variables. All surgical complications were documented.

**Main results:** 65 patients were included undergoing a total of 111 surgeries. Mean follow-up was 39 months. 108 postoperative complications were documented. The most common complications reported were stenotic complications (40%), cosmetic complications (21%) and fistulisations (20%). No prognostic factors for developing complications could be identified. More than half of complications occurred within one year after surgery, but new complications were identified up to 11 years after last surgery (figure 1). 36.4% of surgeries resulted in no complications. 36.5% of patients remained complication-free after their first surgery in the tertiary care centre, rising to 63.9% of patients after their last surgery.

**Conclusions:** Compared with earlier results of hypospadias repair in childhood, conducted in the same care centre, adult hypospadias patients are at increased risk for developing complications. Long-term follow-up is necessary to document all surgery-related complications, since long-term complications occur frequently.



**Figure 1**

## O39

### **O39 Perineal hypospadias: why a separate entity?**

*Ahmed Hadidi, Emma & Offenbach Hospitals, Offenbach, Germany*

Perineal hypospadias or Grade IV hypospadias is a complex deformity (rather a syndrome) consisting of; a perineal urethral orifice, hypoplastic ventral penile structures resulting in severe chordee, small sized glans & penis, bifid scrotum and often undescended testis and occasionally penoscrotal transposition. It remains a major challenge for the experienced hypospadias surgeon. The Bilateral based flap, Koyanagi technique, Duckett Island flap and Bracka (Cloutier) two stage repair, are the current techniques used for perineal hypospadias.

**Technique:** Chordee Excision and Distal Urethroplasty (CEDU) were performed at the first operation in 63 patients leaving a 1 cm segment as perineal urethrotomy to be reconstructed at the second operation.

**Patients and Methods:** Between January 2013 and December 2016 the CEDU technique was performed in 63 patients with perineal hypospadias. The records of 59 patients who maintained regular follow up were reviewed. The principle is to excise the hypoplastic urethral plate, atretic corpus spongiosum and longitudinal layer of tunica albuginea, split the glans in the midline and reconstruct a healthy urethral plate using preputial and lateral skin flaps to the tip of the glans. Distal urethroplasty was performed leaving 1 cm at the proximal end to be reconstructed 3-6 months later. This principle was used by Duplay in 1880s. Patient age ranged between 6 months and 2 years (mean 8 months). All the patients had perineal hypospadias, bifid scrotum with severe deep chordee. Follow-up period ranged from 17 to 53 months (mean 36). A transurethral silastic catheter was inserted for 4 days. Three months later, the remaining 1 cm of the new urethra was reconstructed and final adjustment of the glans and foreskin was performed.

**Results:** Satisfactory results were obtained in 54 patients (90%). Three children experienced glans dehiscence that was corrected in the second stage, one child developed fistula after the second operation and one developed diverticulum. The fistula and diverticulum were corrected at a 3rd operation successfully.

**Discussion:** It was necessary in our series to incise the urethral plate and excise the hypoplastic corpus spongiosum and the outer longitudinal layer of tunica albuginea to correct the associated deep chordee. The lateral skin flaps receive double blood supply from the base of the penis and the preputial vessels. This natural urinary diversion allows early removal of the catheter, reduces the discomfort of the patient and allows the new urethra to heal without urine irritation for 3 months. Long follow up for 15 years is necessary to assess the technique objectively.

**Conclusions:** The CEDU technique diverts urine away from the urethroplasty for 3 months without a catheter. It reduces the hospital stay and patient discomfort. It

produces satisfactory results and has become our standard technique in perineal hypospadias.

## O40

### Revisiting the risk factors for complications post-tubularized incised plate urethroplasty

Melissa McGrath<sup>1-3</sup>, Smruthi Ramesh<sup>2</sup>, Kornelia Palczek<sup>3</sup>, Luis H. Braga<sup>1-3</sup>

complications following Tubularized Incised Plate (TIP) urethroplasty. The role of other factors such as urethral plate (UP) quality, glans groove and preoperative testosterone stimulation (PTS) has been disputed. Herein, we investigate whether these variables impact TIP repair complications in a large prospective series of distal and midshaft hypospadias.

**Methods:** Of a prospectively collected hypospadias database (n=662), consecutive TIP repairs from 2009–2017 were selected. Staged repairs, other techniques and redo cases were excluded. Primary outcome was postoperative complication rate (fistula, glans dehiscence and meatal stenosis). Predetermined risk factors were collected (age at repair, modified GMS score, PTS (for glans width <14mm), regional block (caudal vs. dorsal penile), VC and complications were recorded. GMS score, calculated using glans groove (deep/moderate and shallow/absent), UP characteristics (robust vs. poor spongiosum), meatal location and VC (<30°, 30°-70°, >70°), ranged from 4 to 11 [worst]). Student's t and Fisher's exact tests and binary logistic were used for statistical analyses.

**Results:** Of 390 patients, 285 (73%) had distal, 82 (21%) midshaft and 23 (6%) proximal penile hypospadias. Median age at surgery was 16 (3–313) mos. and mean follow-up was 18±16 mos.; 100 (26%) boys received PTS and 323 (83%) had a caudal block. Mean GMS score at initial exam was higher in PTS group vs. no PTS (7.4±1.7 vs. 5.2±1.3, p<0.01). The mean GMS score for PTS patients was similar to that of non-PTS at surgery (6±1 vs. 5.6±1, p<0.01). Overall complication rate was 12% (9%-distal, 17%-midshaft, and 30%-proximal) and the median time to complication was 9 (0-105) mos. Contrary to previous studies, glans width and PTS were not independently associated with complications. Logistic regression revealed a combination of glans groove/UP quality and GMS score >7 were the independent risk factors significantly associated with TIP complications (p=0.01). **(Table 1)**

**Conclusion:** Our results involving a larger number of patients are consistent with previous reports that demonstrated an association between increased GMS scores and higher complication rates. Even though GMS scoring takes into account multiple

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**Introduction and Objective:** Components of the GMS score such as meatal location and ventral curvature (VC) have been well established as risk factors for

factors such as glans diameter and VC, our analysis suggests that glans groove/UP quality still have an effect on complications post TIP repair independently of GMS scores.

	Complications n=46 (%)	Univariate		Multivariable	
		Total value	p n=390	HR (95% CI)	p value
<b>Preoperative Testosterone</b>					
No	29 (10)	262	0.71	Ref 1.8 (0.9 – 3.5)	0.66
Yes	17 (17)	82			
<b>Glans Diameter</b>					
>13 mm	29 (12)	203	0.63		
≤13 mm	17 (11)	141			
<b>Meatal Location</b>					
Distal	25(9)		<0.01		
Midshaft	21 (19)	258	86		
<b>Ventral Curvature</b>					
≤ 30	34 (10)	305	<0.01	1.8 (0.8 – 4.2)	0.47
> 30	12 (23)	39			
<b>Glans Groove</b>					
Moderate/Deep	19 (8)	221	<0.01	1.1 (0.5 – 2.5)	<0.01
Absent/Shallow	27 (18)	123			
<b>Urethral Plate Quality</b>					
Robust Spongiosum	19 (8)	296	<0.01		
Poor Spongiosum	27 (36)	48			
<b>Anesthesia</b>					
Caudal	42 (13)	280	0.10	2.3 (0.8-6.7)	0.12
Dorsal Penile Block	4 (6)	64			
<b>GMS Score at Surgery</b>					
< 7	22 (8)	241	<0.01	2.5 (1.3- 4.6)	<0.01
≥ 7	24 (19)	103			

## O41

### Urethral caliber in Penoscrotal hypospadias: A comparative study of TIP versus Onlay technique

*Darius Bägli (Canada)*

Over an eight year period, 75 patients with penoscrotal hypospadias were reconstructed: 40 underwent onlay (OL) and 35 underwent tubularized incised plate (TIP) repairs. Urethroplasty performed over an 8F catheter in all pts. Age (~17 months) and follow-up (~30+ months) were comparable. There was no meatal stenosis. Complications occurred in 60% of TIP and 45% in onlay procedures. Fistula rate, in particular, was 50% in TIP w 75% of these proximally located vs 25% in OL with 75% distally located. Flow curves at 5 years follow-up were primarily flattened in TIP vs bellshaped in OL patients. We speculate that these results likely demonstrate the impact of differential distensibility of the neourethra in TIP vs OL patients. Poiseuille's law of fluid dynamics is discussed to illustrate how the neourethra with seemingly adequate caliber by traditional surgical standards can create flow resistance and subsequent fistula formation.

## O42

### Lengthening Coproplasty with artificial graft

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**Aim of the study:** To check the possible indications and complications of an artificial graft in case of a corporoplasty resulting in a lack of tissue.

The correction of a severe penile curvature results many times in a ventral lack of tissue that needs to be repaired with a graft. We suggest the use of an artificial graft of small intestinal submucosa to cover this defect.

**Methods:** Retrospective study of our cases from 2010 to 2017, analyzing characteristics of the penis and results of surgery, as well as possible complications.

**Main results:** We had during these years 24 patients, operated almost everyone by the same surgeon, in different hospitals. The initial degree of curvature was less than 30° in 5 cases, between 30° and 60° in 7 cases, and more than 60° in 12 cases. The meatus was scrotal or peno-escrotal in 16 of 21 cases, and the glans was small in 11 of 21 cases. The mean age was 33 months in 20 patients. There were no complications in any case. All grafts remained successfully implanted.

**Conclusions:** It is very important to achieve a good erection in order to have a final good results in the correction of hypospadias in the long-term. This can only be done (in our opinion) in severe curvatures with a corporoplasty.

Our technique is feasible and has excellent results with a minimum rate of complications.

## O43

### **Laparoscopic resection of a Prostatic Utricle cyst in a patient with proximal hypospadias**

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**Introduction:** Prostatic utricle cyst (PU) is an embryological remnant of the Müllerian duct. PU has been reported to be rare in the normal population, but has often been demonstrated in patients with hypospadias and its incidence has increased according to the severity of the hypospadias.

**Case report:** We report the case of a 2,5-year-old boy, diagnosed with penoscrotal hypospadias. Abdominal ultrasound was performed as part of the preoperative protocol and a 25/23 mm transonic image was described behind the bladder. Voiding cystourethrography showed no significant findings. After magnetic resonance imaging the suspicion of a Müllerian remnant was raised. The patient underwent stage I Braka urethroplasty in June 2016 and BILAB urethroplasty in October 2017. During surgery, due to the fact that the uretrovesical catheter could not be placed in, the patient required a suprapubic catheter. Postoperatively, the patient presented with episodes of acute epididymo-orchitis. He underwent exploratory laparoscopy and a PU was discovered, then scoped. The cystoscope was left in situ to facilitate laparoscopic dissection. The PU was dissected from the anterior rectal wall and the posterior bladder wall, with the preservation of the vasa and completely resected. Recovery was uneventful and the patient was discharged on the 8<sup>th</sup> postoperative day.

**Conclusions:** PU is often associated with hypospadias. The PU cysts are rare in clinical practice and optimal surgical results require accurate definition of its anatomic relationship to the adjacent structures. Surgical correction remains challenging because the utricle is close to the ejaculatory duct, the pelvic nerves, the rectum, the vas deferens, and the ureters. Surgical manipulation can result in damage to these structures.

## O44

### **Urethral reconstruction using the “Onlay-Tube” in patients with severe Hypospadias**

*A.K. Faizulin, S.M.Sharkov, P.A.Kolosova, A.G.Burkin(Russia)*

**Aim:** to improve the cosmetic results and to decrease the rate of complication.

**Materials:** 354 male children were treated. Patient’s age ranged from 6 months to 17 years. Urethroplasty was performed according to “onlay-tube” technique.

**Methods:** the meatus located at the peno-scrotal angle in all patients. The curvature was corrected by the plication of tunica albuginea. The length of formed urethra depended on the tissues reserve and on the location of hair follicles. The graft has a form of bi-concave lens. Graft’s form determined with the different skin’s distensibility,

which allowed to form the urethra with constant diameter. Proximal anastomosis formed with the flip-flop technique. We used intracutaneous uninterrupted suture (back-step) of urethra. Glanduloplasty was done according to Hendren. The zone of interest was covered with the grafts of local tissues. The bladder was drained with the Foley catheter #10 Fr and the penis was covered with the multilayer compressive bandage for 10 days.

**Results:** In 17 patients (4.8%) appeared urethral fistula at the area of proximal anastomosis, in 8 patients (2.3%) we observed forming of fusiform urethra.

**Conclusions:** using of tubular skin graft allows to prevent the hair's growth in urethra. Saving of two neuro-vascular tracts provides good urethra's blood supply and sufficient growth in future. Modified technique of proximal anastomosis and maladaptation of suture's line prevent fistulae appearing.

## Session 8: Complications of hypospadias repair

### O45

#### **Hypospadias Surgery; Short Term Success can be Long Term Failure**

*Moneer Hanna (USA)*

This lecture represents a journey of 40 years of experience in hypospadias repairs, which started in 1970. Long term follow-up revealed high level of dissatisfaction among adolescents and adults regarding the quality of their repairs, both in term of function and esthetics. Historically following early reported 'successful' standard two-stage Dennis Brown repair or one its modification or variation of the theme which were surgically relatively easy to master, and associated with low complication rate however, the result was a meatus on the under-side of the glans penis resulting in spraying of urine in some patients and obtrusive appearance in others. These operations were replaced by the one stage procedures aiming at creation of a terminal urinary meatus. The long-term results and morbidity of these repairs which were popular and 'fashionable' at some stage will be reviewed. The early successful "take" of the tubed skin graft urethroplasty had significant incidence of stricture rate and Lichen Sclerosus many years later. Likewise, the tubed island flap urethroplasties had a high of early complication rate of fistula and late incidence of diverticulum formation. Currently the most popular technique is the TIP procedure however, the reported post-operative stricture rate is 4-66%.

Recurrent chordee was reported at 5-10 years follow-up in 22-25% after dorsal shortening procedures (plication or Nesbit procedures) and none -10% of the ventral lengthening procedures (dermal or Tunica Vaginalis grafts), however, my longer term follow up of 25+ years show a recurrence rate of penile curvature of 35% in the dorsal plication and 10% in the ventral lengthening patients. In my experience recurrent curvature following repair of proximal hypospadias may be due to; incomplete correction, periurethral fibrosis and skin tethering and/or disproportionate growth of

relatively hypoplastic ventral corporal wall. Nevertheless, surgical correction of symptomatic adolescent patients by dorsal shortening for mild chordee (30 degrees), ventral grafting when the urethroplasty is healthy, and staged repair using buccal mucosal grafts for complex cases have been successful.

History tells us that the sub-coronal meatus anchored to the under surface of the glans penis is ineffective and associated with functional and esthetic issues at long term. However, the one stage procedures aiming at terminal meatus have been also been associated with long term problems. This creates a dilemma for the surgeon who operates on children born with hypospadias and makes long term follow up through adolescence well worthwhile.

## O46

### **Unsolved Hidden Problems in Hypospadias Management: Challenging the Unknown Unknowns**

*Ibrahim Ulman, Ege University Faculty of Medicine, Izmir (Turkey)*

Hypospadias surgery evolved rapidly since the initial attempts to repair the anomaly. A casual overlook may end up applauding a winning story with above 90 percent success rates. However, when distal hypospadias cases, which constituted the majority in contemporary reports are omitted, success rates sharply decline even to the levels of the era when distal hypospadias was untouched. A meatus at the tip of a straight penis should not be the sole aim. Any repair must set the goal as a normal penis, not an 'acceptable' one. There are problems we are unaware of or tend to ignore. Recognizing our faults or imperfections is the first-step to improve. Some of them are addressed herein.

Glanular wings approximation over the new urethra has been a basic maneuver to secure the repair, but it comes with sacrificing normal glans anatomy.

Dribbling becomes a complaint in elderly men, but most successfully repaired hypospadiac boys keep dribbling, and some milking as it is the normal practice. Surgical repair of hypospadias creates an inelastic tube attached in front of a normal urethra. This is an excellent organic model of a nozzle that we make unintentionally. Do we really need it? Does it make any harm? How can we avoid it?

During correction of severe chordee, it is common to suffice with a straight penis angled 90 degrees to the abdomen pointing forward. This is indeed an early sign of impotence in aging men. Why don't we correct chordee as it should be?

A perfectly managed, normal sized hypospadiac penis can be buried even in a nonobese boy having excess pubic fat mimicking mons in girls. This problem definitely downscores parental and patient satisfaction and awaits solution.

Hypospadiac penis may not achieve normal size throughout puberty. This is one of the main concerns for adolescents. Do we know what percentage of this size loss is due

to scarring caused by extensive dissection during surgery? Will the grafts that we cover penile body stretch normally in future?

What is the significance of damage to the nerves and corpora in regards to erectile dysfunction in men operated for hypospadias in childhood? Is it all psychological? These are probably just a short list compared to the remaining unknown unknowns that we will face in future. Success rates are always biased by the time segment they belong to.

## O47

### **A Strategy for Management of Ischemic Tissues and Skin Flaps in Re-Operative and Complex Hypospadias Repair**

*Christine M. White, Moneer K. Hanna (USA)*

**Background:** Repeated surgeries for hypospadias result in a varying degree of scarring and hypovascularity of the penile skin. Herein we review the results of our strategy using nitroglycerine ointment (NTG) and hyperbaric oxygen therapy (HBOT) for redo surgery for hypospadias.

**Materials & Methods:** Between May 2014 and June 2017, 56 patients underwent reoperative repair of proximal hypospadias complications. Group I included 24 patients who were noted to exhibit significant tissue ischemia of the skin flaps postoperatively. NTG was applied after surgery, and daily HBOT for 90 minutes was instituted (6-10 sessions). Betamethasone cream was applied to reduce scar/keloid formation. This protocol was not used in Group II (32 patients).

**Results:** In Group I, 22/24 (90.6%) of repairs were successful. One patient developed wound infection and the distal repair broke down. Another patient developed breakdown resulting in a low glandular subterminal meatus. In Group II, successful outcomes were noted in 23/32 (75%) at 3 weeks post-operatively. 4/9 patients were lost to follow up, and 5 patients underwent additional surgery of which 4/5 achieved good outcomes. The fifth patient declined further surgery.

**Conclusions:** The proposed treatment modality appears to result in reversal of tissue hypoxia and improved wound healing. This preliminary report shows improved outcomes with less morbidity at short term follow up in a group of patients who endured multiple hypospadias surgical failures and it warrants further application in a larger number of patients.

## O48

### **Urethrocutaneous fistulae after hypospadias repair; evaluation of 34 cases**

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**Aim of the Study:** To investigate the factors affecting the formation and repair success of urethra-cutaneous fistulas and recurrent fistula and after hypospadias surgery

**Methods:** After local ethics committee permission (2018-075), 34 cases with urethracutaneous fistula who underwent surgical repair between 2015 and 2016 were evaluated retrospectively. Age of the cases, location of the meata, surgical intervention, complications, fistula repair and complications after re-fistula repair were investigated.

**Main results:** There was no statistically significant difference in the age of operation between fistula and non-fistula cases. A statistically significant difference was found case between distal and proximal hypospadias. 9 of the 34 patients (26.47%) who underwent fistula repair had a hypospadias recurrent fistula. There was no significant difference between the patients with and without re-fistula when evaluated according to the location of the meatal localisation and operation age. The most frequent cause of fistula was meatal stenosis noted in 8 cases.

**Conclusions:** Meatal localisation is the only factor for fistula formation in our series. In case re-fistula formation, there was no statistical significance of meatal localisation. Re-fistula is noted 26.47% in our series. The patient's age does not affect fistula and re-fistula formation.

	n	%	Fistula n	Fistula %	p
Dystalhypospadias	148	%75,89	17	11,5	,0001
Proximalhypospadias	47	%24,11	17	36,2	
Total	195	%100	34	17,43	

	n	%
Fistula	26	76,5
Meatalstenozis + fistula	7	20,6
Diverticula + fistula	1	2,9
Total	34	100,0

## O49

### Re-operative management after failed repairs of proximal hypospadias in Children

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**Aim of the study:** Patients after unsuccessful repairs of proximal forms of hypospadias present with skin deficit, urethral stenosis, scarring penile deformations, and scrotum transposition. Our aim is to improve treatment results of the most complicated group of patients after failed repairs of proximal hypospadias.

**Methods:** In the Urology Department of the Russian Children's Clinical Hospital from 2015 to 2017, 33 patients with proximal forms of hypospadias (penoscrotal (20) and

scrotal (13)) who underwent 2 to 6 re-operations before admission were treated (median – 3.4). Depending on urethral competence, patients were divided into 2 groups: Group I: 16 patients with incompetent urethra were treated with staged surgical repair using buccal mucosa; Group II: 17 patients with competent artificial urethra – with removal of penile deformations and scrotum transposition. Penile curvature in both groups was corrected with plication of cavernous bodies depending on deviation type, and skin deficit was compensated with transposed scrotal flaps. Evaluation of cosmetic treatment results was performed according to HOPE (Hypospadias Objective Penile Evaluation) scale. Functional results were evaluated based on independent free urination, lack of complications.

**Main results:** Good functional results were obtained in 20 patients (61%); satisfactory – in 11 patients (33%); unsatisfactory in 2 cases (6%) complicated by urethral fistulas (Table).

**Conclusions:** Management after failed surgical repairs always requires an individual, non-standardized approach. However, improved results are obtained with the use of staged repair with buccal mucosa, compensation of skin deficit with scrotal flaps, and correction of penile curvature with plication of cavernous bodies.

Table. Functional Results of Surgical Treatment of Patients with Re-do Proximal Hypospadias

Results	Good (# patients)	Satisfactory (# patients)	Unsatisfactory (# patients)
Groups			
Group I	8 (50%)	7 (44%)	1 (6%)
Group II	12 (71%)	4 (23%)	1 (6%)
Summary	20 (61%)	11 (33%)	2 (6%)

## O50

### Re-do Circumcision; Buried penis may be there

*A.Zaghloul (Egypt)*

**Background and aim of the work:** Many children with undiagnosed buried penis are subjected to circumcision by physicians who are unaware of the condition. They nearly always cut the foreskin well proximal to the coronal sulcus. This is followed by sliding of penis into its superficial coverings with clinically manifested buried penis.

The aim of this work is to show the author's experience of 50 cases presented for circumcision redo.

**Patients and methods:** The study entailed retrograde analysis of 50 cases presented to the author for circumcision redo, between February 2013 and June 2018, aged between 1 and 9 years. Clinical examination revealed buried penis in 45 cases, out of them 2 cases showed significant cicatrization. Parents were consented before repairing the buried penis using the author's 3- level tunica albuginea phallopey .In

this technique penis is degloved at the subdartos plane up to its base and fixed to its coverings at its base, mid-penile point and subcoronally. The remaining 5 cases showed excessive penile foreskin that underwent re-circumcision by dissection, under general anaesthesia.

**Main results:** 2 out of the 45 cases subjected to buried penis repair showed significant penile oedema that resolved by the end of the third postoperative week. No detected complications in the remaining 43 cases of repaired buried penis or the 5 re-circumcised cases.

**Conclusion:** Buried penis should be considered as a highly possible reason for excessive foreskin before redoing circumcision.

## O51

### Urethroplasty failures in Tartu University Hospital in 1990 – 2017

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**Introduction:** Urethroplasty complications develop approximately 10% in distal and >50% in proximal hypospadias repairs.

The aim of this study was to analyze urethroplasty failure in Tartu University Hospital in patients operated between 1990 and 2017.

**Methods:** Data were extracted retrospectively from medical records using ICD-10 codes: Q54.0-Q54.9;N48.8-N48.9. We excluded patients, who were older than 18 years. Patients, who were operated at 2017, were followed up at least 5 months.

**Results:** Altogether 272 urethroplasties were performed in 213 patients. In 111 (40.8%) cases after urethroplasty developed complications. In 53 (19.5%) cases developed urethrocutaneous fistula, partial or total glans dehiscence developed in 28 (10.3%) cases. In 19 (7%) cases complicated operation with urethral or meatal stenosis, in 3 (1.1%) cases urethral diverticula and in 3 (1.1%) cases recurrent ventral curvature that required operative treatment. Preputioplasties were performed in 82 patients and dehiscence developed in 19 (23.2%) cases. 11 patients had more than one complication.

For further analysis we compared patients with failed urethroplasty (110 cases) to patients with successful operation (162 cases) (Table 1). Patients in failed urethroplasty group were more often operated for proximal hypospadias, more often used Snodgrass method without preputioplasty, their mean hospital stay was longer and urinary bladder catheter removed later. Comparison of urethroplasty failure rate in different surgeons, we found no statistically significant difference ( $p>0.05$ ) (Table 1.).

**Conclusion:** We can conclude, that altogether urethroplasty failure rate is almost 41%, it does not depend on surgeon. The risk factors for urethroplasty failure are proximal hypospadias and Snodgrass technique.

Table 1.

Factors		Successful urethroplasty group (161 cases)	Failed urethroplasty group (111 cases)	p-value
Hypospadias	Distal	96 (59.6%)	51 (45.9%)	0.035
	Penis soft	38 (23.6%)	26 (23.4%)	1
	Proximal	19 (11.8%)	29 (26.1%)	0.003
	Other (fistulas, etc.)	8 (4.9%)	5 (4.5%)	1
Urethroplasties	Mathieu	79 (49.1%)	35 (31.5%)	0.005
	Snodgrass	58 (36%)	57 (51.3%)	0.016
	Island flap	4 (2.5%)	3 (2.7%)	1
	Bracka I stage	4 (2.5%)	1 (0.9%)	0.619
	Others	16 (10%)	15 (13.5%)	0.472
Preputioplasties		48/82 (58.5%)	34/82 (41.5%)	0.042
Surgeons	Failure rate			
U.R.	38.4%	45 (28%)	28 (25.2%)	0.719
K.V.	42.9%	60 (37.3%)	45 (40.5%)	0.675
V.K.	45.2%	17 (10.6%)	14 (12.6%)	0.741
M.A.A.	}p>0.05	26 (16.1%)	20 (18%)	0.810
Others	43.5%	13 (8.1%)	4 (3.6%)	0.214
	23.5%			
Mean duration of urinary bladder catheter		7.3 days	8.5 days	0.010
Mean hospital stay		9.6 days	11 days	0.012

## O52

### Management of Challenging Rare Cases in Hypospadias: case presentation and literature review

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We present three interesting cases of hypospadias. The first case is a rare case of female hypospadias presented in infancy with urine retention, deranged renal function and difficult catheterization. The second case is a male patient with proximal hypospadias and anorectal malformation. Staged repair of anorectal malformation was done followed by hypospadias repair, which was complicated by recurrent fistula (3 times). The third patient is a boy with urethral duplication and perineal hypospadias. Surgical management will be discussed in details with literature review.

## O53

### Management of Hypospadias Patients with associated skin disorders and autoimmune diseases

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**Aim of the study:** The purpose of this paper is to emphasize the factors which influence the surgical treatment in patients with hypospadias who associate skin allergies and autoimmune disorders.

**Methodology:** The chosen type of study is case series, since from the 1<sup>st</sup> of January 2012 until the 31<sup>st</sup> of May 2018 only 2 patients presenting these conditions were identified. No ethics committee approved this study.

**Main Results:** The first case is a 15 years-old patient, also known with juvenile idiopathic arthritis, who underwent surgical treatment for subglandular hypospadias and penile curvature at the age of 12 using the Snodgrass procedure, Byars flaps and plasty of the foreskin. One year later, the patient returned with urethral stenosis and recurrence of the hypospadias. Consequently, an iterative Snodgrass procedure was performed followed by urethral dilations and plasty of the foreskin for cosmetic reasons, with favorable results. The second case is a 9 months-old patient who was brought to the hospital for subglandular hypospadias. He also suffered from atopic dermatitis, kept under control using topical treatment. The chosen approach was the Snodgrass technique, with initial favorable outcome. However, the skin condition worsened in the following days. Several pediatric evaluations were performed and systemic intravenous treatment was administered, with temporary improvement. One month later the patient returned with urethral stenosis which required urethral dilations.

**Conclusions:** Autoimmune disorders and skin allergies can significantly influence the outcome of the surgical treatment of hypospadias, an multidisciplinary approach being mandatory as well as establishing important criteria in the management of these patients.

## Poster Walk

### P1

#### Urethral advancement according to KOFF

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**Objectives:** Retrospective evaluation of the technique of Koff urethral advancement in the distal hypospades

**Material and Methods:** 16 urethral advancements according to Koff's technique were performed from January 2016 to March 2018 by the same surgeon. The average age of the intervention was 3 years. All patients had a hypospade with a distal division of the spongy body

**Results:** The decline is from 3 to 24 months (average: 5 months). 2 patients presented penile hematoma at removal of the dressing in the 4th. Six patients presented with symptomatic meatus stenosis requiring a meatoplasty. One child presented a spontaneously resolving glaucal ureteral fistula. A child has presented a curvature of the penis has not yet corrected All have a satisfactory cosmetic result. **Conclusion:** Koff's urethral advancement seems to us to have an important place in the arsenal of the techniques described to treat hypospades having a distal division of the spongy body. This technique has the essential merit of avoiding urethroplasty itself and minimizes the risk of fistulas. However, it is possible that extensive dissection of the urethra is responsible for ischemia of the distal urethra responsible for observed meatus stenosis.

## P2

**The scrotal tube : a new operative technique for urethroplasty in proximal hypospadias using non hair bearing scrotal skin described as the scrotal plate.** *Saber Waheeb , Hazem Ahmed (Egypt)*

**Objective:** growing interest in the one stage repair of hypospadias has developed in recent years.the use of scrotal skin has been frowned upon in modern hypospadias practice. The claim that scrotal skin is universally covered with hair has been the reason why scrotal skin was abandoned.in the present study, the data of 32 patients who underwent the scrotal tube urethroplasty is presented.

**Patients and methods:** retrospective analysis of patient records.32 patients who were admitted to Alexandria pediatric surgery department and underwent the scrotal tube urethroplasty by a single surgeon during the period from January 2010 to December 2015 were studied retrospectively. In the first 10 cases of the series.Intraoperative biopsies were obtained from the edges of the scrotal plate to study an area of the scrotum grossly void of hair on histological basis.

**Results:** the patients were followed up for 4-13 month.in the first 10 cases, 3 biopsies from the edges of the scrotal septal skin were obtained and histologically examined for the presence of hair follicles. 9 patients showed no hair follicles.1 patient showed a single hair follicle in one of the 3 biopsies. 26 patients underwent a one stage repair. 20 of which received only the scrotal tube urethroplasty. 6 patients received a combined repair the scrotal tube proximally and a duckette type tube distally.6 patients recived a 2 stage repair with a scrotal tube urethroplasty in the first stage and a dukette type tube or a mathieu type flap in the second stage.During the period of follow up urethrocutaneous fistulae was observed in 2 patients.urethral diverticulum was observed in one patient.

**Conclusion:** the taboo of using scrotal skin in urethroplasty can be challenged. the scrotal tube urethroplasty is a reliable technique to be used in patients with proximal

hypospadias and it provides a low risk of fistulae and acceptable functional and aesthetic results.

### P3

#### **Characteristics of hypospadias patients in plastic surgery division at the national Hospital CIPTO MANGUNKUSUMO JAKARTA**

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**Purpose:** To analyze the characteristics of hypospadias patient, hypospadias with other genital anomalies, and family history of hypospadias.

**Materials and Methods:** We used The National Hospital Cipto Mangunkusumo Medical Record Databased, which contains all the patient data from 2013 to 2017. All the information of the diagnosis, type of hypospadias, and the family history are provided. After collecting all the data, we analyzed the total cases of hypospadias and the characteristic of hypospadias patient.

**Result:** From of the total of 6,254 patient that registered in the Plastic Surgery Division, 49 patients were diagnosed with hypospadias. Among 16% of the patient has the type of penoscrotal hypospadias. Only 3% of the hypospadias patients has a family history of hypospadias. Approximately 29.4% of the patients associated with the other genital anomalies. There were only 35% of the patients who get a surgical repair at the age 0-5 year.

**Conclusion:** The total cases of hypospadias that handled by Plastic Surgery Division at The National Hospital Cipto Mangunkusumo are comparable to the world's prevalence of hypospadias. In addition, the prevalence of hypospadias in Indonesia remain unknown and still need further studies.

### P4

#### **Creation of an experimental model of proximal hypospadias in rabbits to test novel urethroplasty techniques**

*Amesty MV, Sanz B, Rivas S, Lobato R, Martínez-Urrutia MJ,*

*López-Pereira P.(Spain)*

**Aim:** Novel urethroplasty techniques development requires experimental models that resemble human tissues characteristics and dimensions. Our aim is the creation of a hypospadias model in rabbits that is stable and reproducible for experimentation.

**Methods:** Twelve giant-New-Zealand rabbits of 16 weeks and 4.5(4-5)kg, were operated under general anesthesia to create a hypospadiac defect. Resection of a segment of 2x0.8cm of ventral penile urethra, subcutaneous tissue and skin was performed, preserving the glans, suturing around the defect to join the skin with the urethra. The welfare of the subjects was evaluated applying a supervision protocol. Reproducibility and stability of the model were studied through macroscopic,

urethrographic and histological analysis of the penis after 5 weeks of creating the defect.

**Results:** All rabbits survived presenting self-limited pain and hematuria, without infection or lesions in adjacent tissues. In all cases the urethral defect was kept open, with an average defect area of  $155.8 \pm 13.8 \text{mm}^2$  initially, and  $140.9 \pm 13 \text{mm}^2$  at 5 weeks. A slight decrease of the area was observed, but homogeneous for all subjects. The position of the defect with respect to the meatus was maintained. The urethrographic study confirmed the existence of a large urethral fistula as well as the absence of urethral stenosis in all animals. In the histological study, minimal or null fibrosis was identified in all cases, as well as good vascularization around the defect. **Conclusions:** The model of proximal hypospadias created is harmless to the rabbit, reproducible and stable over time, so it can be considered suitable for use in the development of urethroplasty techniques.

## P5

### Proximal hypospadias: Looking beyond the urethra

*Aparajita Mitra, Satish Kumar Aggarwal, Rupa Banerjee, Gaurav Singh, Muni Varma, Sugandh Aggarwal*

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**Background:** Besides urethral reconstruction, the management of proximal hypospadias (PH) is often confounded by other issues like disorders of sexual differentiation (DSD), upper tract anomalies, pseudovaginal diverticulum (PVD), penoscrotal transposition (PST) and bifid scrotum and urethrovasal reflux (UVR).

**Materials and Methods:** Data from **122** children with PH operated between January 2007 to January 2017 was analysed retrospectively (age range 6 months to 17 years). All were operated by a single-surgeon and included redo cases (**n= 38**). PH was defined as a meatal opening penoscrotal or more proximal.

**Results:** All **84** primary cases underwent staged repair. Stage 1 included cystoscopy for assessment of PVD, chordee correction (Nesbit procedure in **14**, division of urethral plate and degloving in **70**), proximal tubularization, distal Bracka graft (inner preputial free skin) and scrotoplasty. Thiersch-Duplay tubularization was done in Stage 2. Further, **70%** required PST correction. Redo cases were addressed as per their complexity (staged repair using buccal mucosa in **26**, split thickness skin graft from the inner thigh in **12**). PVD with obstructing membrane required cautery incision in **4** and excision in **1** case. Associated malformations were VUR in **3**, UPJO in **1** and low ARM in **3**. UVR was seen in **13** cases who developed epididymo-orchitis after stage two (1 required vasectomy). DSD included 46XX DSD (True hermaphrodite reared as male), **8** with 5 alpha-reductase deficiency and **1** with mixed gonadal dysgenesis.

**Conclusion:** PH requires an individualized approach. Pre-operative evaluation for urinary tract anomalies, DSD and a problematic PVD is essential. Staged repair including scrotal repair is suggested. Careful follow-up of UVR is necessary as this may be an inherent problem which becomes evident after reconstruction.

## P6

### The Y-duplication of the urethra: One anomaly, myriad presentations

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**Background:** Urethral duplication is a rare anomaly and each case has a unique anatomy. Management must be customized. We present our experience with this entity and highlight the variations in anatomy and surgical approach.

**Materials and Methods:** Sixteen boys underwent surgery for primary or complicated urethral duplication between December 1997 to December 2017 (10 were previously operated elsewhere). Data was collected retrospectively regarding demography, presentation, clinical features, surgery, complications and outcomes.

**Results:** All had a Y-duplication of the urethra in the sagittal plane (age range newborn to 13 years). Of these, 4 had associated upper tract anomalies, 4 had seminal vesicle cysts and 2 had associated ano-rectal malformation. Ventral urethra was connected to the bladder in all except 1 case. One was epispadias with duplication. Reconstruction was done using various combinations of buccal mucosa(13), preputial skin(3), split thickness graft from thigh(2), Monti sigmoid(1) and pedicled appendix(1). All repairs were staged. Upper tract and seminal vesicle cysts were tackled as per clinical indications. Complications occurred in 7 cases including stenosis, lip deformity, graft failure, epididymitis.

**Conclusion:** This probably represents the largest single-centre series for this anomaly in literature. The existing classifications do not do justice to the fine variations in anatomy. Staged surgery gives good results especially in previously operated cases. Initial surgery should aim at good calibre, mucosa lined urethra constructed from the anorectum in the perineum. Buccal mucosa, preputial skin and split thickness graft are good for reconstruction but scrotal or perineal skin causes complications. In our experience, serial dilatation of the dorsal hypoplastic urethra has not been effective.

## [Session 9: Assessment & Long Term follow up](#)

### O54

#### Evidence Base for Hypospadias: Fact or Fiction?

*Mark Davenport (UK)*

## O55

### Long term follow up of hypospadias: why we need to meet the challenge?

*Christopher J. Long, Children Hospital of Philadelphia, USA*

**Introduction:** Penile reconstruction for hypospadias is a difficult task. Short term follow up for distal hypospadias is approximately 10%. In distal hypospadias intermediate term follow up has complication rates ranging from 30-60%.

**Methods:** Review of the literature for hypospadias outcomes was performed and will be reviewed with the audience. We also performed a retrospective review of hypospadias cases performed at CHOP from 2015-2017, reviewing the complication rate and time to complication detection.

**Results:** Review of the literature indicates that a significant portion of surgical complications after hypospadias repair occur beyond the typical 12-24 month postoperative follow up period. There is a relationship between the time period from surgery and the type of complication that develops. Adult outcomes indicate that urethral complications, such as strictures and meatal stenosis, are common causes for patient complaints. In addition to surgical complications, adolescents are a population that is at particular risk for poor psychological outcome that can worsen into adulthood. Quality of life assessment in men having undergone childhood hypospadias repair suggests that the majority are equally satisfied to their peers, although those with proximal hypospadias tend to have worse satisfaction score.

**Conclusion:** The majority of the published literature indicates that follow up after hypospadias repair wanes within 24 months of the repair. Complication data shows that complications can present well beyond this capture period. In addition to surgical complication detection, patient education concerning their diagnosis provide strong evidence of the need for long term follow up.

## O56

### Penile appearance after hypospadias repair: differences in patients and surgeons prespective

*Marco Castagnetti*

*Pediatric Urology Unit, University Hospital of Padova, Padua, Italy*

**Aim of the Study:** Next to series about secondary surgery rates, scant data are available about the long-term outcomes after hypospadias repair, particularly postpubertal cosmetic results and patients satisfaction. Therefore, at present, hypospadias repair is a procedure performed in infancy without a clear understanding of what will be important for the patient later-on in life. In present lecture, we will assess the existing evidence about patient and surgeon assessment of the results of surgery.

**Methods:** This lecture will be based on a non-systematic review of pertinent literature.

**Main results:** Development of validated questionnaire to assess patient perception of genital appearance have shown that surgeon and patient perception of the results of hypospadias repair can differ significantly. Patients generally appreciate overall penile appearance and may give less importance than surgeons to some aspects such as meatal shape or residual curvature, if the latter has no consequences for sexual

function. Other aspects, instead, such as the absence of the prepuce could be more important for the patient than the surgeon.

**Conclusions:** A few cases, particularly those born with more severe variants of the malformation, will keep perceiving their genital appearance as abnormal, even though no additional surgeries are required. Accumulating long-term data could give us important clues about the relevance of the different aspects of the repair for the patient and help us refining the goals of surgery, so that results will be more consistent with the expectations of adults born with hypospadias.

## O57

### **Patient and parental satisfaction and long term psychosexual outcome after hypospadias surgery**

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**Aim of the study:** To assess long-term psychosexual outcome of men born with hypospadias, and their attitudes towards early hypospadias repair.

**Methods:** Cross-sectional assessment of a large cohort of men who had hypospadias (all forms) repair and controls, aged 15-21 years. Participants filled in five questionnaires: Decision Regret Scale (DRS), Penile Perception Score (PPS), Sexual Quality of Life – Male (SQoL-M), International Index of Erectile Function (IIEF-5) and a custom-made questionnaire. In addition, DRS and a custom-made questionnaire were also completed by parents.

**Main results:** Ninety-seven men participated (75 hypospadias, 22 controls). Fortyseven percent of parents worried about their sons' fertility, sexual experience and/or pubertal development. Most parents and participants felt the decision for hypospadias repair should be made by parents and surgeon. Overall, few regretted past surgery, but more reinterventions was significantly associated with increased DRS scores. Men who had hypospadias were not more hesitant to engage with a sexually attractive person than controls, but less had had sexual intercourse at the time of survey (hypospadias: 54,7%; controls: 86,4%). Dissatisfaction about genital appearance was mostly on penile length, and associated with smaller stretched penile

length in hypospadias only. Mild erectile dysfunction and sexual dysfunction were present in two different men who had hypospadias.

**Conclusion:** According to patients and parents, the decision about hypospadias repair should be taken by the parents and surgeon. Psychosexual outcome in men with hypospadias is generally not impaired. However, shame and dissatisfaction about the genital appearance are causes of concern in young men treated for hypospadias.

## O58

### **Family education seminar for hypospadias surgery, A powerful preoperative tool -7yr outcomes**

*Ernest Azzopardi FRCSEd(Plast) PhD<sup>1,2</sup>, Elayne Azzopardi MSc (Manch) PhD<sup>1</sup>  
Nicholas Wilson Jones, MSc FRCSEd(Plast)<sup>1,2</sup>*

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2. Paediatric Plastic Surgery Unit, the Welsh Centre for Burns and Plastic Surgery, Swansea SA6 6NL, Wales, UK

**Background:** The effectiveness of educational pre-operative interventions is well documented. Parents of children with hypospadias have been shown to retain little of the information provided in the standard hospital outpatient setting.<sup>1</sup> Pre-operative educational interventions have not been documented in hypospadias<sup>2</sup>. We present experience of our multidisciplinary hypospadias family seminars over 7 years (2012-2018) in a regional centre. The contribution to parents satisfaction, of various domains demonstrated through formal quantitative-qualitative analysis.

**Method:** Data was retrospectively collected from semistructured questionnaires containing 11 domains over 7 years (n=98 respondents). Analysis was performed with Graphpad (v5.11) and NVivo software (V.10).

**Results:** We report overall satisfaction of (94%,  $\pm 4.8\%$ : mean $\pm$ SD). A highly significant ( $X^2$ ,  $p < 0.0001$ ) trend between overall satisfaction to: touring the childrens' ward, ( $r = 0.45$ ) clarity of operating team's presentations ( $r = 0.41$ ) and the comfort of premises ( $r = 0.41$  Fig 1). Quality of multidisciplinary input was demonstrated through thematic analysis.

Analysis of the different domains assessed through the questionnaire did not account for a significant variance (MANOVA, 6.9%,  $p < 0.0001$ ). Inter-responder variation also only accounted for 38.7% of the variance ( $p < 0.0001$ ). Figure 2.

**Discussion:** This study underscores the benefits of a specialist multidisciplinary preoperative family education seminar and the importance of message reinforcement. These findings are in keeping with current trends in pre-operative education.<sup>1</sup> The demand for these interventions highlights the need for training and recruitment of clinical nurse specialists in hypospadias surgery.

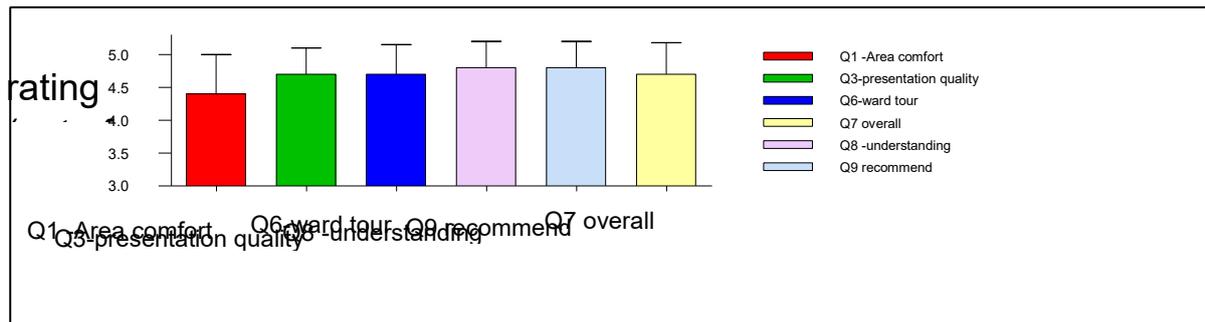


Figure 1: Satisfaction over 7 domains (box and whisker represent mean +/- SD)

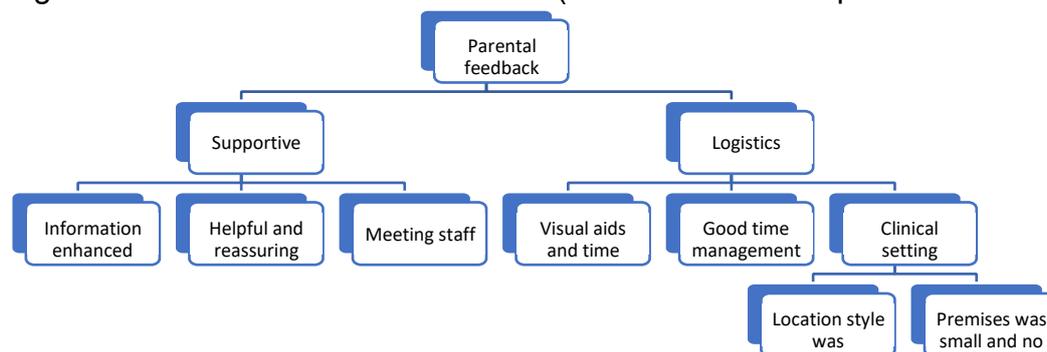


Figure 2: Thematic Hierarchy: Sample content analysis of parental feedback from 5 qualitative domains in the questionnaire

## O59

### Parental Perception & attitudes towards disclosure of hypospadias repair

Melissa McGrath<sup>1-3</sup>, Udi Blankstein<sup>1</sup>, Luis H. Braga<sup>1-3</sup>

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**Aim of the study:** Boys with hypospadias often undergo reconstructive surgery to improve cosmetic appearance and functional outcomes. While the ethics of physician-patient disclosure of illness are clear, parent-child disclosure is more ambiguous. There is a paucity of research regarding the parental disclosure of past urological procedures, specifically hypospadias repair. Our objective was to determine the rate of parental disclosure in boys undergoing hypospadias repair, and to evaluate the parental perspectives regarding concerns and amount of support in relation.

**Methods:** A web-based questionnaire was distributed to parents of hypospadias patients at our pediatric urology outpatient clinic, and to those belonging to closed social media support groups. Data was analyzed using descriptive statistics and chi-squares.

**Results:** One hundred and eighty-seven survey responses were collected. The majority of respondents were North American (82.5%), urban dwellers (70.0%), and the mothers of the child (79.9%). Distal hypospadias was the most common variant of the condition (71%). When asked if they plan to disclose the repair to their child, 94% said “yes”, and of those, the optimal mean age of disclosure was  $6.80 \pm 4.56$  years. Ninety percent reported that they were not offered guidance on how/when to disclose, 48% thought they would benefit from support on this. There was a significant difference in nervousness to disclose if the condition was distal versus proximal ( $\chi^2 = 14.03$ ,  $p < 0.01$ ), with proximal being more nervous. A significant difference was also observed regarding disclosure support with proximal being more likely to want formal support ( $\chi^2 = 4.0$ ,  $p = 0.05$ ).

**Conclusions:** To our knowledge, this is the first study to evaluate perceptions and attitudes around disclosure in patients with hypospadias and their families. The majority of respondents were planning to disclose the operation to their child, and were not offered any guidance or support as to the optimal way to disclose. Half of those parents thought they could benefit from resources to help them with this process. Further research is required to understand the impact of disclosure and to create tools to help caregivers with this responsibility.

## O60

### **Urological, cosmetic and psychosexual results in adolescence after surgery for proximal hypospadias in childhood**

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**Aim of the study:** To assess objective and subjective results in adolescence in boys with penoscrotal to perineal hypospadias.

**Methods:** After ethical approval for this prospective cross-sectional case-control study, all 56 patients >14 years operated at a single center between 1996-2005 were invited. 39 came for clinical evaluation with uroflow, HOSE and genital measures and 33 answered a web-based questionnaire including Penile Perception Score (PPS), Psychological General Well-being (PGWB), and questions on psychosocial, psychosexual and sexual outcome. 31 patients with distal hypospadias and 25 age-matched controls also answered the questionnaire.

**Main results:** Hypospadias repairs were TIP, a flap repair as Onlay or tubularized (Duckett). Median age was 16.5 (14.0-25.0) years at follow-up. Uroflows improved from Md 5.0 (5.0-37.5) percentile (prepubertal) to 37.5 (5.0-95.0) percentile (adolescence),  $p < 0.0001$ . Satisfaction with meatal position was good (table 1). Penile curvature was more frequent after preservation of the urethral plate (figure 1). No difference was found in QoL (PGWB) between groups. Patients with proximal hypospadias had more specialized tutoring, 36% vs. 10%(distal) and 12%(controls),  $p = 0.024$  vs. distal, and 36% had neuropsychiatric problems according to charts. Age at sexual debut and

sexual activity were comparable. 38% of proximal hypospadias patients vs. 7%(distal) and 17%(controls) reported uncertainty of desire for physical contact,  $p=0.0054$  vs distal. There were occasional erectile difficulties and anejaculations.

**Conclusion:** Proximal hypospadias patients were satisfied with meatal position despite unanatomical position. A straight penis in adolescence seems more likely after transection of the plate. One third of patients may need adjusted information and support due to educational challenges and neuropsychiatric problems.

Table 1. The position of the meatus in patients with proximal hypospadias and the satisfaction of their meatal shape and position. No one was dissatisfied with meatal position or shape, regardless if it was distal glanular or not.

Count		PPPS meatus		Total
		Satisfied	Very satisfied	
HOSE meatal position	Coronal	3	1	4
	Proximal glanular	16	5	21
	Distal glanular	2	1	3
Total		21	7	28

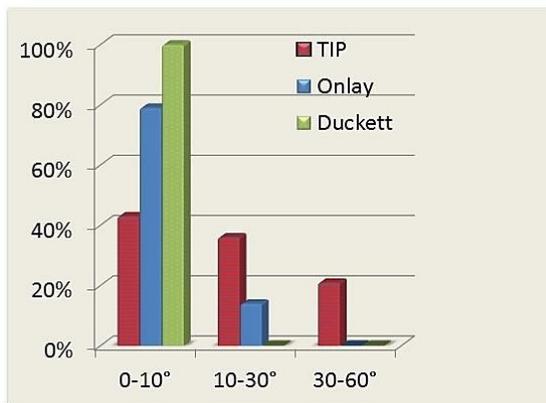


Figure 1. Penile curvature at adolescence. Seventy-two percent (28/39) were considered straight at follow-up. TIP vs. Duckett  $p=0.0062$  and TIP vs. Onlay  $p=0.076$ .

## O61

### Comparison of short & Long term results of severe proximal hypospadias surgery

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There are a few studies comparing short and long-term consequences of severe proximal hypospadias surgery. We compared the first and second 5 years of 34 severe

proximal hypospadias cases treated by combination of transverse island flap (Duckett) and ventral skip flap (Thiersch-Duplay).

The 34 cases were operated during last 18 years by combining the Duckett and Thiersch-Duplay techniques. Patients were invited to evaluate long-term results. Then, short and long-term results were compared in terms of urethral functions and complications.

During short-term, proximal anastomotic stricture was observed in 3 cases (8,8%) and none in long-term. A diverticulum was detected in 1 case (2,9%), and one more in long-term follow-up. Seven cases (20,6%) were operated due to fistula in short-term and 2 in long-term. Fistula recurrence was observed in 2 cases during long-term. Two patients (5,9%) were diagnosed with persistent chordee and 4 patients (11,8%) complained of short penile length in long-term follow-up. Erection and ejaculatory function was normal in 16 cases who reached adolescence.

Reoperation was required in 13 patients (38,2%). 28 patients had no symptoms during urination, while the other 6 cases urinated with difficulty and had a thin stream. Urinary tract infections were seen in two patients with diverticula while 32 patients had no infection.

There were no complications in 61,8% of the cases during long-term. However, 38,2% of the cases required reoperation. It is suggested that patients with severe proximal hypospadias should be followed up for cosmetic problems and potential penile curvature, diverticula and late fistula complications.

## Panel 2: Proximal and Perineal Hypospadias: How do we correct it – different views from around the world!

### **O62**

#### **Two stage repair; Why do it?**

*Peter Cuckow (UK)*

### **O63**

#### **Two stage repair for penoscrotal hypospadias with severe ventral curvature**

*Luis H Braga<sup>1,2,3</sup>, Melissa McGrath<sup>1-3</sup>*

**Aim of the study:** The gold standard technique for repair of scrotal and perineal hypospadias with severe ventral curvature (VC) is yet to be established. Herein we want to describe our experience with the STAG technique, as well as risk factors for complications.

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**Methods:** We examined our patients with proximal defects were identified from a prospective collected hypospadias database between 2008-18 (n=77). Patients who underwent a long TIP or two staged repair using Byars skin flaps were excluded, leaving 62 boys who underwent 2-stage graft repair. We further excluded those who only completed the 1<sup>st</sup> stage(n=13). Our study population consisted of 49 boys who completed the 2<sup>nd</sup> stage and had at least 6 months' follow-up. Graft staged repairs were performed with inner prepuce for primary cases (n= 38) and buccal mucosa (n=11) for reoperations Preoperative hormone stimulation(PHS)was administered when glans width <14mm according to protocol. We collected the following variables: age at each stage of repair, meatal location, degree of VC, complications (urethrocutaneous fistula (UCF), glans dehiscence (GD), recurrent VC), additional procedures and follow-up time. Our primary outcome was overall rate of complication. Univariate analysis of risk factors for complications was conducted. **Results:** Median patient age at 1<sup>st</sup> and 2<sup>nd</sup> stage for those undergoing primary repair was 18 and 26 mos, respectively, while median follow-up was 10 mos. Five of 49 (11%) patients had VC between 30-70° and 44 (89%) > 70 °; 30 of 49 (61%) boys received PHS with 1-4 injections, 2-3 months prior to surgery. Grafts took well with only 2 (5%) contractions or scarring in all primary cases including those that were excluded for only undergoing 1<sup>st</sup> stage. Median interval between stages was 7.6 mos. Complications occurred in 9 of 38 (24%) patients undergoing primary repair and 3 out 11 (27%) patients undergoing redo operations (NS). Of the 38 primary repair patients, 6 (16%) developed UCF and 3 (8%) GD. For the 11 redo patients, 2 (18%) had UCF and 1 (9%) GD. No boys in either group developed recurrent VC at a median follow-up of 10 months

**Conclusions:** Thus far our complication rates for primary scrotal and perineal staged preputial graft hypospadias repair has been lower than what has been recently reported. No recurrent VC has been observed, but we recognize that a median follow-up duration of 1 year is not enough to capture long-term results.

## O64

### **One stage versus two stages for complex primary hypospadias repair: the three-in-one technique versus the flap-as-a-graft two stage approach**

*Nicanor Macedo (Brasil)*

**Introduction:** Complex primary hypospadias repair (scrotal and perineal) is a controversial issue and arguments for different strategies are available in the literature. We want to review our long-term results on two approaches we use for one stage and two-stages.

**Methods:** We described in the past the so-called “three-in-one technique” (BJU Int, 2004) that combine three different sources of tissue: dorsal buccal mucosa to reconstruct the urethral plate after division of it in association to two flaps: preputial flap and tunica vaginalis flap to cover the neourethra. This is a versatile technique for good

part of cases but we recognize that two-stages is more appropriate for the most challenging ones. Differently from the regular Byars's flaps, we develop a transverse flap and rotate it to ventral surface applying it as a graft to create the foundations of the future neourethra (J Pediatr Urol 2013). The standard second approach is performed after 6 months, always covered by a tunica vaginalis flap. We reviewed our data-base of both principles and discuss tips and tricks learned with experience **Results:** We report on 53 patients treated with the three-in-one technique (procedure A) and 35 treated according to flap-as-a-graft technique (procedure B). Our complication rate was 37.7% and 11.4% respectively. Reoperation rate was 32% and 11.4% for a mean follow-up of 12.3 and 4.5 years respectively.

**Conclusion:** Based on our results we found a trend to perform more two-stage repairs than in the past but considering number of surgeries and results there is not a superiority of one approach towards the other. We believe that complex hypospadias repair should be treated individually and not passionate.

Fig 1: The three-in-one technique: notice the dorsal buccal mucosa reconstructing the urethral plate after division at subcoronal level and the preputial flap to be applied onlay.

Fig 2: The flap-as-a-graft technique: the preputial flap is applied as the neo-urethral plate and redundant foreskin is brought to both sides of the flap applied as a graft. Second procedure is performed after 6 months, notice that penoscrotal transposition is corrected on first surgery.



## O65

### Single-repair for primary proximal hypospadias. Lessons learned after 196 primary repairs

*Prat-Ortells J\*, García-Aparicio L, Martín-Solé O, Correa J, Muñoz E, Castañón M Hospital Sant Joan de Déu. Universitat de Barcelona.*

**Introduction:** Proximal hypospadias, especially those associated with penoscrotal transposition, are the most complex to repair. Despite the popularity of two-staged procedures, the authors believe that almost any hypospadias can be repaired in one surgery, mastering a few techniques and concepts.

**Methods:** The article offers a retrospective review and discussion of a large series of consecutive primary proximal hypospadias repaired in one surgery by the same surgical team from 1999 to 2016. All hypospadias have been repaired using one of these surgical techniques: onlay, tubularized preputial flap or mucosal grafts. Grafts were used only until 2005; after 2005, surgical refinements allow the surgeons to use onlay procedure or tubularized island flap for any complex hypospadias.

**Results:** 196 patients were operated. 68% of cases were successfully resolved after the surgery. Only 13% of cases needed more surgical procedures other than a simple pinhole urethral fistula closure (observed in 25% of patients).

**Conclusion:** Proper design of the cutaneous incisions is a milestone in hypospadias repair. When the incisions follow the lines that are naturally formed on the skin the penis and scrotum, it results in the largest tissue available for obtaining both a urethral flap and proper skin coverage, avoiding even the need for mucosal grafts.

## O66

### One-stage repair for proximal hypospadias: 10 years 'experience

*A-A. Lachkar, I. Talon, R. Moog, F. Becmeur (France)*

**Aim of the study:** To evaluate the one-stage repair complication rate in proximal hypospadias repair over the last past 10 years.

**Methods:** We retrospectively reviewed clinical outcomes of one-stage primary repair for proximal hypospadias between 2007 and 2017. We collected in our center data on age at surgery, pre and post-operative meatal position, drainage duration, surgical technique used, complications (fistula, stenosis, urethral stricture, diverticulum), associated diseases and duration of follow up.

Patients were followed at 6 months, 12 months and every year until puberty. Study was ethically approved and parents' consent was obtained for all patients.

**Main results:** Forty patients were analyzed. Mean age at the surgery was 14,3 months and mean follow-up duration was 69,3 months. The pre-operative meatal position was posterior in 10 boys, penoscrotal in 28 boys and perineal in 2 boys.. The main surgical technique used was the Duplay-Retik technique (18 patients). 11 patients had Koyanagi procedure, 5 Onlay island-flap procedures, 5 Duckett procedures and 1 Hadidi procedure. Snodgrass incision was performed in 17 cases. Mean drainage duration was 8, 9 days. Post-operative meatal position was apical in 3 cases, glandular

in 32 patients and penile in 5 cases. We reported 8 fistulas (20%), 3 stenosis, no urethral stricture and 1 diverticulum. 11 patients had associated bilateral cryptorchidism, 1 had congenital mega ureter, 1 VACTERL and 1 WT1 mutation with Wilms tumor.

**Conclusion:** One-stage urethroplasty was successful in 57, 5% with a long duration of follow-up. The high complication rate is due to the hypospadias complexity and remains a challenge to face.

## O67

### **Proximal Hypospadias: A new algorithm to improve outcome**

*Saber Waheeb , Mohamed Abdelmalak (Egypt)*

Hypospadias surgery is an art form. The evolution of surgical techniques has made distal hypospadias outcomes favorable, but recent publications suggest that complication rates for proximal hypospadias are much higher than previously reported. Surgical repair of proximal hypospadias is challenging and problematic even for the most experienced specialists, that's mostly due to variability in surgical techniques and no definitive rules how to select appropriate technique for each patient.

We believe that the use of standardized assessments including simple classification of chordae ( premeatal ,postmeatal and combined) in addition to meatal orifice and associated scrotal variation will allow for appropriate surgical technique selection .

This will improve outcomes for this rare disorder.

## O68

### **Surgical approach of posterior hypospadias using the Koyanagi Technique**

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**Introduction:** Reconstructive surgery of proximal forms of hypospadias is always a challenge for pediatric urologists. The most commonly used procedures are oral mucosal grafting, Onlay technique, Bracka and Koyanagi with its variants.

We present our new experience with the Koyanagi technique.

**Materials and methods:** 10 patients with proximal hypospadias and aged between 23 months and 6 years were operated on by the same surgeon according to the original Koyanagi technique. The average follow-up is 6 months (1-12 months). All patients were explored hormonally. The functional results were evaluated and a questionnaire was conducted to assess the satisfaction of parents and the surgeon aesthetically.

**Results:** The recovery of the penis is obtained in all patients by dissection of all the ventral tissues.

The complications observed were: partial dehiscence of the urethra, fistula (25%), ureterocele (0%), meatus stenosis (25%), release of urethroplasty.

These complications led to 1 surgical revision. 1 patient is waiting for a surgical procedure. The reconstruction of the penis and scrotum and the straightening of the penis were well judged by the surgeon and the parents, who were satisfied with the aspect of the penis.

**Conclusion:** The Koyanagi technique is an acceptable alternative for forms of hypospadias with a proximal division of the spongy body at the penoscrotal junction, a major bend and when the ureteral gutter is not usable for reconstruction. Correct straightening of the penis is achieved without additional procedures and the aesthetic result is satisfactory. The complication rate is not negligible and parents should be warned of the risk of reoccurrence. The modified Koyanagi technique, by allowing better distal vascularization of the skin flaps, could reduce the risk of complications.

## O69

### Experience with CEDU Technique for perineal hypospadias in Hungary

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**Aim:** Our aim was to reduce the number of complications occurring in children during their treatment for scrotal hypospadiasis, especially the number of fistulas.

**Patients & Methods:** Our team of doctors has treated 11 children (between the ages of 8-20 months) with scrotal hypospadiasis in our hypospadiasis center since 2015. For each of these patients, in addition to the usual chordectomy during the initial surgery, we have also performed distal urethroplasty. We added this additional step with the hope of reducing the number of fistulas by removing pressure on the neo urethra. We allow the wound to heal for five to six months, after which we perform the finalizing surgery. Using the above procedures, we never had no complications with fistula. After the first surgery, five patients had dehiscence developed in the glandular part, due to underdevelopment of the glans. Four was corrected in another operation with DYG technique. The last one was corrected by the combination of a hormone treatment through the 5-6 months of healing period and by using the SLAM technique

during the second surgery, hence we only had to perform two surgeries on the patient in order to achieve the aesthetic and functional purpose that we were looking for.

**Results:** Based on our experience in the past years, the CEDU procedure have significantly reduced the number of complications with scrotal hypospadias surgeries, as well as reduced the number of required operations needed to achieve the wanted results.

**Conclusion:** Even though the number of cases are small, the occurrence of scrotal hypospadias disorder is very rare. The results of the past years indicate that the CEDU procedure is successful. We are planning on further developing this procedure by implementing local hormone therapy before the second surgery, which will further increase efficiency and reduce complications.

## O70

### **Experience with CEDU two stage repair for Perineal and recurrent hypospadias in Romania**

*Andreea Moga<sup>1</sup>, Laura Balanescu<sup>1,2</sup>, Radu N. Bălănescu<sup>1</sup>, Ahmed Hadidi<sup>2,3</sup>*

**Objective.** The aim of our study is to report our initial experience using the CEDU (chordee excision distal urethroplasty) two stage repair for severe perineal hypospadias and analyze the outcomes of this surgical technique.

**Material and methods.** A retrospective chart review was performed between January 2016 and June 2018. Of the 120 patients who were assessed, 9 patients with CEDU repair were included in our study.

**Results.** Of the 9 patients who were included in our study, 7 patients presented with perineal hypospadias and 2 presented with recurrent complicated hypospadias. The patients with recurrent hypospadias presented with ectopic meatus, persistent chordee and stenosis. All 9 patients underwent first stage repair with chordee excision and distal urethroplasty, with favorable postoperative outcome. Only 3 patients under the second stage repair with distal urethroplasty, with no postoperative complications having been reported. The follow-up time for these patients was of 8 months.

**Conclusion.** The two-stage CEDU repair seems a reliable technique for patients with proximal hypospadias and recurrent hypospadias, however, further studies need to be conducted on larger groups.

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**Introduction.** Perineal hypospadias and recurrent hypospadias represent a significant surgical challenge, with both single and two-stage procedures having been use in their repair. However, many researchers believe that the two-stage technique offers superior cosmetic and functional results and is associated with a lower rate of postoperative complications.

O71

## **Hypospadias Repair: Initial Experience with CEDU Technique in Pakistan**

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**Introduction:** Proximal Hypospadias are difficult to manage. In general, we prefer two-stage procedures, especially when faced with chordee in addition to the very proximal site of the urethra. However, in two-stage procedures, the issue of fistula and failure remains and the need for a third, or even more procedures is not uncommon.

**Material and Methods:** We offered this relatively new procedure as reported by Professor Hadidi, to patients with Proximal Hypospadias with minimal chordee. Patients with previous surgery or significant chordee were excluded.

**Results:** Five patients were included in the study. In the first 3 patients, there was minimal Chordee, and hence excision of fibrous tissue from underneath the urethral plate was not performed. However, the last two patients had significant chordee and excessive dissection was performed. We used Torniquet where possible to reduce blood loss. The initial follow-up is promising, but long-term results are still awaited.

**Conclusion:** Hadidi Procedure is a useful tool in dealing with proximal Hypospadias, is relatively quick and the results are promising.