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Hypospadias repair in adults

Tips and tricks

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"...no final word is written on primary hypospadias repair in adults. It is common sense to accept that techniques for repair do not differ between adults and children..."

Agenda

- **Introduction**
- **Which techniques?**
- **Specific surgical considerations**
  - Sutures
  - Catheters
  - Erections

Introduction

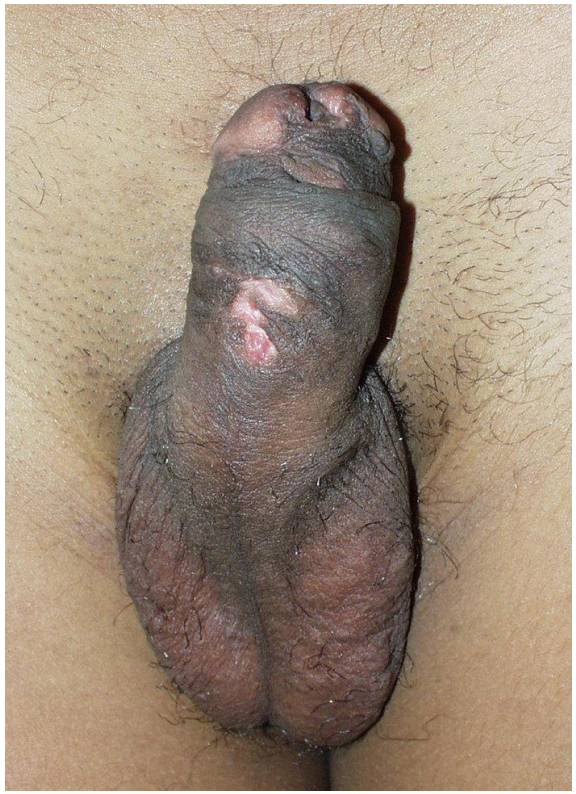
- Adult men presenting with primary non-operated hypospadias seeking surgical correction are rare
- Hypospadias in adults is mostly encountered in older men presenting for Lower Urinary Tract Problems (mostly based on prostatic problems)
- These men do not seek surgical correction of hypospadias
- Those men asking for reconstruction of adult hypospadias present with minor or distal forms of hypospadias (not diagnosed or not corrected)
- Rare studies incidence more than 15 %

Fichtner J, Filipas D, Mottrie AM, Voges GE, Hohenfellner R. Analysis of meatal location in 500 men: wide variation questions need for meatal advancement in all pediatric anterior hypospadias cases. J Urol. 1995;154(2 Pt 2):833-4.

Hypospadias in adults

Operated

Non operated



magpi

Cripple (who did this??)

Primary Hypospadias repair in adults

- **Rarely reported**
  - Snodgrass W, Villanueva C, Bush N. Primary and reoperative hypospadias repair in adults--are results different than in children? J Urol. 2014;192(6):1730-3.
  - Hensle TW, Tennenbaum SY, Reiley EA, Pollard J. Hypospadias repair in adults: adventures and misadventures. J Urol. 2001;165(1):77-9.
- **Most men with undiagnosed or untreated hypospadias do not seek correction**
- **A recent study shows that laypersons find the position and the shape of the meatus the least important in the aspect of the penis**
  - Ruppen-Greeff NK, Weber DM, Gobet R, Landolt MA. What is a Good Looking Penis? How Women Rate the Penile Appearance of Men with Surgically Corrected Hypospadias. The journal of sexual medicine. 2015;12(8):1737-45. Epub 2015/07/21

Snodgrass W:Primary and reoperative hypospadias repair in adults--are results different than in children? J Urol. 2014;192(6):1730-3

- compares outcome in adults and children operated by the same group of surgeons
- complication rate is similar in both groups: 12.5% complications after primary repair
- proximal meatus and reoperation are risk factors for complications
- Pubertal stage, and thus adulthood were not identified as risk factors form complication

Hensle TW, Tennenbaum SY, Reiley EA, Pollard J. Hypospadias repair in adults: adventures and misadventures. J Urol. 2001;165(1):77-9.

- **the complication rate in a small group of patients with primary repair in adulthood is reported as of 37.5 %**
- **a very small group of patients, thereby offering a very low evidence level(3)**

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Appraisal of adult genitalia after hypospadias repair: Do laypersons mind the difference?

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Keywords
Genital perception; Genital appearance; Hypospadias; Sexuality; Patient outcome assessment

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Summary

Introduction
Men with corrected hypospadias often suffer from sexual inhibition and fear of being ridiculed by others because of their penile appearance. However, no investigation has thus far been made of the perception of hypospadias-affected surgically repaired genitals by laypersons unacquainted with hypospadias. Therefore, the aim of this study was to find out whether laypersons notice a difference between genitals of men with corrected hypospadias in comparison with circumcised genitals. Furthermore, the most relevant predictors of laypersons' perception of hypospadias-affected genitals were examined.

Study design
A cross-sectional study was performed in which a questionnaire with 10 standardized photographs of non-erect hypospadias-affected genitals and 10 circumcised genitals was presented to laypersons unacquainted with hypospadias to measure how they rated these genitals. Laypersons were 105 women and 70 men of three different age groups (age ranges 16–20, 25–30, and 40–45 years). Furthermore, laypersons were asked about demographic characteristics, their sexuality and their genital self-perception.

Results
The results showed that genitals with distal forms of hypospadias were rated similarly to circumcised genitals. In contrast, genitals with more proximal types were perceived as significantly less positive than circumcised genitals. However, the effect size was small. Higher age, being in an intimate relationship, higher socio-economic status, and a higher sexual interest predicted a better layperson's perception of hypospadias-affected genitals.

Discussion
These findings do not support the fear of some men with corrected hypospadias of being ridiculed by others because of their penile appearance. The results indicate that laypersons do not notice a difference between corrected distal types of hypospadias (which represent the majority of hypospadias) and circumcised genitals. Although the findings showed that laypersons perceive more proximal forms of hypospadias less positively than circumcised genitals, the difference does not appear to be clinically relevant as the effect size was small. A major strength of this study is its comprehensive study design. However, the low response rate of hypospadias patients and control individuals for photo documentation and of laypersons who rated these photosets is a limitation of the study. Therefore, generalization from the results must be made carefully.

Conclusions
The results are relevant for patient counseling. Knowing that the penile appearance would not trouble laypersons may prevent the development of a negative genital self-perception and feelings of shame. The findings also suggest that hypospadias-affected genitals seem to be rated more positively when laypersons know more about the "normal" variation of penile appearance (e.g. with increasing sexual experience at a higher age).

Hypospadias repair and evidence

- **Research on hypospadias repair *in general* is based on low-level studies**
- **Most studies are retrospective with short follow-up and non-objective measurements of functional and aesthetic outcome**
- **For primary repair *in adults* there is no evidence at all**
- **Recommendations that follow are based on large experience and on literature about urethral reconstruction in adults**

What is the difference between children and adults presenting with hypospadias?

- Age and size, size based on changes that happen with puberty.
- Growth of the penis
- Increased trophicity of the tissues based on increased vascularity
- Spontaneous erectile function in adults more specifically nocturnal erections
- While better tissue quality should be in favor of wound healing the nocturnal erections might interfere with good healing as tension is put on the reconstructed tissues

Discussion: Androgen stimulation

- **Pros of preoperative stimulation:**
  - **Size of the penis** (microphallic hypospadias)
    - Jacob S.C. et al - Urology 1975
    - Monfort G. et al – European Urology 1982
    - Husmann D. A. – J Urol 1999
  - **Downgrading the severity** of hypospadias
    - Koff S.A. et al – J Urol 1999
      - Hypoplastic tissues located beyond the division of spongiosum have a lower response to hormonal stimulation.
      - Is it safe to use hypoplastic tissues for urethroplasty ?
  - **Tissular blood supply**

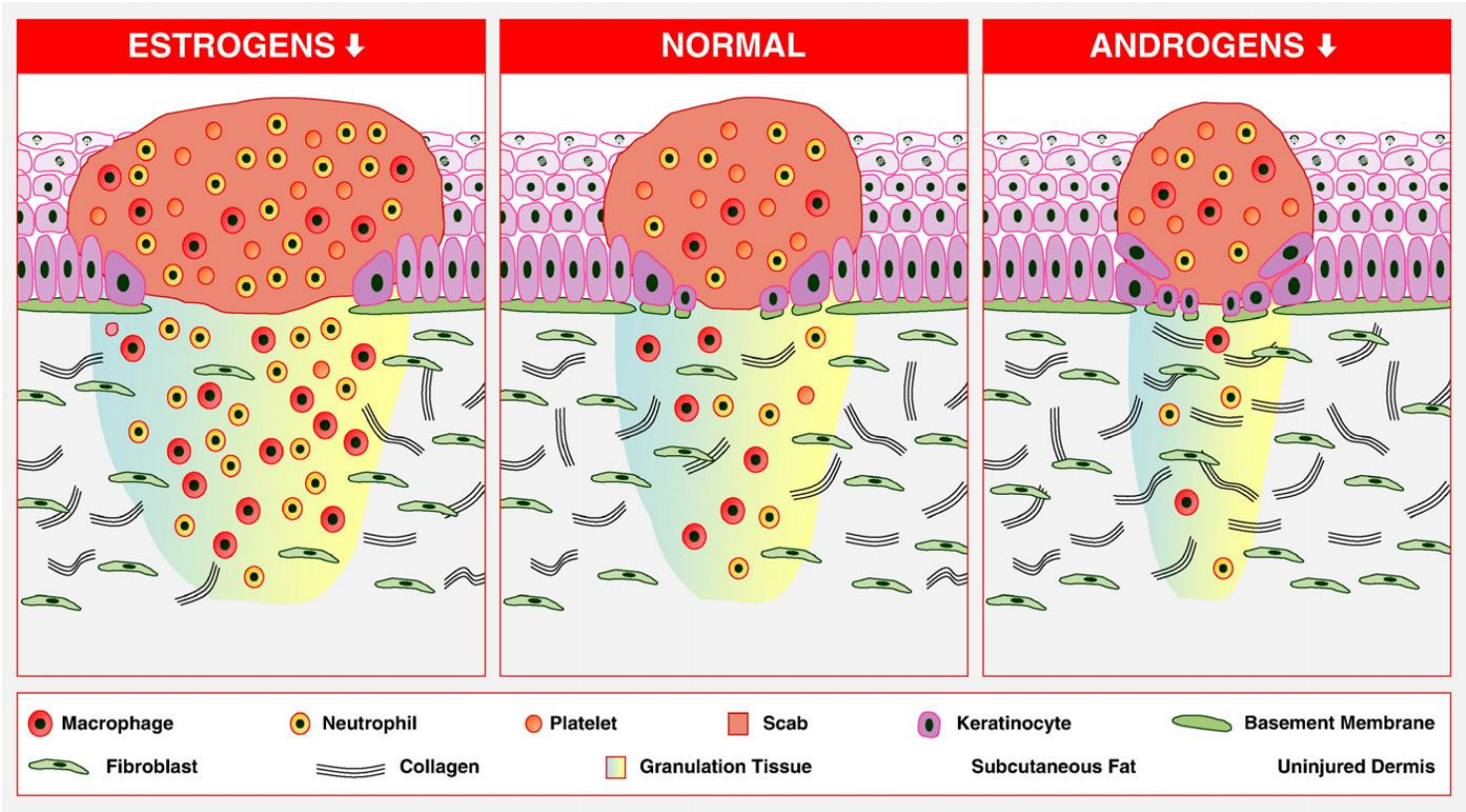
Discussion: Androgen stimulation

- **Cons of preoperative stimulation**
  - Peroperative and post operative bleeding
  - Timing of androgen stimulation, bone maturation and adult height
    - Husmann D.A. et al - J Urol 1994
    - Blethen S.L. et al – Pediatr Res 1984
  - Long-term effects on the penile size ? (rat)
    - Takane K.K. et al - Endocrinology 1991

Is Androgen stimulation detrimental for the healing process ?

- **Although patients who received androgen stimulation were those with the most severe anatomy, the significant difference of complications between patients who received stimulation < and > 3 months prior to surgery supports the repressive role of androgens on the healing process.**
- **Hormonal regulation of cutaneous wound healing also supports this repressive effects. Gilliver S.C. et al**

Gilliver S.C. et al Clinics in Dermatology 2007

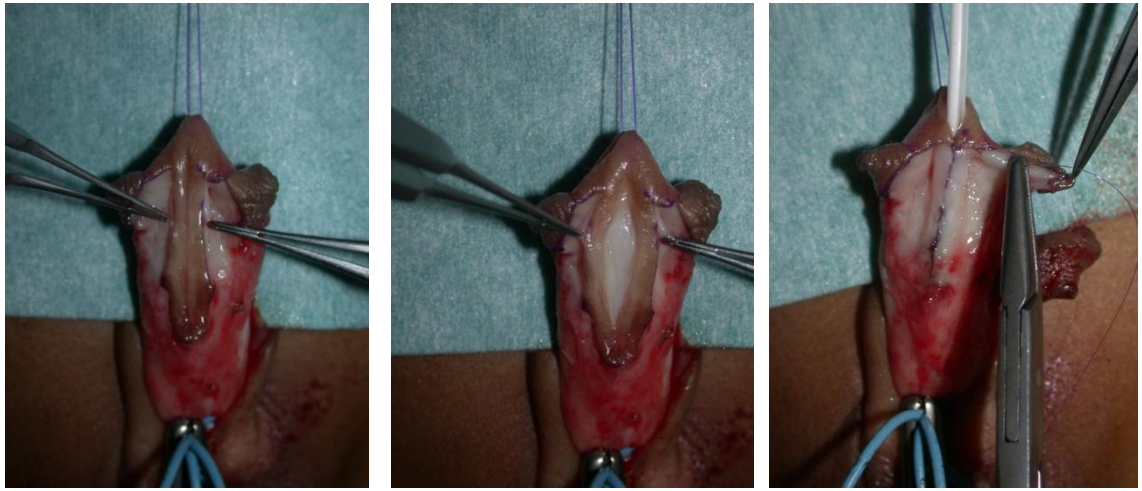


Estrogens accelerate the healing process whereas androgens are primarily deleterious

Choice of operative technique

- **Distal hypospadias**
- **The techniques used in adults do not differ from those in children**
- **Tubularized incised plate urethroplasty (TIPU) which is nowadays most popular in children has been shown to be feasible in adults (9, 10)**
  - Adayener C, Akyol I. Distal hypospadias repair in adults: the results of 97 cases. Urologia internationalis. 2006;76(3):247-51.
  - Sharma G. Tubularized-incised plate urethroplasty in adults. BJU Int. 2005;95(3):374-6.
- **Other techniques described are meatal advancement and glanuloplasty (MAGPI) and Mathieu repair as wel as Tiersch Duplay techniques like GAP-repair**

TIP repair



Tubularized–incised plate urethroplasty in adults

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Accepted for publication 26 August 2004

OBJECTIVE

To evaluate the results of tubularized incised-plate (TIP) urethroplasty for distal and midshaft hypospadias in adults, and to underline technical aspects to decrease complications.

PATIENT AND METHODS

From December 1999 to January 2004, 13 patients with hypospadias and aged 18–26 years had a TIP urethroplasty as a primary repair. Five had distal penile and eight had midshaft hypospadias. In all cases a TIP urethroplasty was used as described for children. Urinary drainage was by a urethral Nelaton catheter connected to a urine bag.

RESULTS

The catheter was removed after 10 days and the patients asked to attend a follow-up at 1, 3 and 6 months and then 6-monthly; the maximum follow-up was 3 years and the minimum was 3 months. One patient developed a fistula after the repair of distal penile hypospadias, which closed spontaneously after a month. All patients with a successful repair voided with a single straight urinary stream in a forward direction. They had a normally situated slit-like glanular meatus.

CONCLUSION

TIP repair in adults is associated good results. There is no difference in terms of wound healing, infection, complication rates and overall success between the TIP repair in children and adults. The cosmetic and functional outcome was comparable to that in children.

KEYWORDS

hypospadias, urethral plate, meatus, stenosis, tubularized incised-plate, urethroplasty, urethrocutaneous fistula

Healing of unstented tubularized incised plate urethroplasty: an experimental study in a rabbit model

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Accepted for publication 18 September 2002

OBJECTIVE

To develop a rabbit model to study the temporal healing taking place after an unstented tubularized incised plate urethroplasty (TIPU).

MATERIALS AND METHODS

The study comprised 13 New Zealand white rabbits (3–4 kg); the ventral wall of the penile urethra was excised to create a hypospadias-like defect. A vertical incision was made in the dorsal urethral plate and the incised urethra tubularized. Two animals were killed at 2 days and two at 5 days after surgery, and the remainder killed at 2, 6 and 12 weeks (three each). A retrograde urethrogram was taken at autopsy. Serial sections of the penis were stained with haematoxylin and eosin, and Masson trichrome for microscopy.

RESULTS

There were no deaths related to the procedure and all animals voided spontaneously. Retrograde urethrograms showed no fistulae or stricture. Microscopic examination at 2 and 5 days showed partial coverage of the incision with regenerating urothelium. At 2 weeks there was full-thickness urothelium with a mild inflammatory reaction. At 6 and 12 weeks, remodelling of the peri-urethral connective tissue with minimal fibrosis completed the healing.

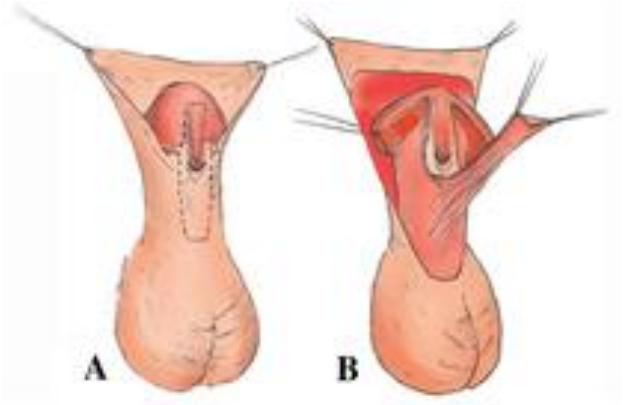
CONCLUSION

The mechanism of healing of the incised urethral plate involves normal urothelial regeneration into the depth of the incised defect, which explains the gain in urethral diameter after TIPU. Urine flow, during normal voiding, might be responsible for keeping the incised plate open during urothelial regeneration. A urethral stent was not necessary for normal healing in this model.

KEYWORDS

urethra, hypospadias, penis, rabbit, healing

Mathieu repair

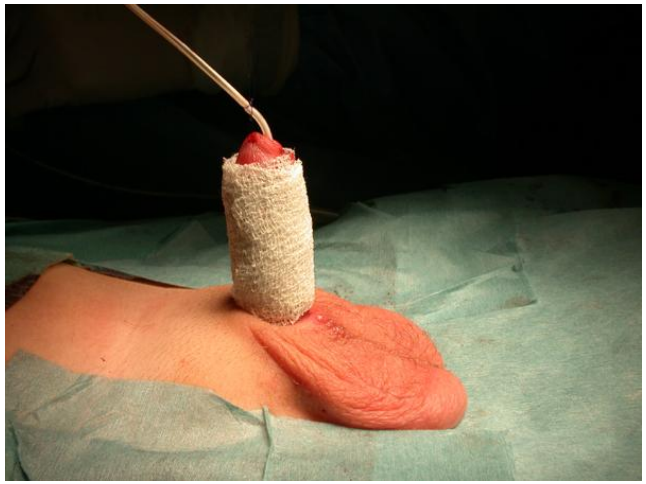


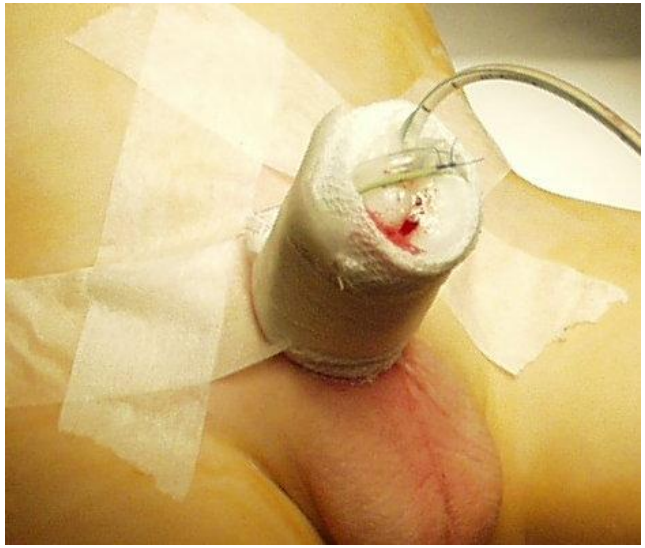
Differences

- **Trends in children are known**
  - Springer A, Krois W, Horcher E. Trends in hypospadias surgery: results of a worldwide survey. Eur Urol. 2011;60(6):1184-9. Epub 2011/08/30.
- **In children sutures are resorbable and most often 6.0 monofilament or thinner**
- **In adults rather 4.0 sutures are used like in most urethroplasty techniques.**
- **The suture material seems to have no result on the outcome and studies on the effect of suture size are nonexistent**
  - Cimador M, Castagnetti M, Milazzo M, Sergio M, De Grazia E. Suture materials: do they affect fistula and stricture rates in flap urethroplasties? Urologia internationalis. 2004;73(4):320-4. Epub 2004/12/18.

Differences:catheter size and dressing

- Catheter size in children is most often 10 French (Fr) where in adults 16 or 18 Fr is more frequently used
- For duration of catheter there is wide variation in children going from no catheter to two weeks
- This information is unknown in adults
- For dressings: fancy dressing are used in children, in adults most often compressive dressing is used





Differences: erections

- **Erections logically might interfere with healing and outcome**
- **Prevention of erection has been studied but no single treatment has been found to be effective to prevent nocturnal erections in a postoperative setting**
  - Johansen LV, Kirkeby HJ, Kiil J. Prevention of erection after penile surgery. A double-blind trial of intracavernous noradrenaline versus placebo. Urol Res. 1989;17(6):393-5.
  - 16. DeCastro BJ, Costabile RA, McMann LP, Peterson AC. Oral ketoconazole for prevention of postoperative penile erection: a placebo controlled, randomized, double-blind trial. J Urol. 2008;179(5):1930-2.
- **A good postoperative compressive dressing during the night. In our center we try to keep the primary dressing for at least five days and encourage patients to use a compressive dressing during night for at least three weeks after surgery**

Conclusion

- ***"...no final word is written on primary hypospadias repair in adults. It is common sense to accept that techniques for repair do not differ between adults and children but it is not at all evidence..."***