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Center for Reconstructive Urethral Surgery



Association of Urology

Hypospadias:

Problems in the adult patient



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International Congress on Hypospadias Surgery



Prishtina, 2 – 5 September 2007

... the other side of the coin



"Strictures in adults who had a hypospadias repair is a growing industry"



Andrich D.E. and Mundy A.R., Eur Urol 2008, 54: 1031-1041



The aim of this lectures is to present a few data

coming from our industry, the national referral Center for

Reconstructive Urethral Surgery in Arezzo, Italy









Patients with urethral stricture diseases: 1510

Failed hypospadias repair: 223 (14.7%)







Patients with penile urethral stricture diseases: 437



Failed hypospadias repair: 223 (51%)







Site of primary hypospadias in 223 patients:

balanic : 79 (35.5%)

penile : 102 (45.7%)

12

peno-scrotal: 42 (18.8%)





Number of operations to repair primary hypospadias in 223 patients:

balanic : 1 – 14 (mean 2.4)

penile : 1 – 13 (mean 3.9)

peno-scrotal: 1 – 12 (mean 4.8)





Number of operations to repair complications following primary hypospadias repair in 223 patients:

balanic : 1 – 5 (mean 1.7)

penile : 1 – 8 (mean 2.5)

peno-scrotal: 1 – 8 (mean 2.6)





Total number of operations to repair primary hypospadias repair and complications in 223 patients:

balanic : 2 – 15 (mean 4.1)

penile : 2 - 21 (mean 6.3)

peno-scrotal: 2 – 14 (mean 7.5)







In conclusions, 223 patients underwent a mean of 5.8 surgical operations to repair primary and failed hypospadias

No other congenital abnormality of the body require a mean of 5.8

surgical operations to be cured !



Complications following failed hypospadias repair

complication	%
stricture	56.6%
residual hypospadias	43.3%
fistula	30%
meatal stenosis	18.3%
residual curvature	15%
hair	6.6%
diverticula	3.3%
stone	1.3%

Barbagli et al., Eur Urol 2006; 49: 887-895

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Complications following failed hypospadias repair

number of complications	%
1	36.6%
2	43.4%
3	13.4%
4	6.6%

Barbagli et al., Eur Urol 2006; 49: 887-895



Surgical techniques in 223 adult patients

• age: 19-76 years (mean 31.6)

• follow-up: 12-237 months (mean 60.4)



Surgical techniques in 223 adult patients

• One-stage repair: 112 (50.2%)

• Staged repair: 111 (49.8%)







Out of 223 patients, 17 (7.6%) showed histological proven Lichen sclerosus





One-stage repair	N°
Meatoplasty or meatotomy	31
Fistula closure	11
End-to-end anastomosis	5
One-stage repair skin flap	11
One-stage repair using oral mucosa graft	17
One-stage repair using skin graft	10
Nesbit procedure	6
Definitive perineal urethrostomy	9
Other (combined procedures)	9
Internal urethrotomy	3
TOTAL	112



Ventral onlay







Dorsal onlay









Dorsal inlay





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Staged repair	N°
Staged repair using oral mucosal graft	52
Staged repair using skin graft	11
First stage of Johanson procedure	18
Two-stage of Johanson procedure	30
TOTAL	111





























Surgical techniques according to the site of primary hypospadias

79 balanic : one-stage repair 52 (66%); staged repair 27 (34%)

102 penile : one-stage repair 60 (58%); staged repair 42 (42%)

42 peno-scrotal: one-stage repair 18 (16.1%); staged repair 24 (21.6%)



69 oral grafts : 17 one-stage; 52 staged

21 skin grafts: 11 staged; 10 one-stage

32 meatotomy

18 first stage of Johanson procedure

9 definitive perineal urethrostomy



Out of 223 patients:

32 (%) showed urinary meatus in the coronal sulcus

18 (%) in the middle shaft of penis

9 (%) in the perineum





Results

evaluation



objective

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Success or failure ?









Success or failure ?

Reconstructive surgical itinerary at the end-point

> No meatal or urethral dilation

Absence of complications or poor aesthetic outcome requiring revision





Results of the surgical repair

surgiaal ranair	su	ccess	failure		
surgical repair	N.	%	N.	%	
ONE-STAGE 112 patients	91	81.3%	21	18.7%	
STAGED 111 patients	72	64.9%	39	35.1%	

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Results

N° Patients	Suc	cess	Fai	lure
223	159	71.3%	64	28.7%

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Final results according to the site of primary hypospadias

balanic : 78.5%

penile : 65.7%

peno-scrotal: 71.4%





Results of staged repair

Surgical techniques	N°	Success		Failure	
Staged repair using oral mucosal graft	52	35	67.3%	17	32.7%
Staged repair using skin graft	11	5	45.5%	6	54.5%
Two-Stage of Johanson procedure	30	16	53.3%	14	46.7%

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Number of surgical steps before the final outcome

Number steps	Number patients
2	19
3	7
4	2
5	1
6	1
7	1

Two-stage repair: 19 patients (61%) Multi-stage repair: 12 patients (39%)

Barbagli et al., Eur Urol 2006; 49: 887-895





Our experience showed two different populations in whom attempts of hypospadias surgical correction have failed





Patients showing multiple penile deformities caused by:

- Error in evaluation
- Error in design
- **Error in surgical technique**
- **Error in postoperative care**







Patients showing a satisfactory final outcome having:

- Cosmetically acceptable meatus
- No evident penile deformities such as fistula or chordee



• Urethral stricture











The neo-urethra may fail to adequately follow the "incredible" grow of the penis when the genital maturation is complete





18 months old

18 years old





The normal urethra is

"spongiosum-made urethra"









The urethra in patient who underwent hypospadias reconstruction is "skin-made urethra"









What is the the difference between the "spongiosum-made urethra" and the "skin-made urethra"



As far as urinary function concern, the reconstructed "skin-made urethra" is able to work as a normal "spongiosum-made urethra"



Pediatric surgeon and parents are very satisfied for this outcome.....



....but, unfortunately, the urethra is a piece of penis...



...and when children reached full sexual maturity, problems are going to come ...

...and the "skin-made urethra" over time will be KO!









The "skin-made urethra" does not tolerate the repeated mechanical stretch and trauma during erection and sexual activity





The **"skin-made urethra"** is not surrounded by the soft, well vascularized corpus spongiosum



During sexual activity, the corpus spongiosum is to the urethra what the airbag is for the body during a car accident



The lack of spongiosum tissue promotes the urethral deterioration over time







Success in hypospadias surgery is not measured in one or even in five years. Pediatric and adult urologists need to maintain active followup on these patients until they have reached full sexual maturity and activity









We are constantly reminded by

late failures that there is not

true sustitute for normal urethra







Hypospadias surgery is now at the end-point



All pediatric surgeons involved in hypospadias surgery are

warmly invited to publish the long-term results (> 20 years) of

hypospadias surgery performed in its Departments to collect

more detailed epidemiological data





All surgeons involved in hypospadias surgery are warmly invited to develop a new studies in tissue engineering and

transplant research







The hypospadias surgery will be improved only when the urethral corpus spongiosum will be available, and a new "spongiosum-made urethra" will be transplanted to the patient







Of course, my hypothesis is not founded on the "based evidence

medicine", but it represents a "personal opinion" of single

surgeon working in a specialized referral Center for urethral

diseases





www.urethralcenter.it



Next month, this lecture will be fully available on our website

Thank you !



