To remember a great friend ...
Pediatric urological long-term follow-up: Personal experience and future perspectives

Giacinto Marrocco – Gianantonio Manzoni

UOC Chirurgia Pediatrica
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UOSD Urologia Pediatrica
Fondazione IRCCS Ca’Granda
Ospedale Maggiore Policlinico - Milano
The quest for the ideal phallus had already begun!!
A HERO WILL RISE
Pediatric hypospadias 2010
“state of the art”

- Who should operate?
- When and how?
- Short-term results?
- Long-term results?
- Future perspectives…….
Hypospadias Surgery in Plastic Surgery: a snapshot of today with an eye on tomorrow

UK NHS surgical teams share in hypospadias surgery

42 plastic surgeons carry out hypospadias surgery

Number of patients per year
Two-thirds < 25
One-third 26-50
One third > 50

Techniques employed
- Bracka 88%
- Snodgrass 45%
- MAGPI 43%

Age at operation: 3 y. or more

84 consultants spread across the specialties of:
Pediatric surgery (57%)
Plastic surgery (43%)
Hypospadias surgery: when, what and by whom?

GIANANTONIO MANZONI, AIVAR BRACKA*, ENZO PALMINTERI I and GIACINTO MARROCCO+
Department of Urology and Section of Paediatric Urology, Ospedale di Circolo, Varese, Italy, *Department of Plastic Surgery, Wordsley Hospital, Stourbridge, West Midlands, UK, ICentre for Urethral and Genitalia Reconstructive Surgery, Arezzo, and +Department of Paediatric Surgery, Ospedale S. Camillo, Rome, Italy
Pediatric hypospadias 2010
“state of the art”

• How ?
• 1- stage repair
  advancement / meatal-glanduloplasty
  urethral plate tubularisation (Duplay, Snodgrass)
  urethral plate augmentation (Onlay, Inlay)
  urethral plate re-arranged (TPIF, Koyanagi)

• 2- stage repair
  urethral plate substitution (Bracka)
How to decide

- Case selection:
  - Urethral plate / glans morphology - width
    - Wide / deep
    - Absent / Small glans
  - Severe
    - Curvature
      - Mild
      - Two stage (prepuce / buccal grafts)
  - Single stage (extended / augmented Snodgrass)
MAGPI (Duckett)

Glans Approximation Procedure (Zaonz)
2 stage (Bracka)
Cosmesis is often the only real indication for treatment ……
is surgical correction always necessary?
Adaptation of Adults to Uncorrected Hypospadias

Peter R. Dodds, Stephen J. Batter, Dennis E. Shield, Scott R. Serels, Francis A. Garafalo, and Paul K. Maloney

- This paper coming from a group of general urologist from Connecticut regarding a 2 year prospective study about 56 adult with uncorrected distal hypospadias without marked chordee.
- The results of the study show that many adults with hypospadias appear to adapt to their congenital anomaly without surgical correction.
- Most of them expressed satisfaction with the appearance of their genitalia, and many stated that they were unaware they had a genital abnormality. None of the patients were known to have infertility on the basis of the location of the urethral meatus.
- Finally, the great majority of patients reported that they could void in the standing position, although they might have angulation or spraying of the urinary stream.
Must undergo correction!!!!!
Pediatric hypospadias 2010

“state of the art”

• When
When?

**Ideal age for surgery**

6-10 months of life

Optimal window
Pediatric hypospadias 2010

“state of the art”

• Short-term results?
Short-term results

• Milano – UOSD Pediatric Urology
  Policlinico Maggiore 2009-2010

This a unique example of modern approach to hypospadias surgery where all the surgeons involved have a dedicated experience and quite long personal training.
Hypospadias Surgery
May 2009 – May 2010  (114 pts)

- Distal (60) 52.6%
- Mid-penile (11) 16.7%
- Complex / Redo (14) 12.3%
- Fistulas (10) 9.6%
- Proximal (19) 8.8%
Overall Complication rate (18.4%)

- Fistulas: 3,5% (2)
- Dehiscence: 7,1% (6)
- Stenosis: 2,6% (1)
- Fistulas: 2,6% (3)
- Dehiscence: 2,6% (1)
- Distal (60)
- Mid-penile (11)
- Proximal (19)
- Complex / Redo (14)
- Fistulas (10)
Tubularized incised plate hypospadias repair for distal hypospadias

Warren T. Snodgrass*, Nicol Bush, Nicholas Cost

Abstract

Purpose: We report surgical technique and outcomes in consecutive patients with primary distal hypospadias.

Materials and methods: A prospectively maintained database of all patients operated by WS in 2000–2008 was reviewed for pertinent data in consecutive patients.

Results: A total of 551 consecutive patients of mean age 17 months underwent distal tubularized incised plate hypospadias repair by urethral plate tubularization with (459) or without (92) midline incision. Follow up occurred for 426 (77%) at a mean of 8.2 months. Calibration and/or uroflowmetry were obtained in 279 (65%). Complications developed in 19 (4%), including nine fistulas, nine glans dehiscences and one delayed meatal stenosis from balanitis xerotica obliterans. These complications could not be attributed to meatal location, urethral plate configuration or incision, suture materials or methods for urethroplasty and glansplasty, or to use or not of a dartos flap barrier layer.

Conclusions: No contraindication to urethral plate tubularization with or without incision was found in 551 consecutive patients operated for distal hypospadias. Reliability of the procedure was confirmed by the low complication rate and success using varied suture materials and methods.
Tubularized incised plate proximal hypospadias repair: Continued evolution and extended applications

Warren Snodgrass a,b,* , Nicol Bush a,b

Abstract  Objective: We report additional technical modifications and extended application of proximal TIP hypospadias repair in consecutive patients operated by a single surgeon.

Materials: During a 39-month period, 36 patients underwent primary proximal hypospadias surgery, with 26 undergoing TIP and 10 two-stage repair for a thin urethral plate (UP) (1) or ventral penile curvature (VC) requiring UP transection (9). Of the TIP repairs, 16 had UP elevation from the corpora cavernosa to facilitate VC straightening while maintaining the UP for urethroplasty. All TIP patients underwent two-layer urethroplasty with tunica vaginalis coverage over the neourethra.

Results: With mean follow up of 12 months (2–38) in 24 TIP patients, 16 had calibration and 11 urethroscopy 6–12 months postoperatively. Complications occurred in three (13%), glans dehiscence (2) and neourethral stricture (1), which represents a significant reduction versus our prior reports. Non-randomized preoperative testosterone in 8/24 with follow up did not influence complication rates. TIP incision of the elevated UP did not divide it into separate strips, or impair vascularity.

Conclusions: Dissection of the UP from the corpora facilitates correction of VC while preserving the plate, without increasing TIP urethroplasty complications. Overall, complication rates for TIP have significantly diminished with technical modifications and experience. The role for neoadjuvant hormonal therapy remains unclear. Despite straightening VC preserving the UP, intraoperative assessment deemed it unsuitable for TIP in one case (4%).

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Pediatric hypospadias 2010

“state of the art”

• Long-term results ?
Long-term results

- 446 Patients
Personal experience on 446 hypospadias cases

- All patients treated by a single surgeon
- The first years refer to an early phase of my surgical experience (learning curve).
- The surgical techniques changed during the observation time.
- All the patients have a minimum follow up of 10 years.
January 1990 – January 2000
Age at operation 1990 -> 2000
446 Hypospadias – Type of defect

- Distal: 336
- Midpenile: 112
- Proximal: 37
- Scrotal: 16
## Complications in 446 patients

<table>
<thead>
<tr>
<th>Complication</th>
<th>N.</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Total n. of complications</td>
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<td>15.47</td>
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<tr>
<td>Fistula</td>
<td>25</td>
<td>4.9</td>
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<tr>
<td>Stenosis</td>
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<tr>
<td>Ballooning</td>
<td>6</td>
<td>1.3</td>
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<tr>
<td>Skin revision</td>
<td>21</td>
<td>4.7</td>
</tr>
<tr>
<td>Curvature (recurr. or persistent)</td>
<td>9</td>
<td>2.0</td>
</tr>
<tr>
<td>Age</td>
<td>N.</td>
<td>%</td>
</tr>
<tr>
<td>--------------</td>
<td>-----</td>
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</tr>
<tr>
<td>10-15 years</td>
<td>250</td>
<td>12,87</td>
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<tr>
<td>15-20 years</td>
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<td>20-25 years</td>
<td>104</td>
<td>4,5</td>
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<td>25-35 years</td>
<td>31</td>
<td>1,2</td>
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<tr>
<td>&gt; 35 years</td>
<td>7</td>
<td>5,1</td>
</tr>
</tbody>
</table>
Long term follow up

- 142 patients sexually active

Most common complaints

- Persistent curvature
- Weak / retained ejaculation
- Post-micturition dribbling
- Premature ejaculation
- Difficulty in establishing a stable relationship
How to evaluate the results of hypospadias correction?
Hystorical papers

Psychosexual adjustement of men who underwent hypospadias repair: a norm-related study

Satisfaction with penile appearence after hypospadias surgery: the patient and surgeon view
M.M.Mureau et al.  *JUrol* 155: 703-6, 1996

Aspects of adult satisfaction with the results of surgery for hypospadias performed in childhood

Sexuality after hypospadias repair
A.Bracka  *BJUInternational* 83 (Supp.3): 29-33, 1999

Psychosocial adaptation of middle childhood boys with hypospadias after genital surgery
HOSE: an objective scoring system for evaluating the results of hypospadias surgery

A.I.J.A. HOLLAND, G.H.H. SMITH*, F.I. ROSS and D.T. CASS
Departments of Academic Surgery, and "Paediatric Urology, The Children's Hospital at Westmead, Royal Alexandria Hospital for Children, Sydney, Australia

Hypospadias: a critical analysis of cosmetic outcomes using photography

L. BASKIN
Departments of Urology and Paediatrics, University of California, San Francisco, CA, USA
The Pediatric Penile Perception Score: An Instrument for Patient Self-Assessment and Surgeon Evaluation After Hypospadias Repair

Daniel M. Weber,* † Verena B. Schönbucher, Markus A. Landolt and Rita Gobet
From the Division of Pediatric Urology, Department of Pediatric Surgery and Department of Psychology (MAL), University Children’s Hospital, Zurich, Switzerland

Purpose: The aim of this study was to develop and evaluate an instrument that allows assessment and comparison of penile perception of patients, parents and surgeons.

Materials and Methods: A total of 77 boys 6 to 17 years old who had undergone hypospadias repair were interviewed by a psychologist with a standardized questionnaire concerning penile self-perception with regard to meatus, glans, skin and general appearance. The Pediatric Penile Perception Score was derived from the sum of these 4 items. The results were compared with a control group of age matched boys following inguinal hernia repair. Parents were asked via questionnaire to report the penile appearance of their son using the Pediatric Penile Perception Score. A total of 56 patients accepted standardized photographic documentation, and their pictures were sent for evaluation with the Pediatric Penile Perception Score to 6 blinded urologists.

Results: The Pediatric Penile Perception Score allowed us to assess perception of the genitalia by patients, parents and urologists. Statistical analysis of the Pediatric Penile Perception Score assigned by the urologist revealed good interrater reliability (interclass correlation 0.75 to 0.88) and stability (r = 0.59 to 0.83). Intercorrelation of the items “meatus,” “glans” and “skin” with “general appearance” was good among the boys, parents and urologists. Patients with hypospadias expressed high satisfaction with the penile appearance, which did not differ significantly from age matched controls. However, parents and urologists were less satisfied with the penile appearance than were the patients themselves.

Conclusions: The Pediatric Penile Perception Score is a reliable instrument to assess penile self-perception in children after hypospadias repair, and for appraisal of the surgical result by parents and uninvolved urologists.
Long-Term Cosmetic and Sexual Outcome of Hypospadias Surgery: Norm Related Study in Adolescence
Kimihiko Moriya,* Hidehiro Kakizaki, Hiroshi Tanaka, Tsuyoshi Furuno, Hiroshi Higashiyama, Hiroshi Sano, Takeya Kitta and Katsuya Nonomura
From the Departments of Urology, Hokkaido University Graduate School of Medicine, Sapporo and Asahikawa Medical College (HH), Asahikawa, Japan

Long-Term Followup of Hypospadias: Functional and Cosmetic Results
Sybren P. Rynja, Gerlof A. Wouters, Maaike Van Schaijk, Esther T. Kok, Tom P. De Jong and Laetitia M. De Kort*
From the Departments of Urology, Pediatric Urology and Psychology, University Medical Center Utrecht, Utrecht, The Netherlands

Body image and sexuality in adolescents after hypospadias surgery
Stéphanie Vandendriessche a, Dieter Baeyens a,b, S. Eline Van Hoecke b, Astrid Indekeu b, Piet Hoebeke b

Long-term outcome of severe hypospadias
M.B. Aulagne a, L. Harper b, S. de Napoli-Cocci b, J.M. Bondonny a, E. Dobremez a
Retrospective chart review dominates the hypospadias literature although it is plagued by incomplete recording of pertinent data, and it introduces biases that limit our ability to trust observations made and conclusions drawn. Prospective data collection increases the capture of relevant details and makes surgeons operate more consistently, thus reducing sources of bias. Accordingly studies based on prospectively collected data are much more likely to provide meaningful information than those dependent on retrospective chart reviews.

It is time to move decision making in hypospadias (and everything else we do) from the era of opinion and surgeon preference to data driven management.
Conclusions: The present systematic review shows the weak evidence backing current management of primary severe hypospadias. We even lack a clear-cut definition of severe hypospadias and associated curvature. Hence, while we developed general recommendations for treatment based on our review of available evidence, we emphasize the need to establish shared criteria for accurate preoperative or intraoperative patient stratification, and to define objective outcome measures and followup intervals for data reporting to make comparison of surgical approaches reliable.
Evaluation of the results!

- In an era where outcomes are increasingly being used to assess performance of individual units/surgeons, there is a need for consistent reporting standards to allow comparison of results both nationally and internationally.

- Most standards of reporting in the current published urological literature are inconsistent, making comparison between series difficult, resulting in the exclusion of the majority of case series.

- Minimum standards for surgeons reporting outcomes from hypospadias surgery should be eventually defined.
The future …
Enjoy Tuscany!
To remember a great friend...
## Table 1. Included papers and summary of results

<table>
<thead>
<tr>
<th>Author</th>
<th>Technique</th>
<th>Age range (months)</th>
<th>Average Age (months)</th>
<th>Follow up (months)</th>
<th>Total Number</th>
<th>Fistula</th>
<th>Meatal Stenosis</th>
<th>Urethral Stenosis</th>
<th>Stents</th>
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<td>Ansour-ul-Haq, Bade r I, Akhter N, et al.</td>
<td>TIP</td>
<td>26 to 164</td>
<td>70</td>
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<td>25</td>
<td>2</td>
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<td>Baccala AA, Ross J, Detore N, Kay K.</td>
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<td>Chang EY, Vemulaapalli SH, Kropp BP, et al.</td>
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<td>Elder JS, Duckett JW, Sinsky HM.</td>
<td>Mathieu</td>
<td>6 to 192</td>
<td>17</td>
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<td>24</td>
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<td>Furness PD, Hutcheson J.</td>
<td>TIP</td>
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<td>19</td>
<td>93</td>
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<td>Ghani AM, al-Malik EM, al-Maliki T, et al.</td>
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<td>Gonzalez ET Jr, Veenaraghavan KA, Delaune J.</td>
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<td>Hakim S, Merguerian PA, Rabinowitz R, et al.</td>
<td>Mathieu</td>
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<td>Holland AJ, Smelth GH, Cass DT.</td>
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<td>6 to 144</td>
<td>13</td>
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<td>60</td>
<td>6</td>
<td>1</td>
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<td>Jayanthi VR.</td>
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<td>110</td>
<td>6</td>
<td>3</td>
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<td>Kios A, Nyirady P, Pinot L, Merksz M.</td>
<td>Mathieu</td>
<td>20-62</td>
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<td>19</td>
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<td>Leclair MD, Camby C, Battisti S, et al.</td>
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<td>2 to 149</td>
<td>15.7</td>
<td>12.4</td>
<td>162</td>
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<td>Man DW, Vordermark JS, Ransley PG.</td>
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<td>3</td>
<td>11</td>
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<td>Ozturk H, Ozen A, Otcu S, Kaya M, et al.</td>
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<td>84</td>
<td>12</td>
<td>14</td>
<td>1</td>
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<td>Ozturk H, Ozen A, Otcu S, Kaya M, et al.</td>
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<td>6-156</td>
<td>84</td>
<td>12</td>
<td>20</td>
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<td>Rees MJ, Sinclair SM, Hiles RW, et al.</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>33</td>
<td>7</td>
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<td>Rees MJ, Sinclair SM, Hiles RW, et al.</td>
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<td>3 to 192</td>
<td>3</td>
<td>204</td>
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<td>6-132</td>
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<td>Stehr M, Liihder H, Schuster T, et al.</td>
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<td>Ugurlu MC, Erol D, Genniyanle/Dolu C.</td>
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<td>Zhou Y, Lu J, Takahashi G.</td>
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<td>Savaneh A, Esposito, Settemi A.</td>
<td>TIP</td>
<td>9 to 60</td>
<td>26.9</td>
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<td>Al-Ghoralay BA, Elashry OM, Al-Housain AE, et al.</td>
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<td>36</td>
<td>195</td>
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<td>11</td>
<td>0</td>
<td>Y</td>
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</tbody>
</table>

NA = Not available from data presented
Comparison of outcomes of tubularized incised plate hypospadias repair and circumcision: A questionnaire-based survey of parents and surgeon


Abstract  Aim: We administered a standardized questionnaire to parents and operating surgeon to determine their opinions regarding outcomes from tubularized incised plate (TIP) hypospadias repair.

Methods: Likert scale questionnaires were used to assess six outcomes: overall penile appearance, cosmesis of meatus and skin, penile size, straightness during erection, and voided stream. These were answered by consecutive parents of boys 6 weeks following TIP hypospadias repair, as well as by the surgeon. Controls were normal boys 6 weeks after elective circumcision, with their parents and the surgeon answering the same questionnaires.

Results: There were no significant differences in responses between parents of boys undergoing TIP repair for distal \( n = 50 \) to proximal \( n = 15 \) hypospadias compared to parents of normal boys undergoing elective circumcision \( n = 22 \). Surgeon impressions of cosmetic results were slightly, but significantly, more favorable than those of parents. Surgeon scores were higher for distal versus proximal hypospadias outcomes.

Conclusions: Our study provides objective evidence that parents consider TIP hypospadias repair to create a normally functioning and appearing penis. Parent and surgeon opinions of cosmetic outcomes were similar, although surgeon impressions were more favorable.

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