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Portuguese Andrological Association National Meeting

June 21 - 23, 2008

Oporto - Portugal



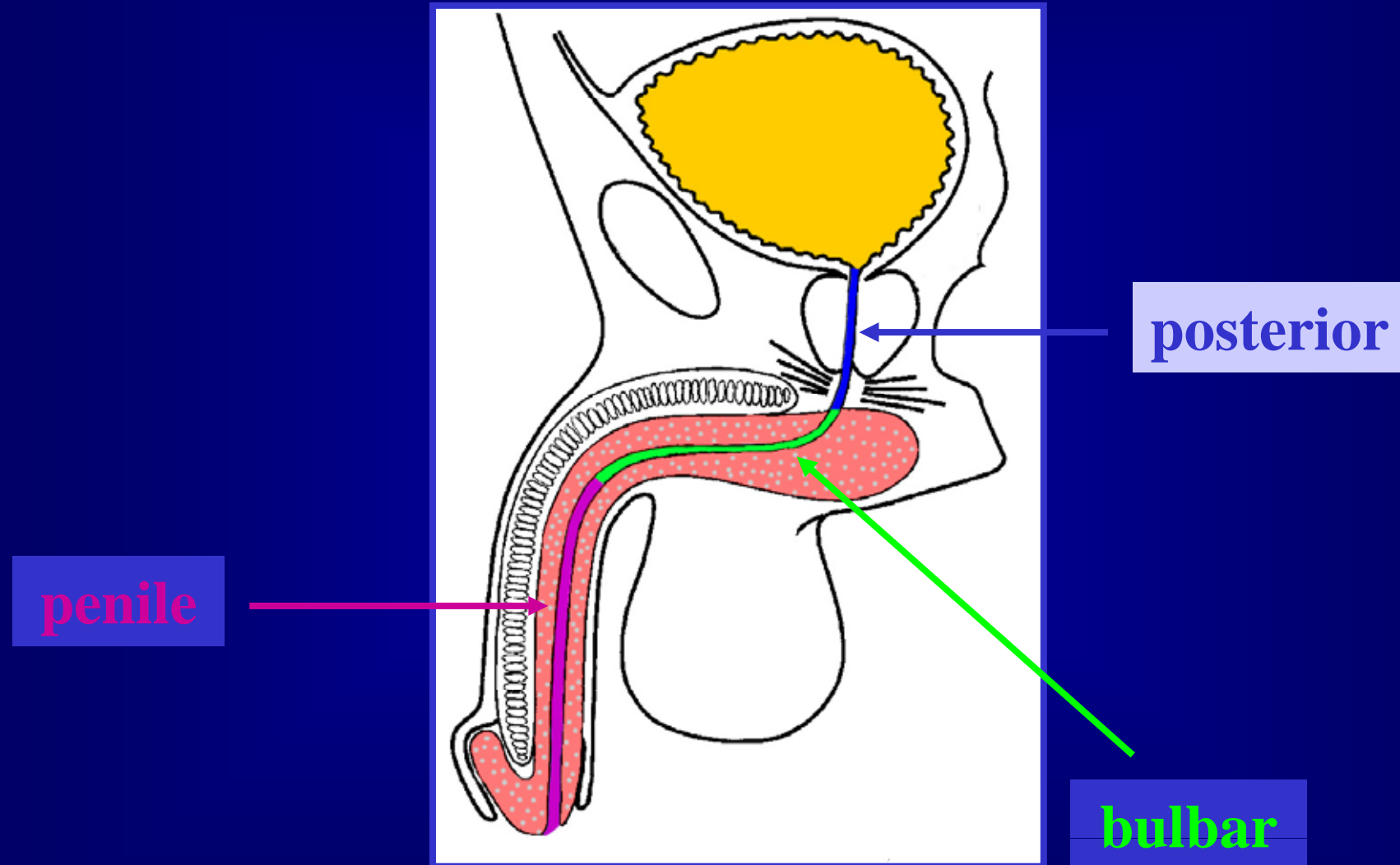
Center for Reconstructive Urethral Surgery



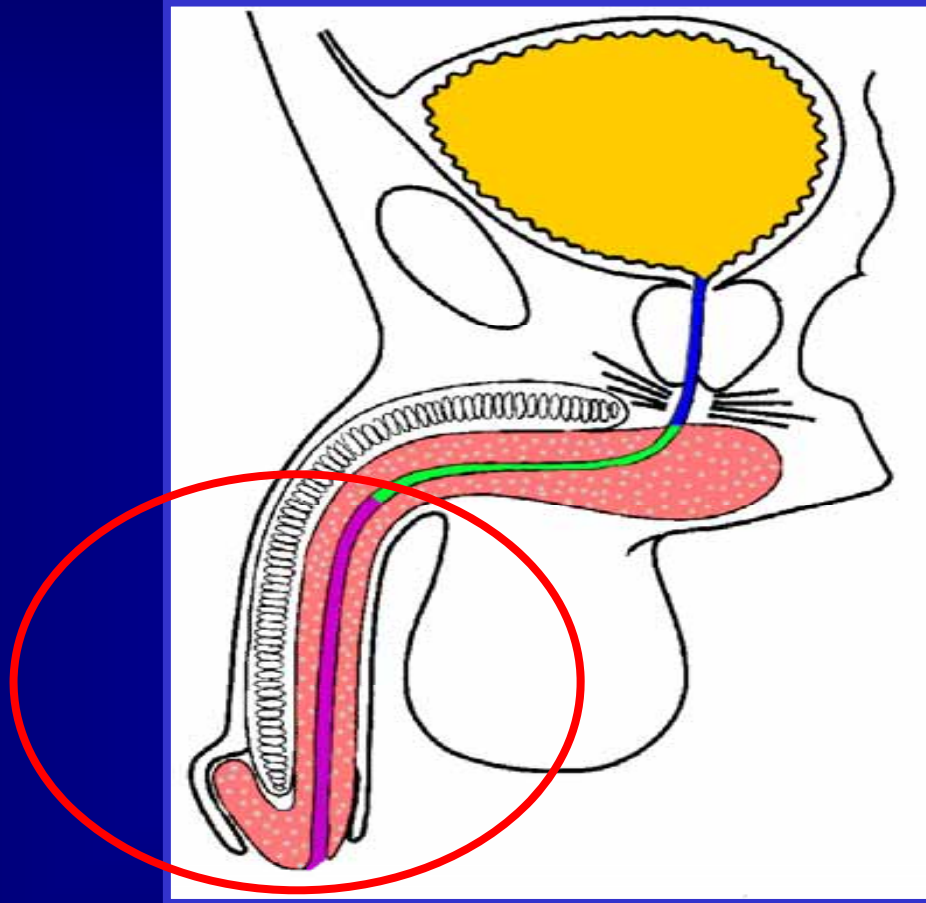
Urethral Reconstructive Surgery: Current Trends



Anatomy of the male urethra



Penile urethroplasty

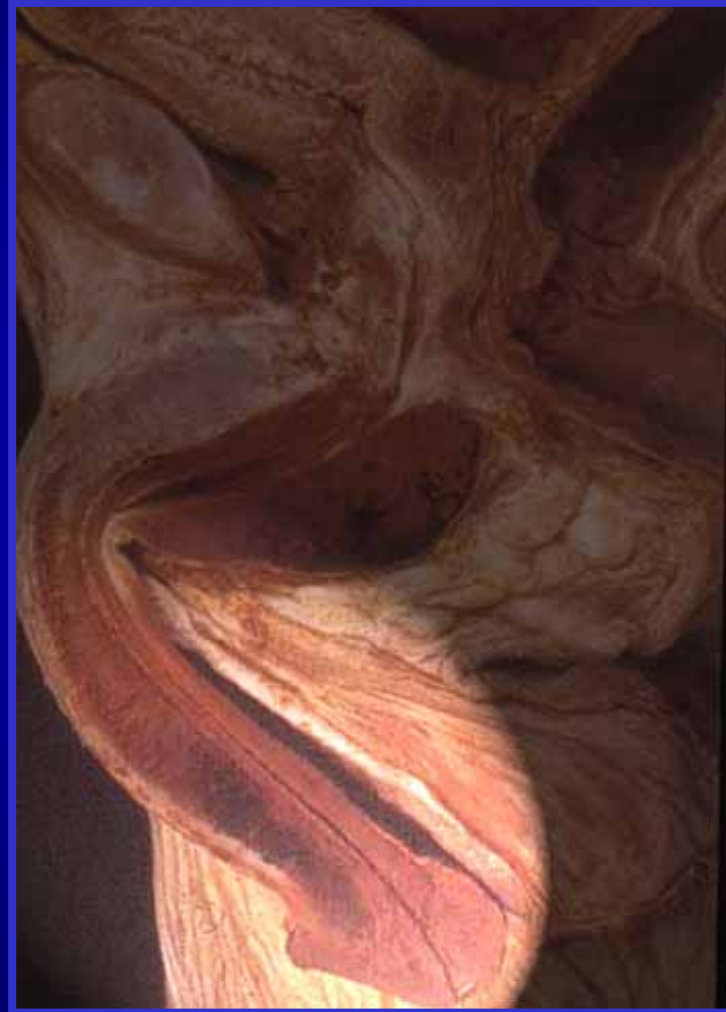


One-stage or two-stage repair ?



Penile urethroplasty

The surgical technique for
the repair of penile
urethral strictures is
selected according to
stricture etiology



Etiology of penile urethral strictures in 404 patients

- ✓ **Failed hypospadias repair 40%**
 - ✓ **Lichen sclerosus 40%**
 - ✓ **Trauma**
 - ✓ **Instrumentation**
 - ✓ **Catheter**
 - ✓ **Infection**
 - ✓ **Other causes**
- } **80%**
- } **20%**

Barbagli 2006, unpublished data



In patients with penile urethral strictures due to:



trauma

instrumentation

catheter

infection



the penis is normal



Penis is normal: one-stage repair



glans
penile skin



dartos fascia



corpus spongiosum



In patients with penile urethral strictures due to:



failed hypospadias

lichen sclerosis



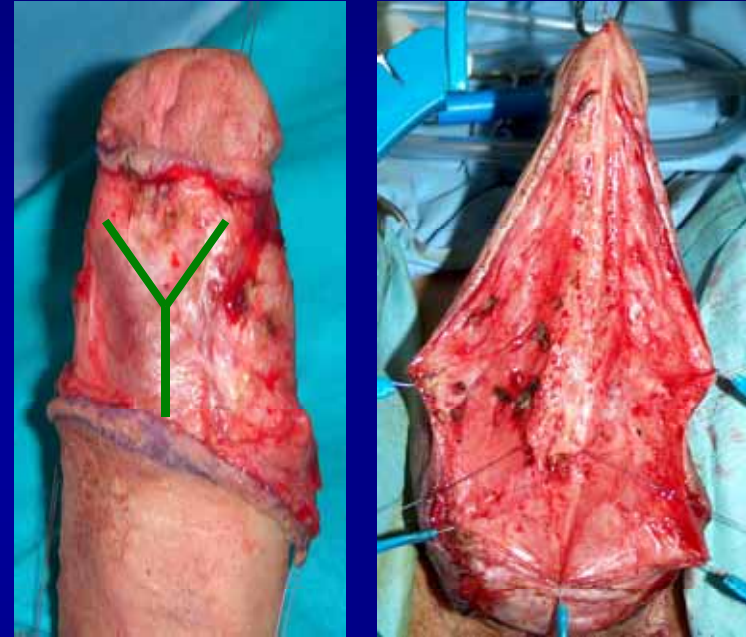
the penis is abnormal



Penis is abnormal: two-stage repair



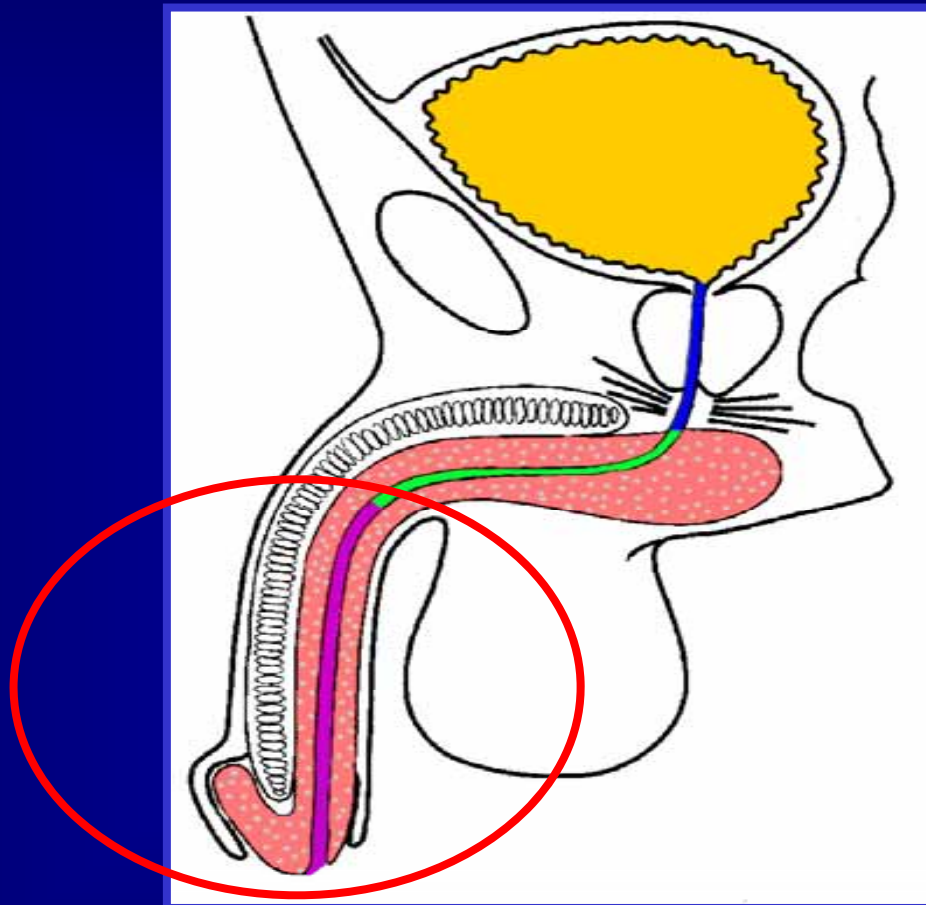
**Glans and penile skin are
fully involved in the
disease**



**Corpus spongiosum and
dartos fascia are fully
involved in the disease**



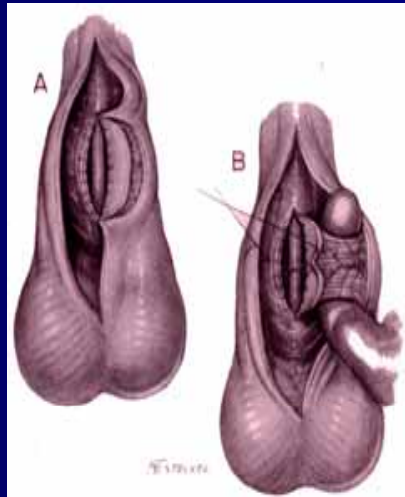
One-stage penile urethroplasty



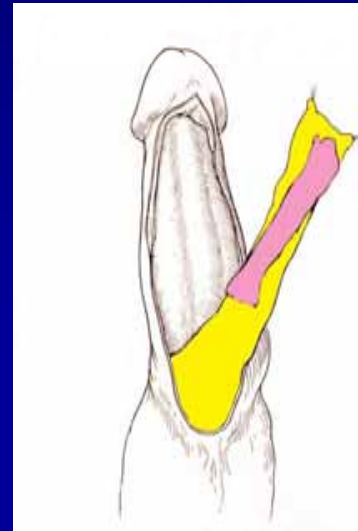
Flap or graft?



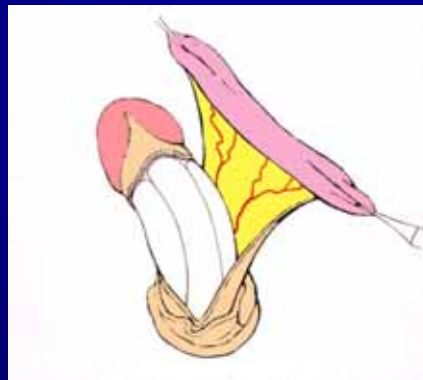
One-stage flap urethroplasty



ORANDI



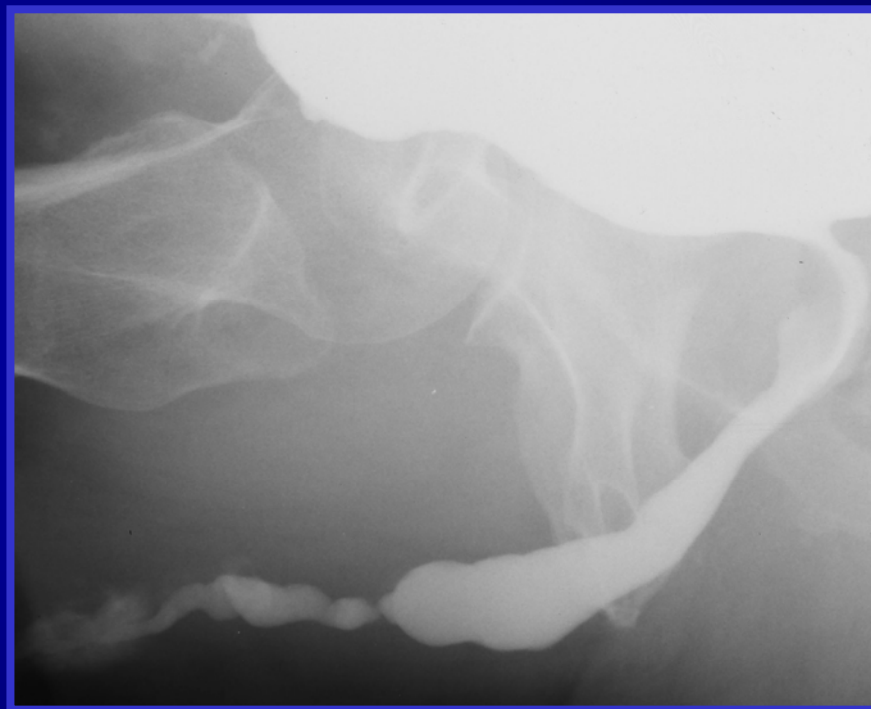
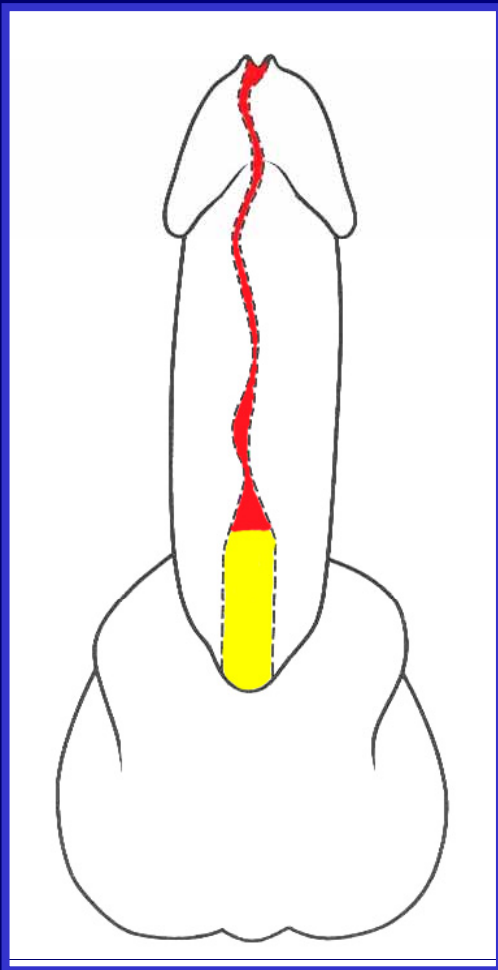
JORDAN



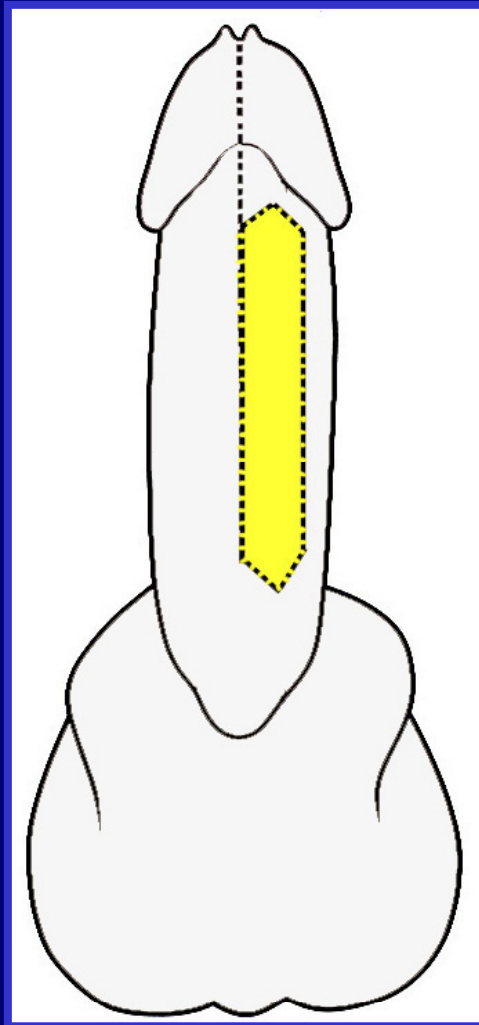
McANINCH



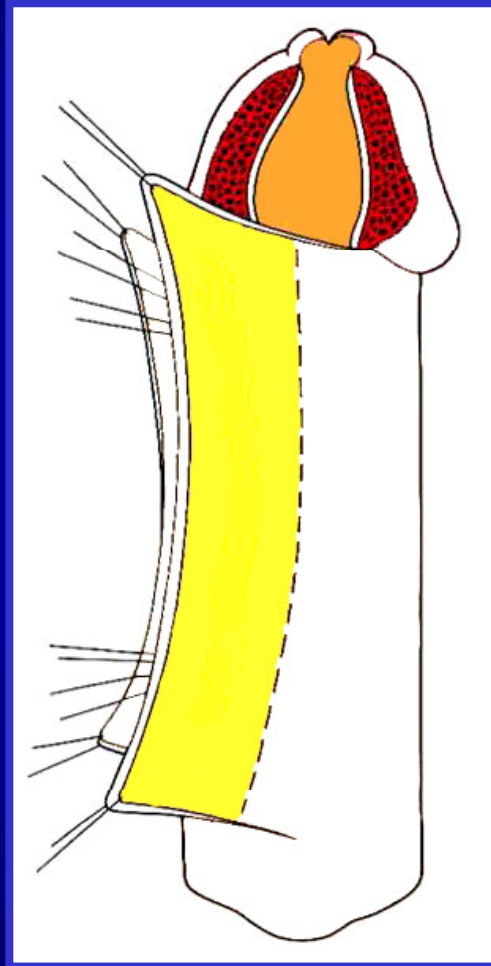
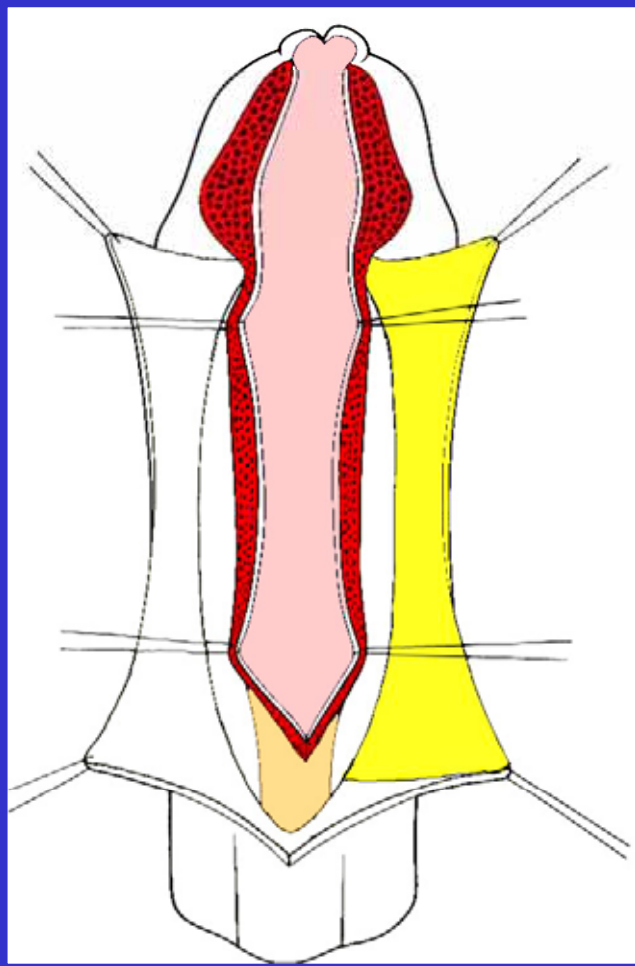
Jordan's flap



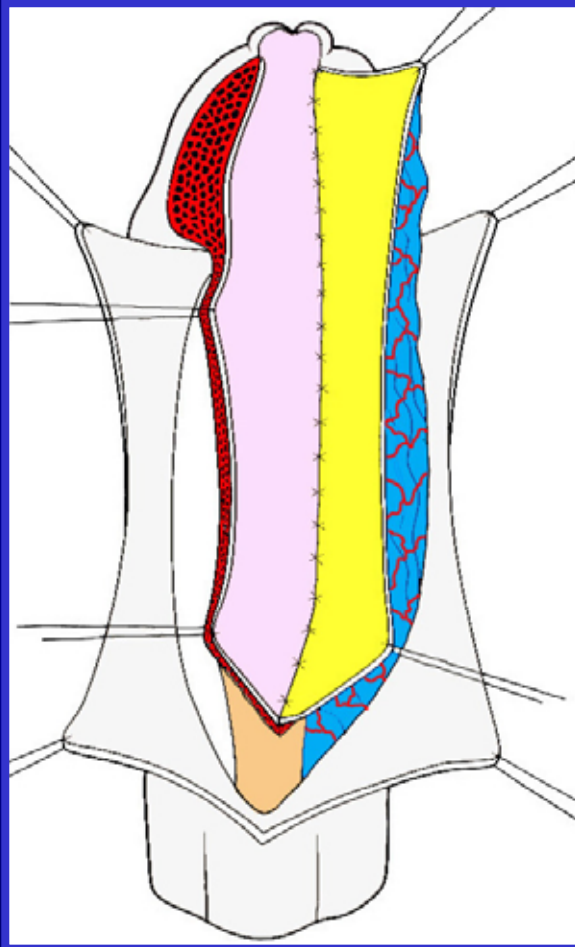
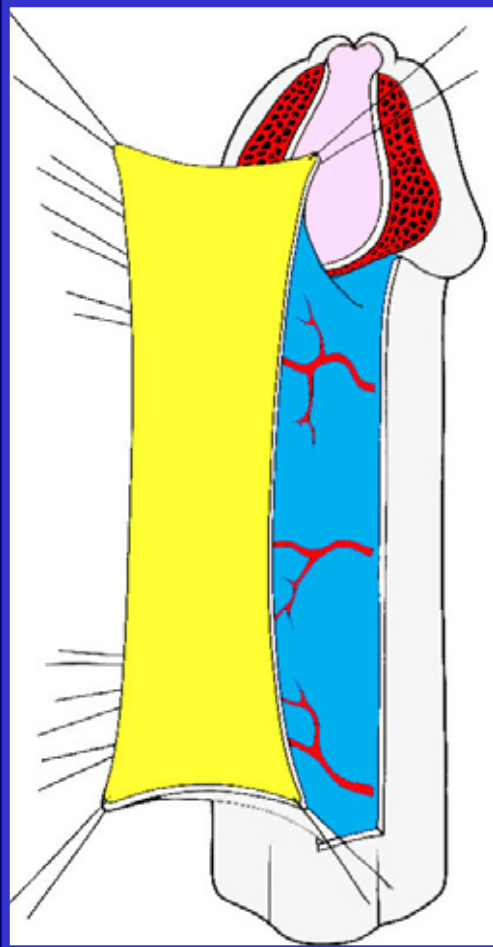
Jordan's flap



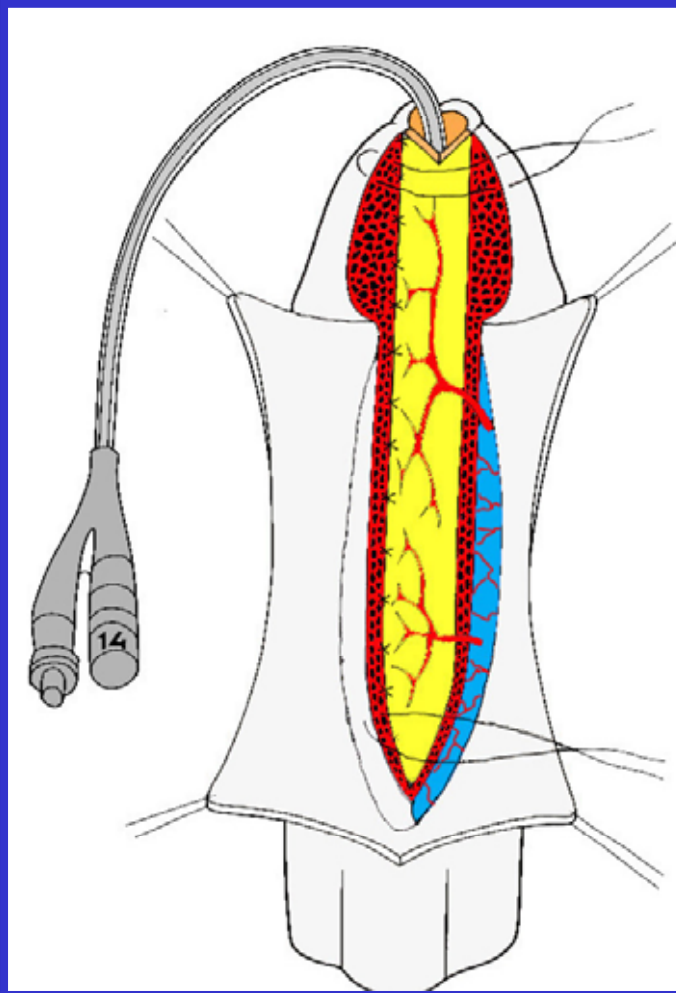
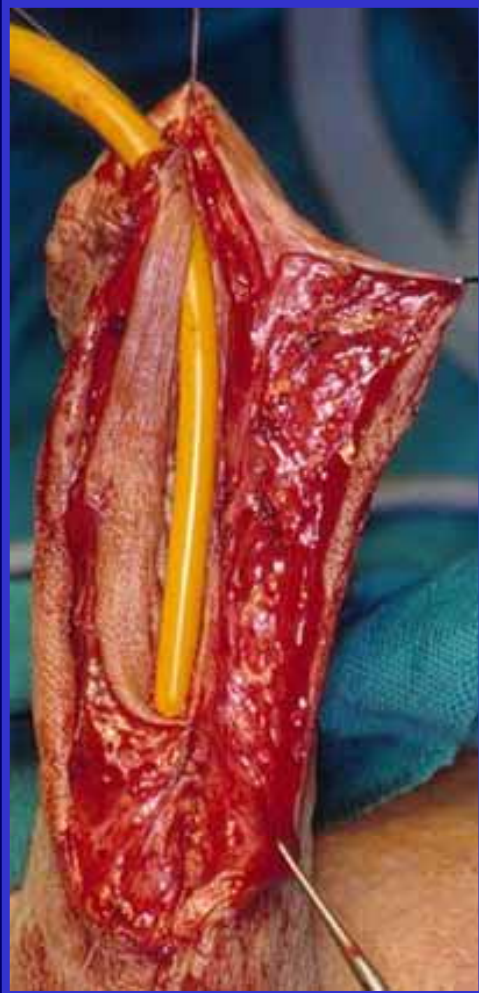
Jordan's flap



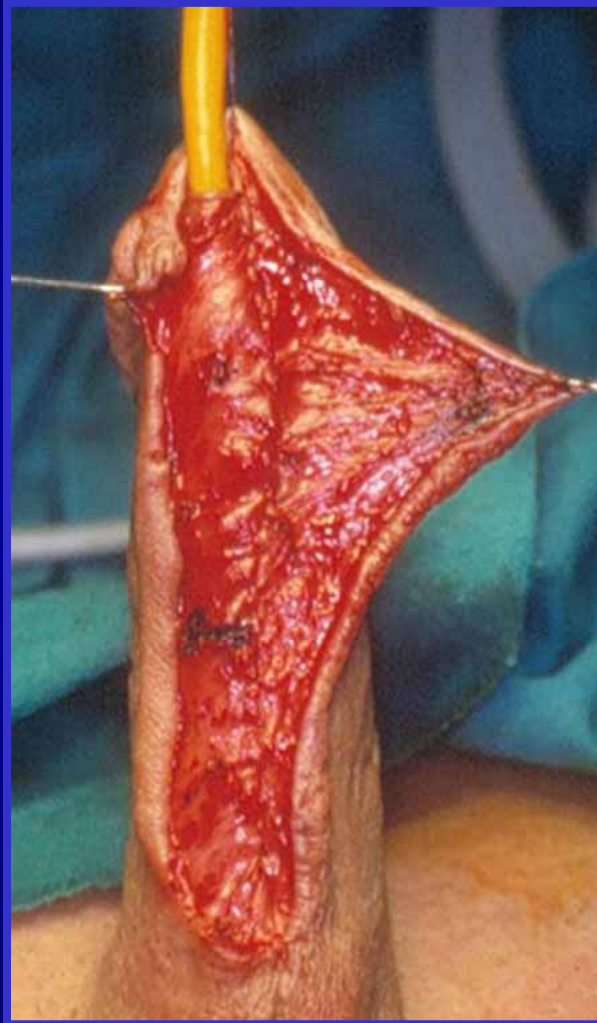
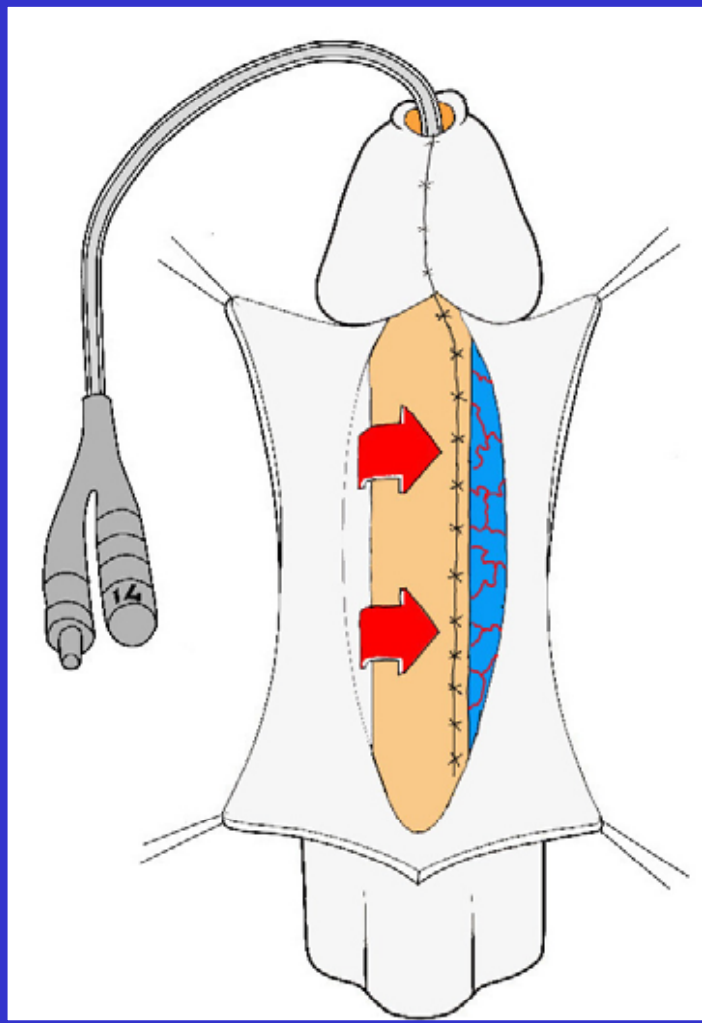
Jordan's flap



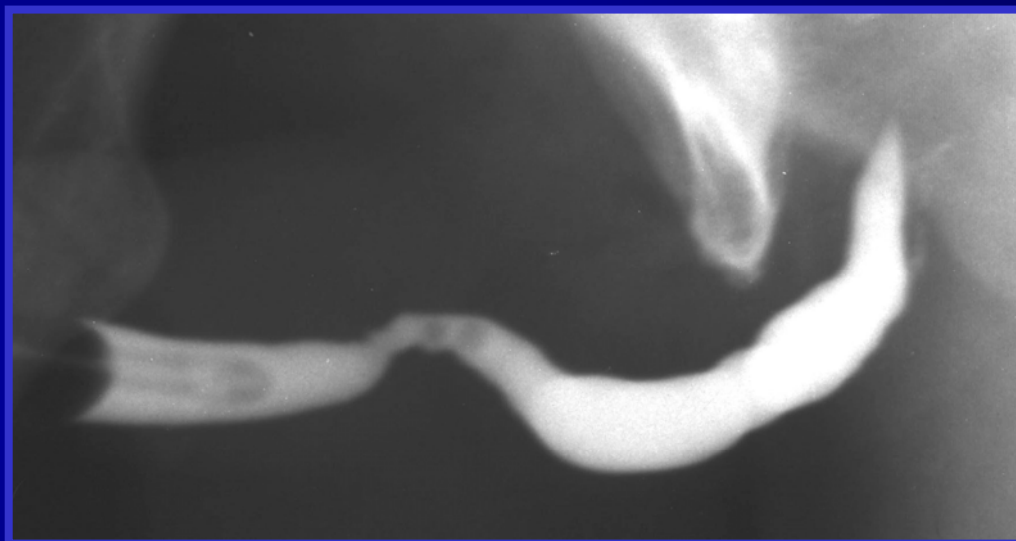
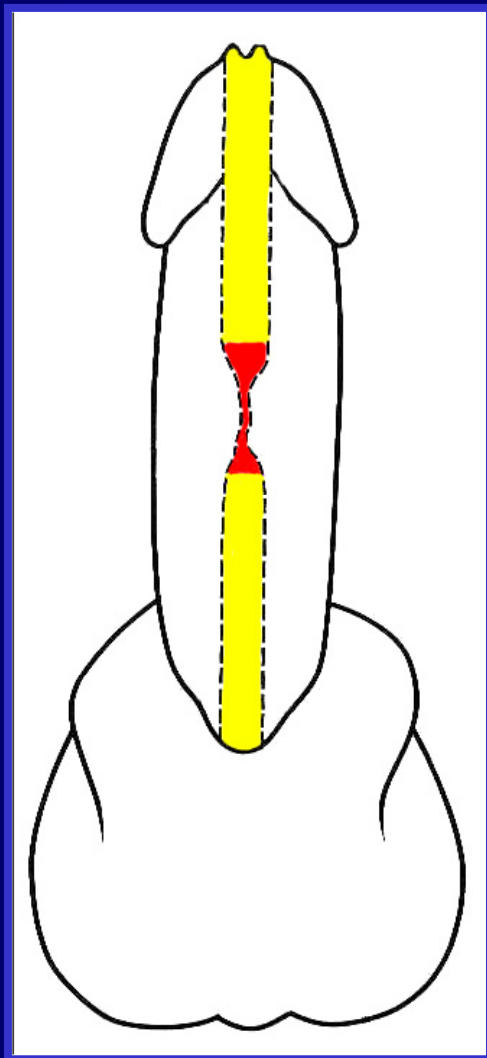
Jordan's flap



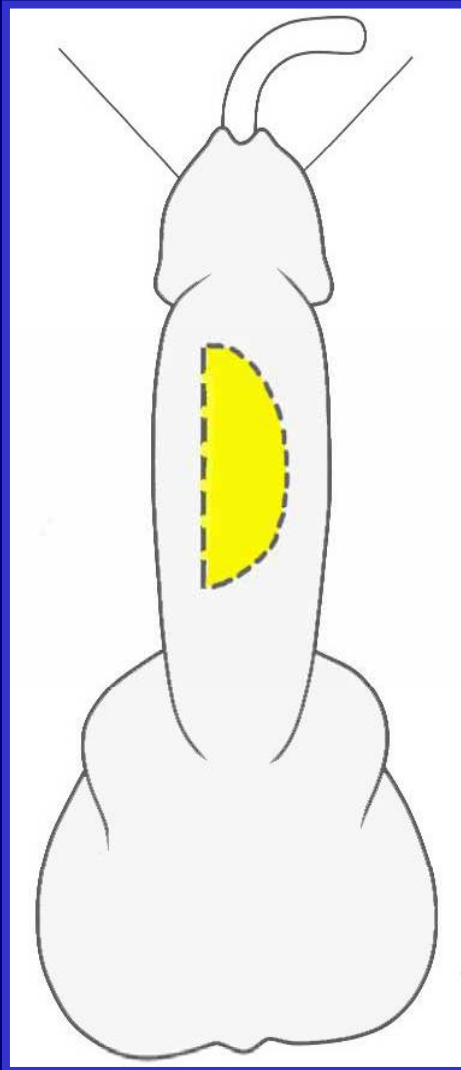
Jordan's flap



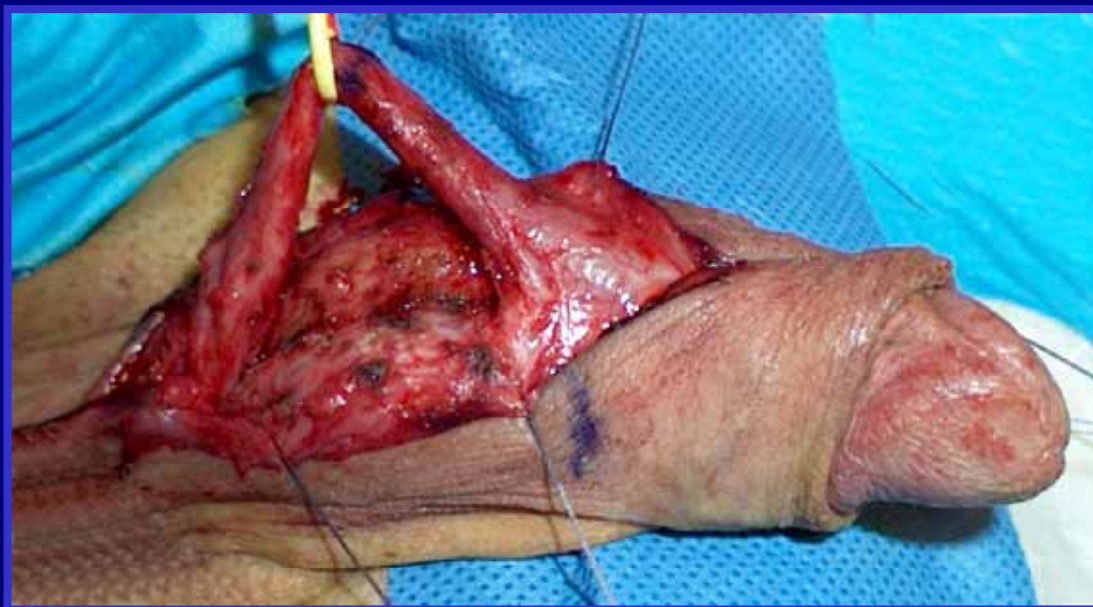
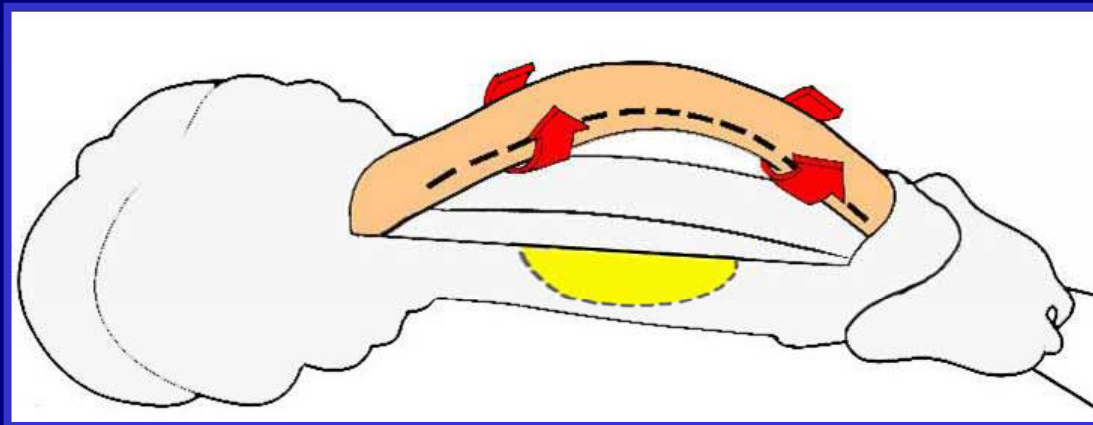
Dorsal Orandi's flap



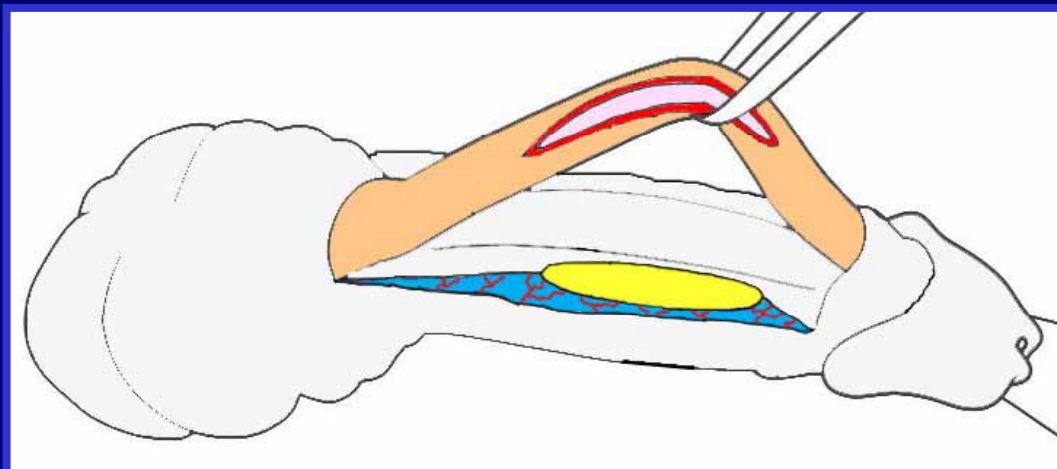
Dorsal Orandi's flap



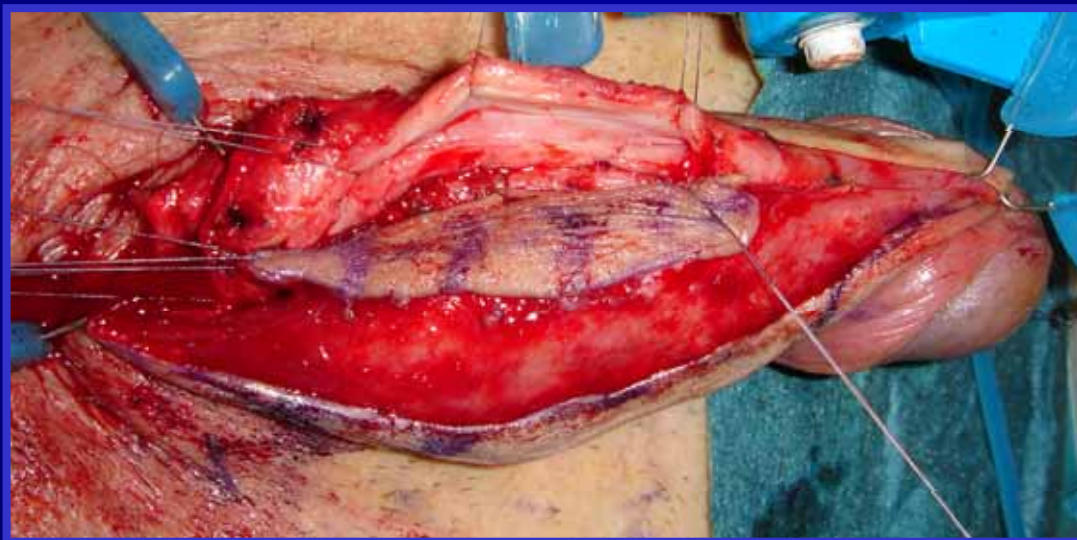
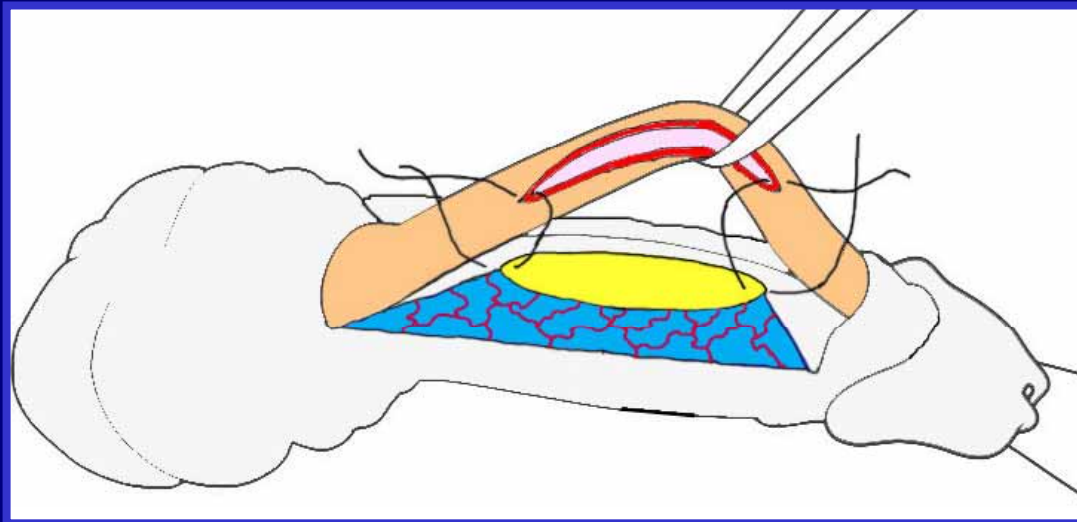
Dorsal Orandi's flap



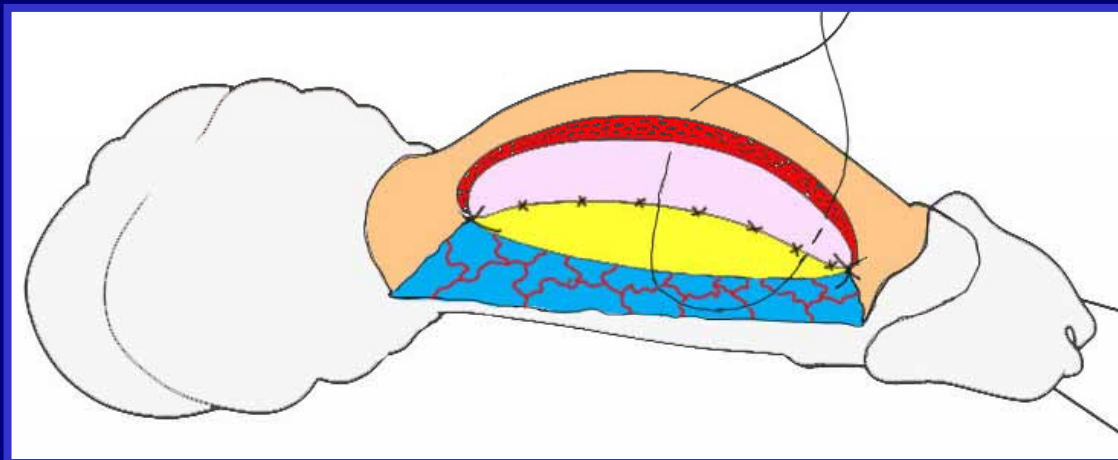
Dorsal Orandi's flap



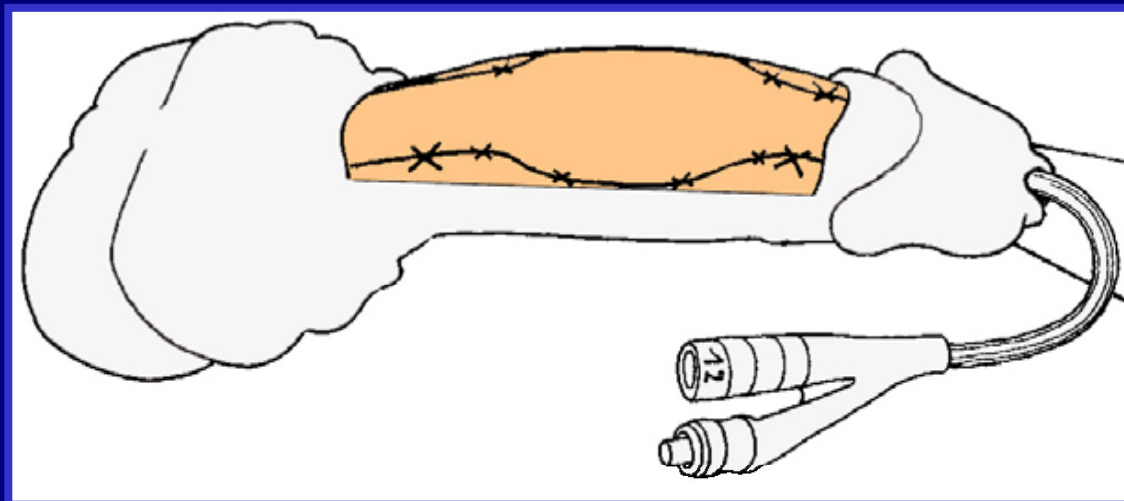
Dorsal Orandi's flap



Dorsal Orandi's flap



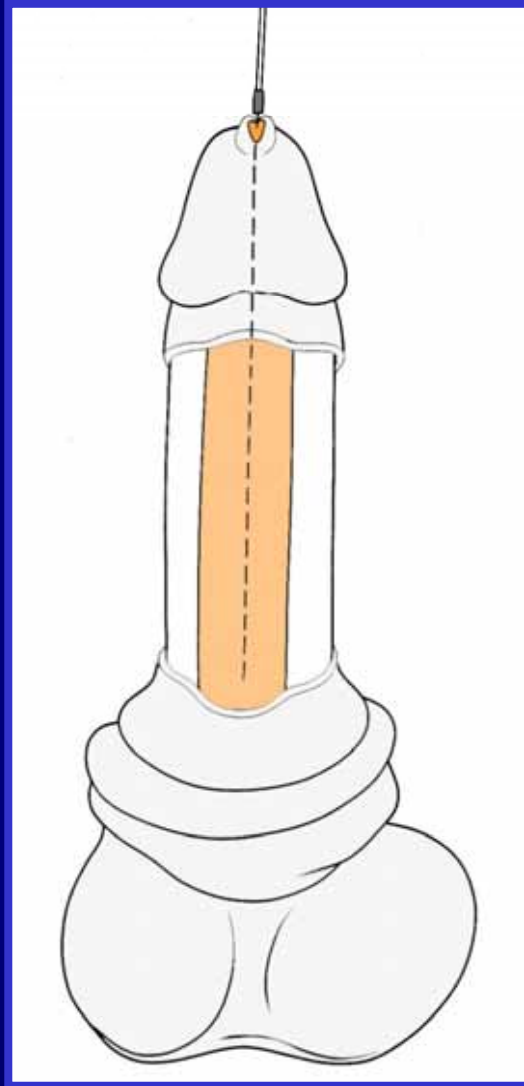
Dorsal Orandi's flap



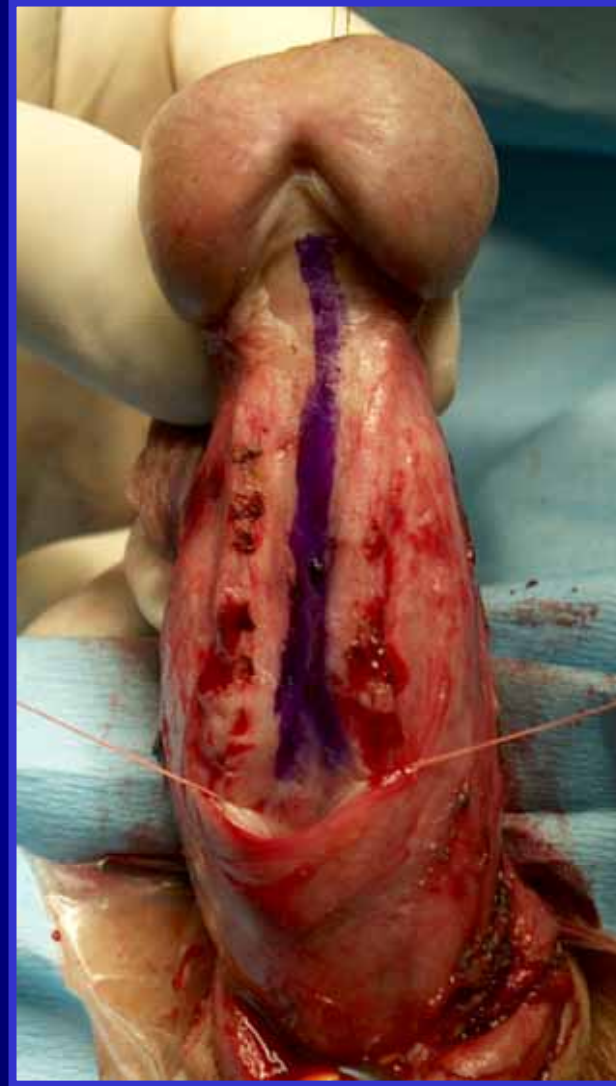
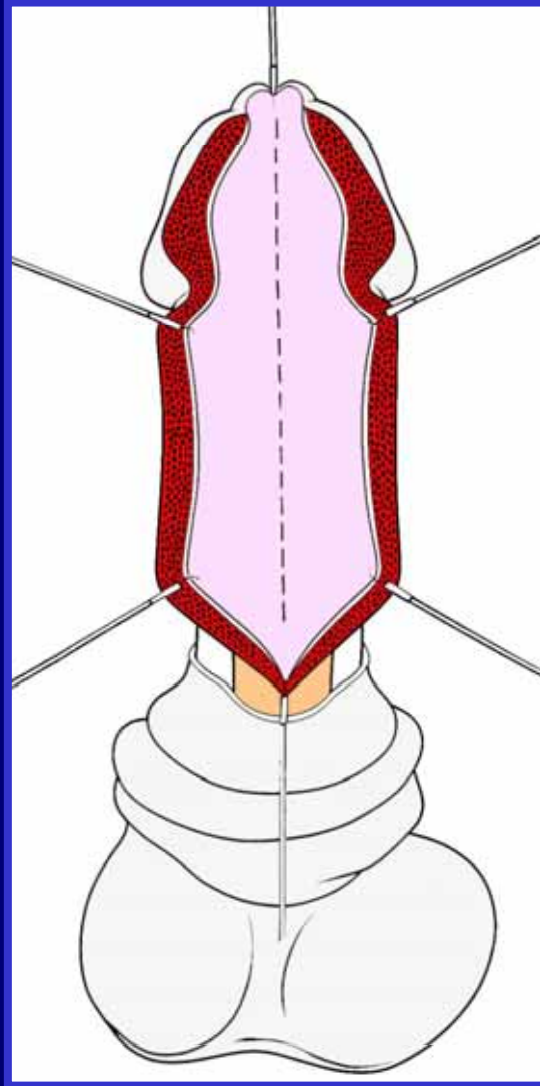
Dorsal Orandi's flap



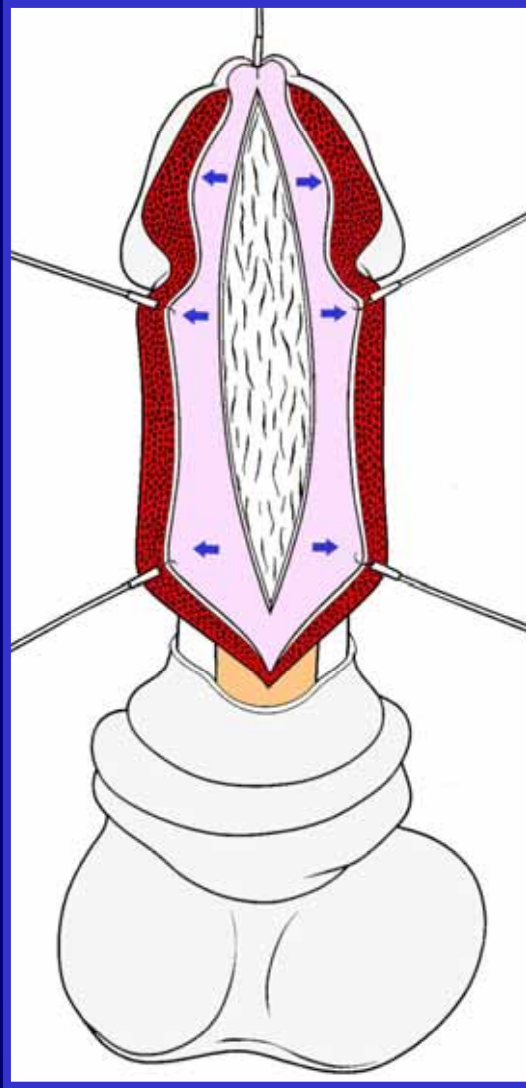
Asopa's graft



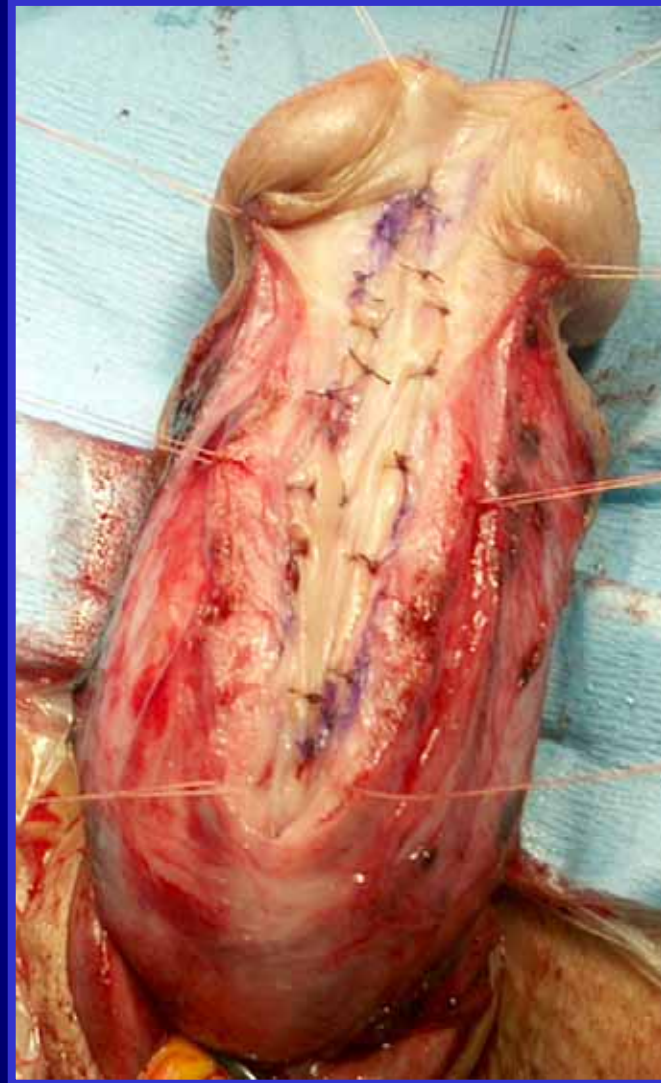
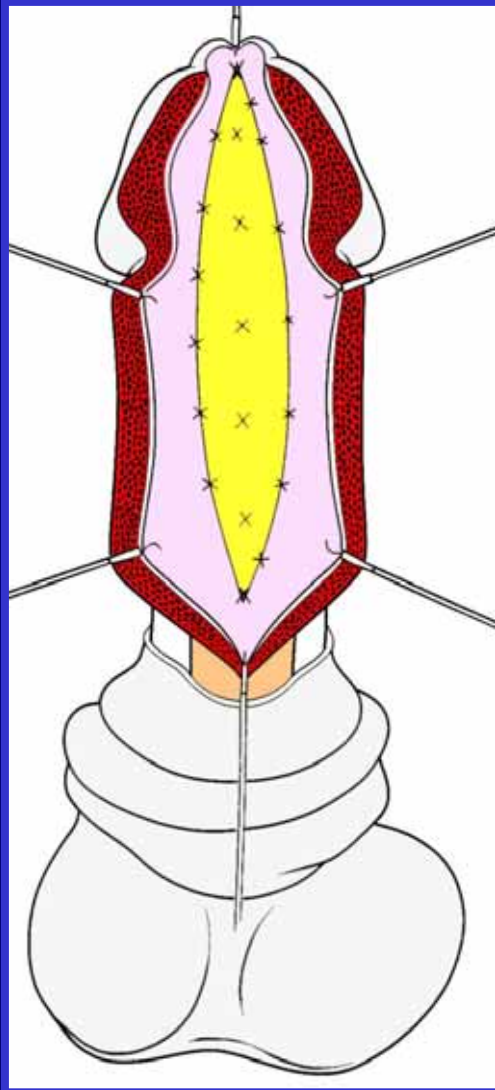
Asopa's graft



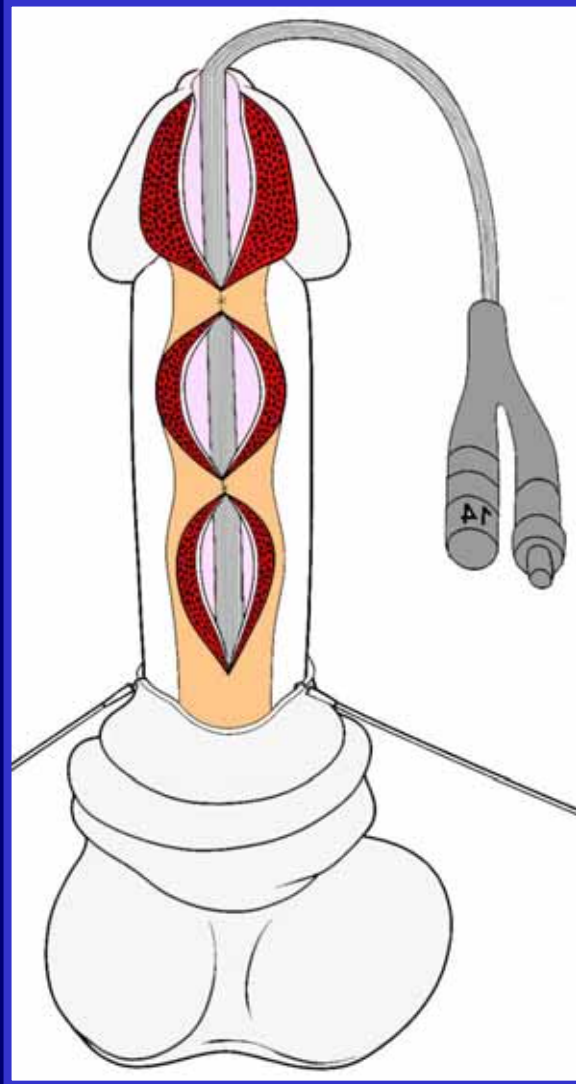
Asopa's graft



Asopa's graft



Asopa's graft



One-stage penile flap or graft urethroplasty

Results

patients	type of repair	success
18	flap	66.7%
22	oral graft	81.8%
23	skin graft	78.3%

www.urethralcenter.it

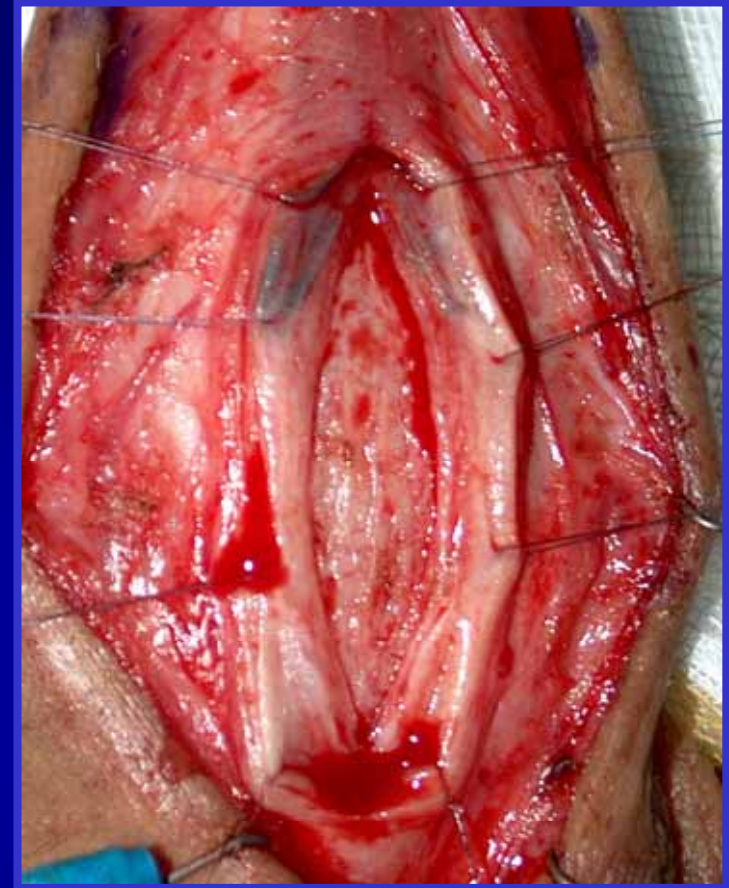




flap

?

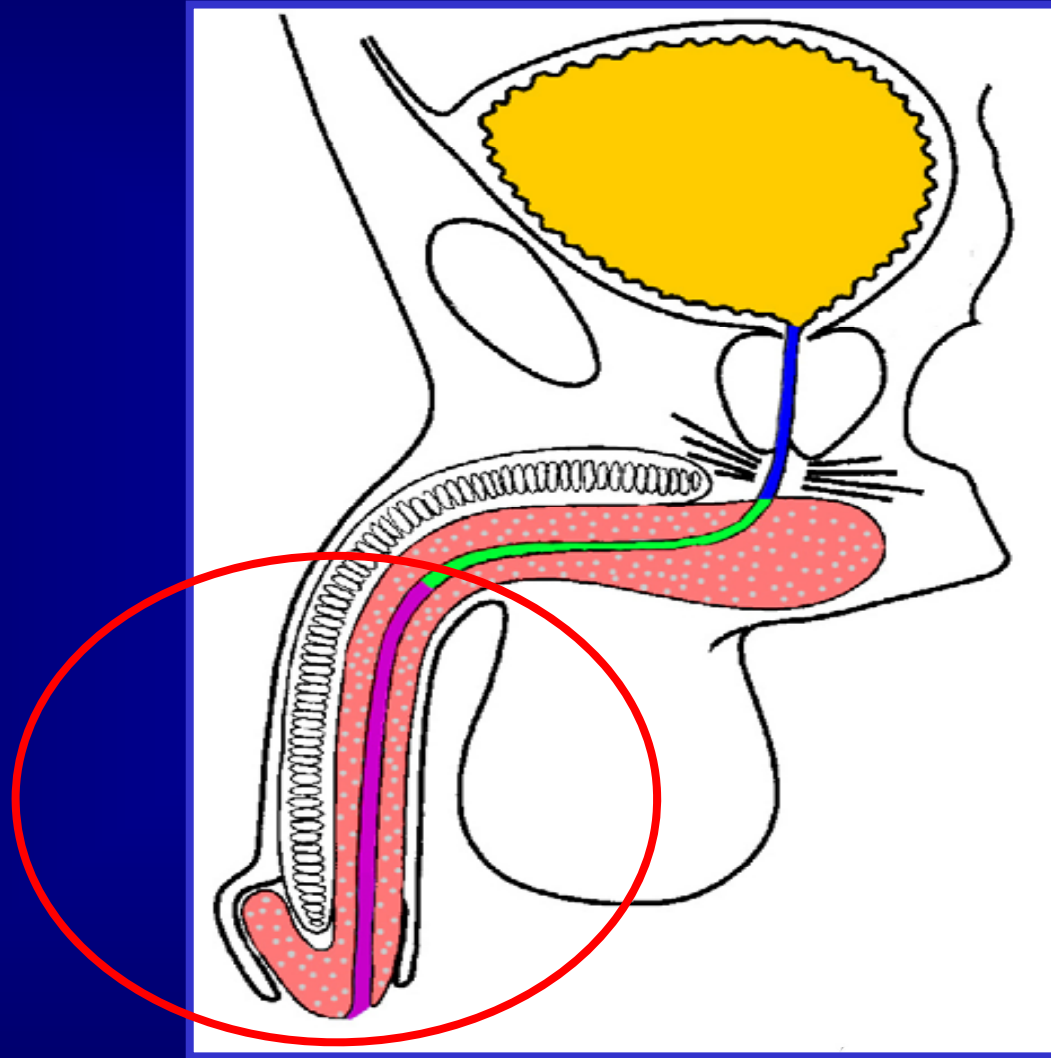
graft



Basically, the choice between flap or graft one-stage urethroplasty should be made according to the status of the urethral plate and according to the surgeon background, training and preference



Two-stage penile urethroplasty



Two-stage urethroplasty using oral mucosal graft







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Complications following the first stage of urethroplasty



10-39% of patients showed contracture or scarring of the initial graft, requiring new grafting procedures

Barbagli et al., Eur Urol, 2006



Second stage





Results of two-stage penile urethroplasty in patients with failed hypospadias repair

Surgical techniques	N°	Success		Failure	
Two-stage techniques with penile skin	14	7	50%	7	50%
Two-stage techniques with oral mucosa	17	14	82.3%	3	17.6%
TOTAL	31	21	67.7%	10	32.3%

Barbagli et al., Eur Urol 2006



Conclusions

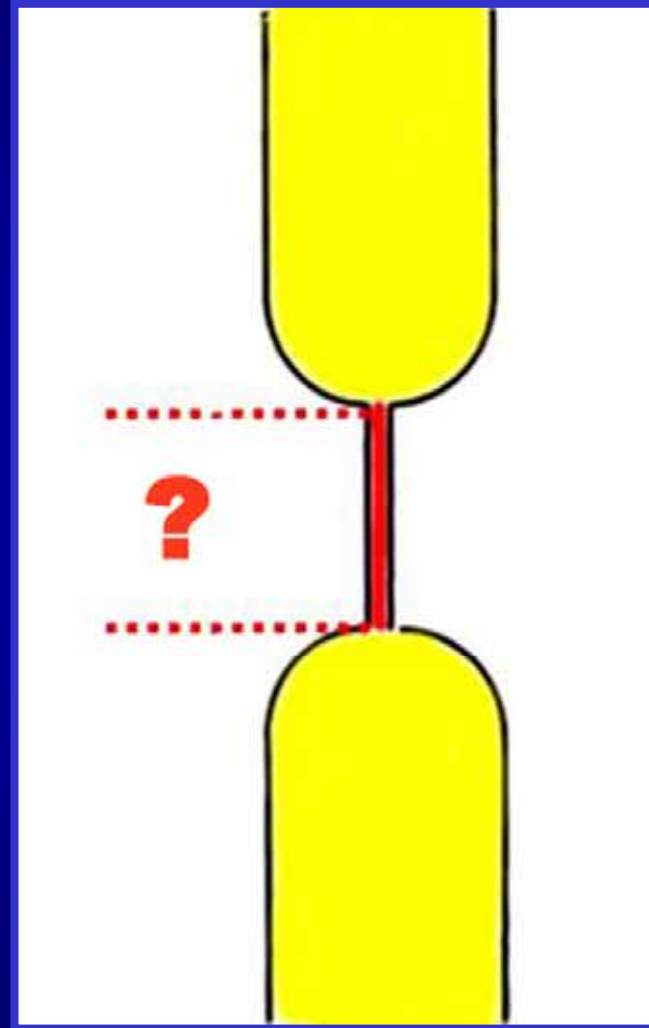
Two-stage penile urethroplasty using oral graft is not a simple procedure and require a great expertise to avoid a lot of traps

Moreover, this two-stage procedure, also in the hands of skilled surgeon, showed an high complications rate either following the first stage or the second stage



Bulbar urethroplasty

Which type of
urethroplasty ?



Bulbar urethroplasty

The surgical technique for
the repair of bulbar
urethral strictures is
selected according to the
stricture length



Preparation of the patient



Simple lithotomy position



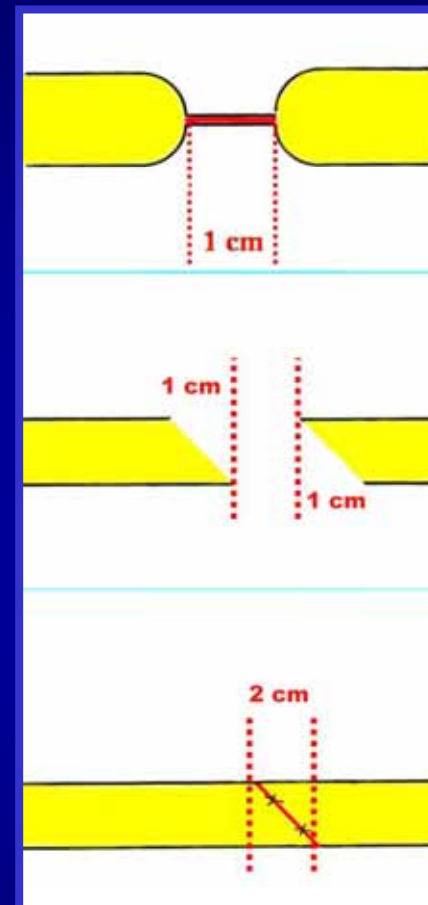
Preparation of the patient



Allen stirrups with sequential inflatable compression sleeves

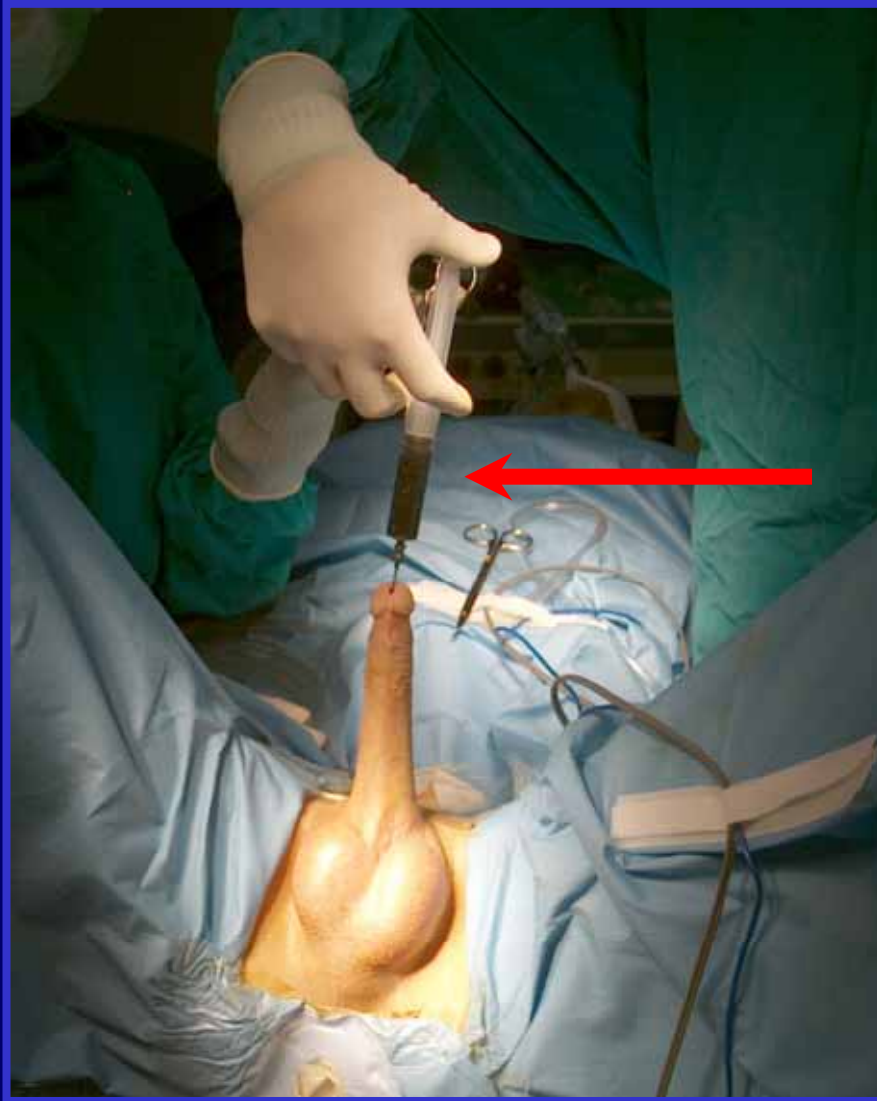


Urethral stricture ranging from 1 to 2 cm



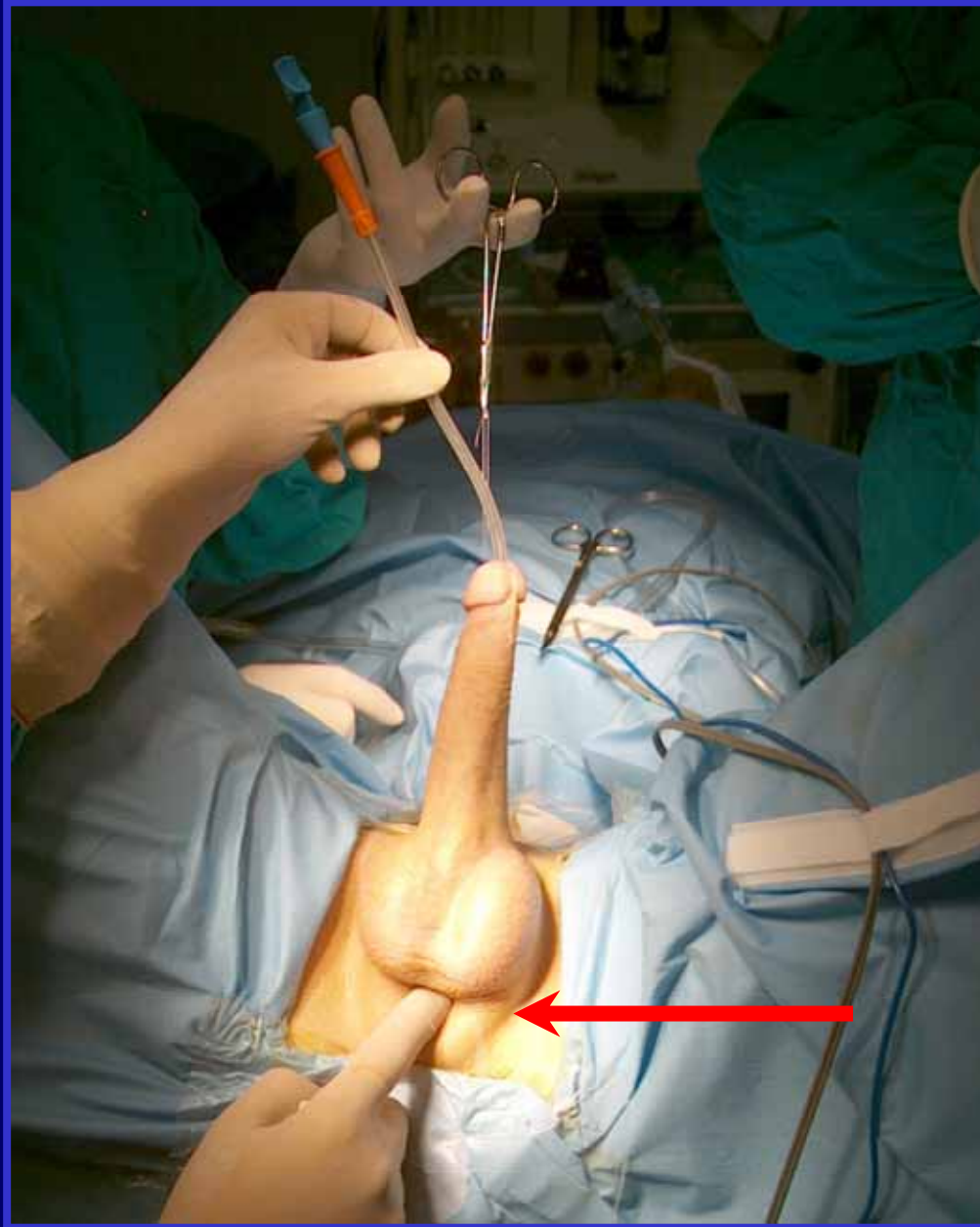
End – to – end anastomosis





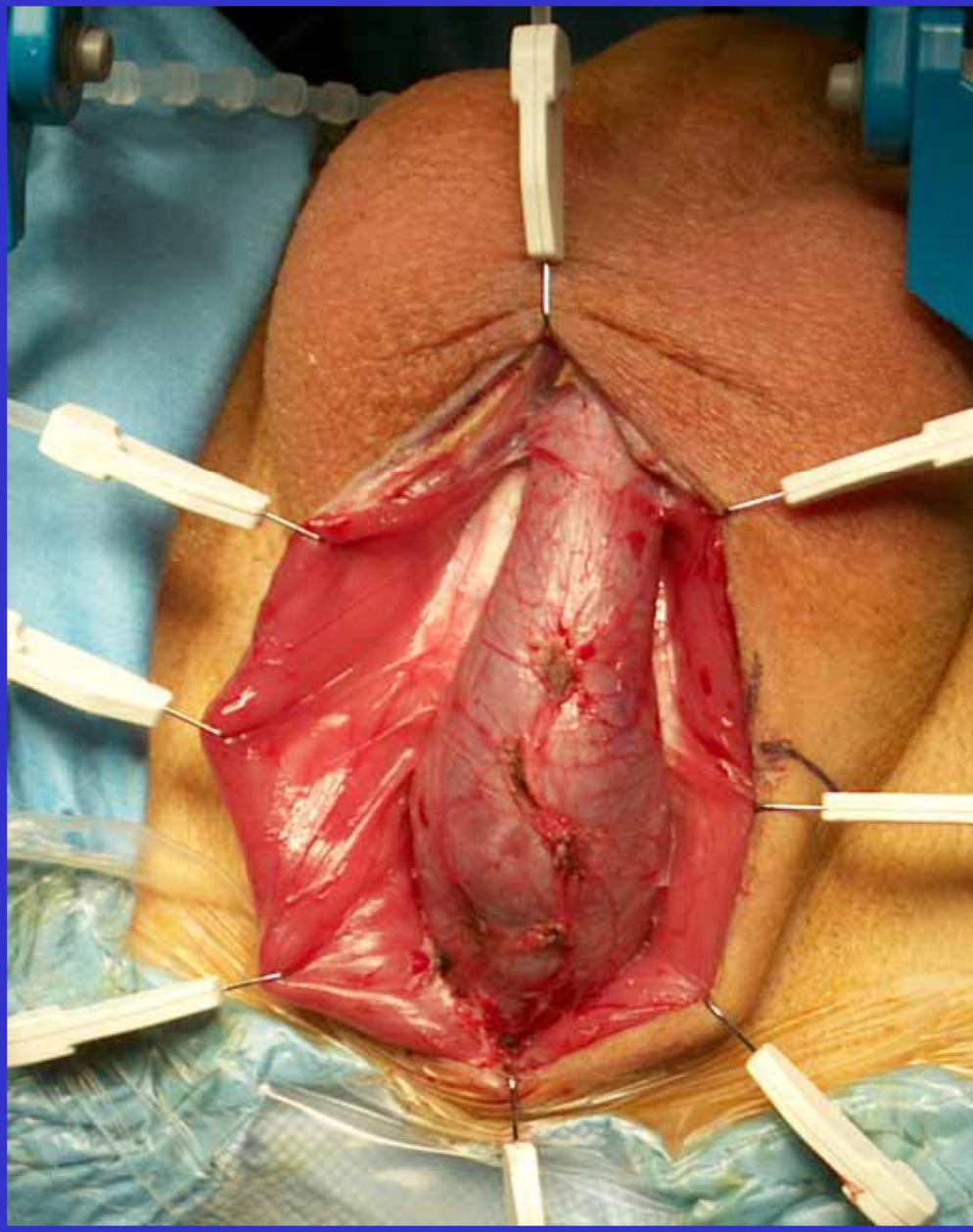
**Methylene blue is
injected into the urethra**





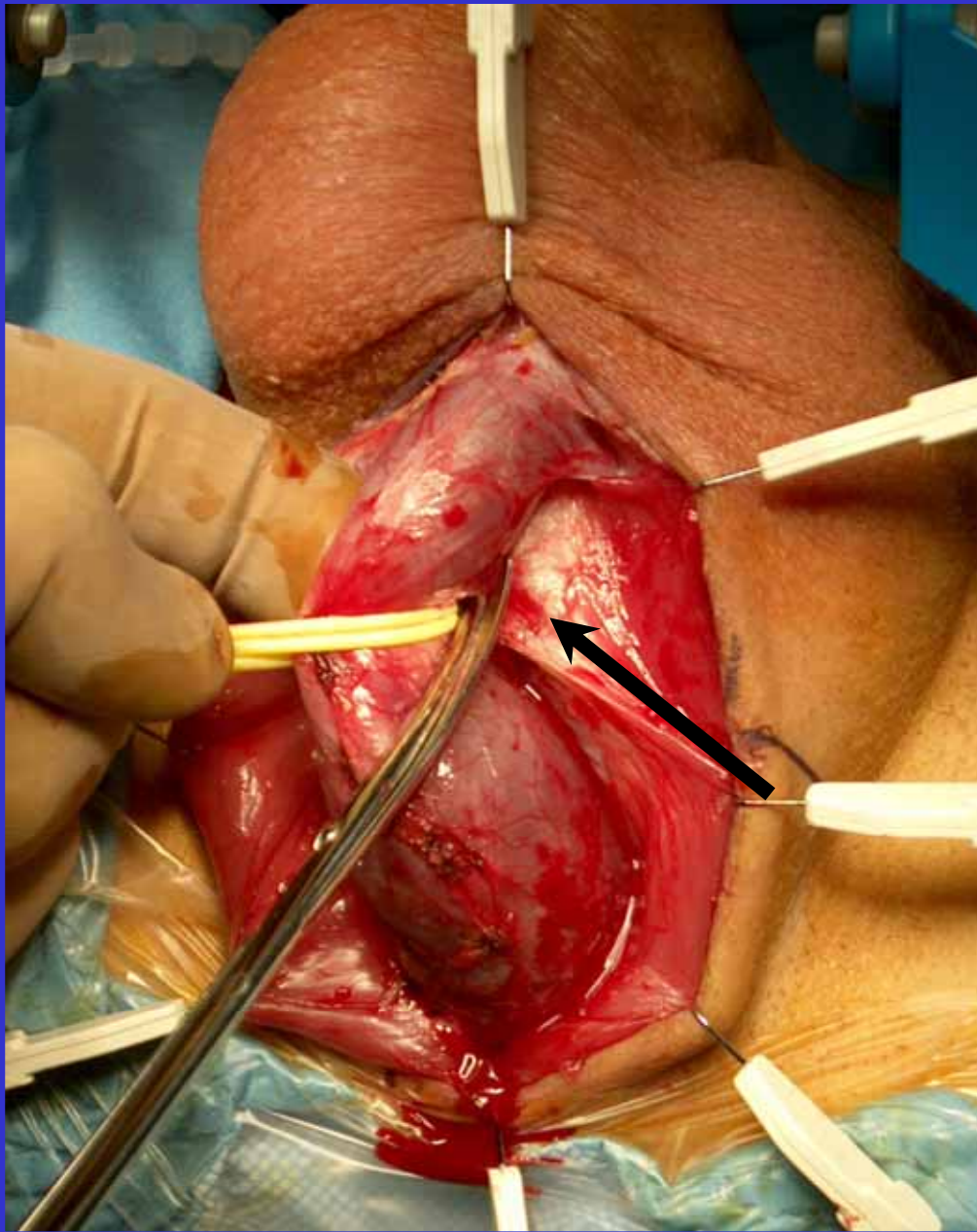
**The distal extent of
the stenosis is
identified by
inserting a 16-
French catheter
with a soft round tip**





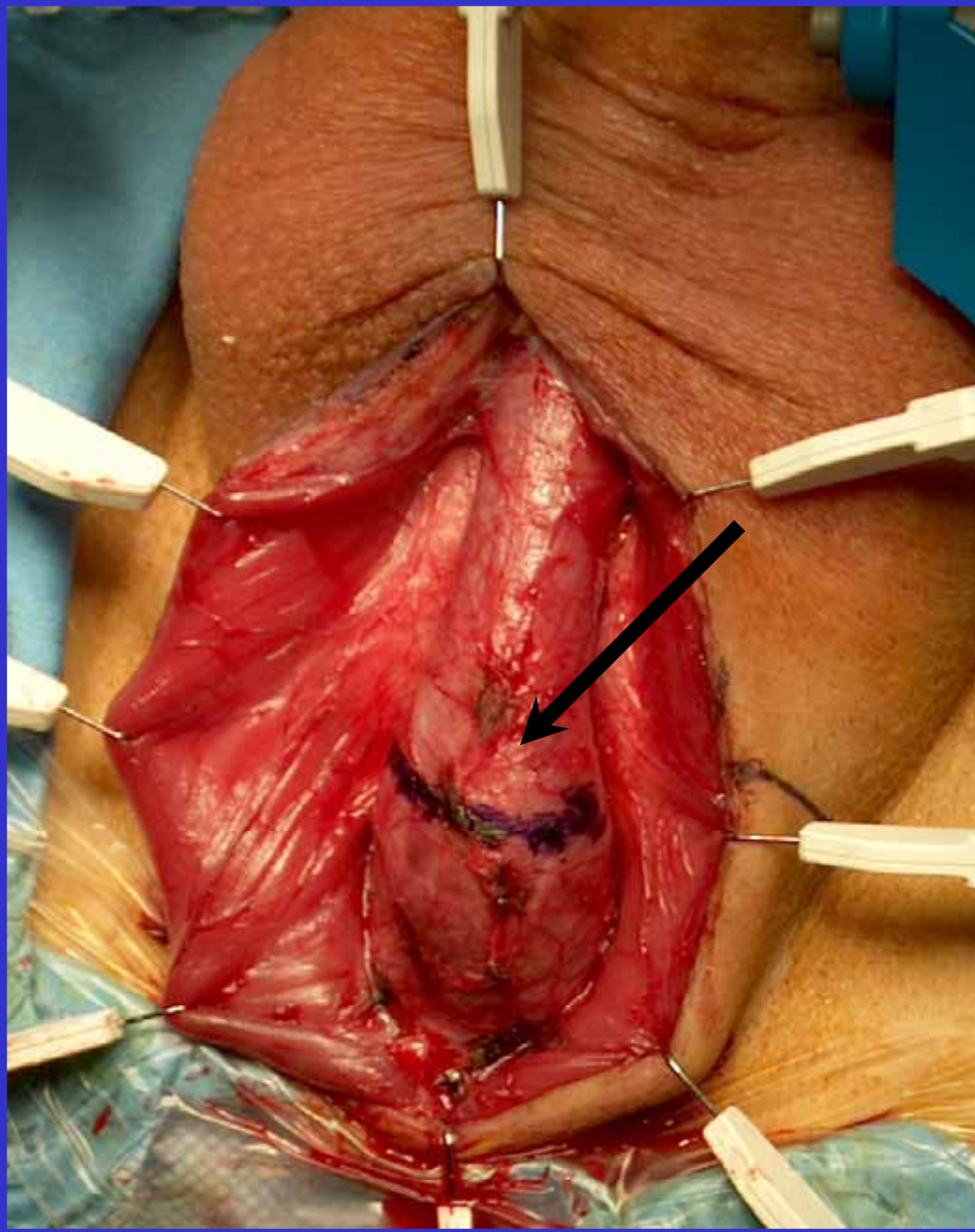
**The urethra is freed from
the bulbocavernous muscle**





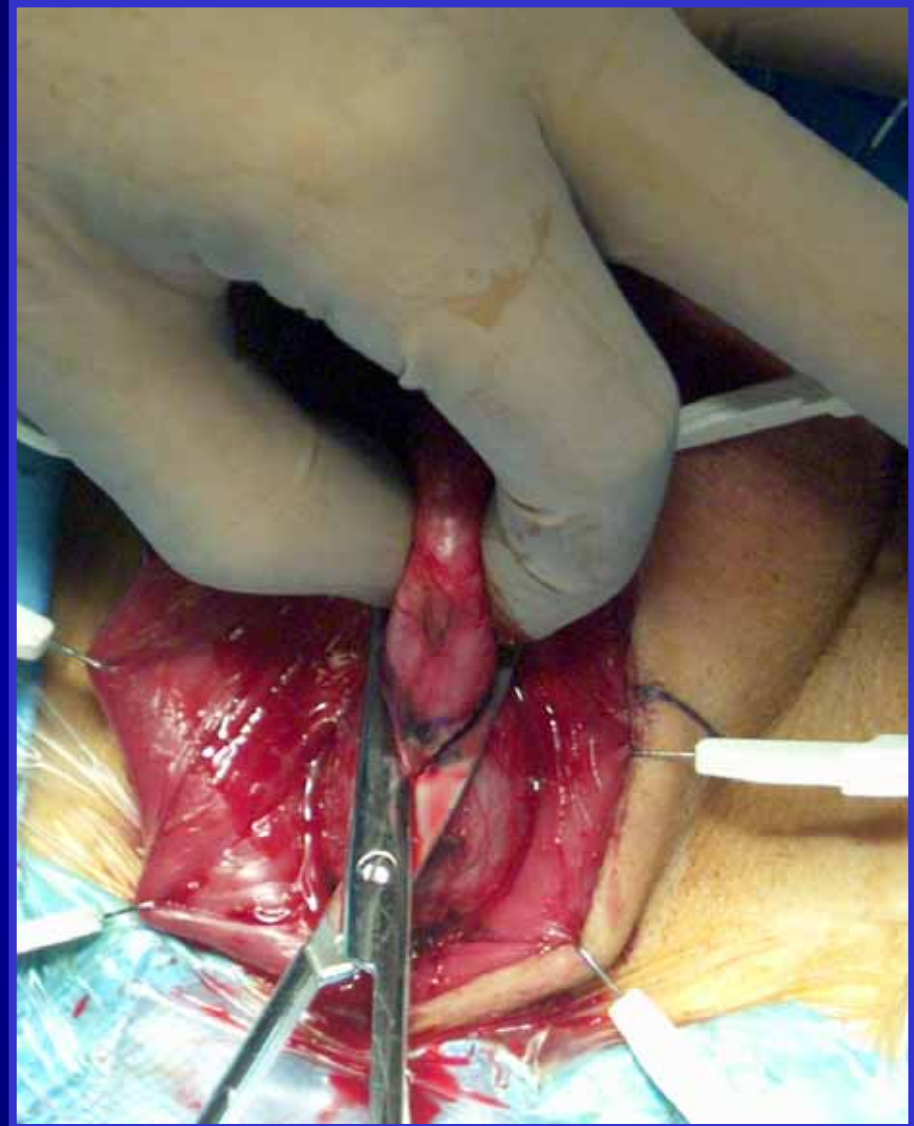
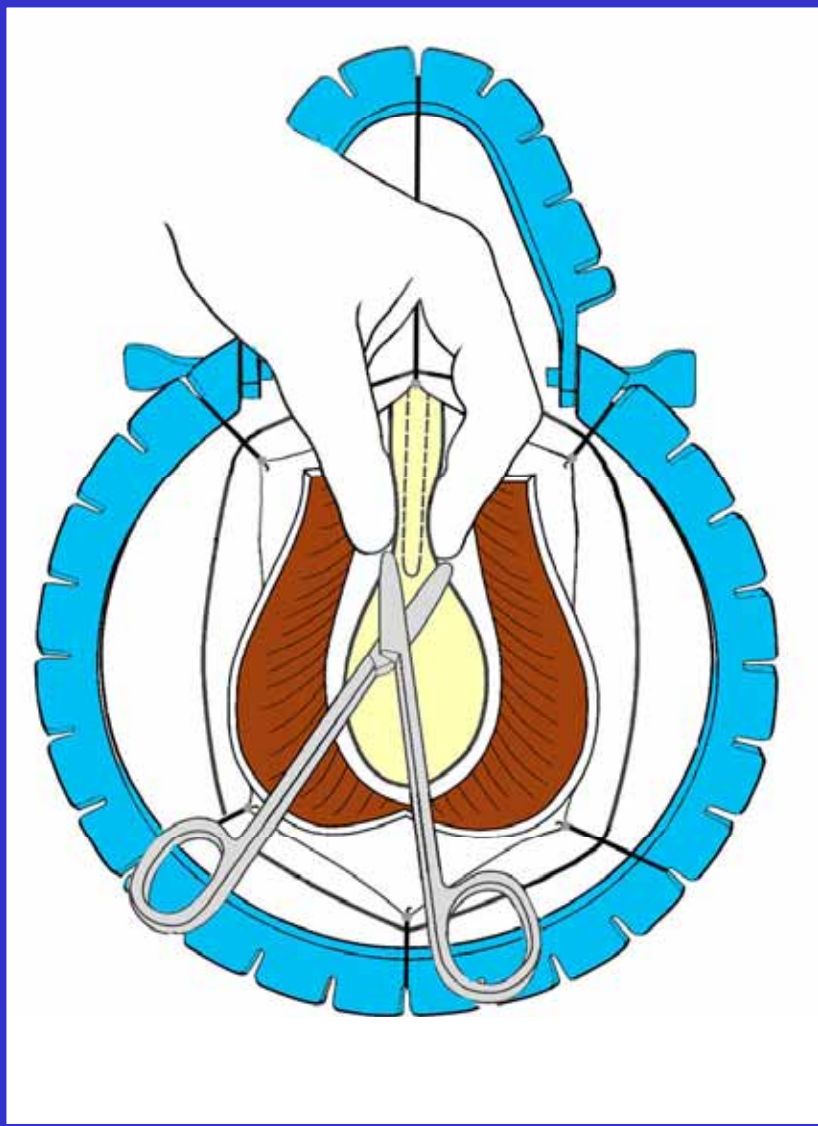
**The urethra is dissected
from the corpora
cavernosa**





The distal extent of the stenosis is identified and outlined

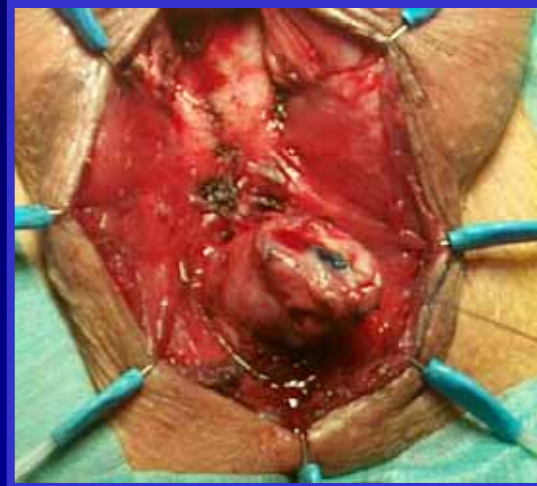




The urethra is transected at the stricture level



distal end

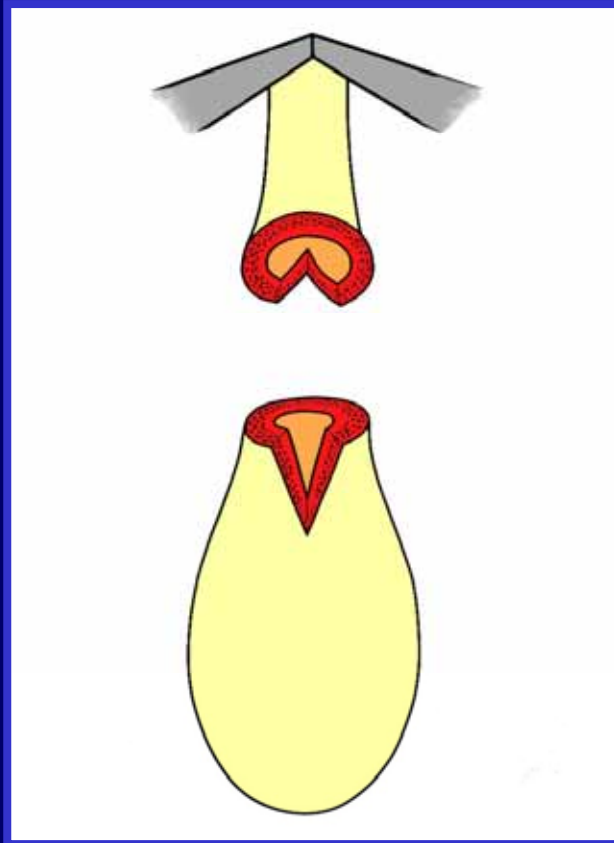


proximal end



The stricture is removed



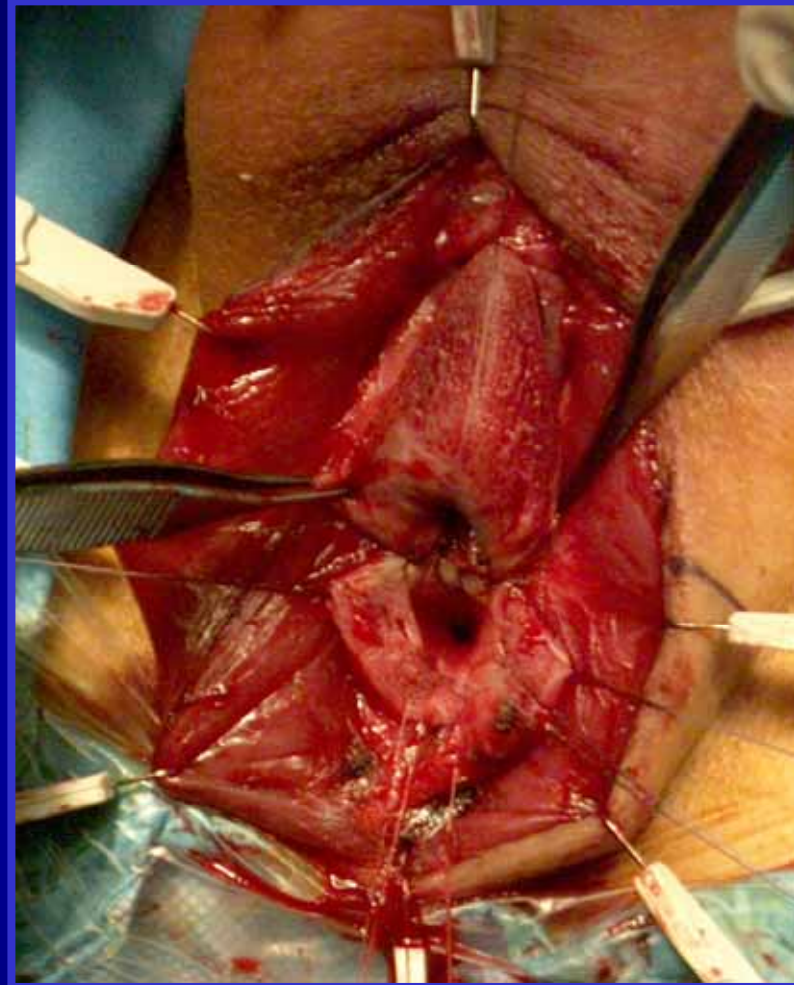
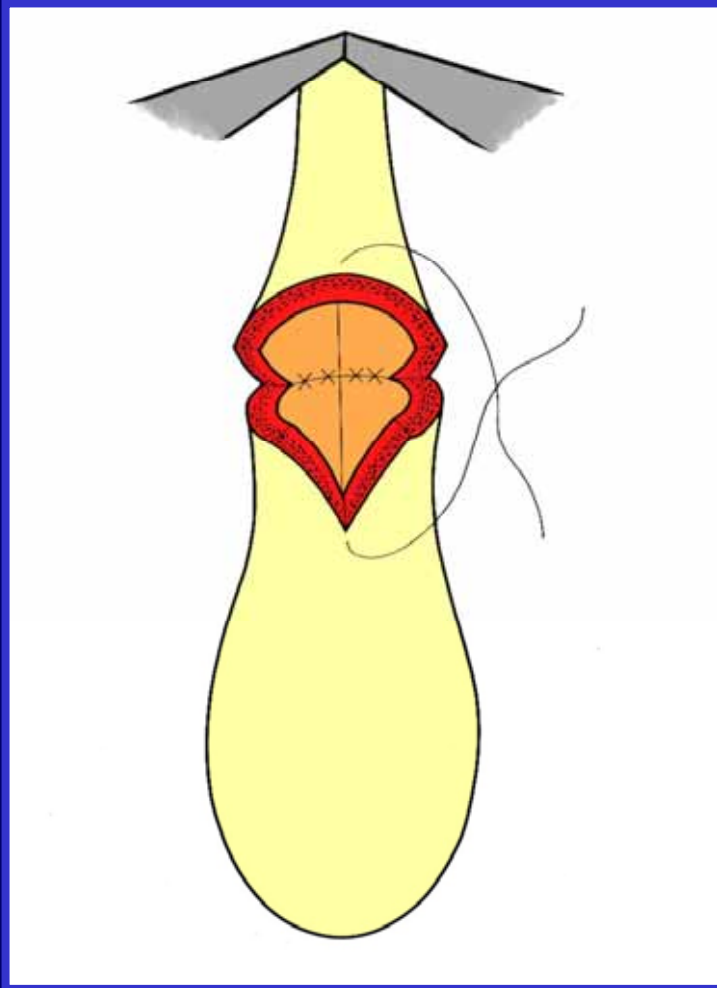


**The urethra is spatuled
for 1 cm on both ends**



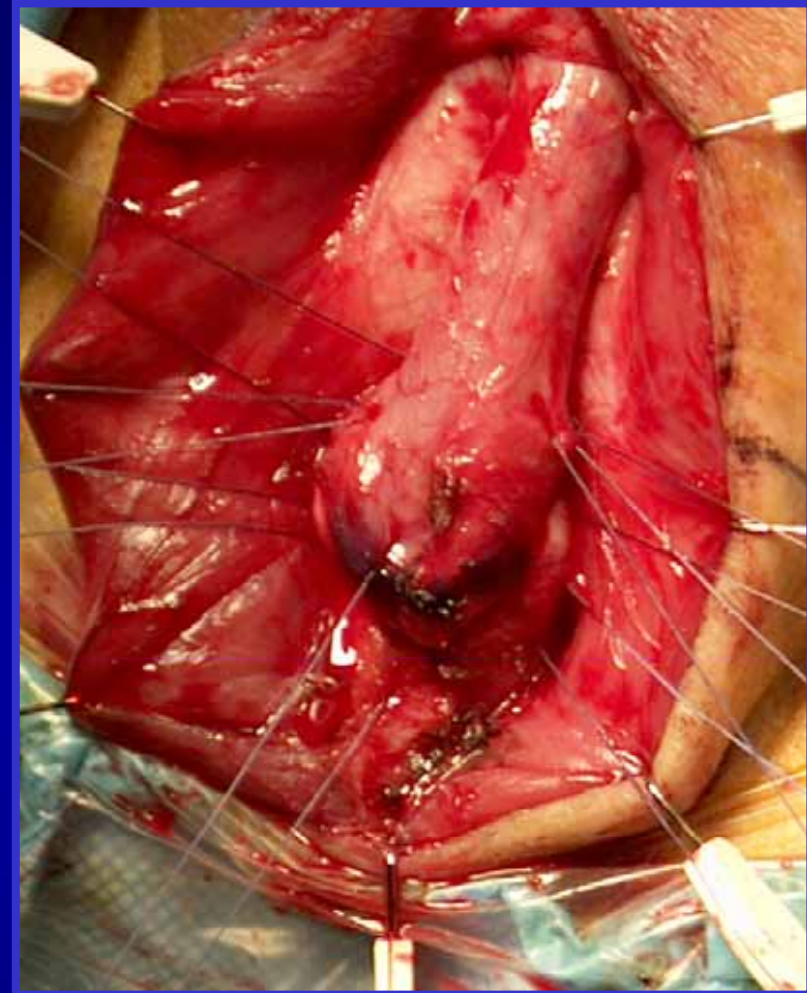
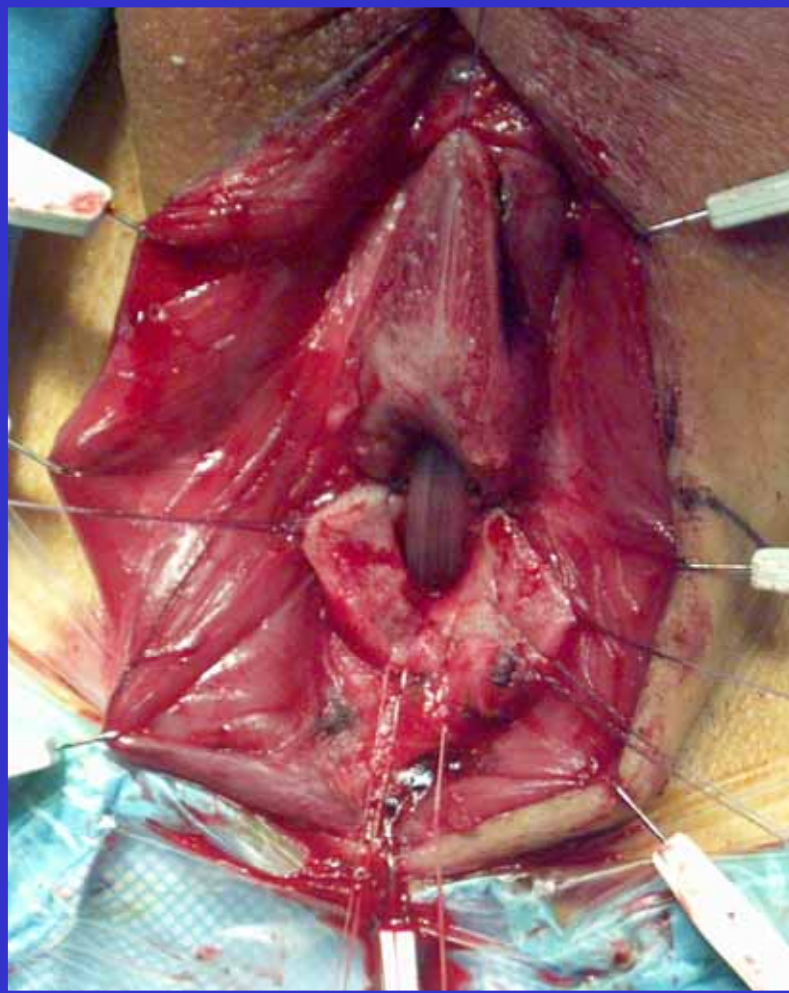
**A total of 10 interrupted
4-zero polyglactin sutures
are put in place before tying**





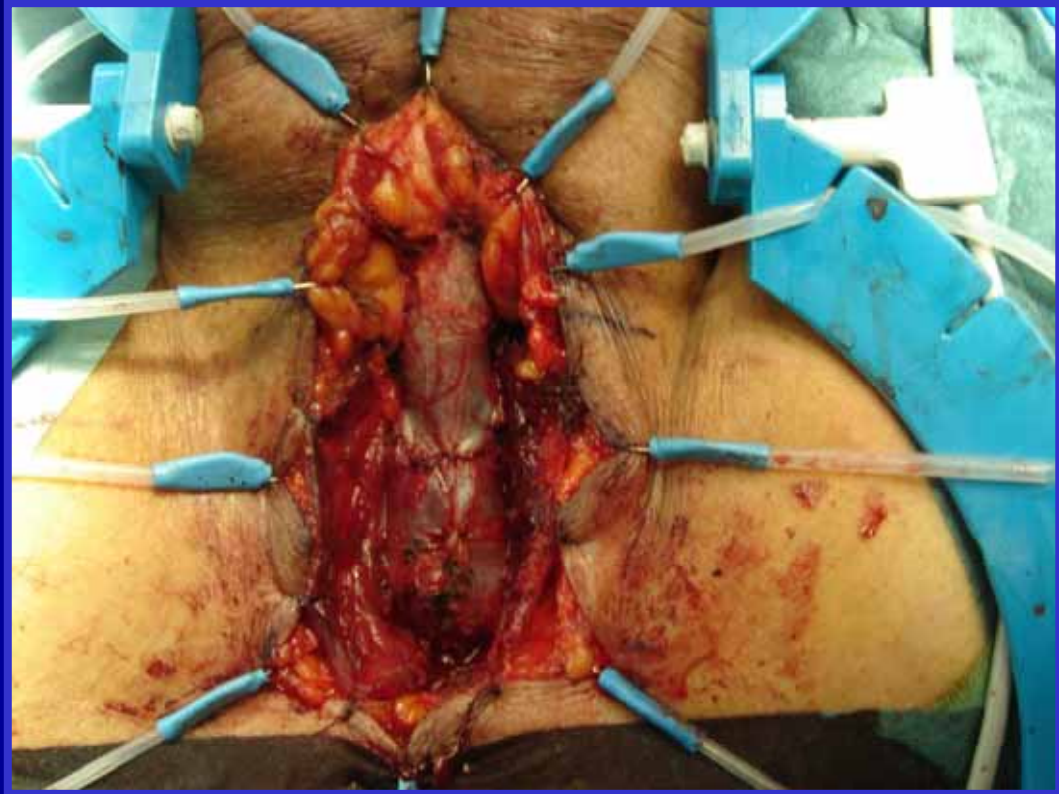
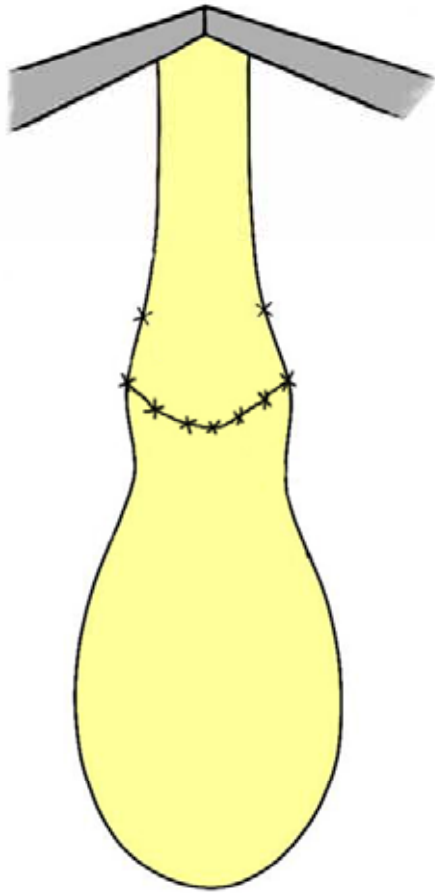
The anastomosis is completed on the roof





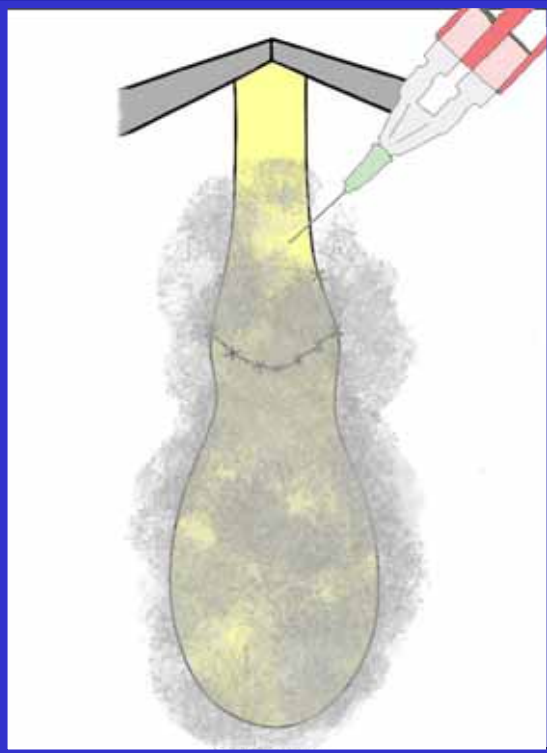
A Foley 16-French grooved silicone catheter is inserted and the urethra is closed





The anastomosis is completed



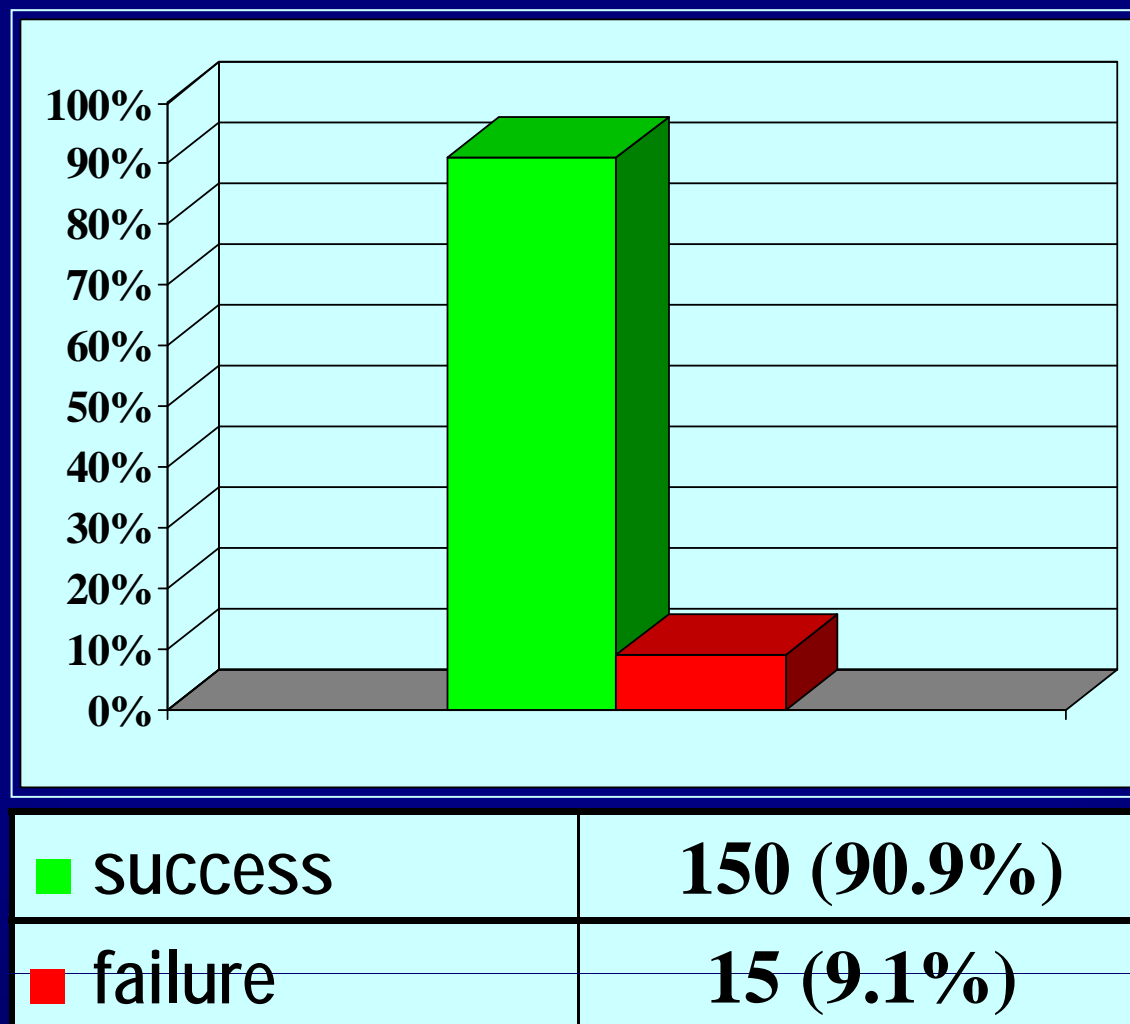


Two ml of fibrin glue are injected over the urethra to prevent urinary leakage



Results of 165 end-to-end anastomosis

www.urethralcenter.it



Center for Reconstructive Urethral Surgery

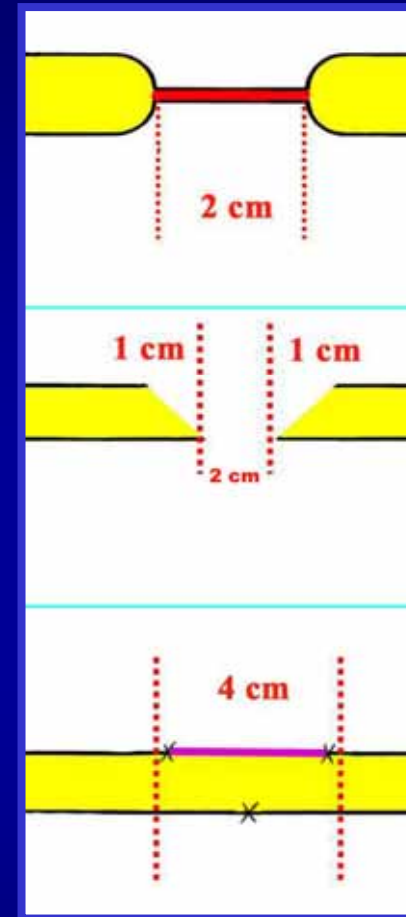
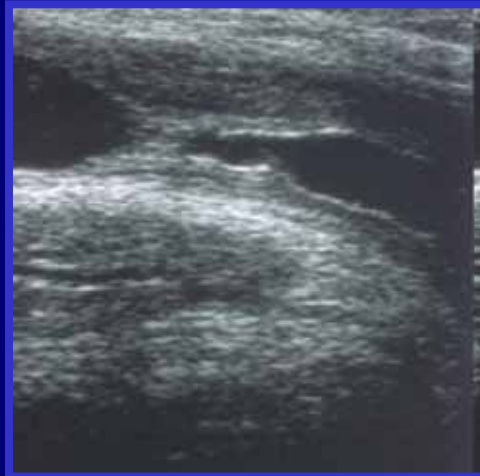
In our experience, out of 60 patients who underwent end-to-end anastomosis:

- **14 (23.3%)** experienced ejaculatory dysfunction
- **11 (18.3%)** had decreased glans sensitivity
- **7 (11.6%)** experienced a glans that was neither full or not swollen during erection
- **1 (1.6%)** experienced a cold glans during erection

Barbagli G. et al, J Urol 2007



Urethral stricture ranging from 2 to 3 cm



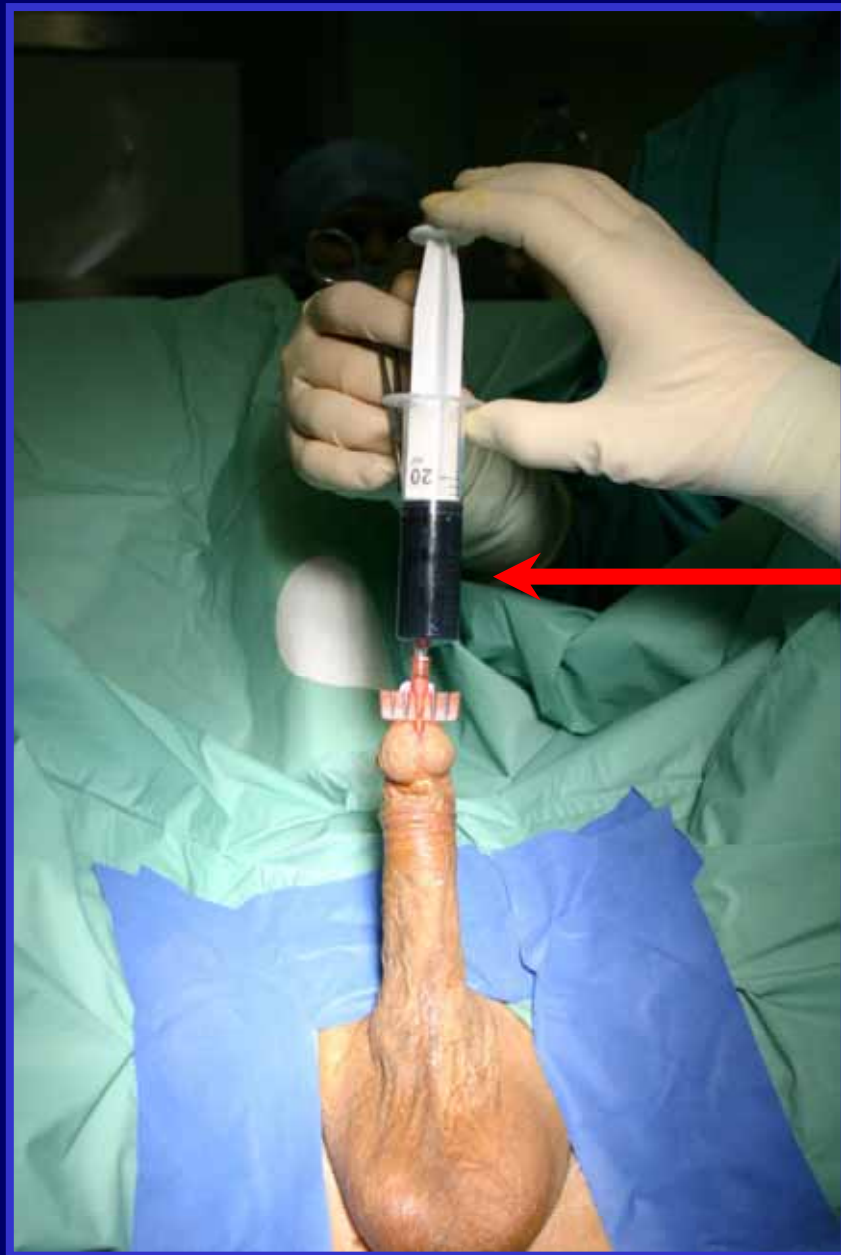
Augmented roof-strip anastomosis

Two surgical teams work simultaneously



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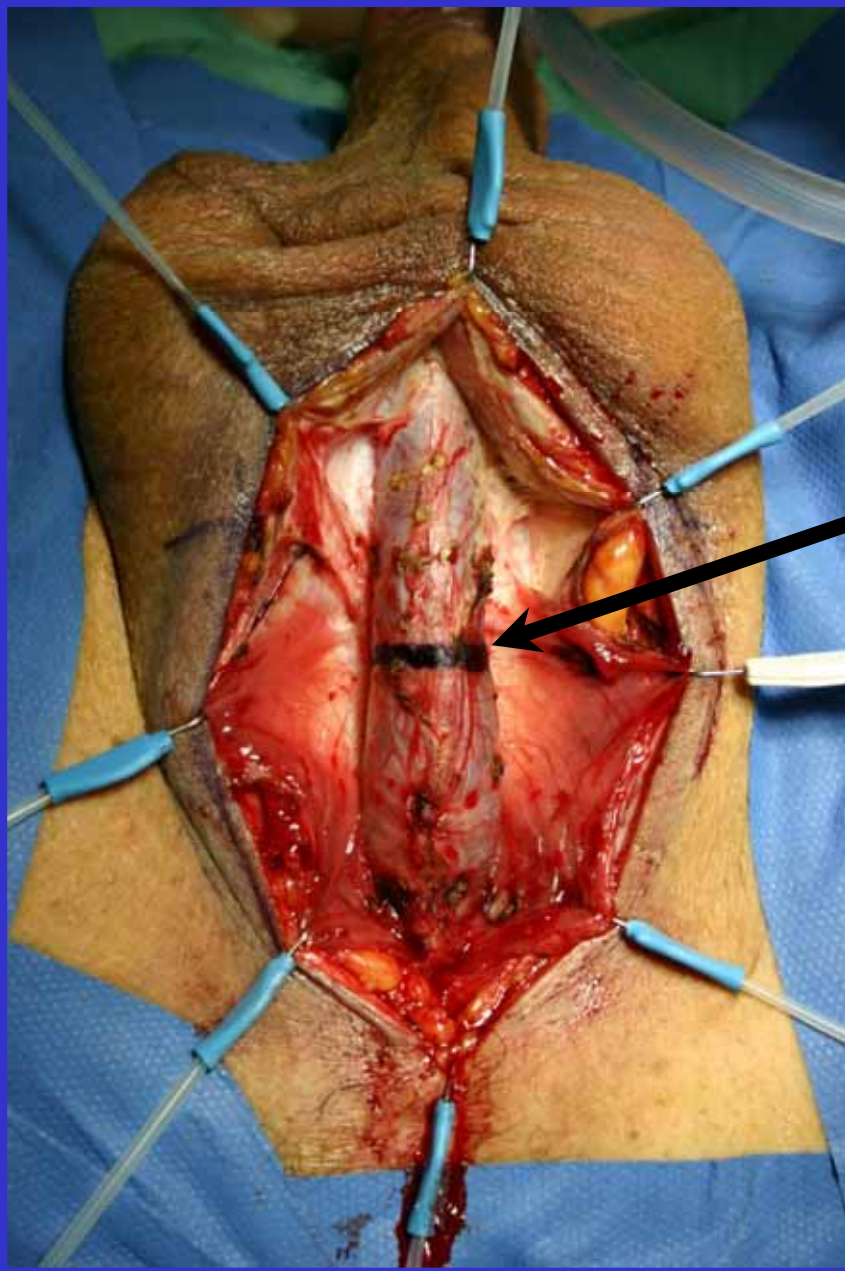


**Methylene blue is injected
into the urethra**



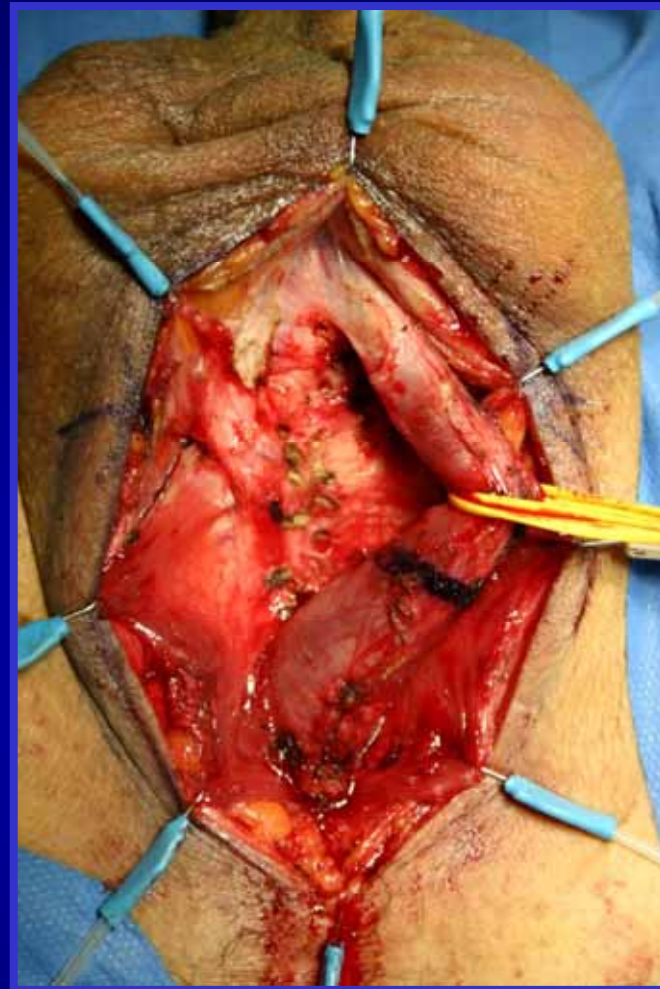
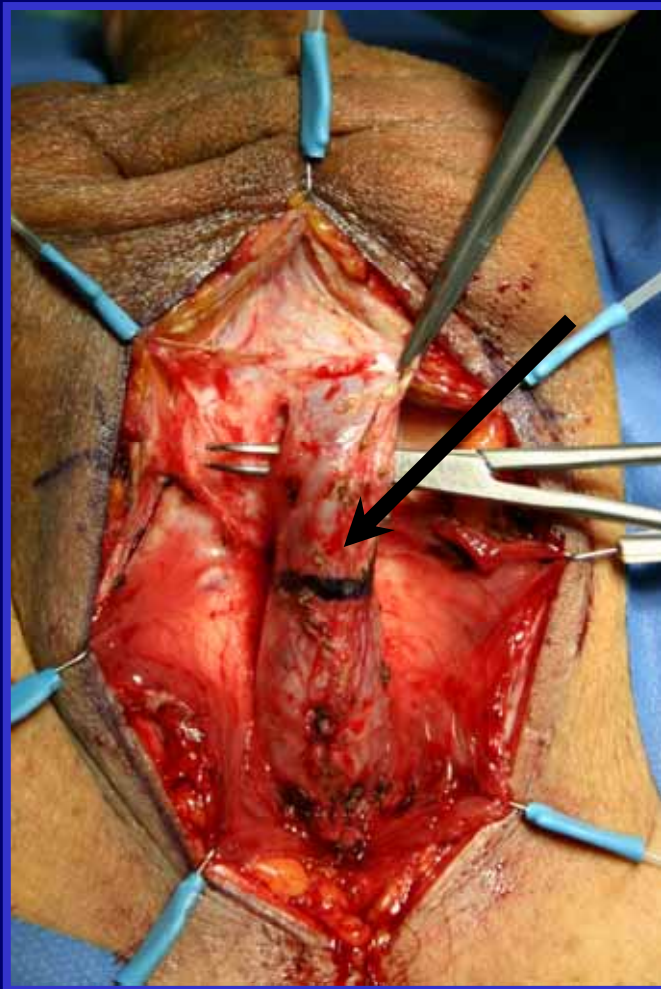
The distal extent of the stenosis is identified by inserting a 16-French catheter with a soft round tip



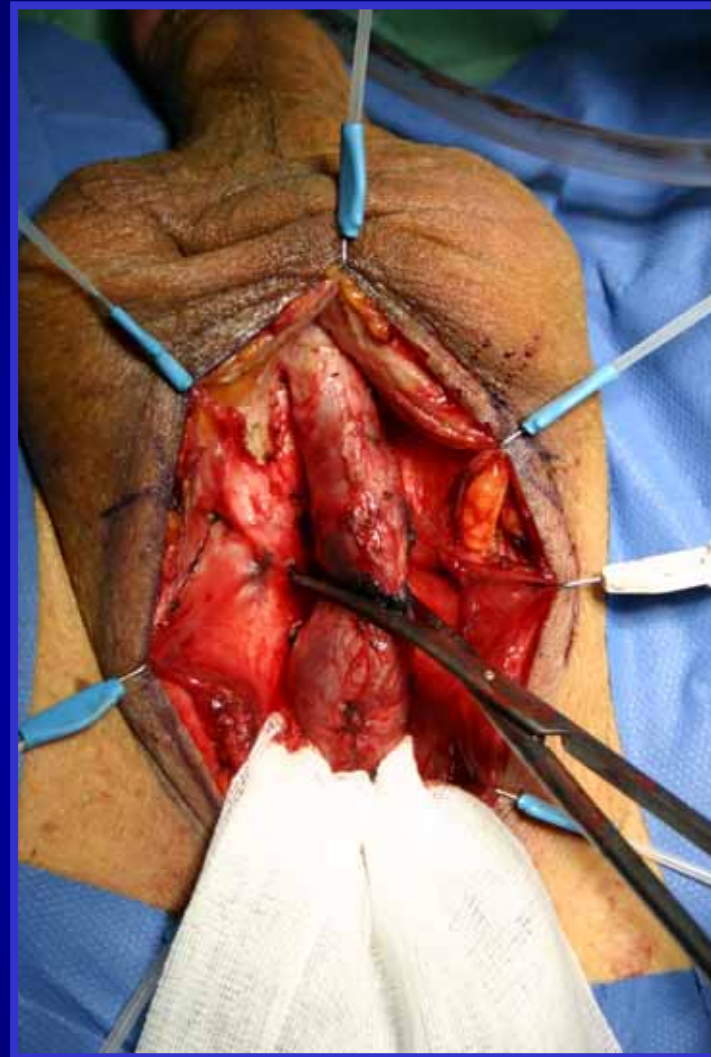
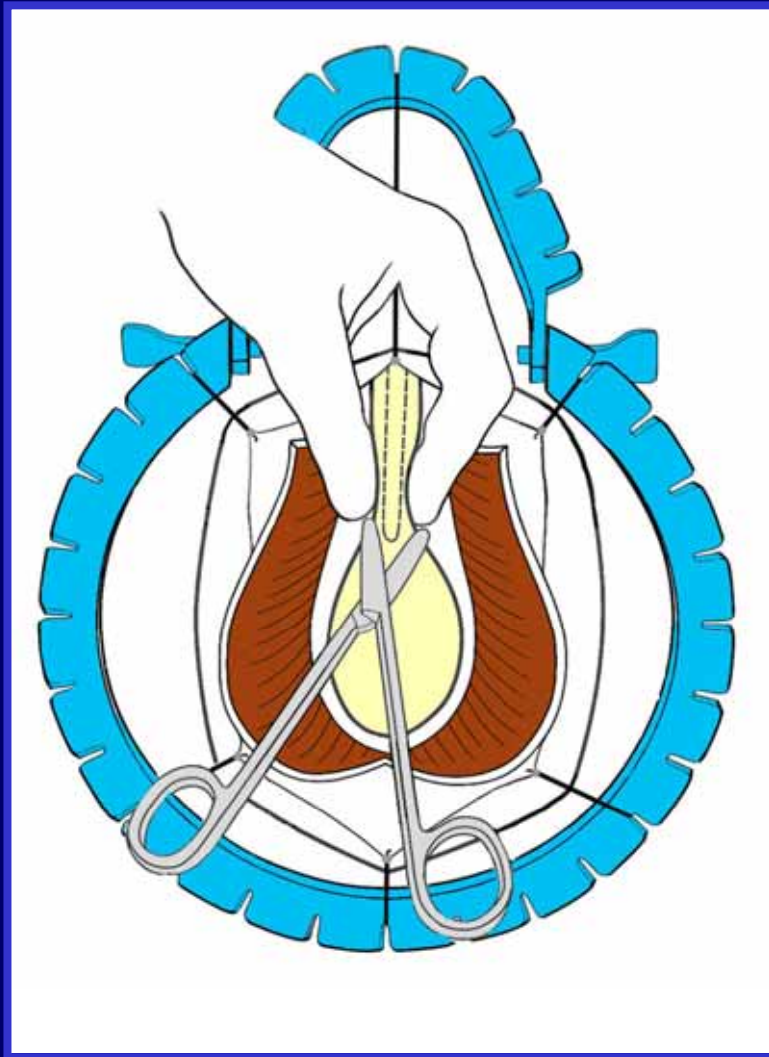


The distal extent of the stenosis is identified and outlined

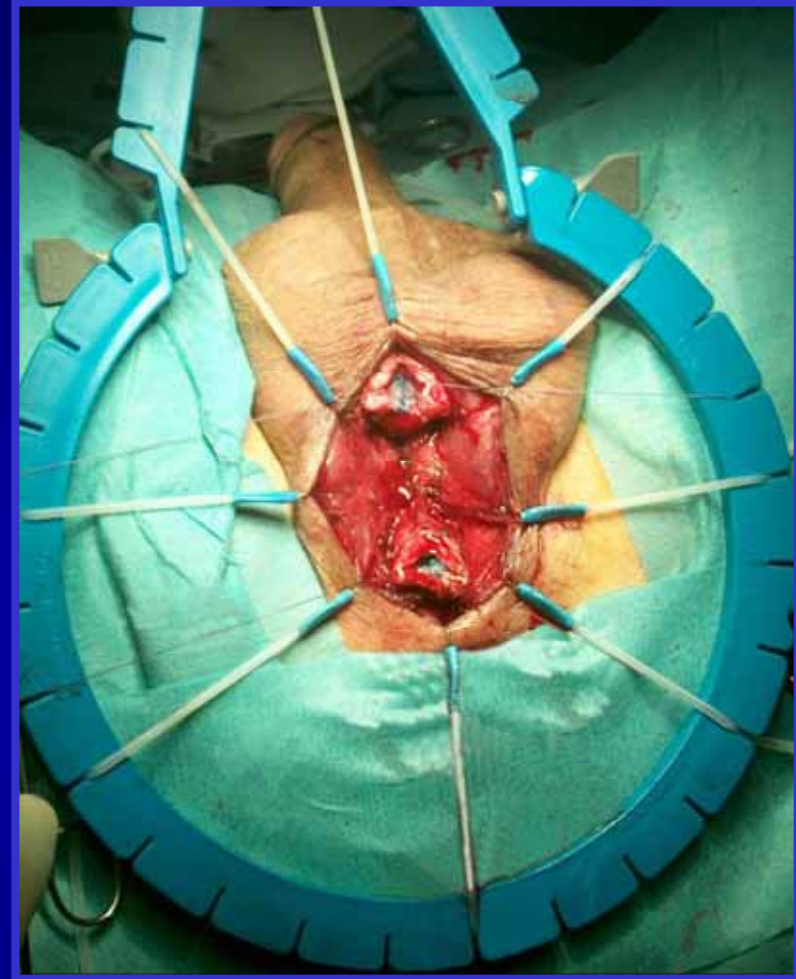
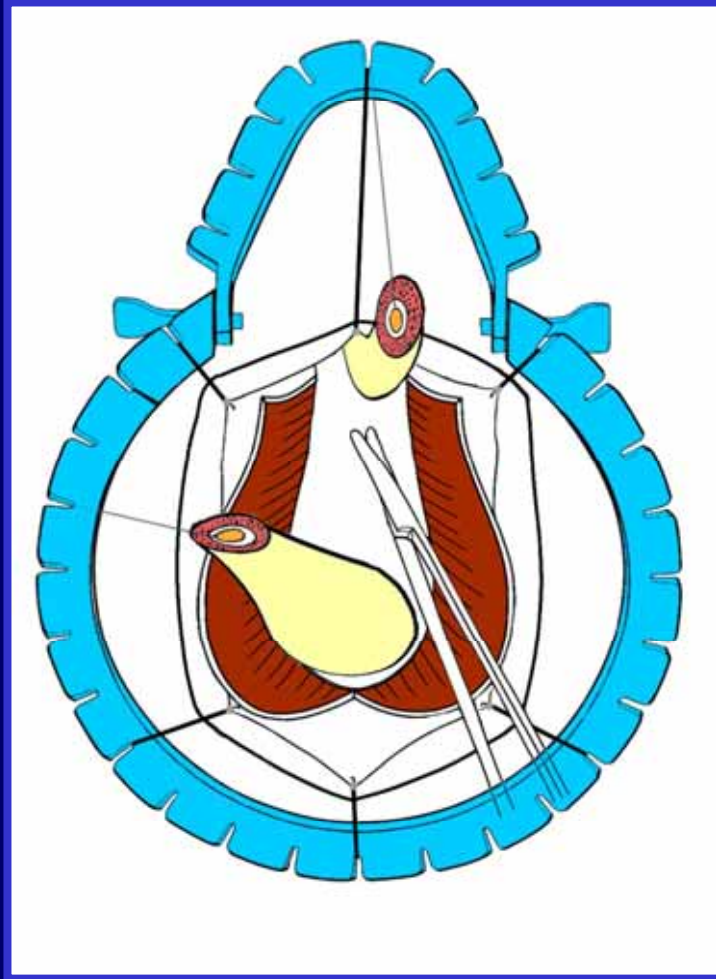




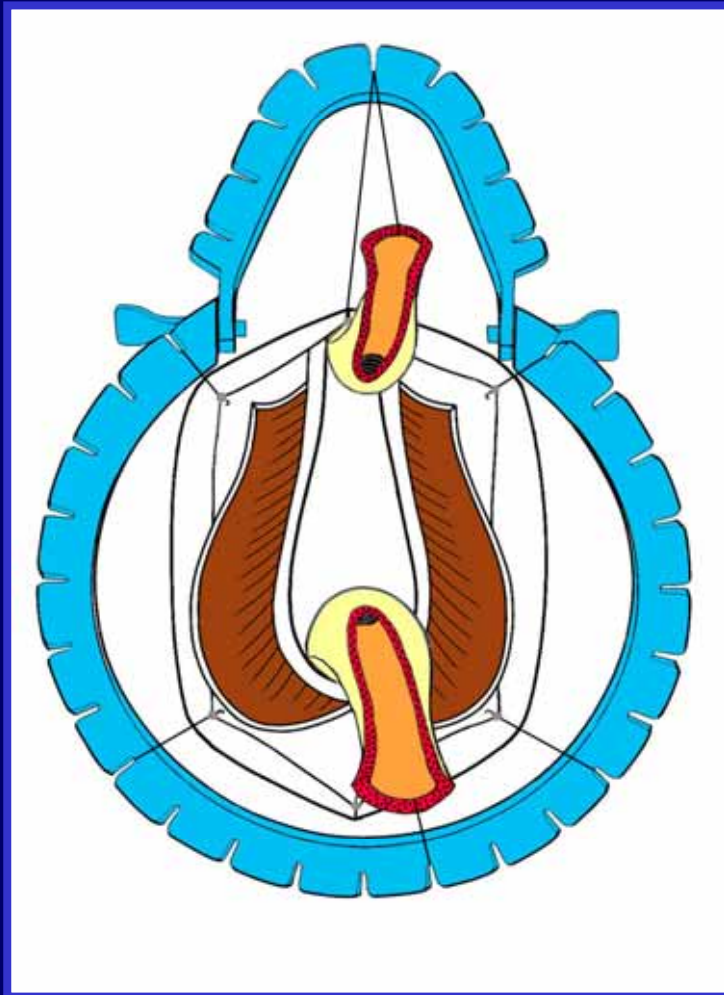
The urethra is dissected from the corpora cavernosa



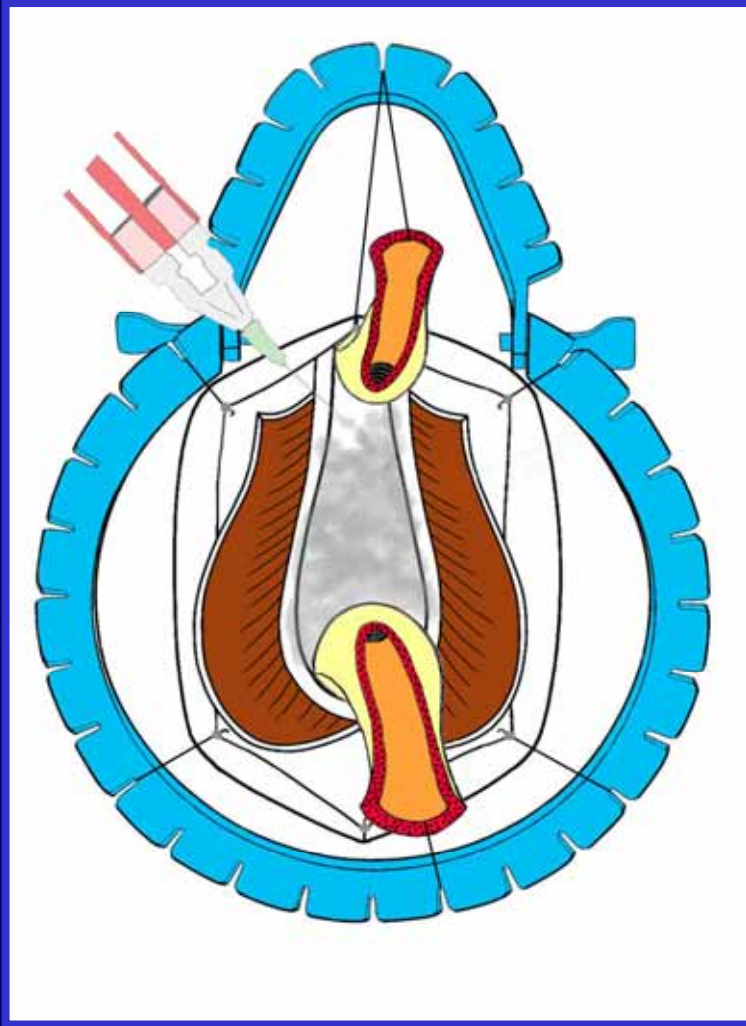
The urethra is transected at the stricture level



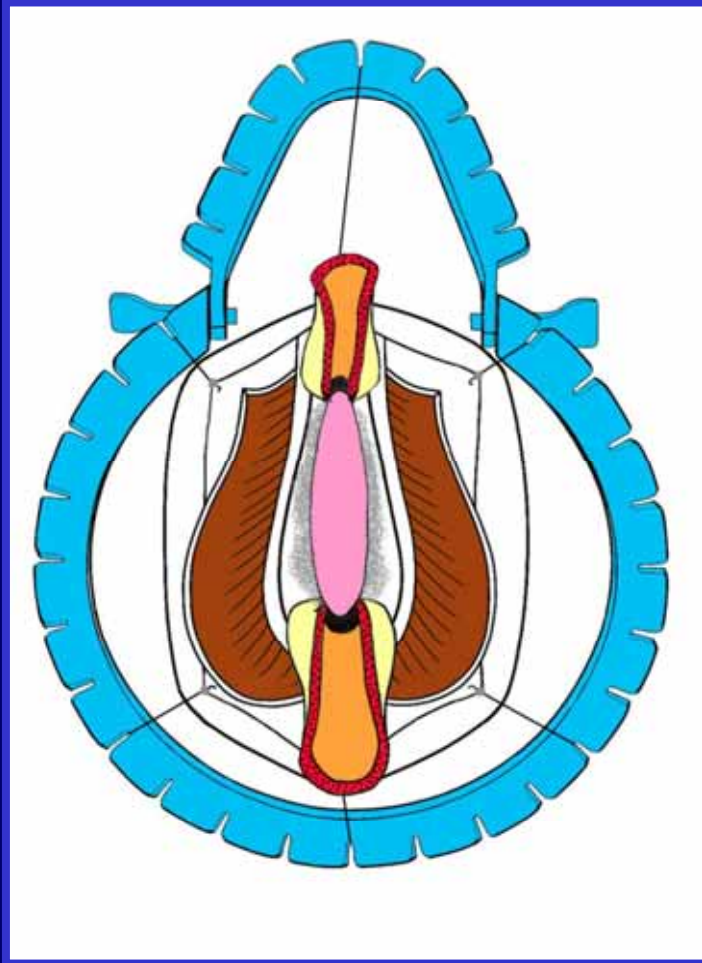
The distal and proximal urethral ends are mobilized from the corpora cavernosa



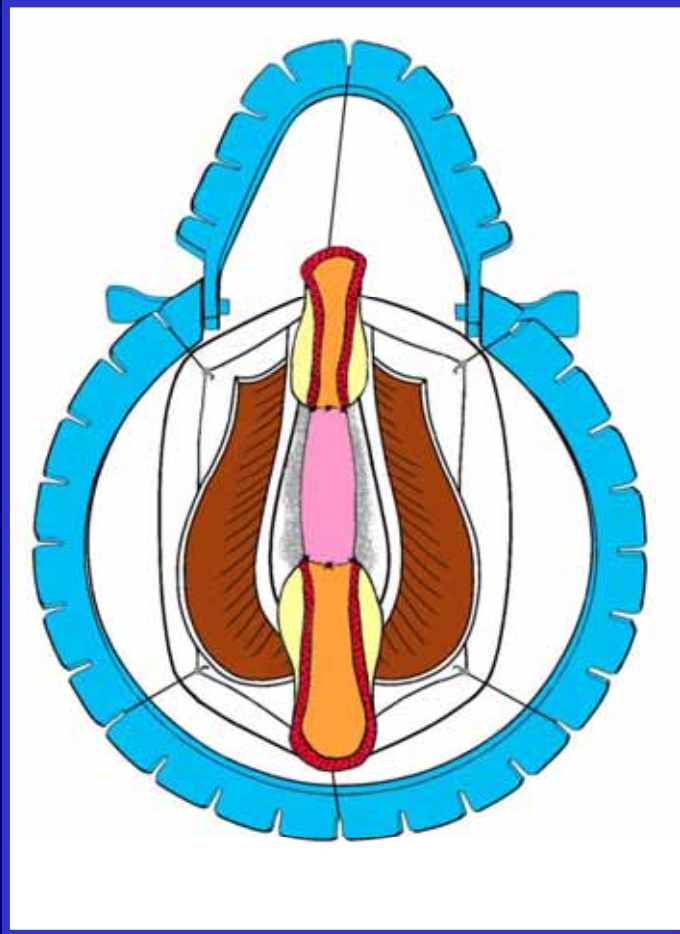
The distal and proximal urethral ends are fully spatuled along the dorsal surface



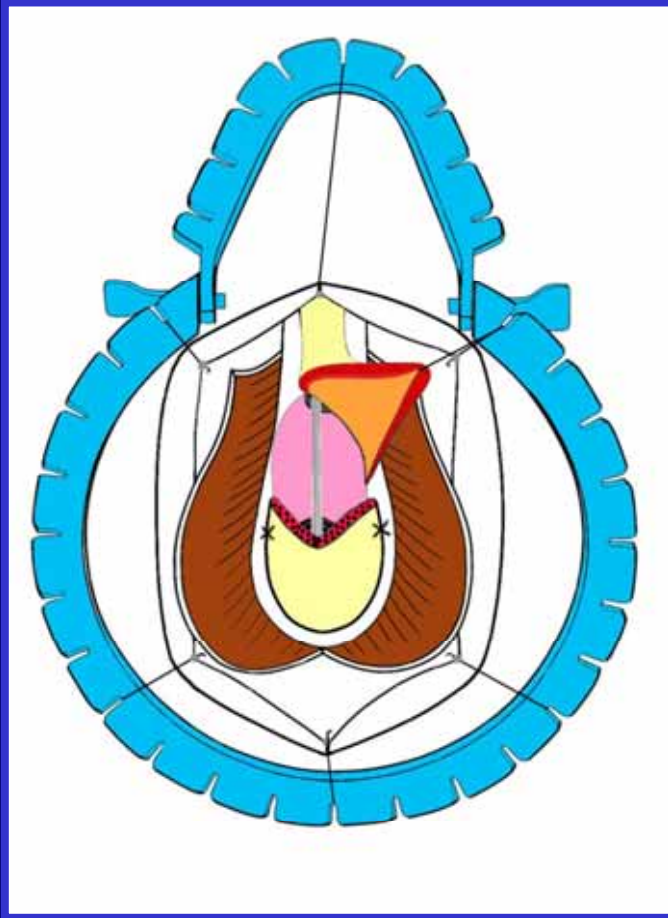
Two ml of fibrin glue are injected over the urethra



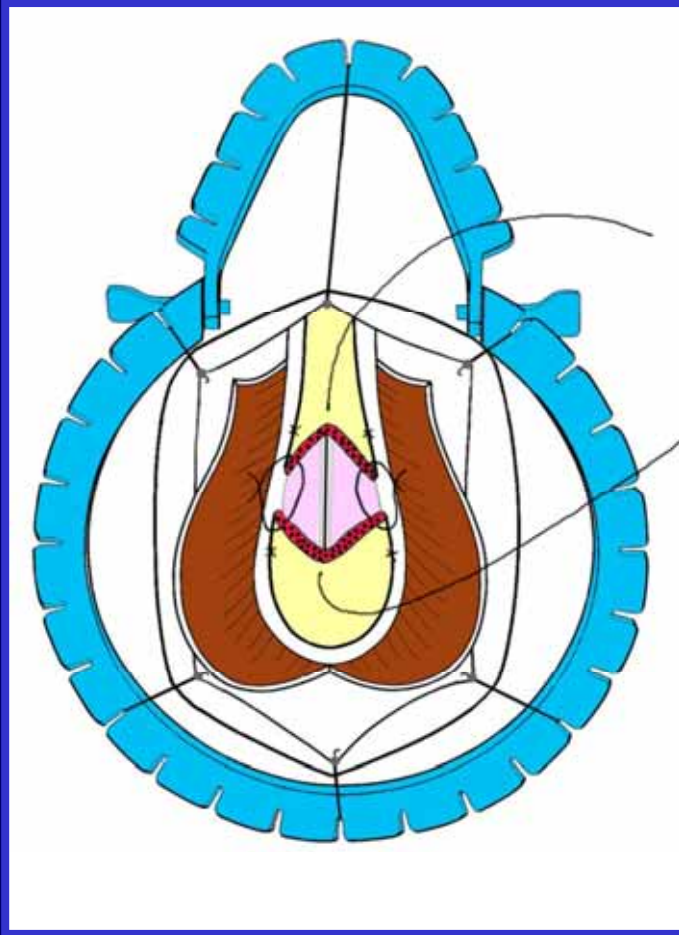
The buccal mucosal graft is applied over the fibrin glue



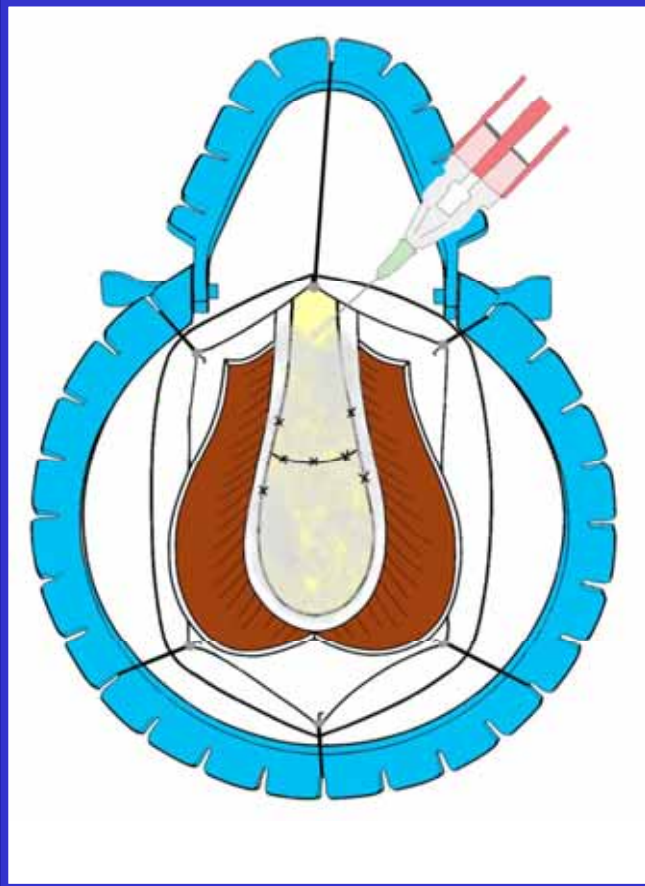
The distal and proximal urethral edges are sutured to the apices of the graft



The distal urethra is pulled down and the proximal urethra is pulled up to cover the graft



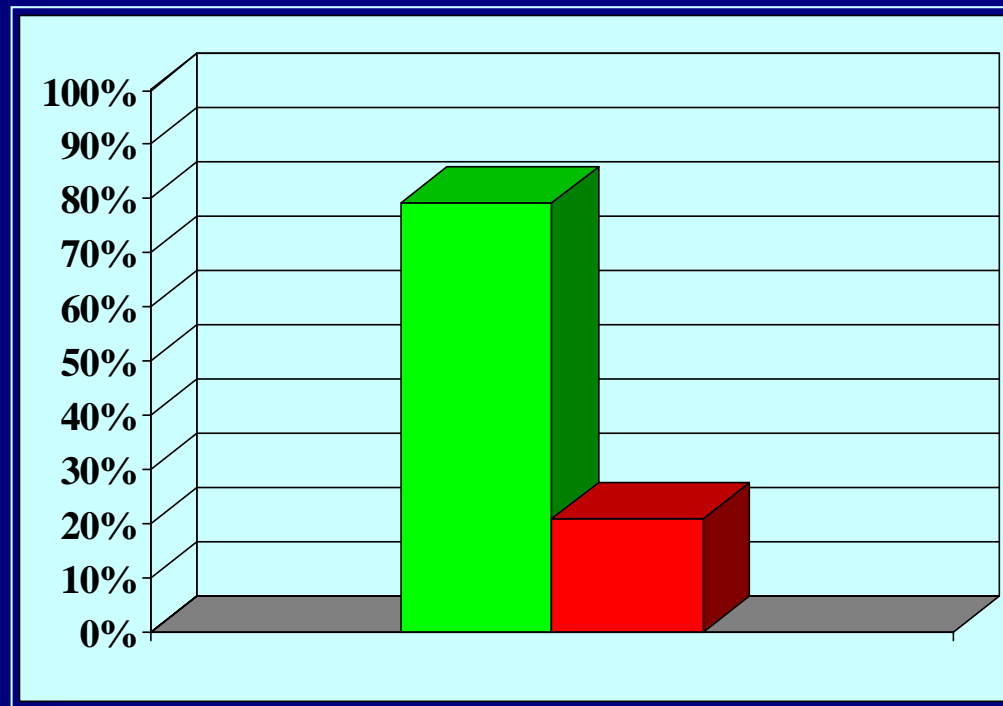
The distal and proximal urethral edges are sutured together along the midline as an end-to-end anastomosis



Two ml of fibrin glue are injected over the urethra to prevent urinary leakage

Results of 24 augmented anastomotic repair using dorsal oral mucosal graft

www.urethralcenter.it



■ success

19 (79.2%)

■ failure

5 (20.8%)

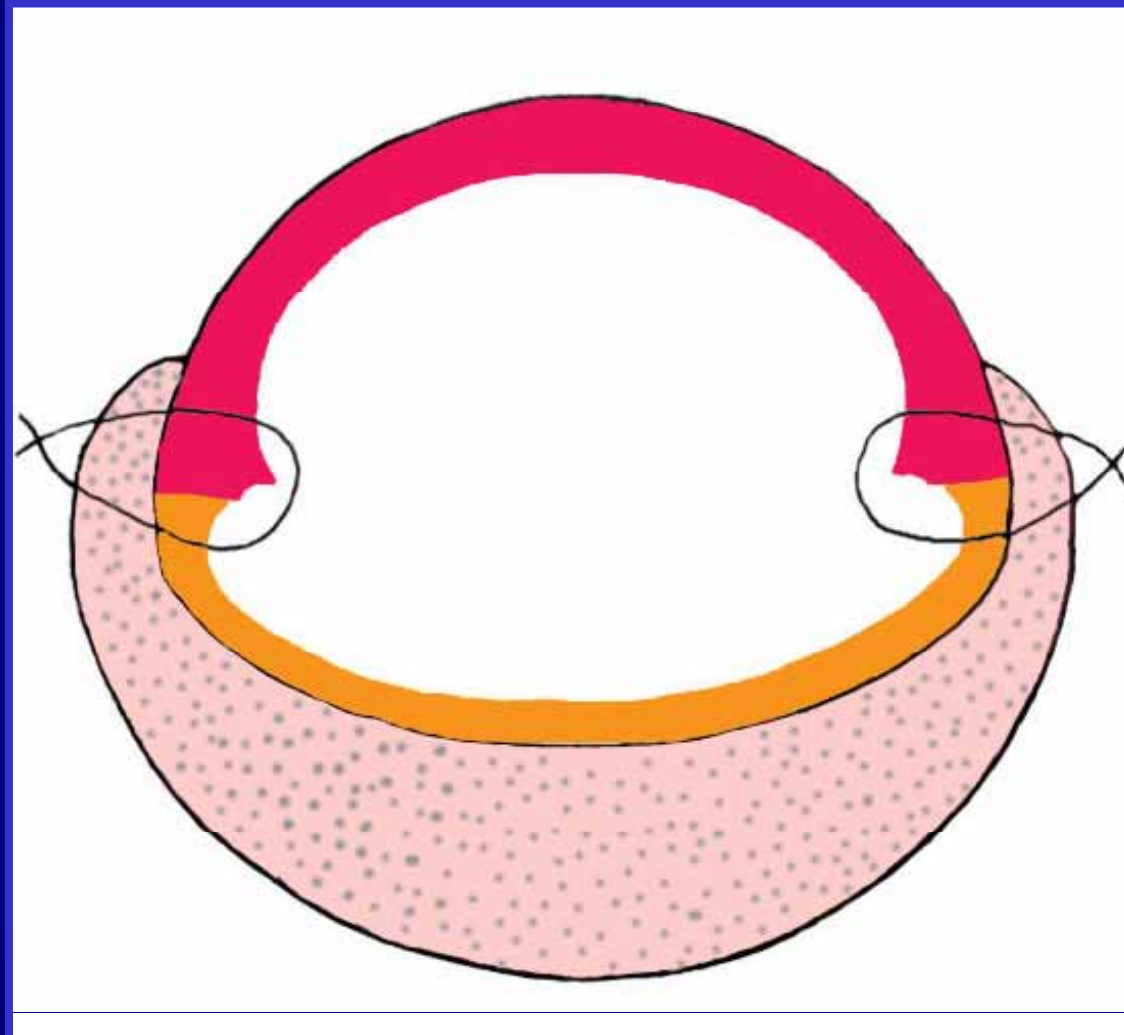
Urethral stricture more than 3 cm in length

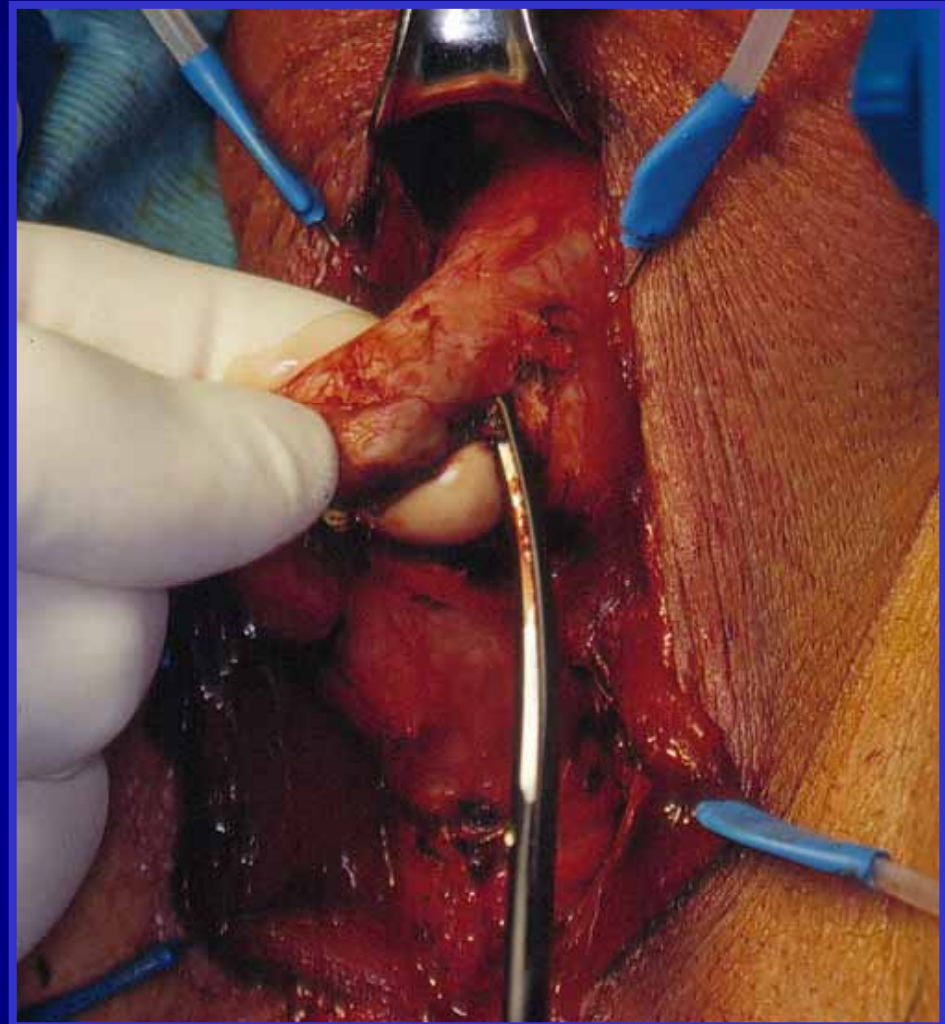
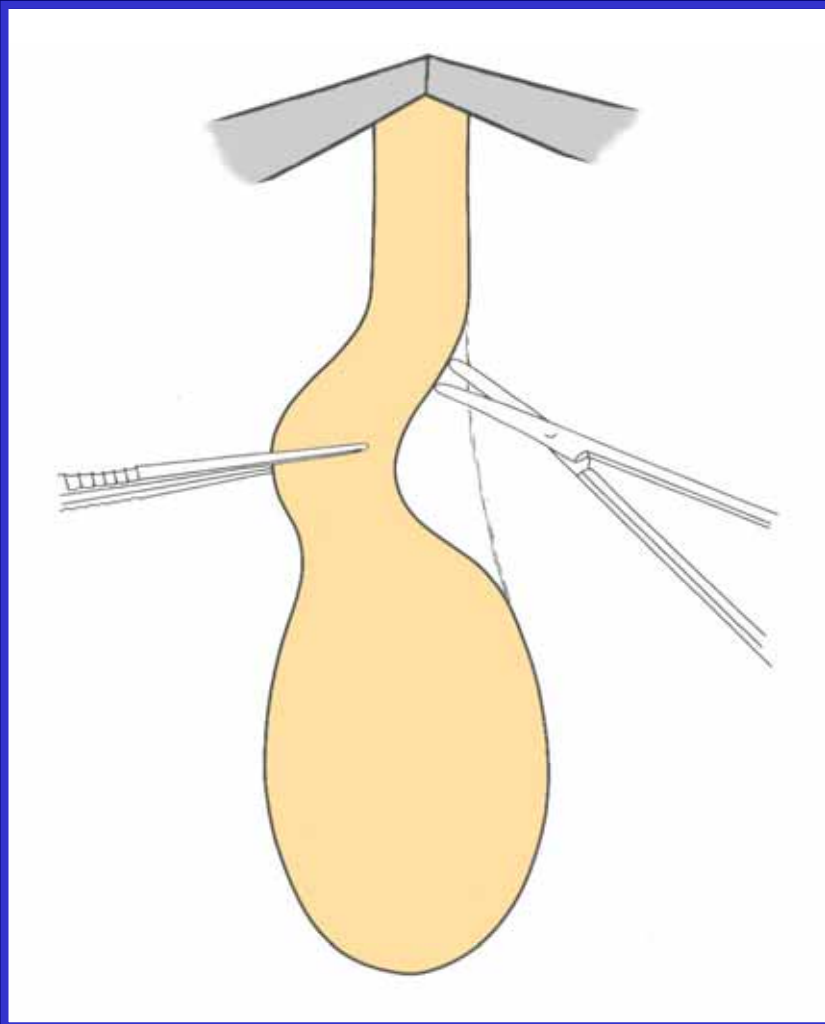


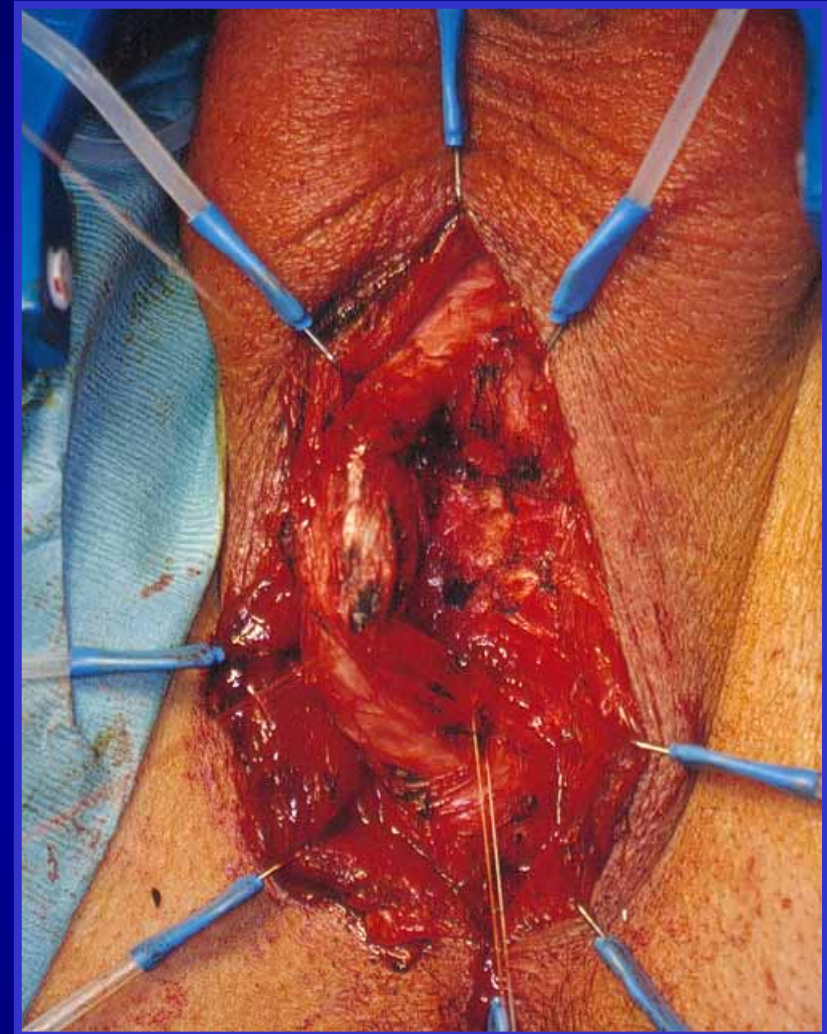
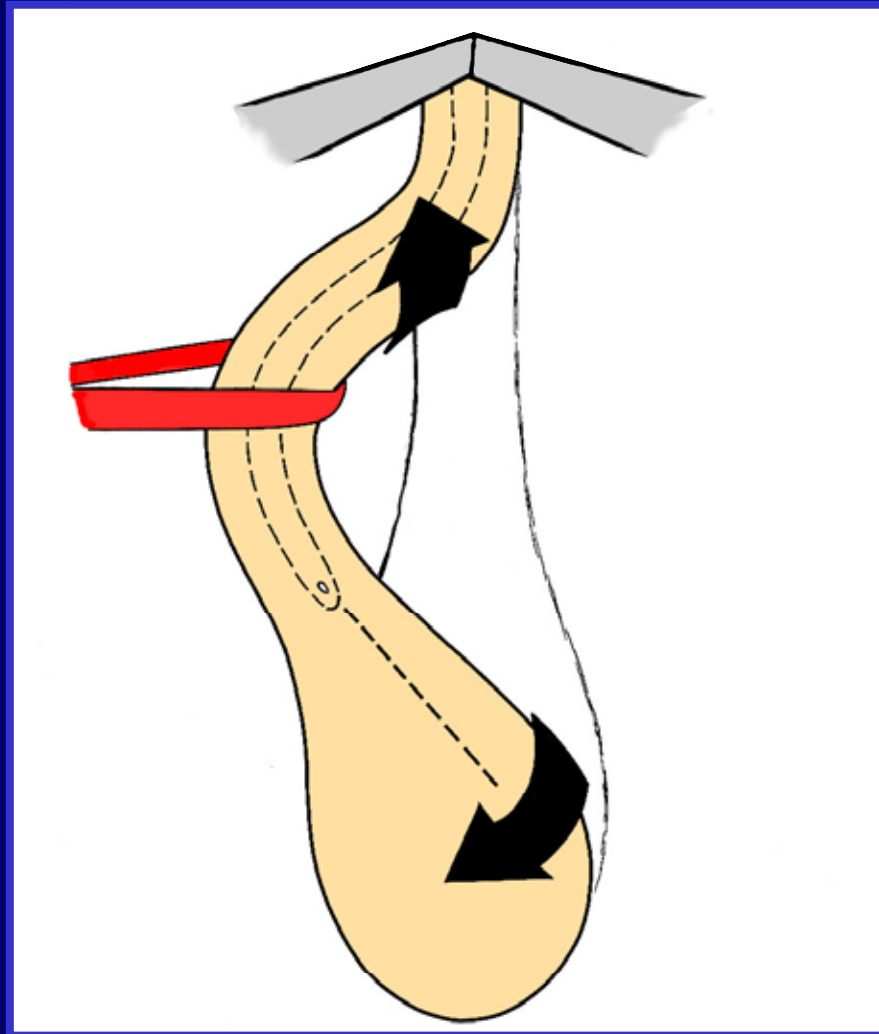
Substitution urethroplasty

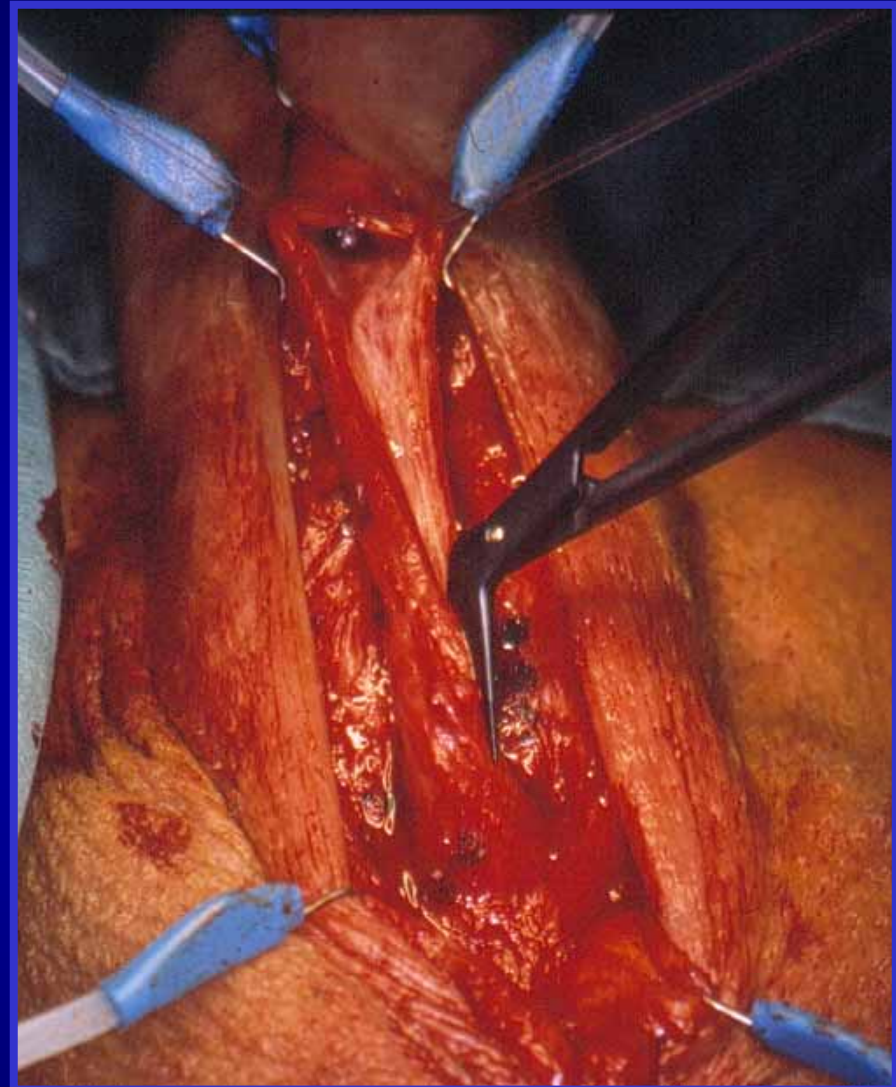
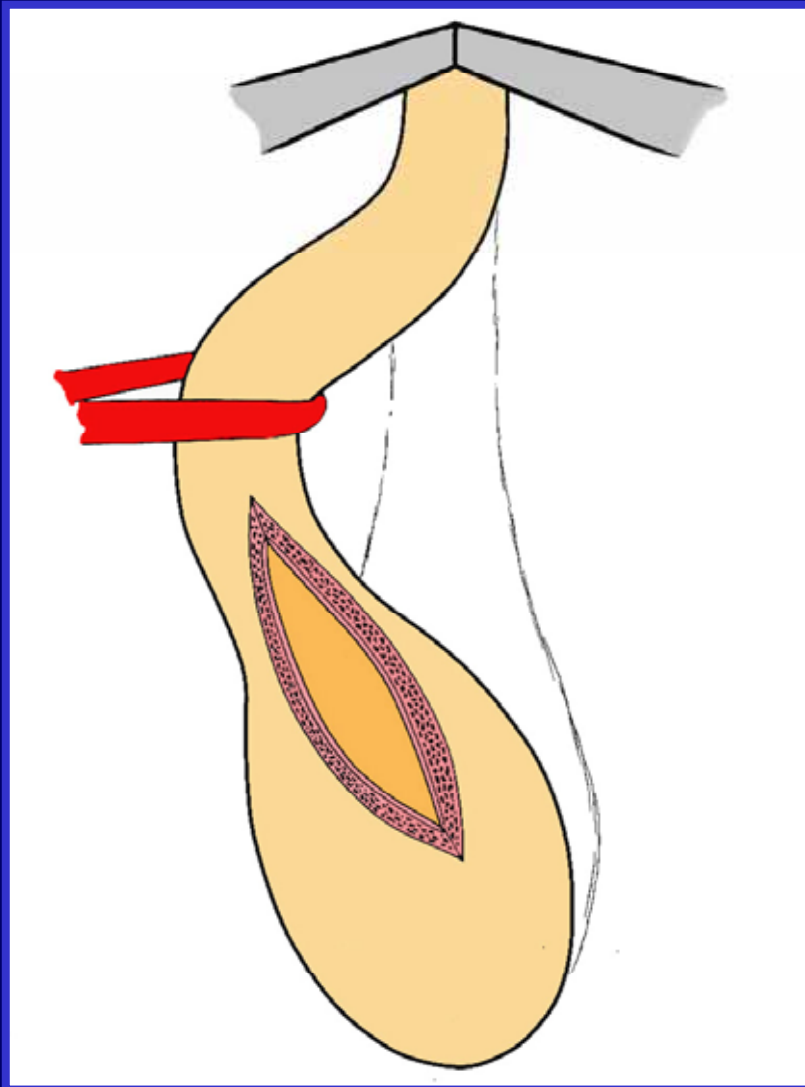


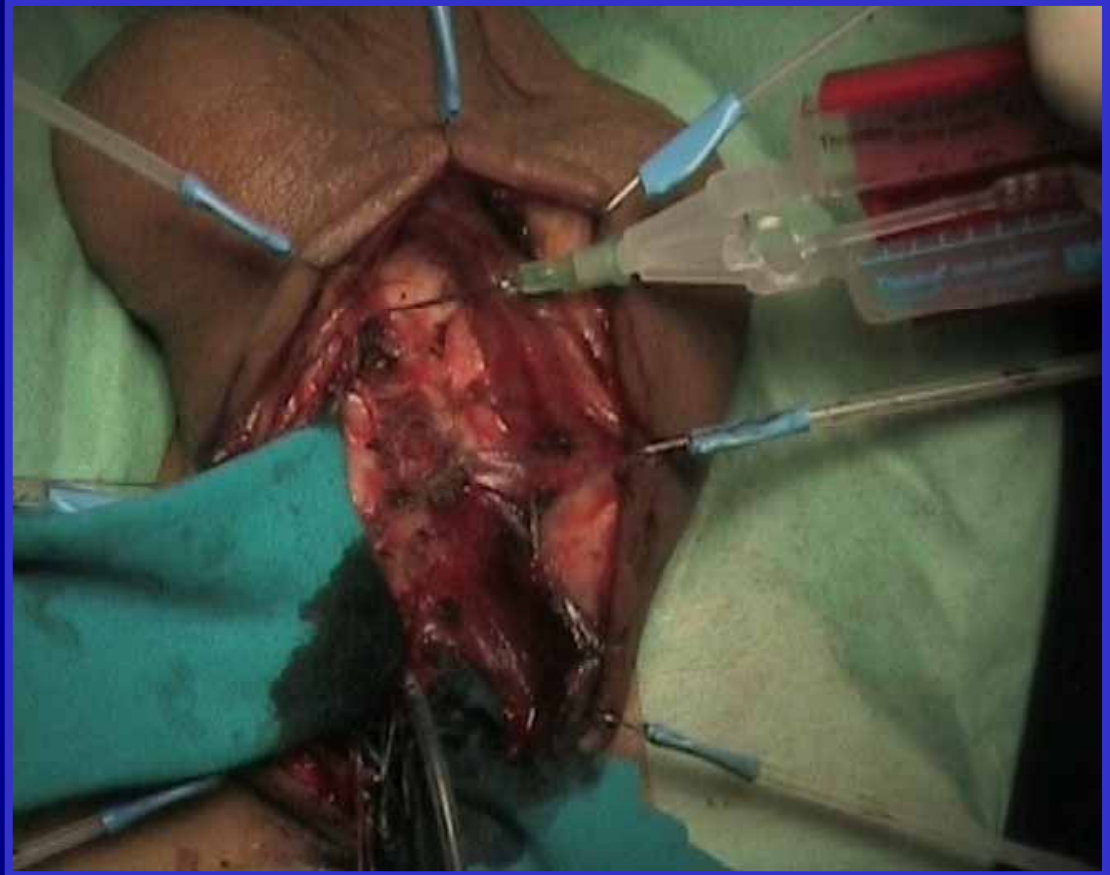
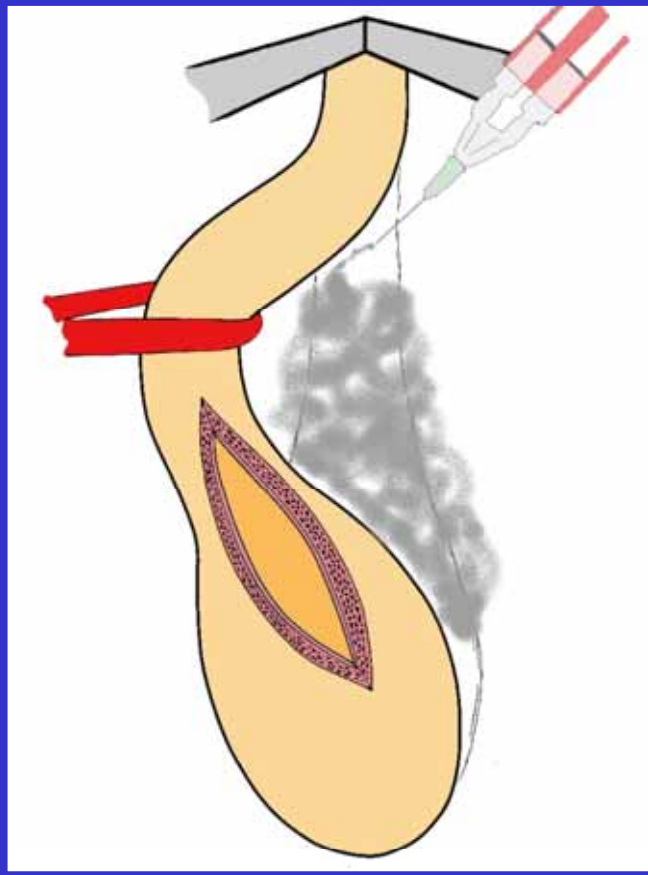
Dorsal onlay graft urethroplasty

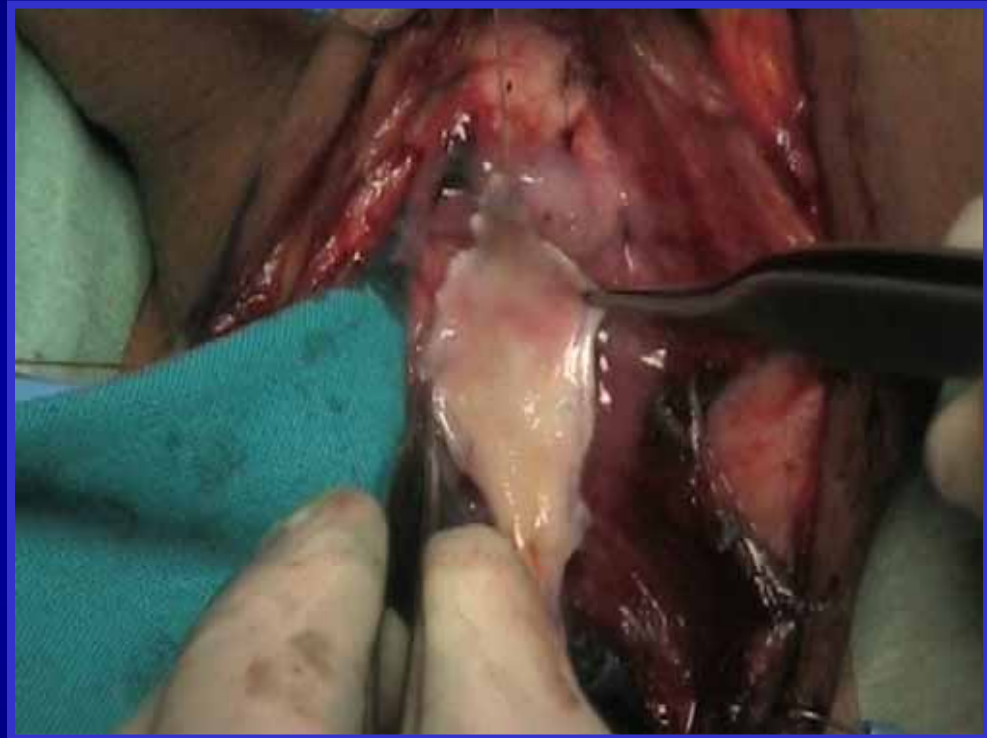
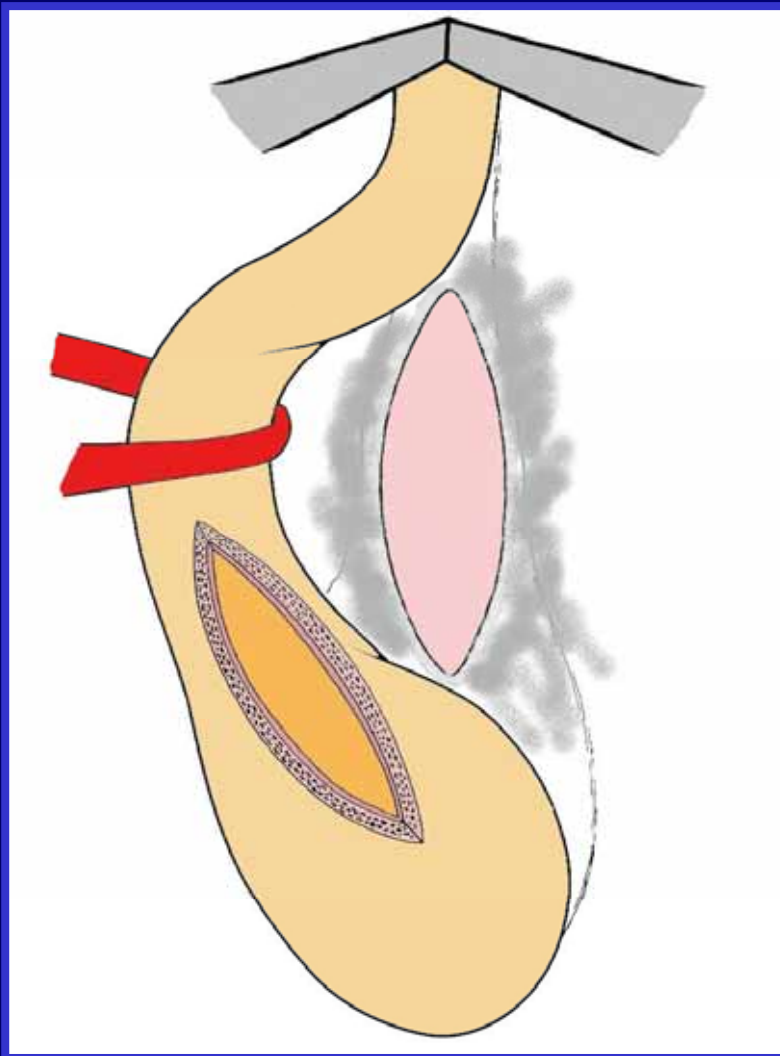


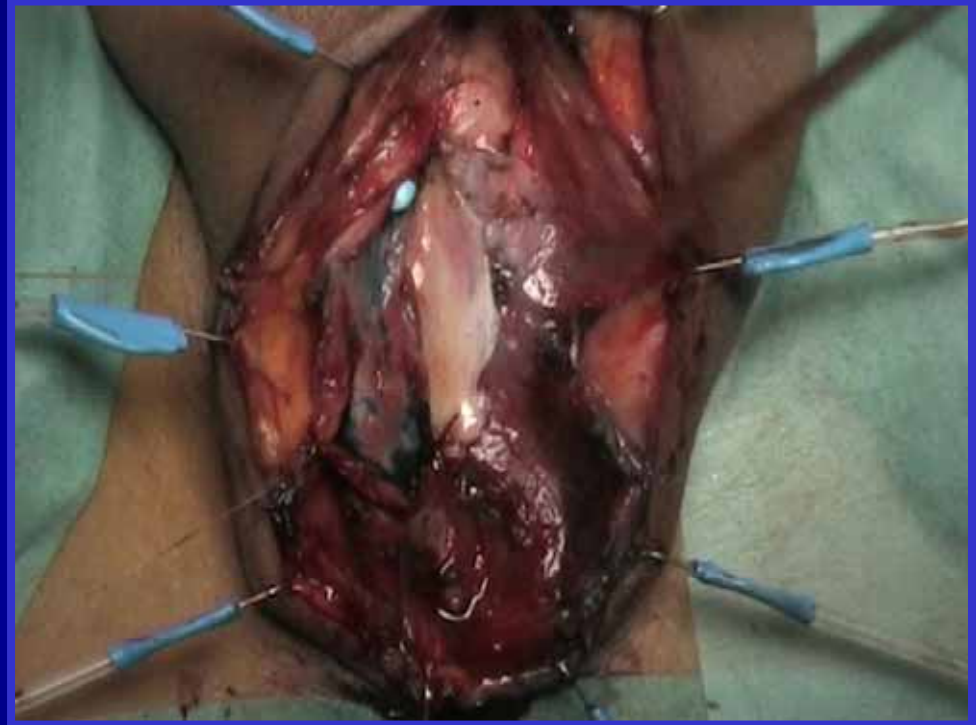
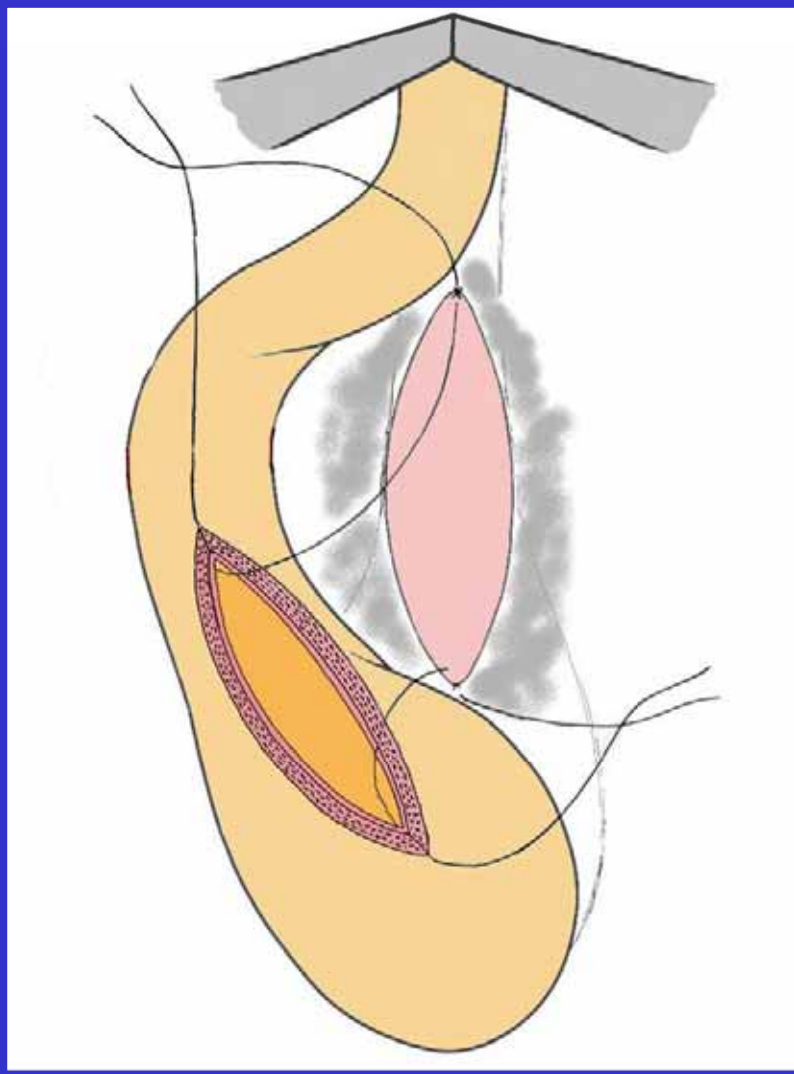


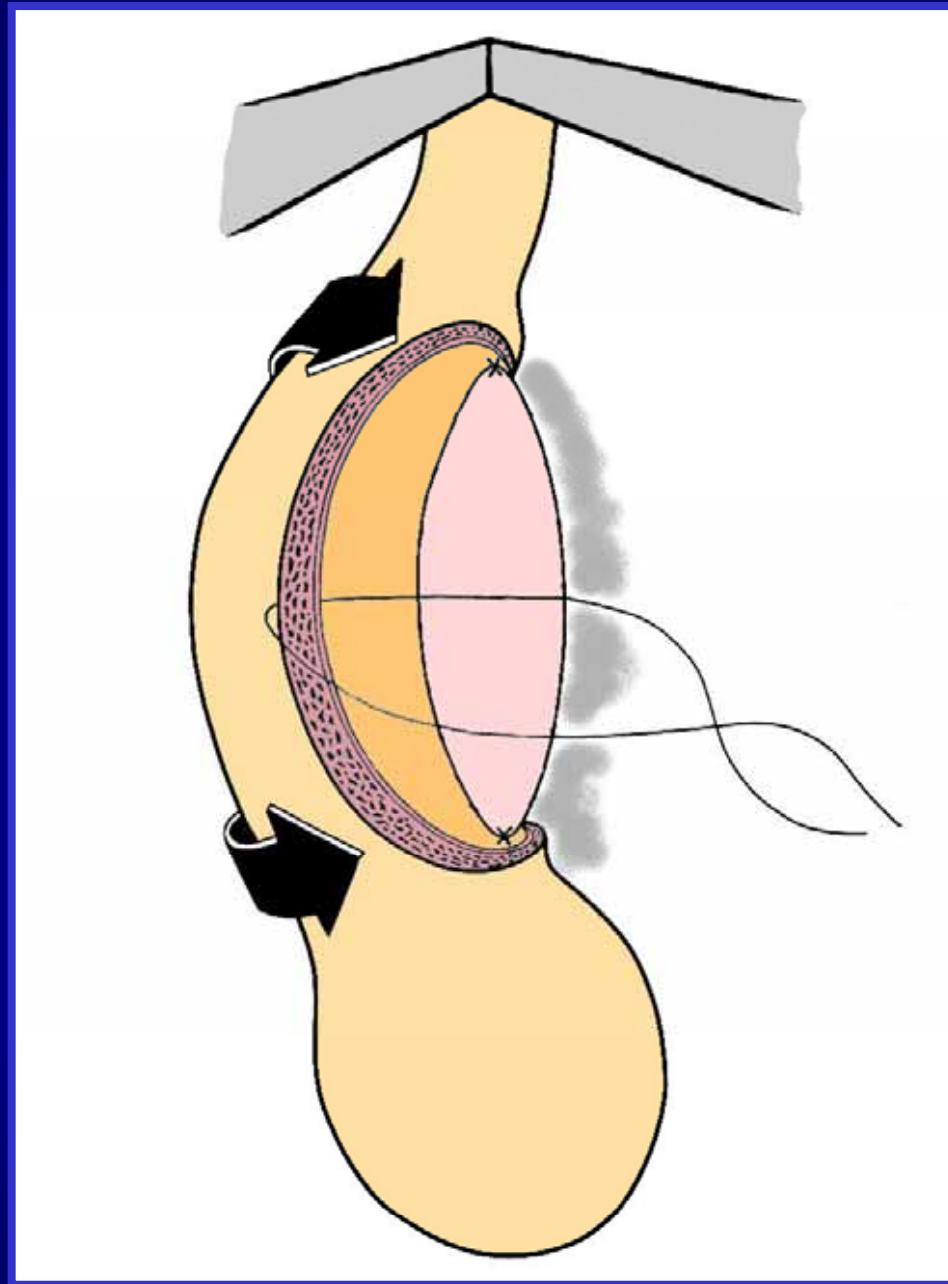


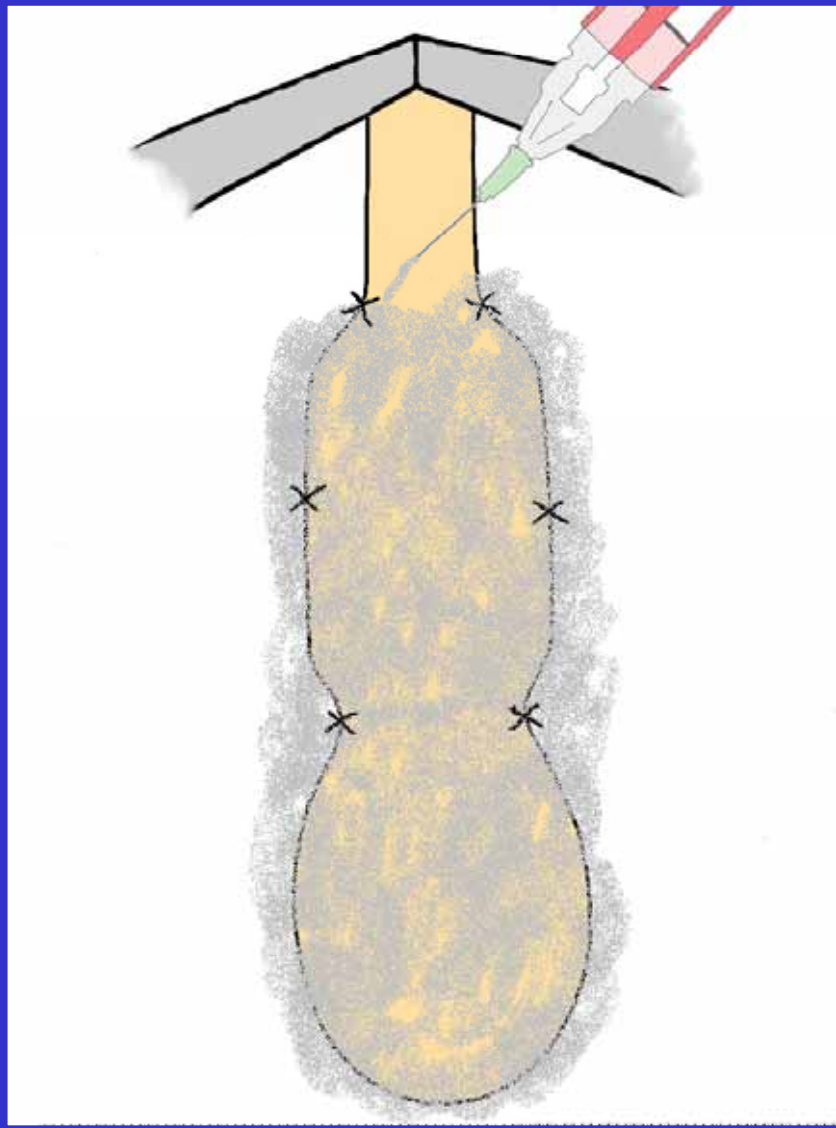






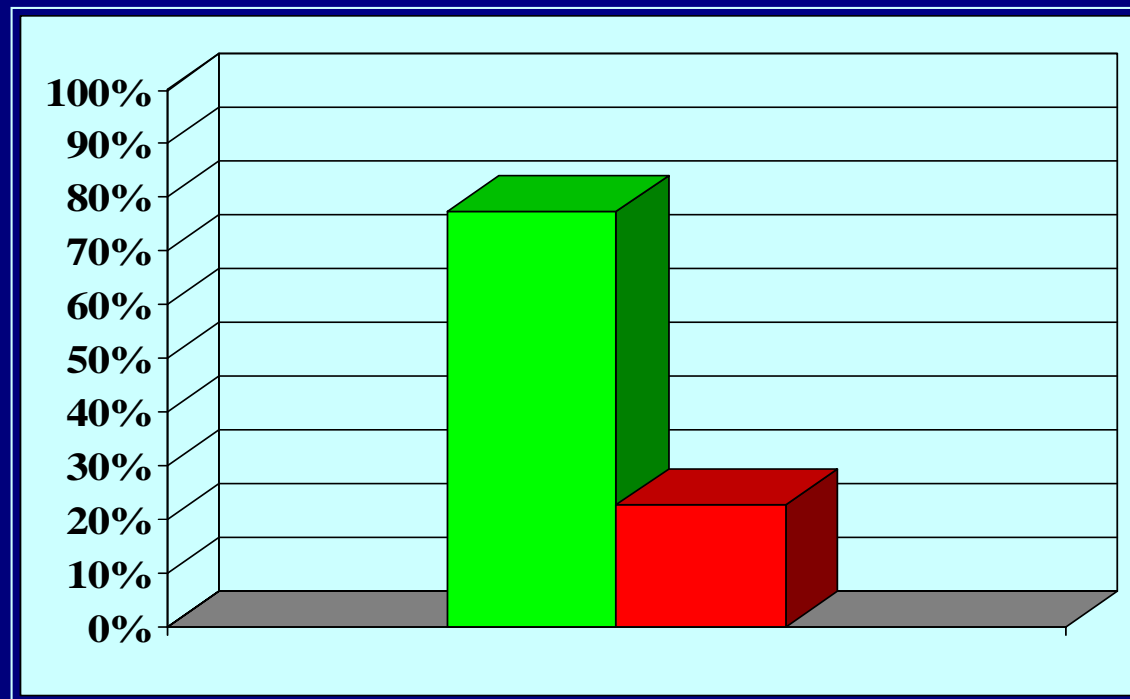






Results of 22 dorsal buccal mucosal onlay graft urethroplasty

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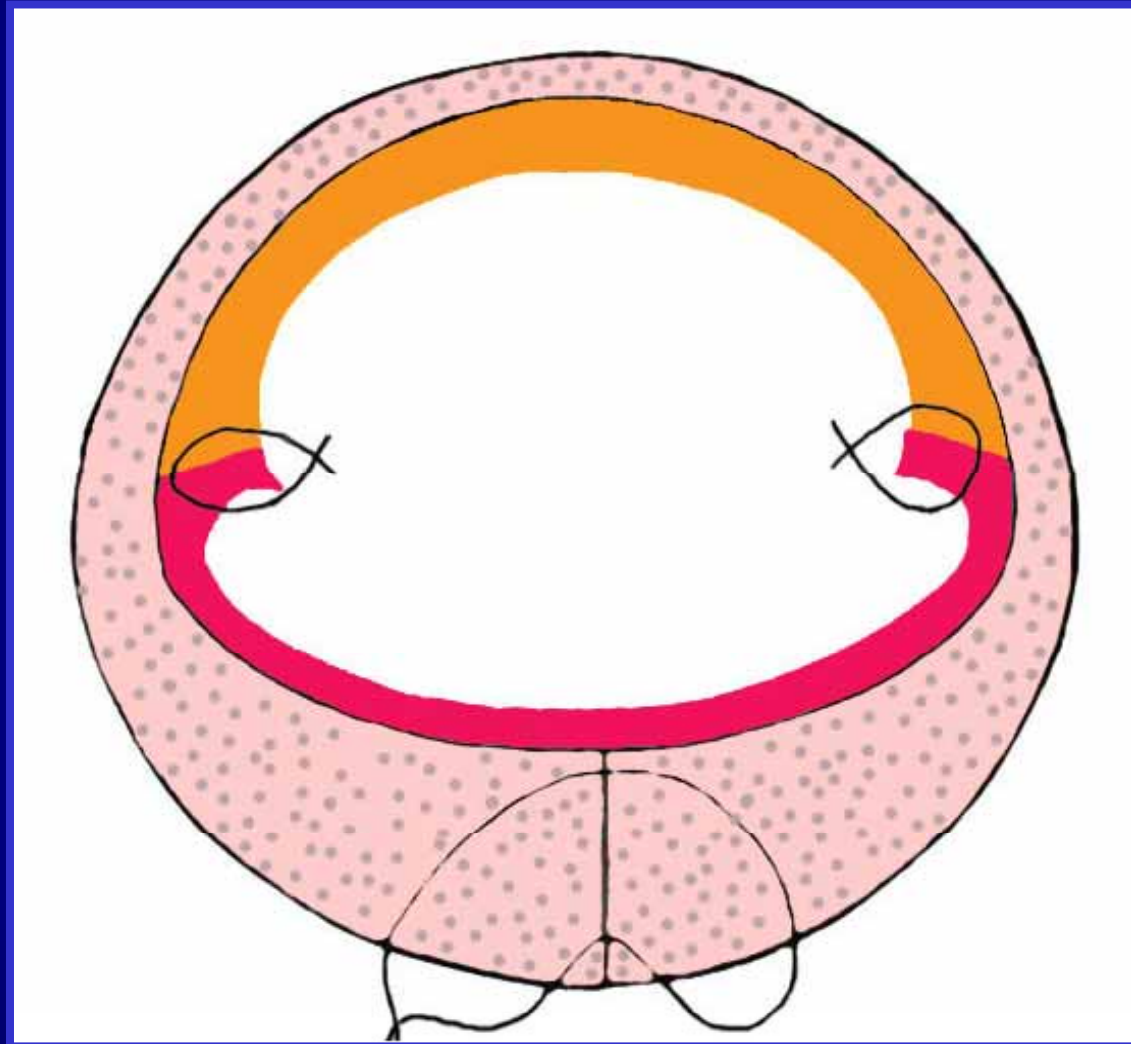
■ success

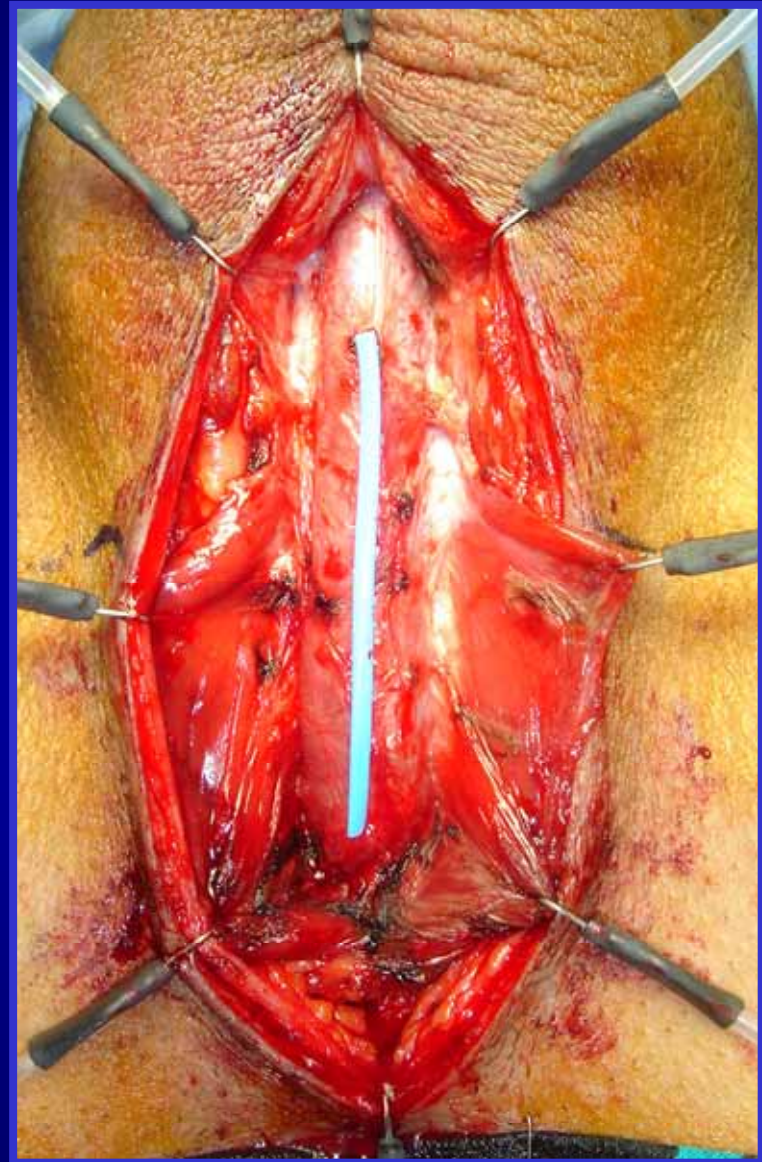
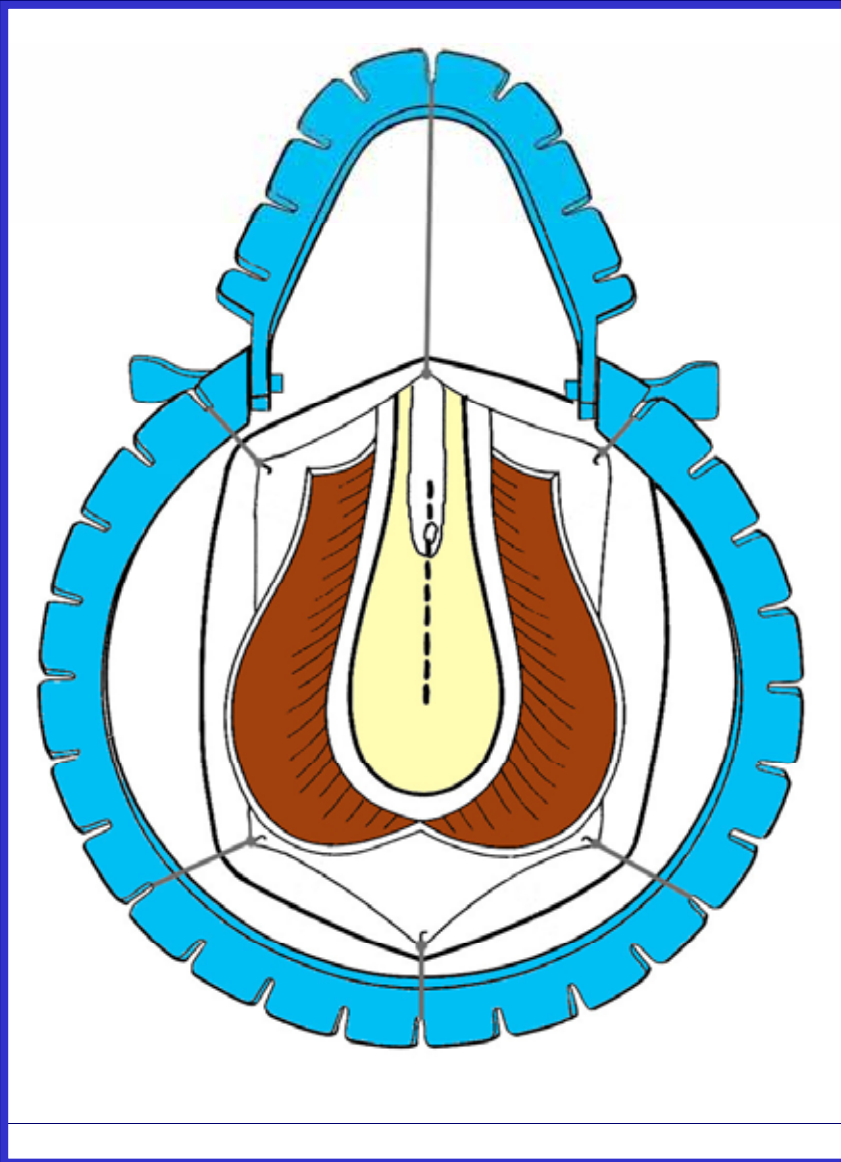
17 (77.3%)

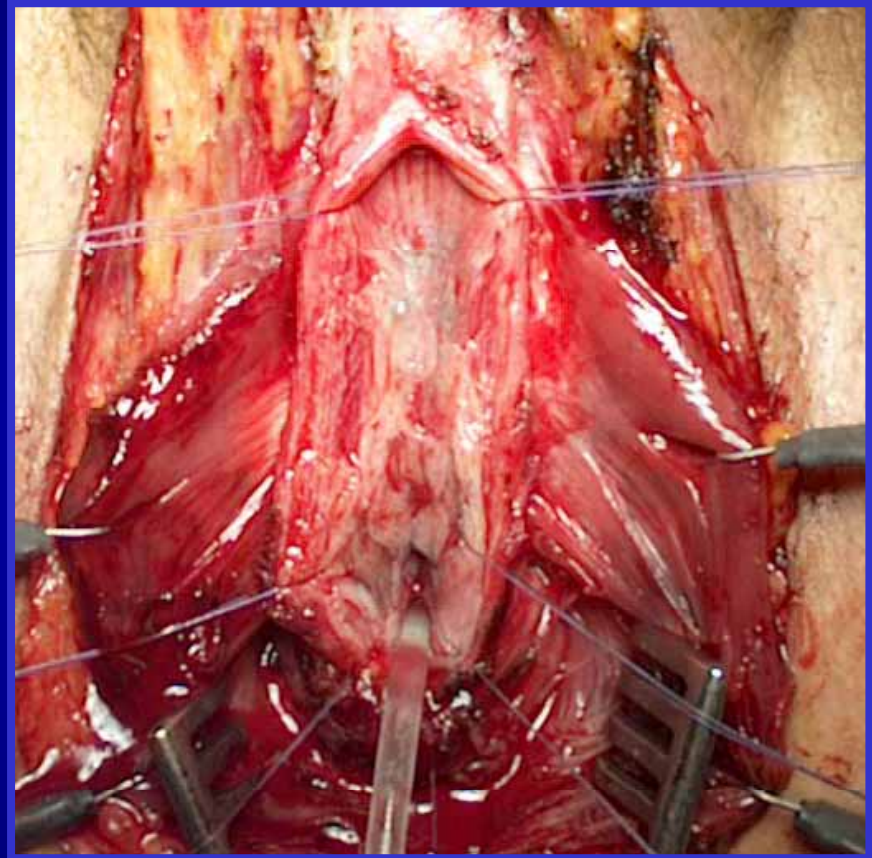
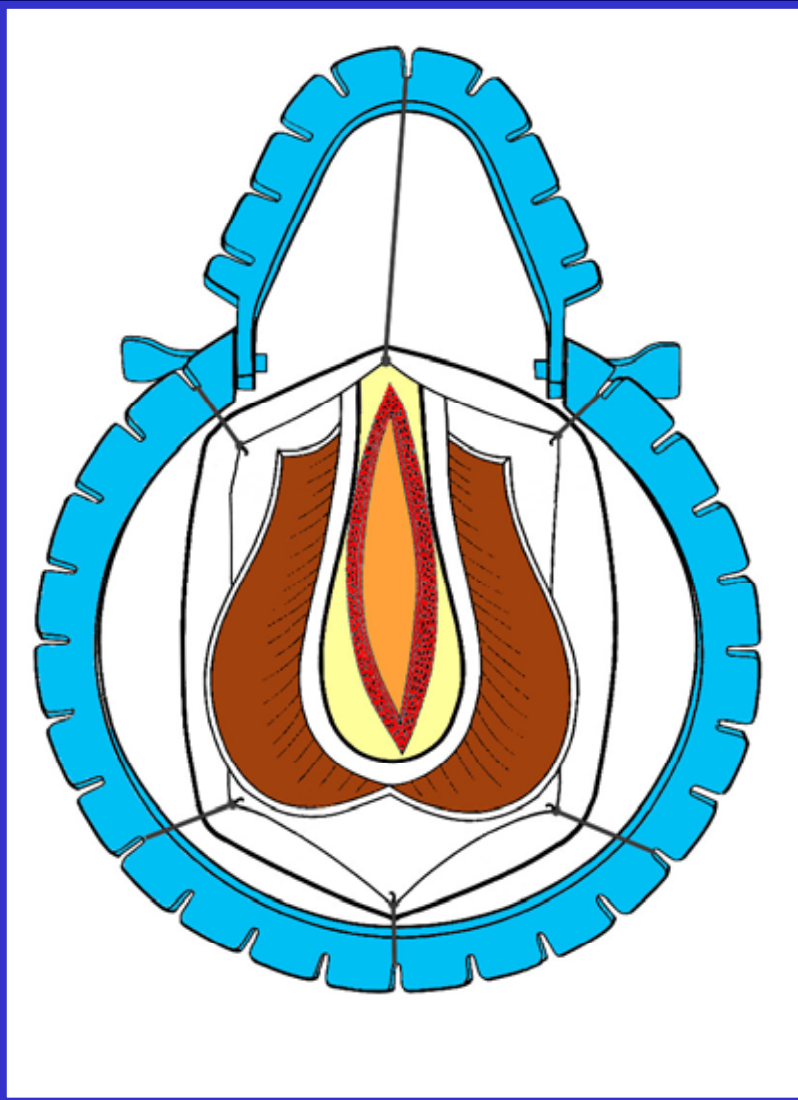
■ failure

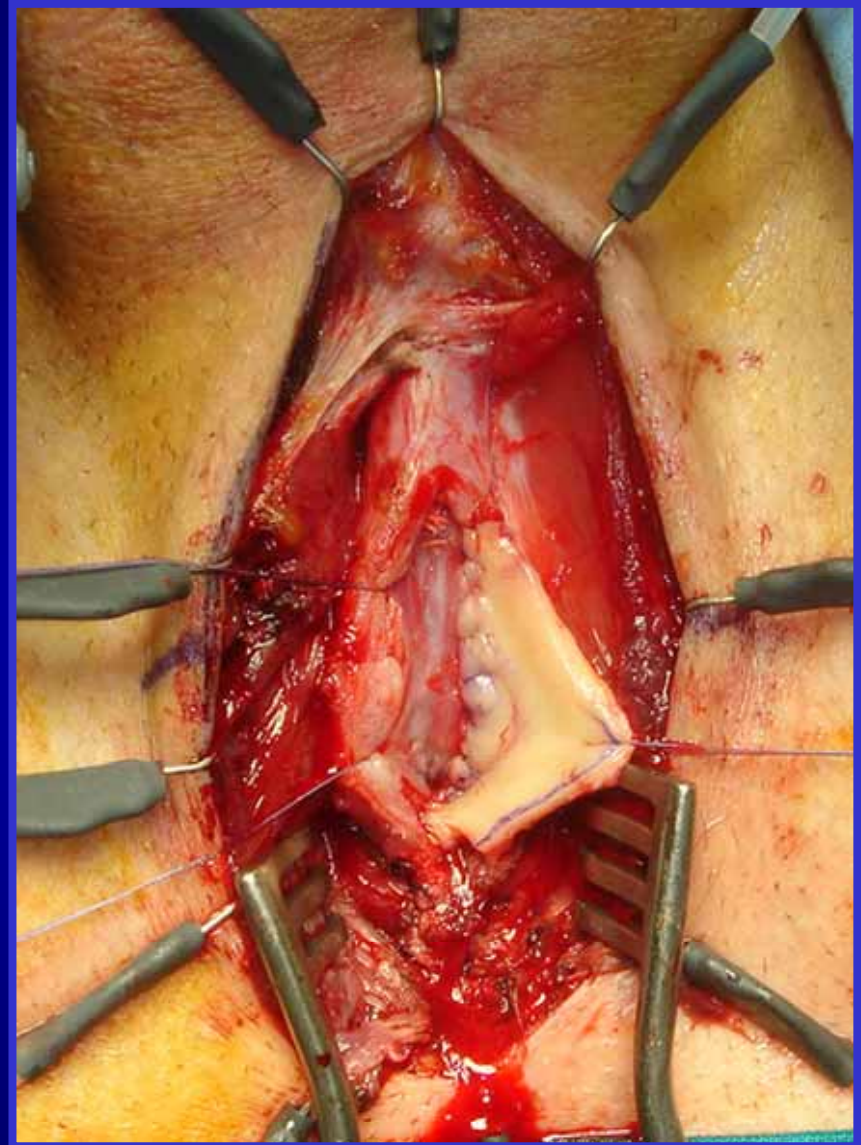
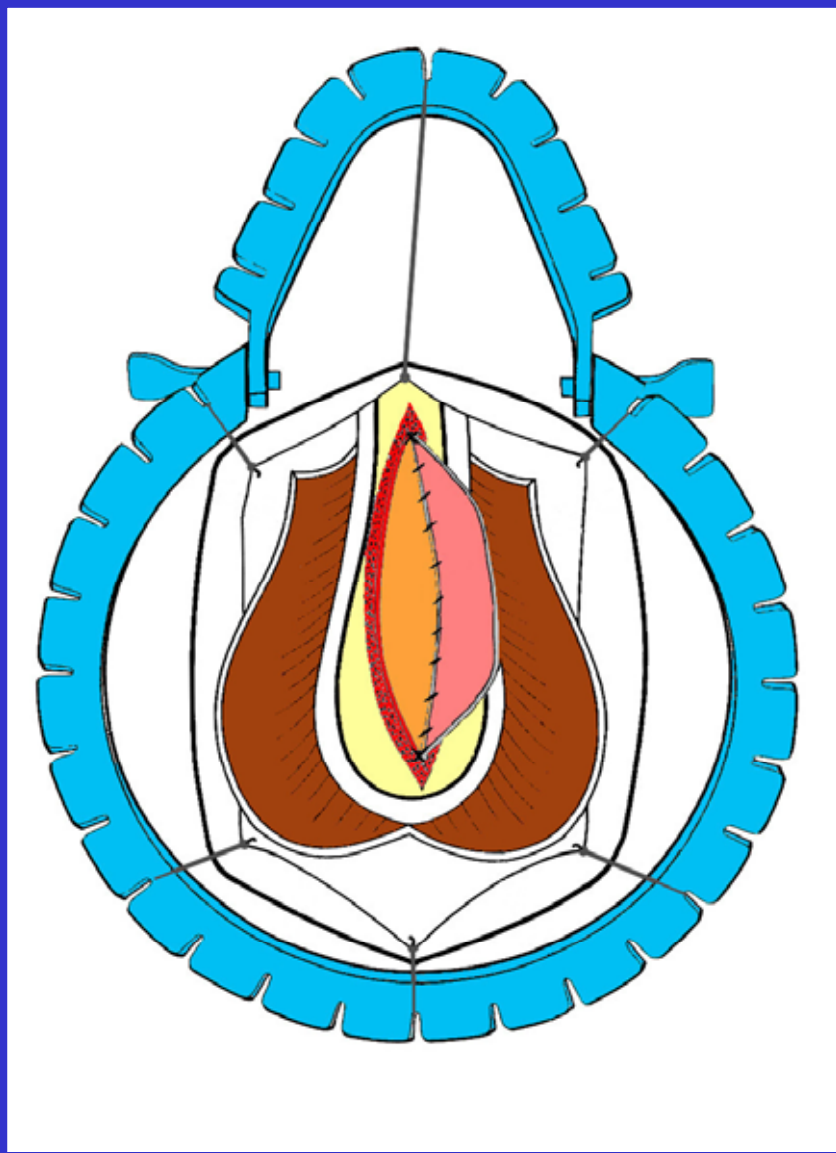
5 (22.7%)

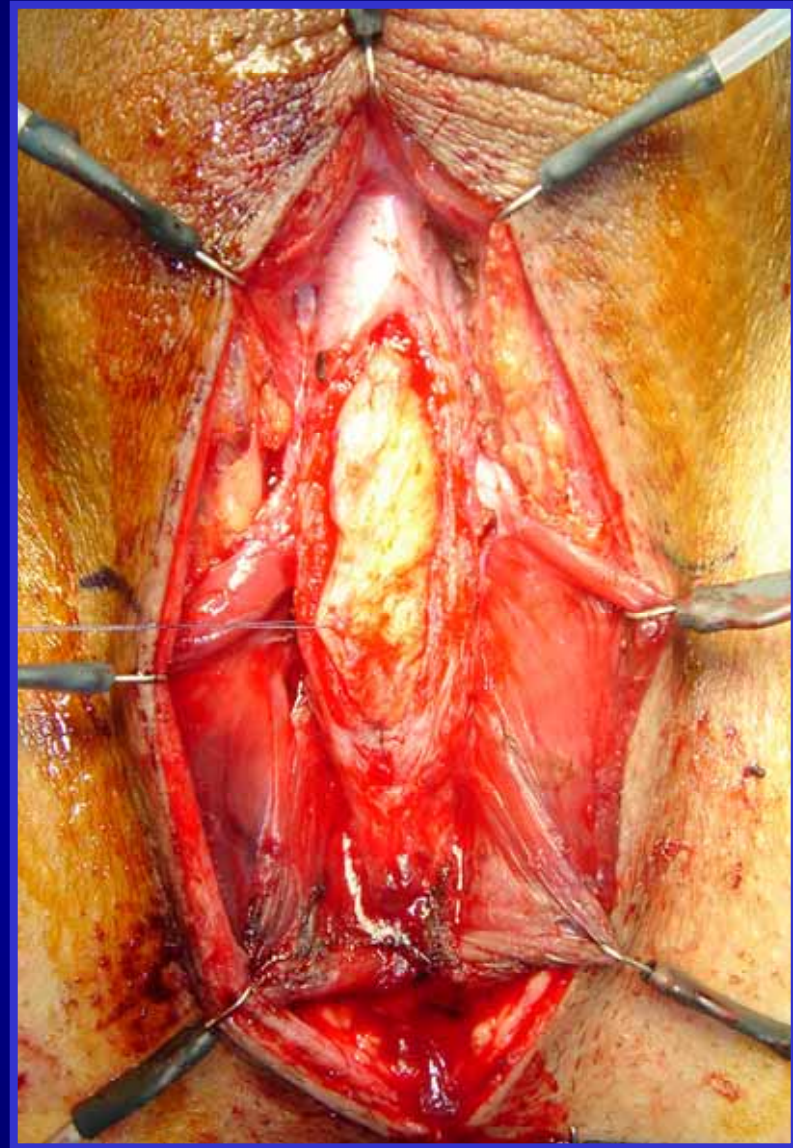
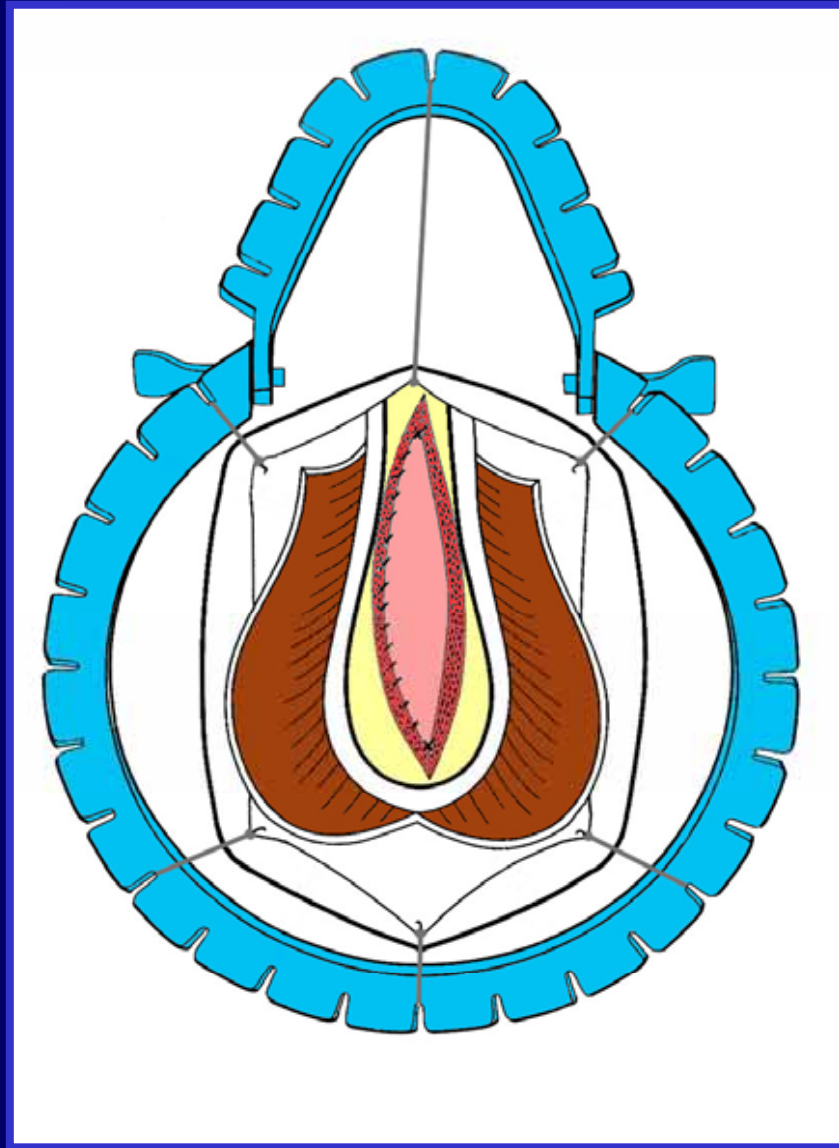
Ventral onlay graft urethroplasty

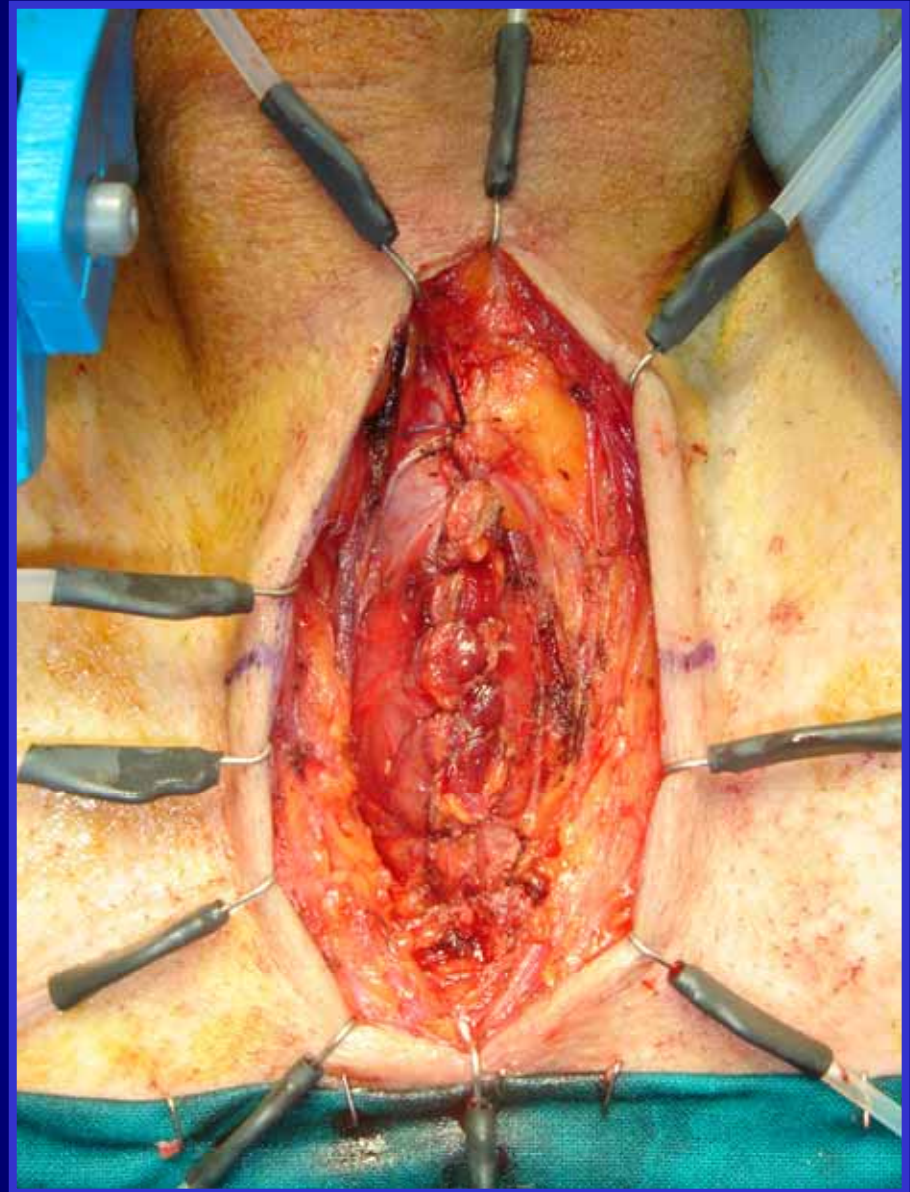
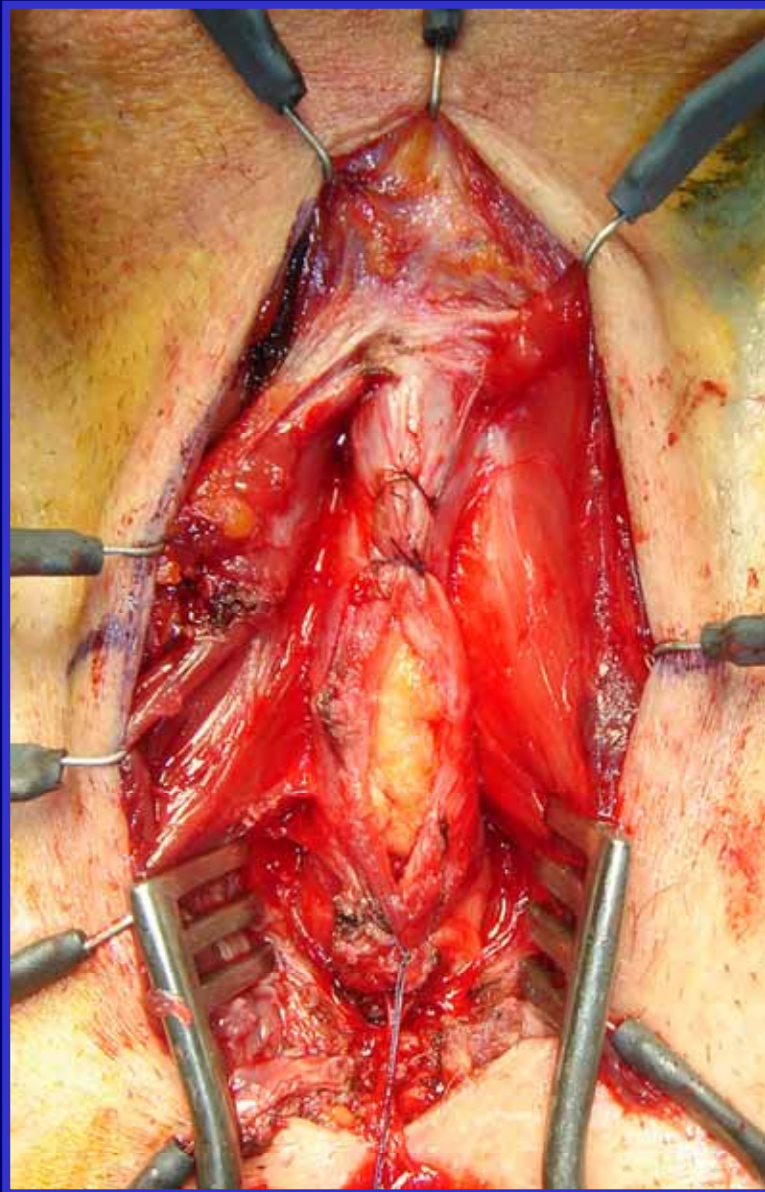






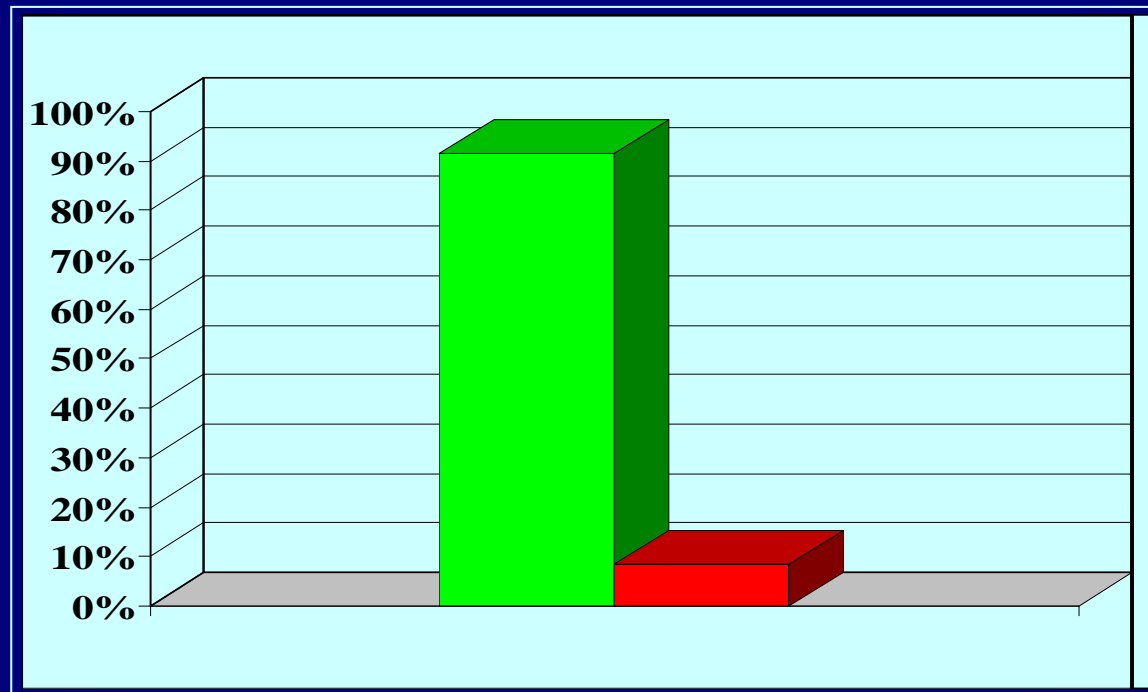






Results of 93 ventral buccal mucosal onlay graft urethroplasties

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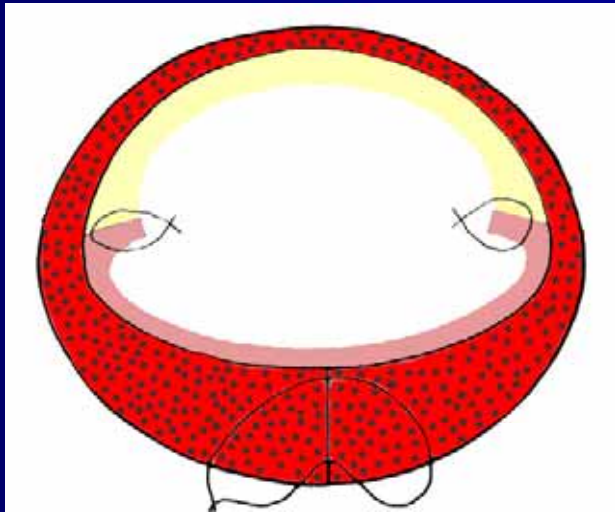
■ success

85 (91.4%)

■ failure

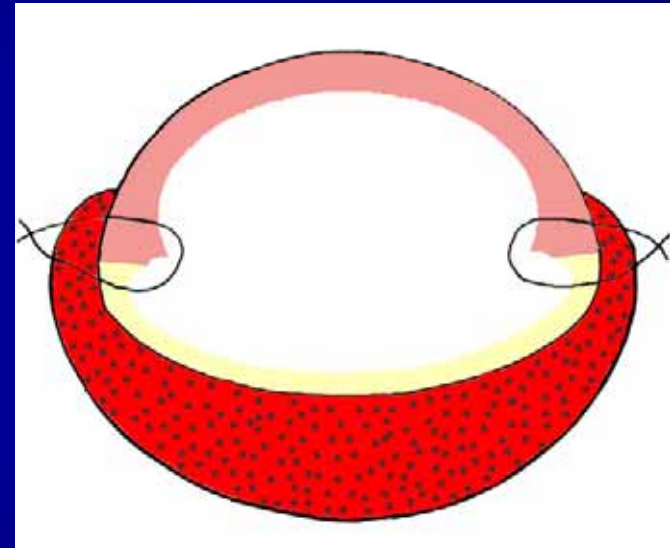
8 (8.6%)

Which type of substitution urethroplasty is best?



ventral

?



dorsal



Trauma/Reconstruction/Diversion

BULBAR URETHROPLASTY USING BUCCAL MUCOSA GRAFTS PLACED ON THE VENTRAL, DORSAL OR LATERAL SURFACE OF THE URETHRA: ARE RESULTS AFFECTED BY THE SURGICAL TECHNIQUE?

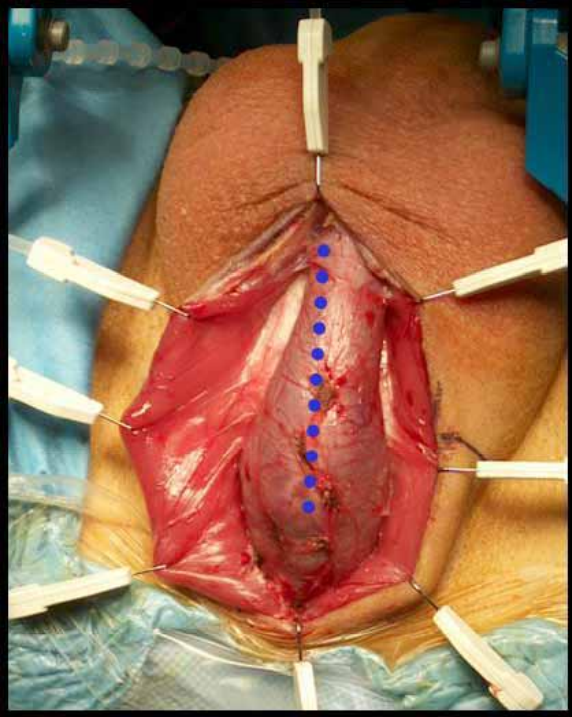
GUIDO BARBAGLI, ENZO PALMINTERI, GIORGIO GUAZZONI, FRANCESCO MONTORSI,
DAMIANO TURINI AND MASSIMO LAZZERI*

From the Center for Urethral and Genitalia Reconstructive Surgery (GB, EP), Arezzo, San Raffaele-Vita-Salute Hospital and University (GG, FM), Milan, Department of Urology, Santa Chiara (DT), Florence and Department of Urology, Ospedale Fondazione San Raffaele Giglio (ML), Cefalù, Italy

J Urol 2005

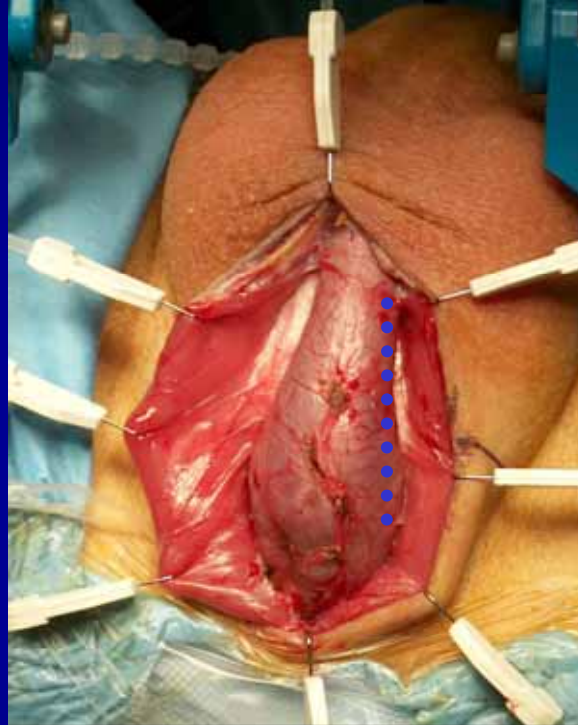


Results



ventral

83% success



lateral

83% success



dorsal

85% success



Substitution urethroplasty

Results

(revised on December 31, 2007)

type of repair	success
ventral OMG	91 %
lateral OMG	83 %
dorsal OMG	77 %

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Comparative success rate of 426 one-stage anterior urethroplasties

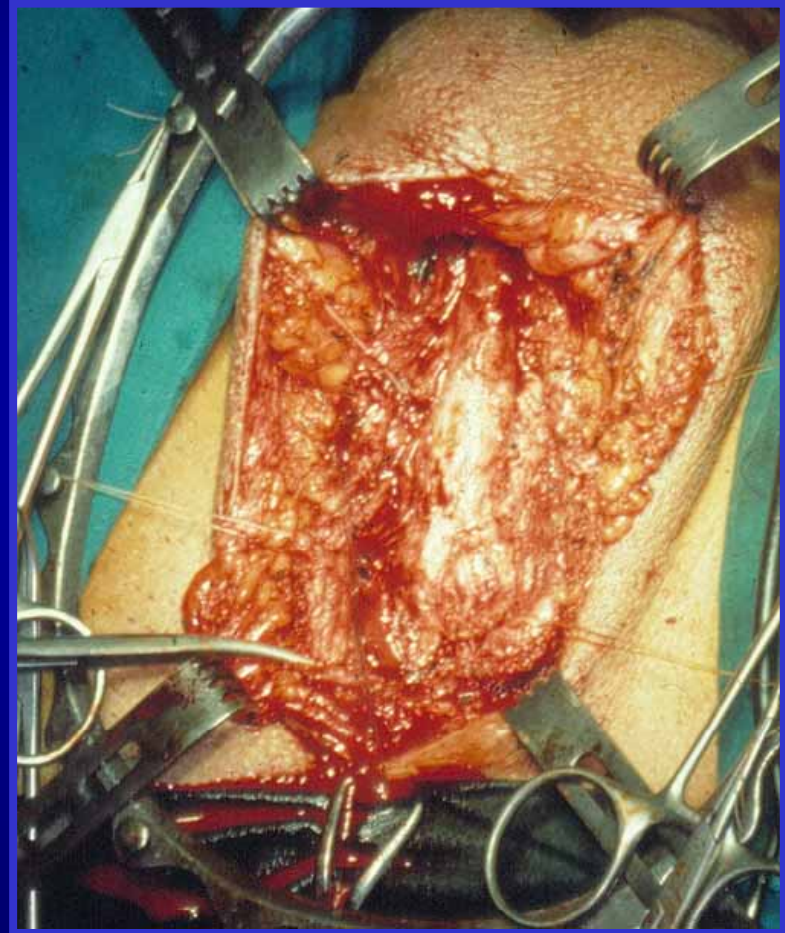
Site	Surgical technique	N. patients	Success rate
penile	flap	18	66.7%
penile	oral graft	22	81.8%
penile	skin graft	23	78.3%
bulbar	end-to-end	153	90.8%
bulbar	substitution	170	81.8%
bulbar	augmented	40	60%

Two-stage urethroplasty



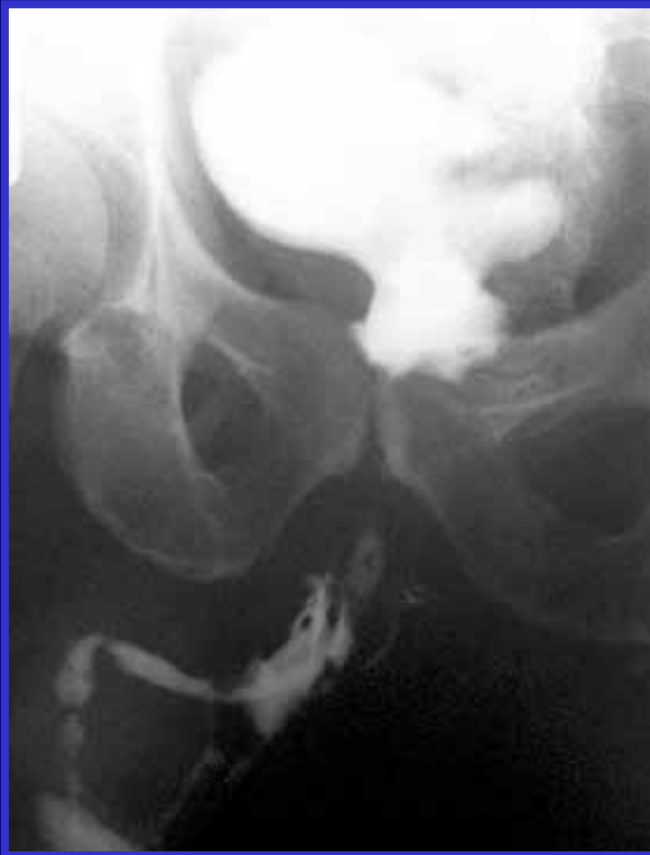
Local adverse conditions

Previous failed open urethroplasty



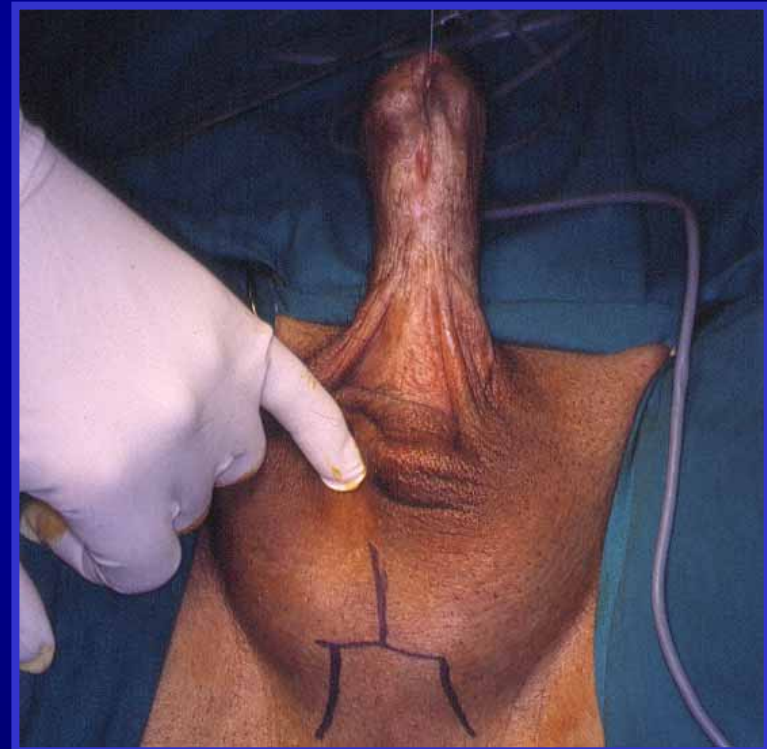
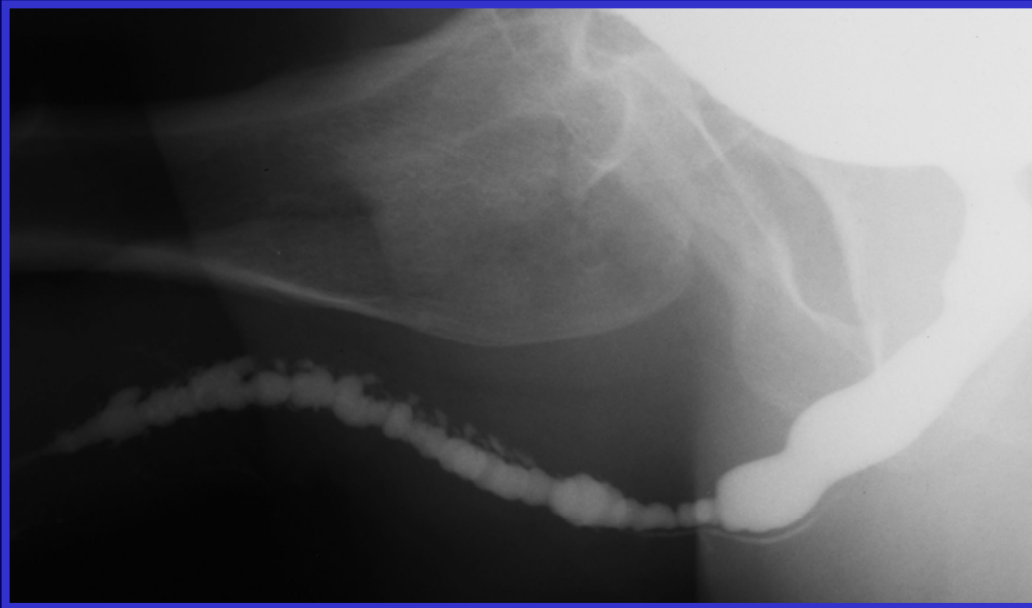
Local adverse conditions

Fistulas and abscess



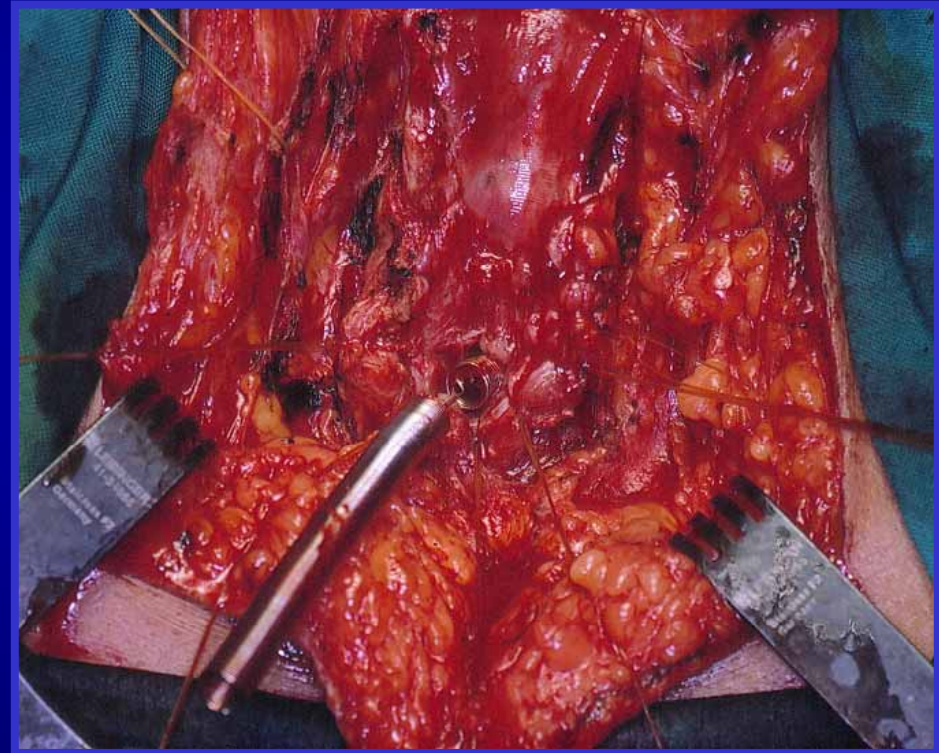
Local adverse conditions

Panurethral stricture associated with lichen sclerosus



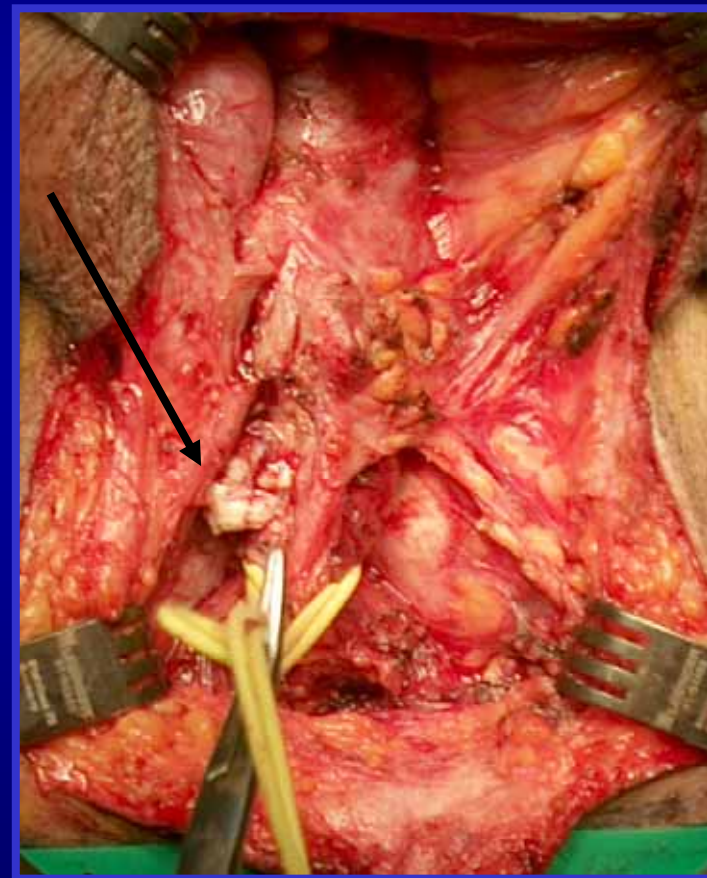
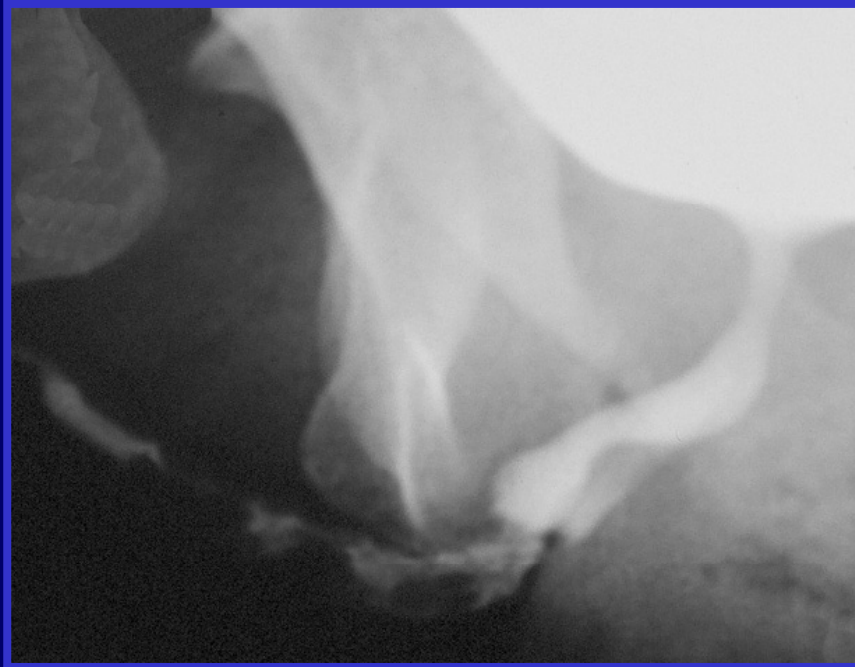
Local adverse conditions

Urethral stent

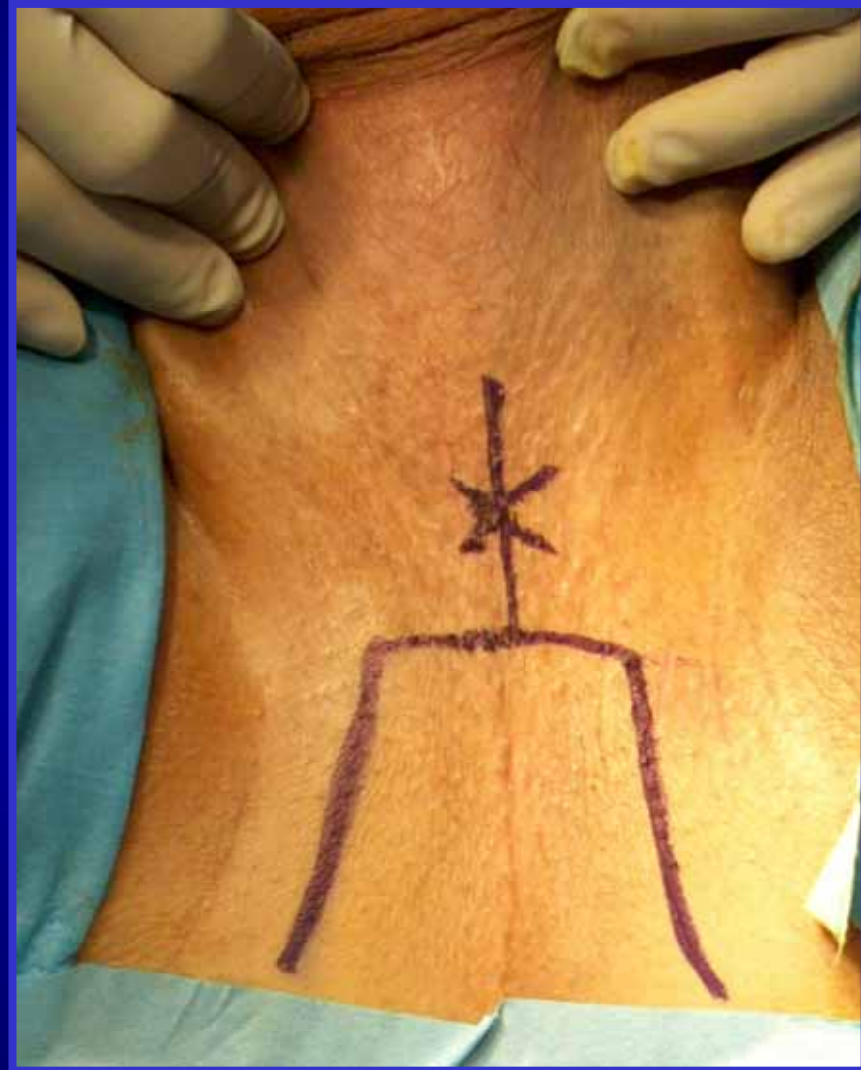
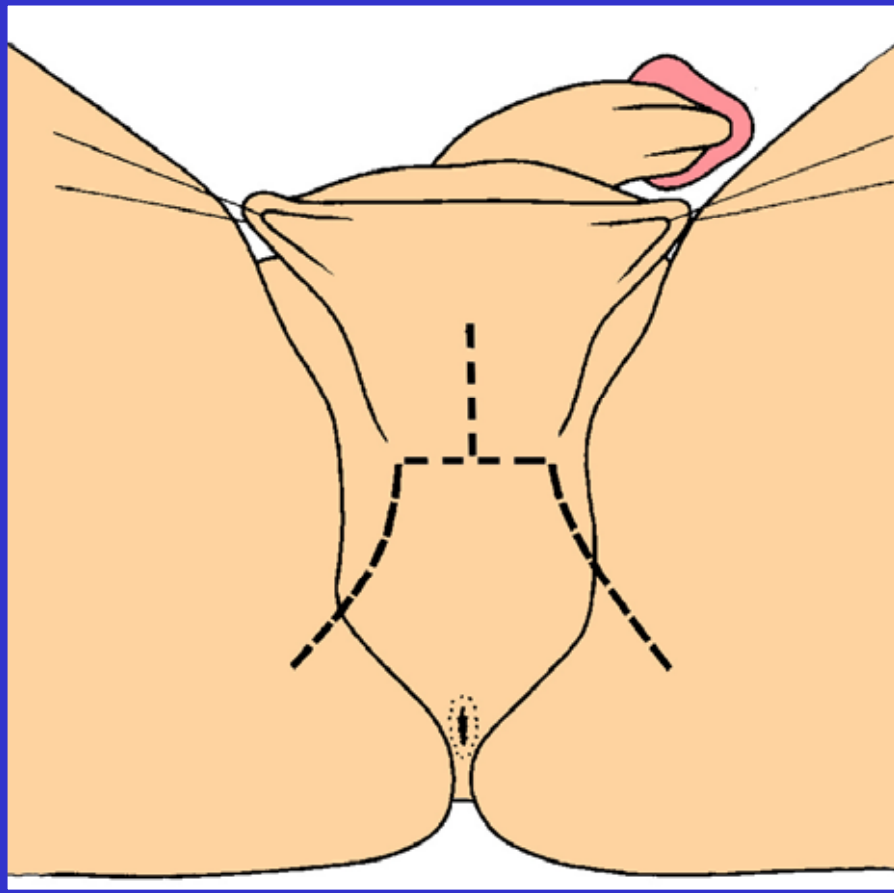


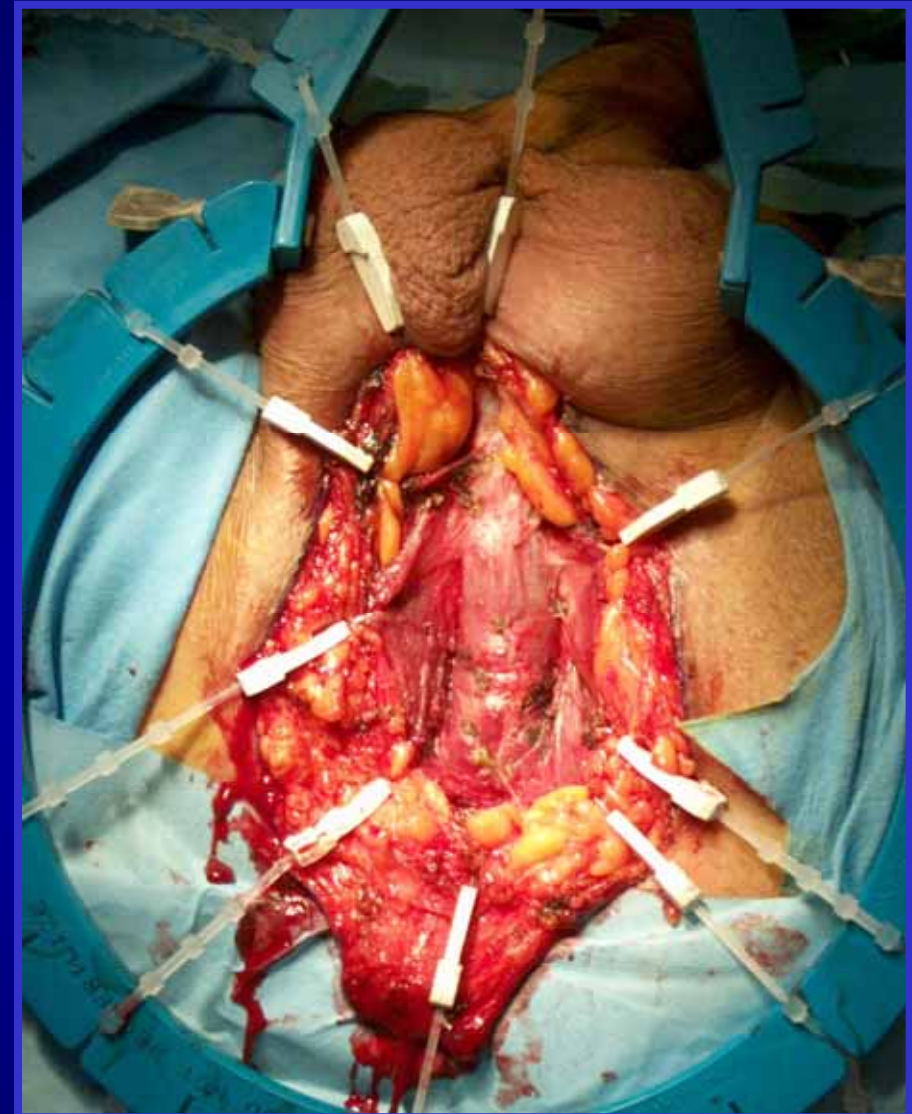
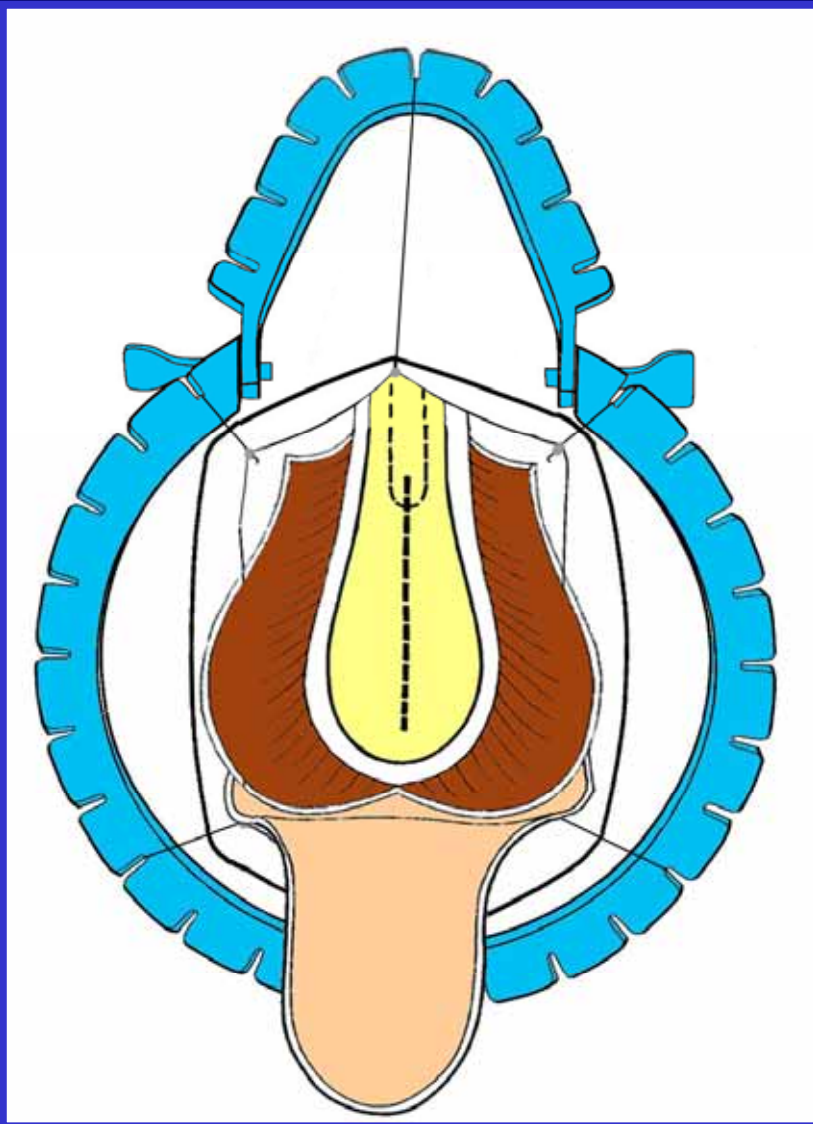
Local adverse conditions

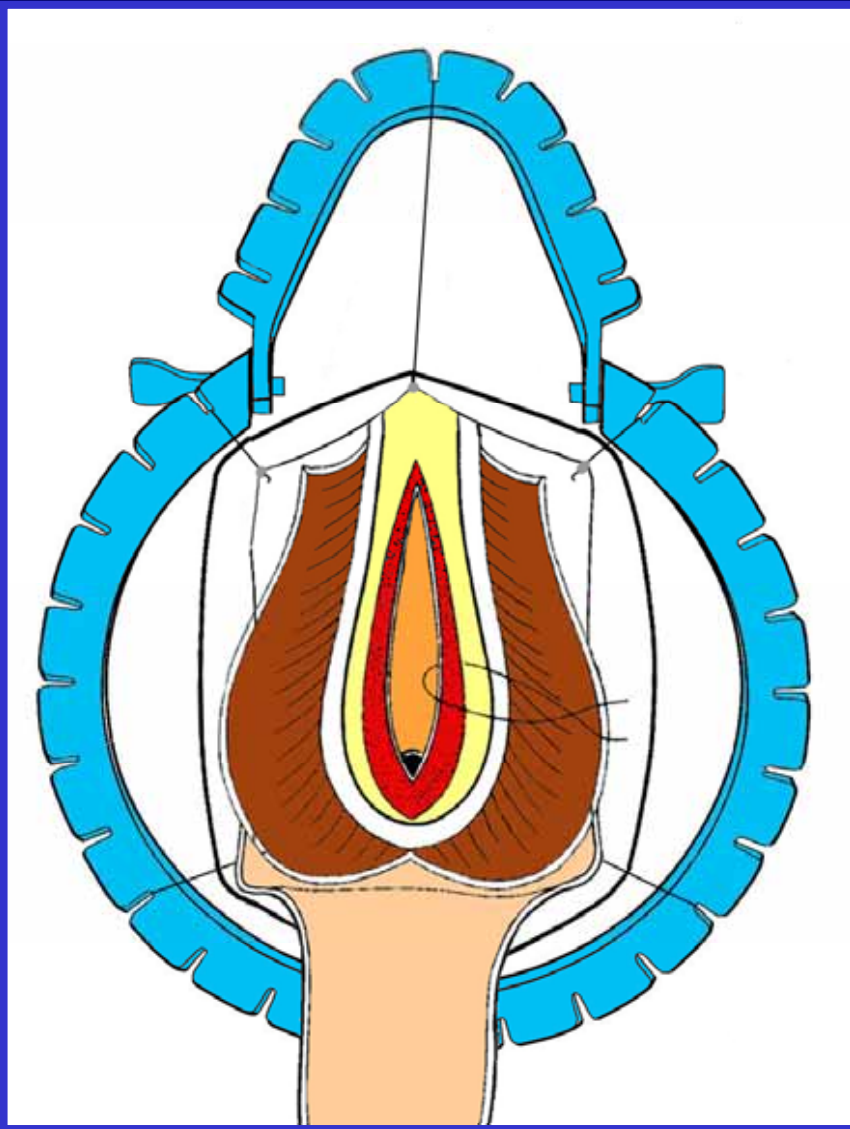
Urethral carcinoma

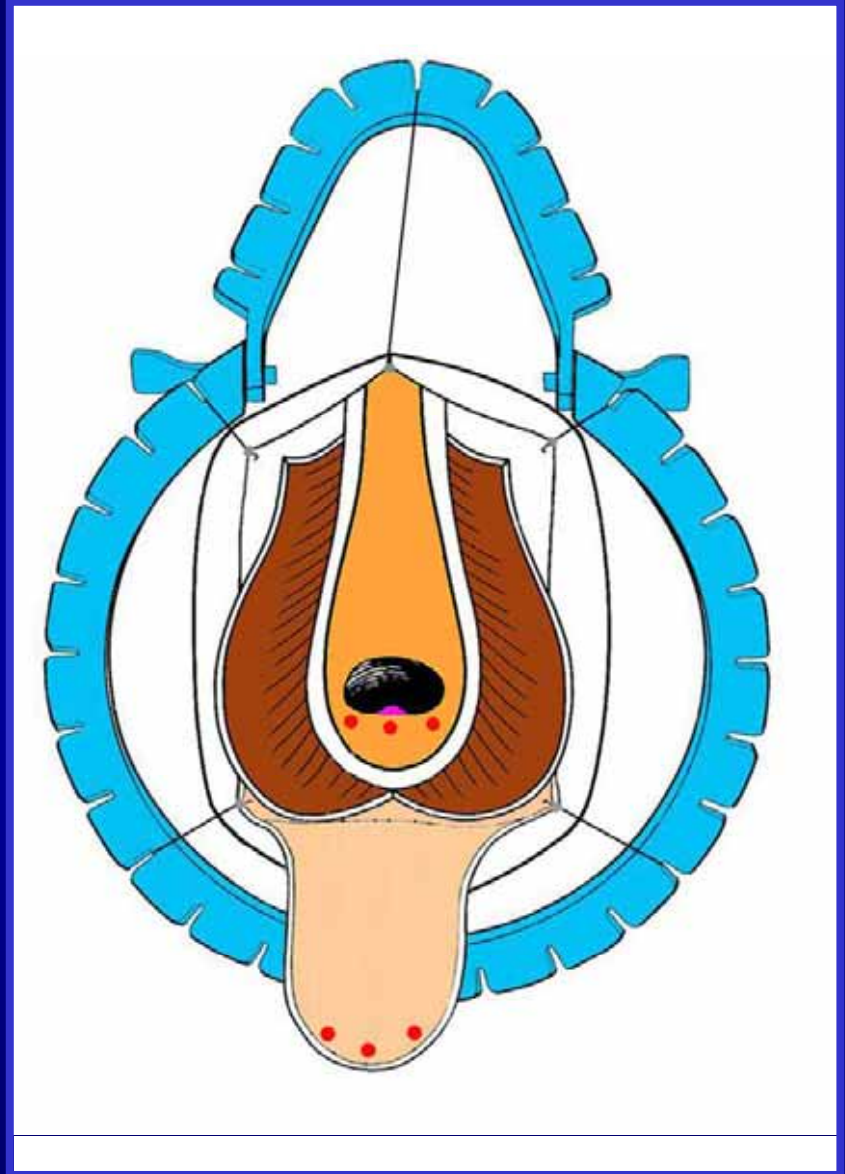
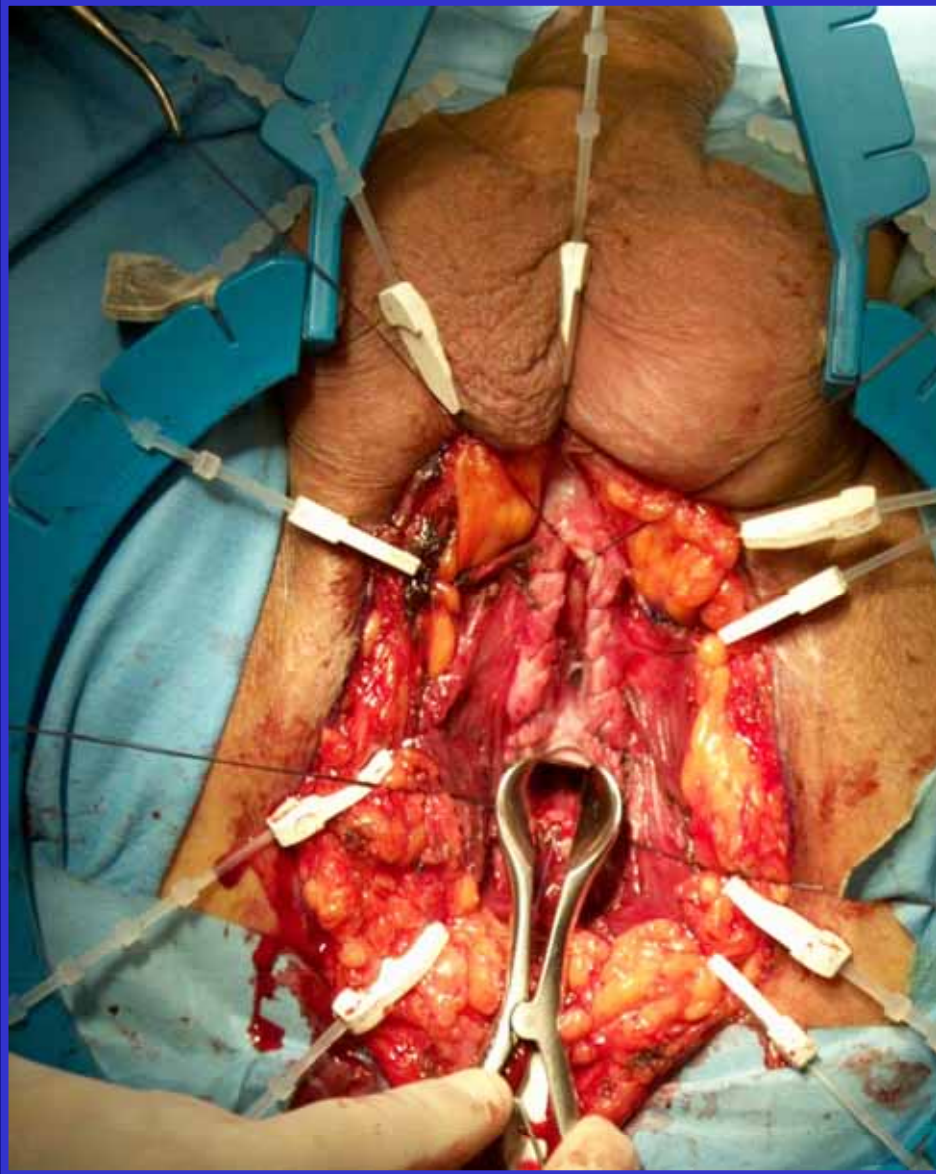


First stage





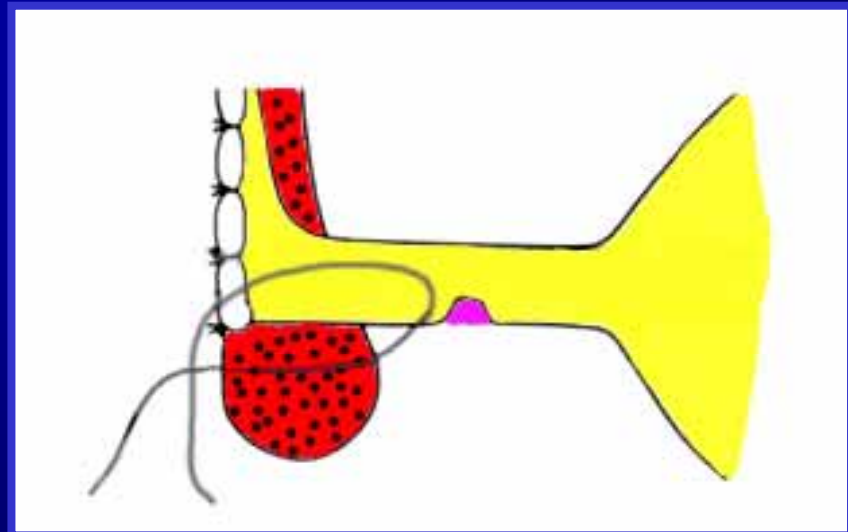
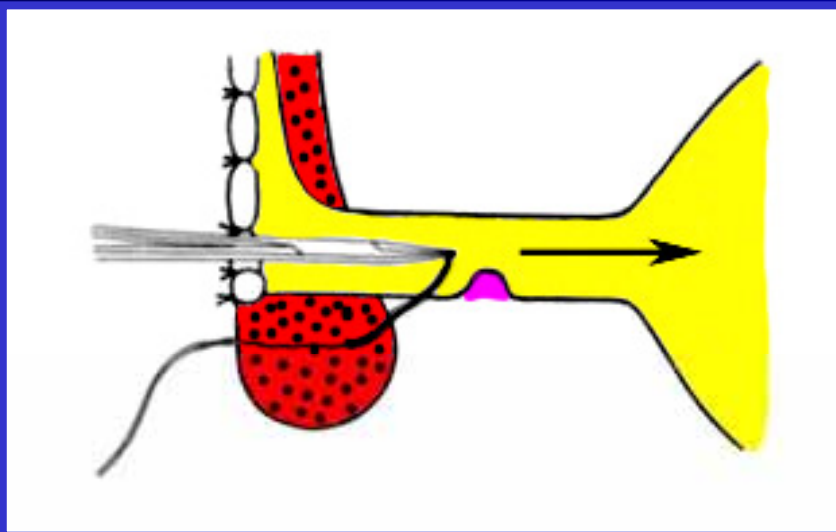
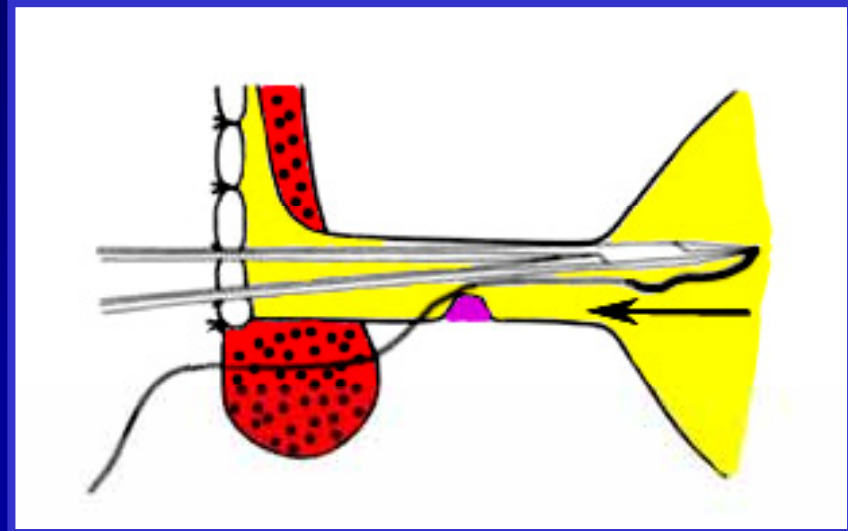
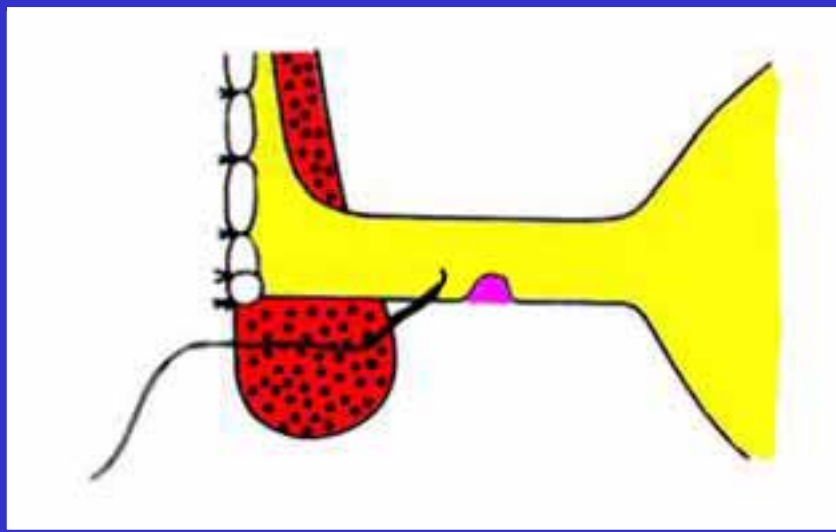


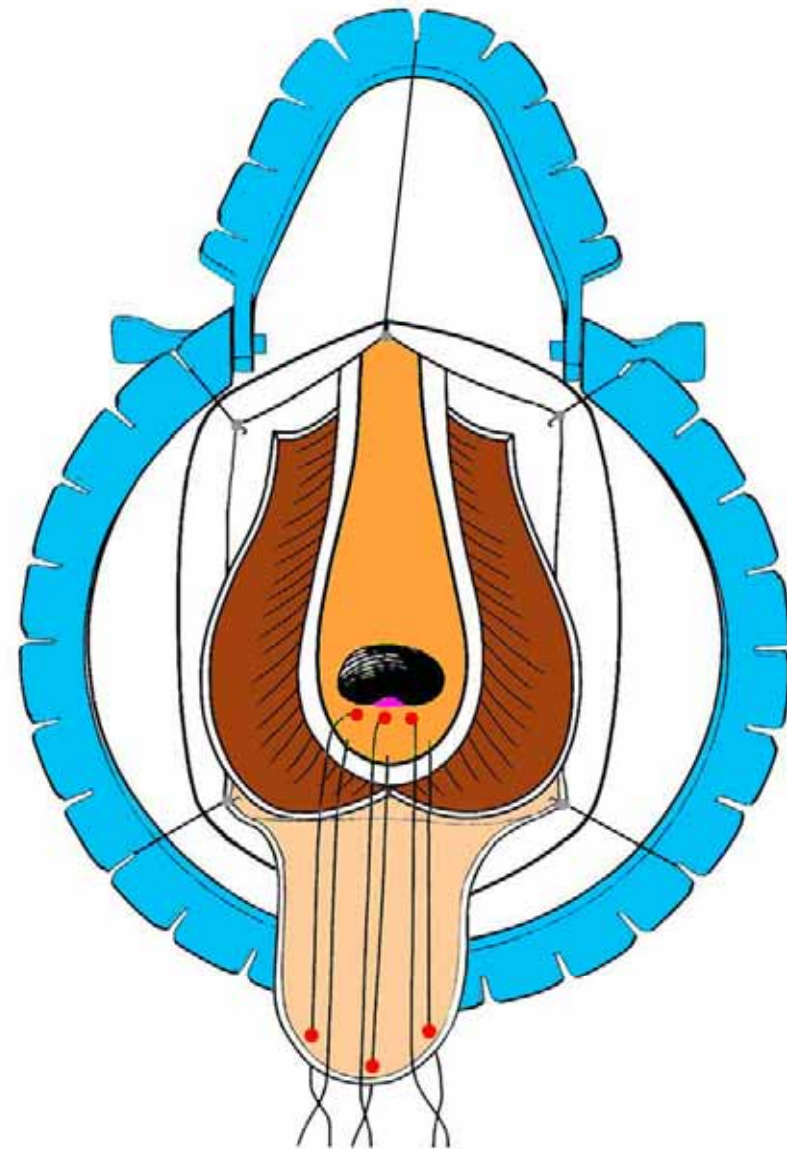
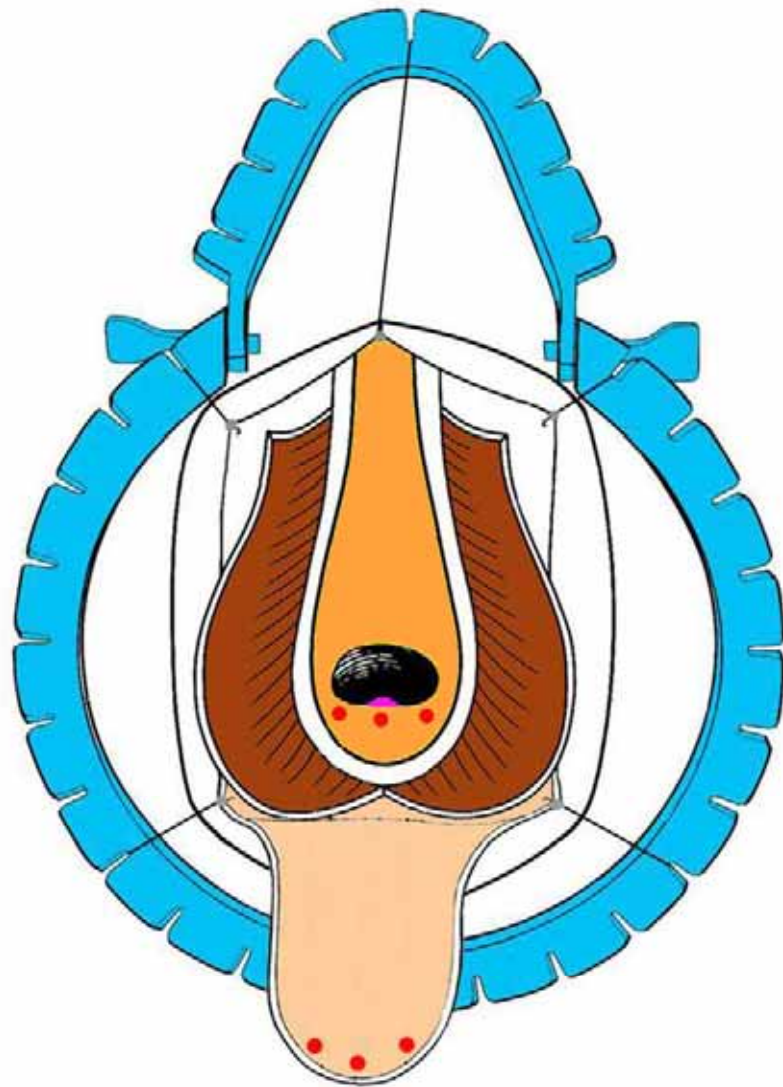


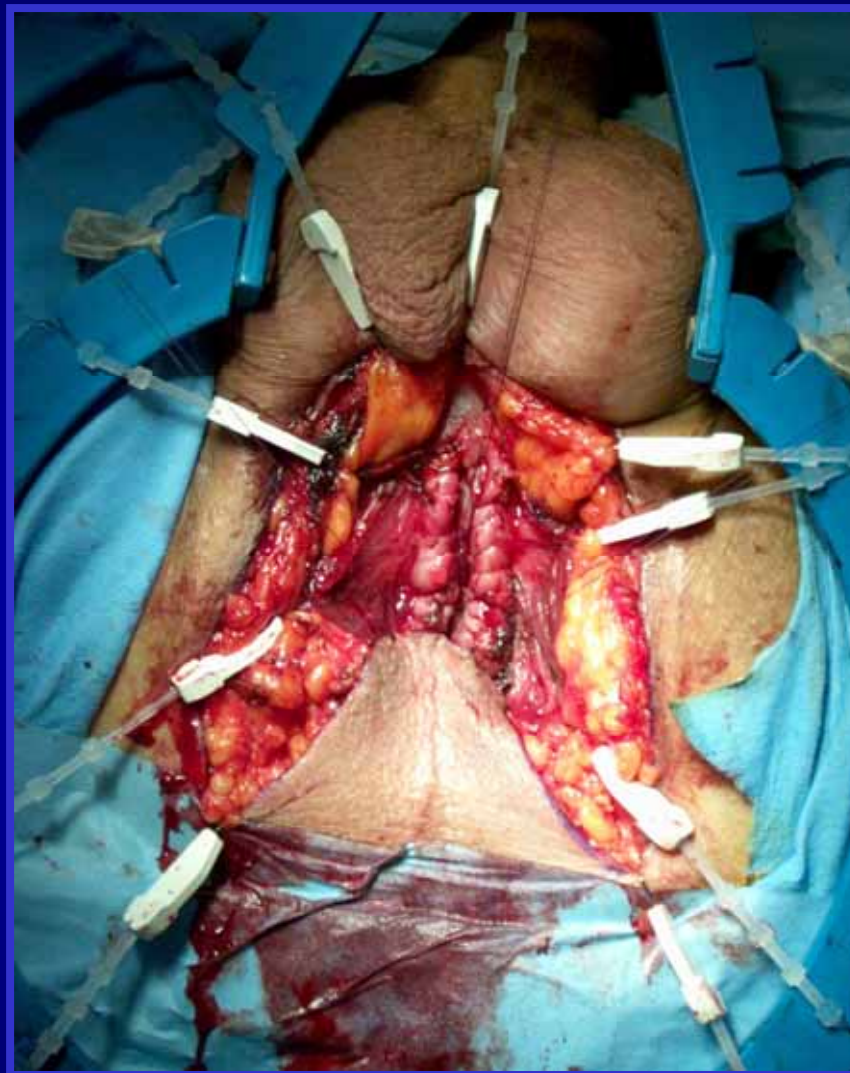
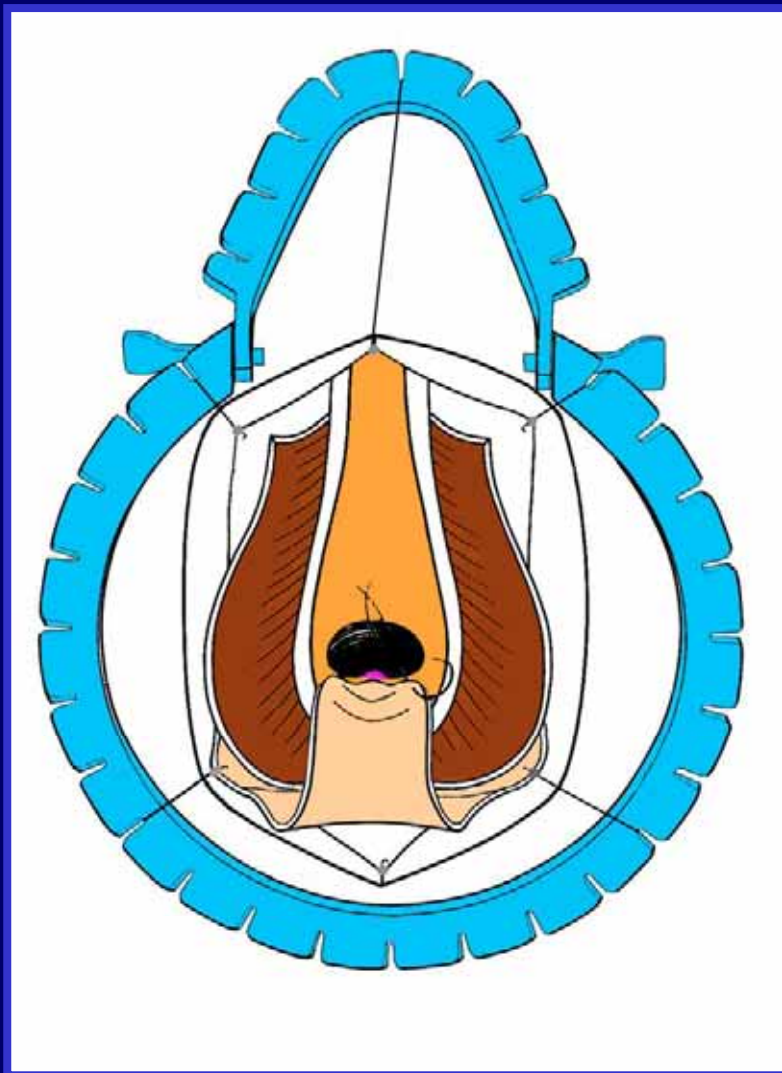
Webster's technique

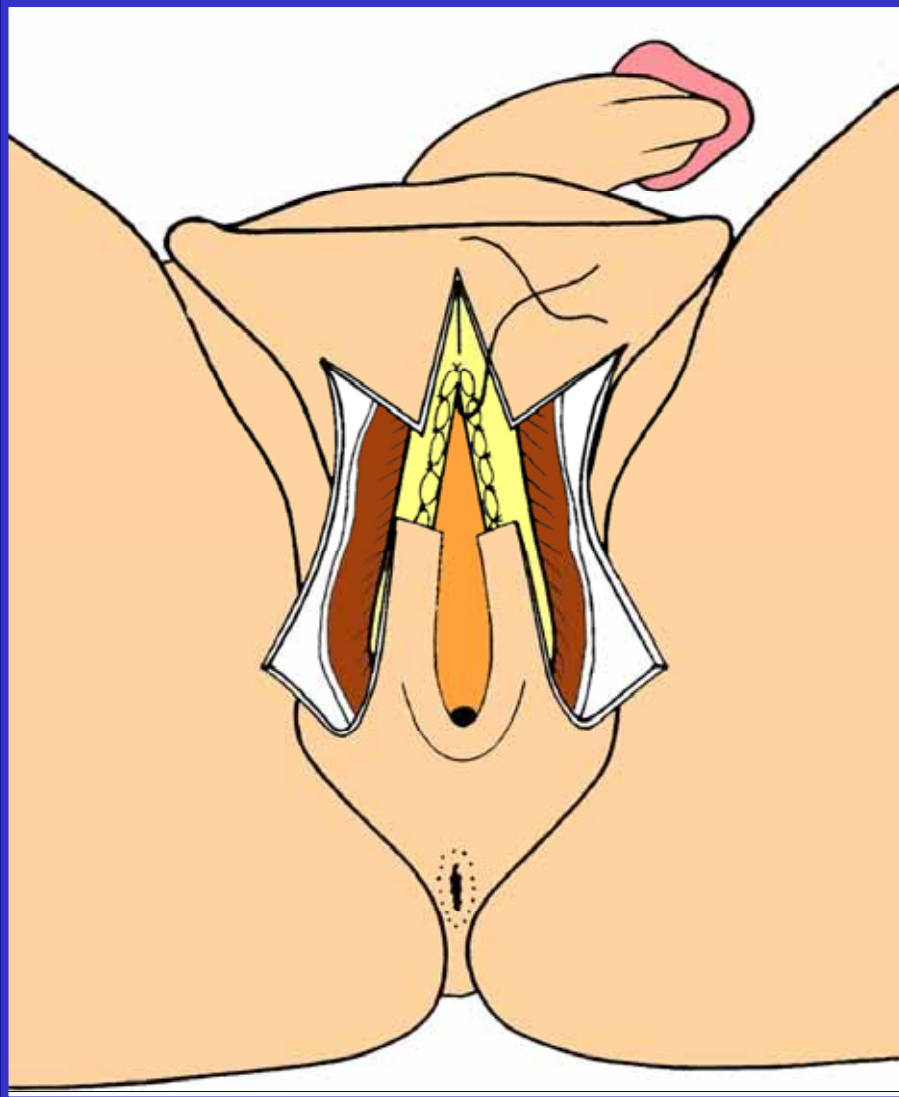


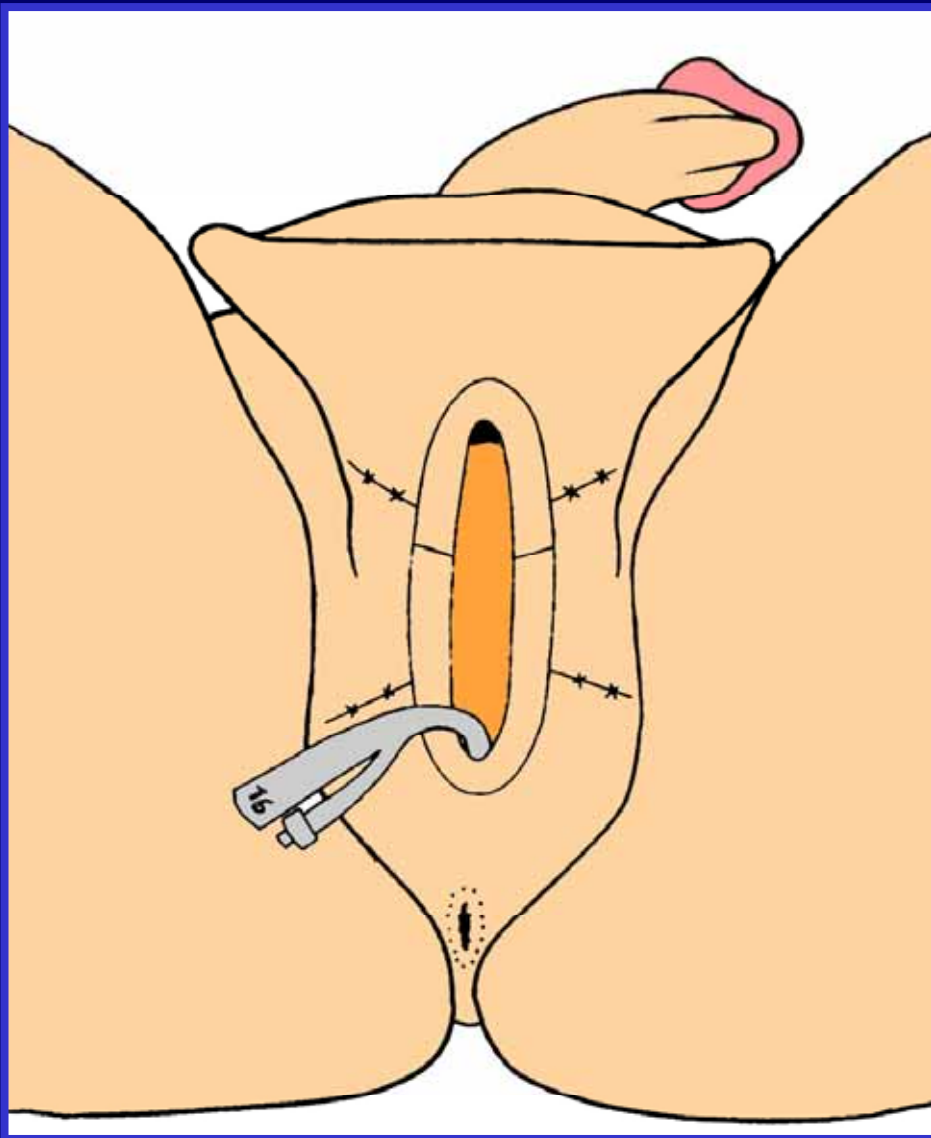
Webster's technique













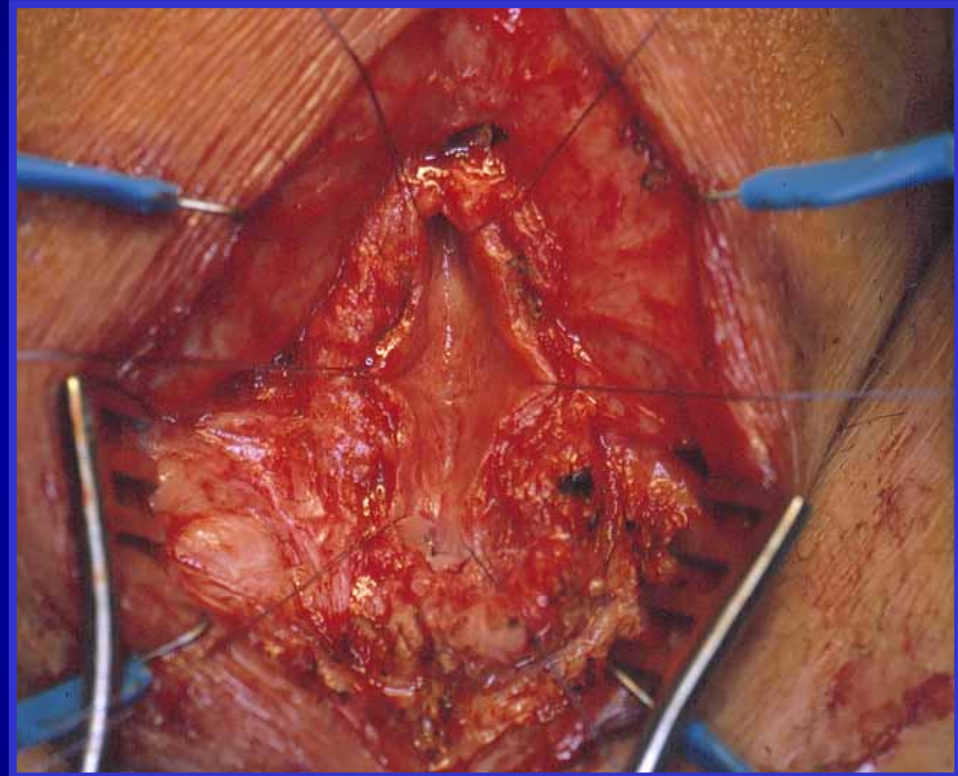
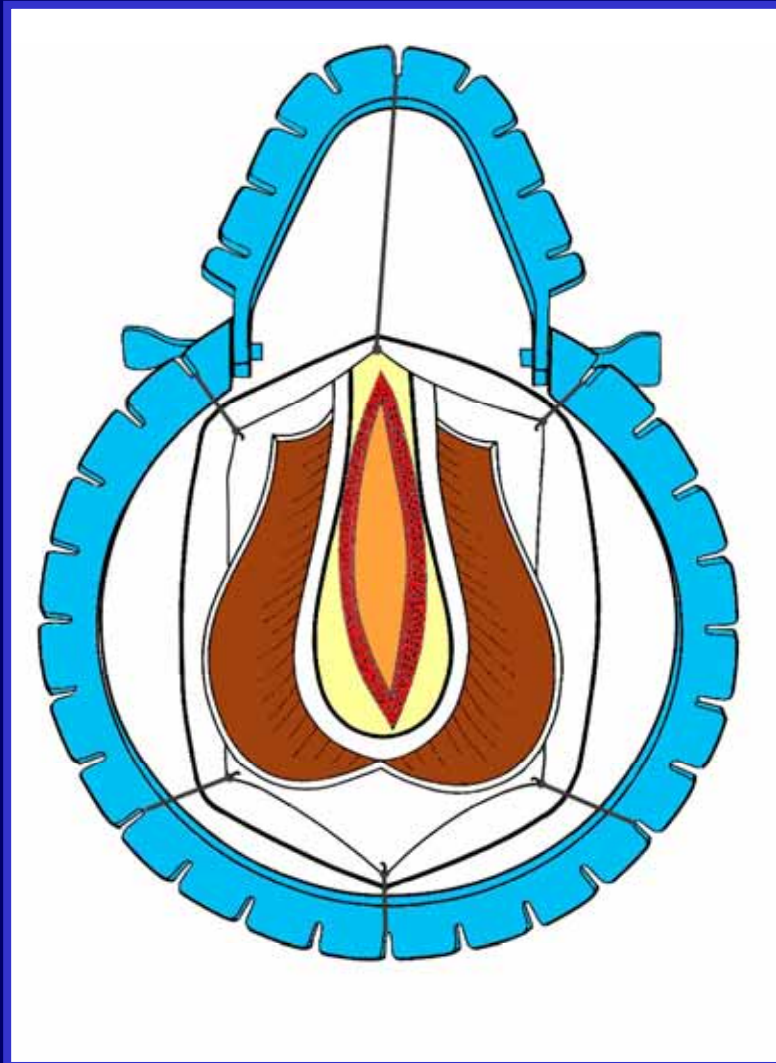
Second stage

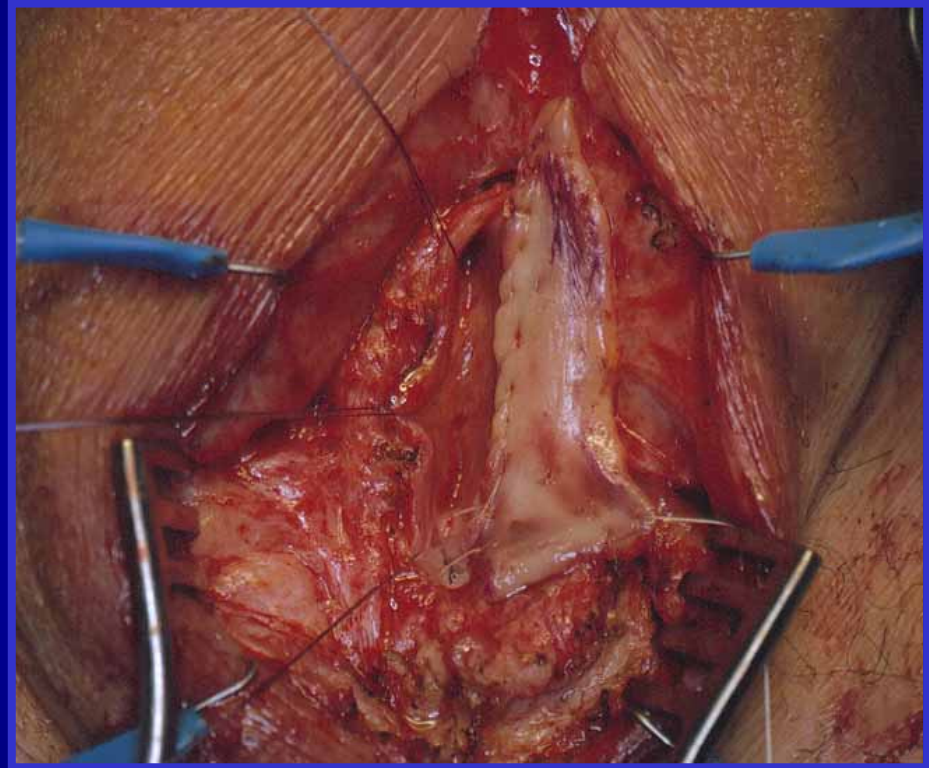
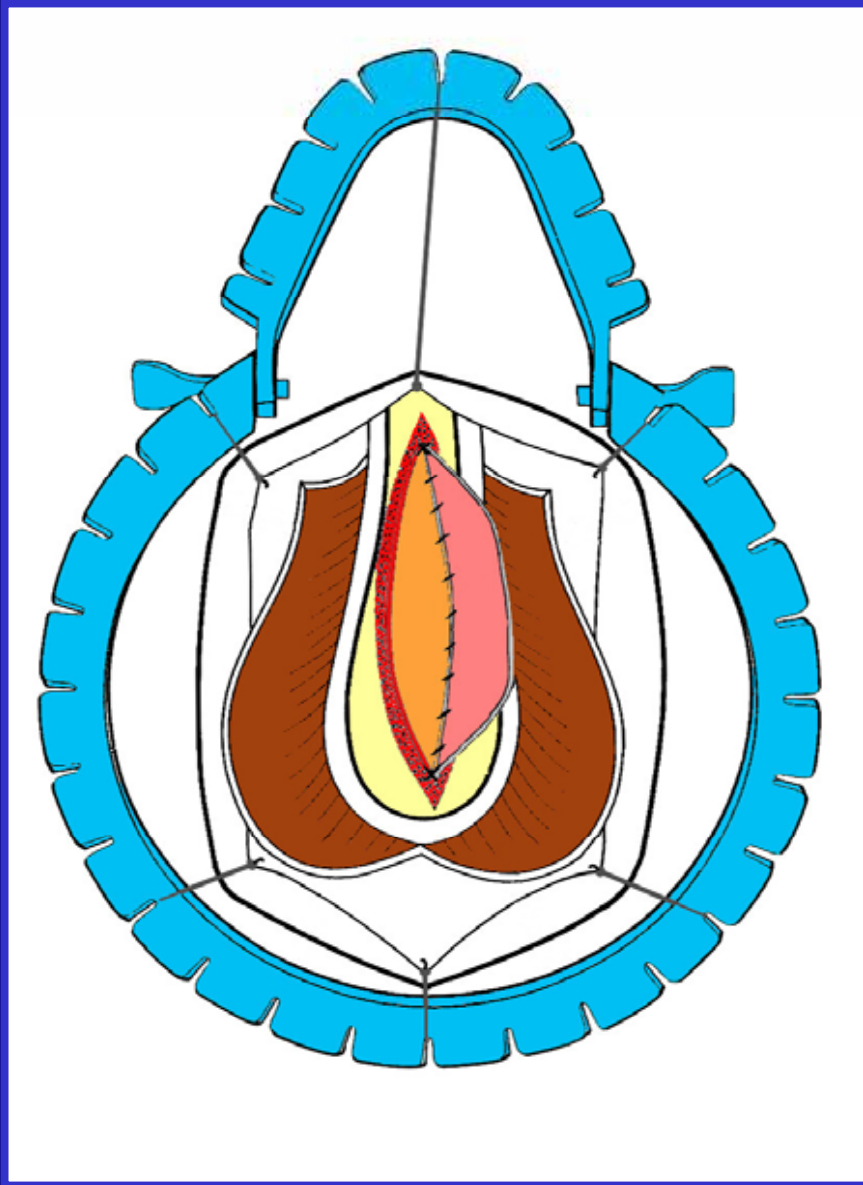


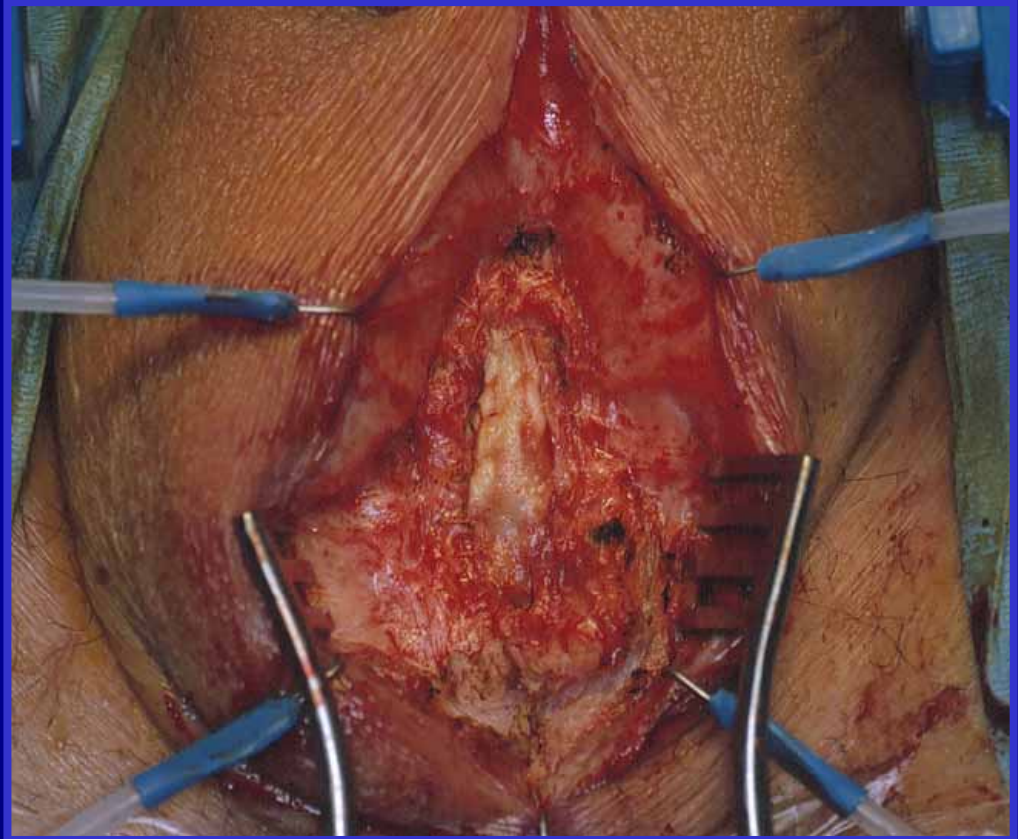
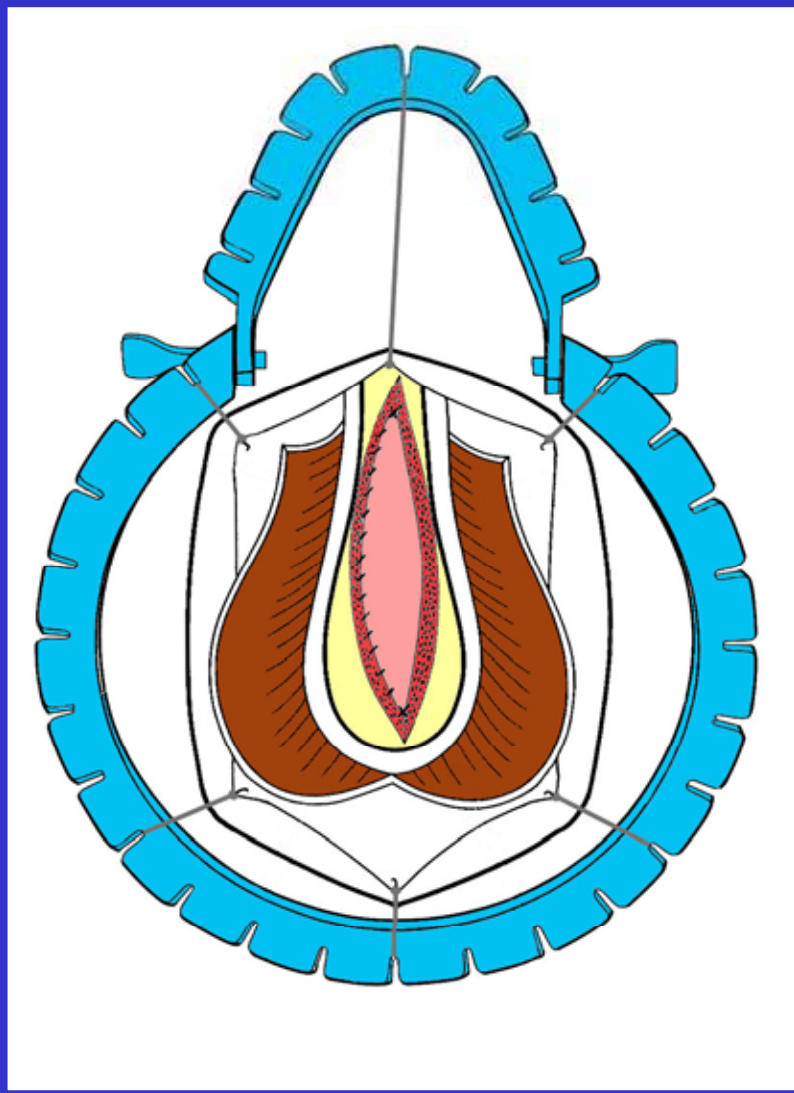


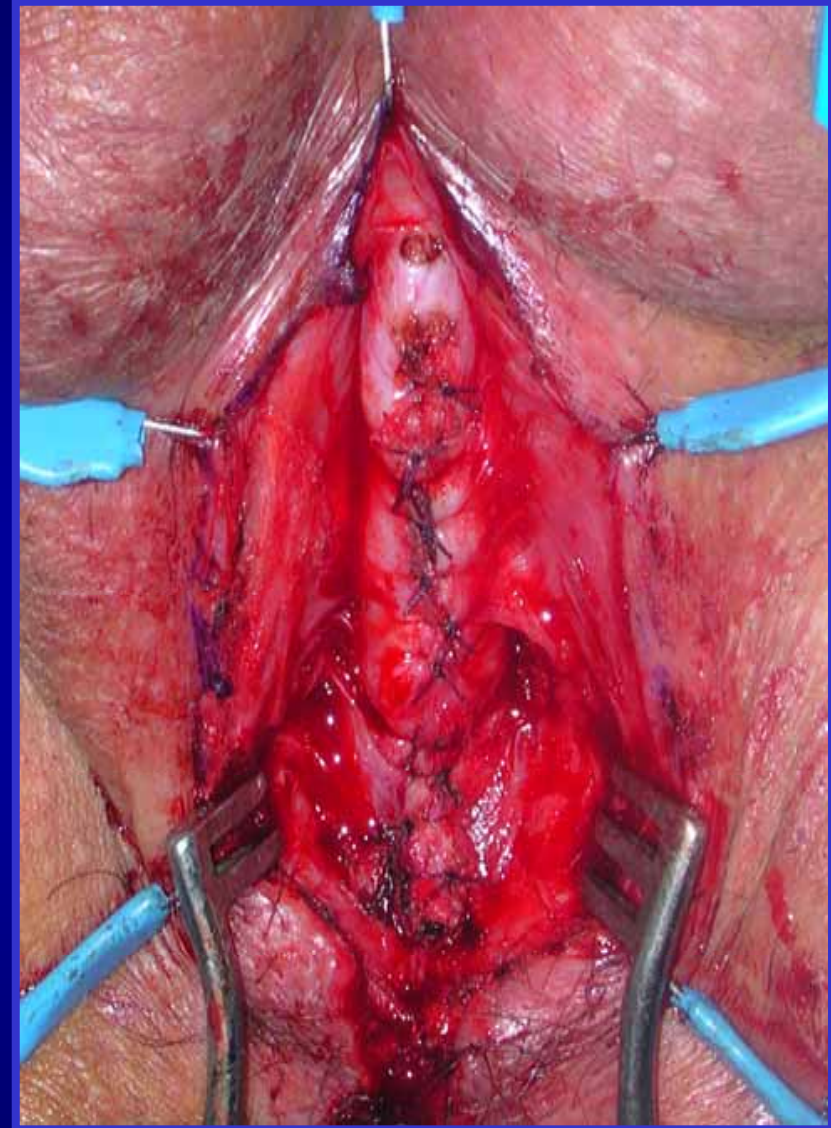
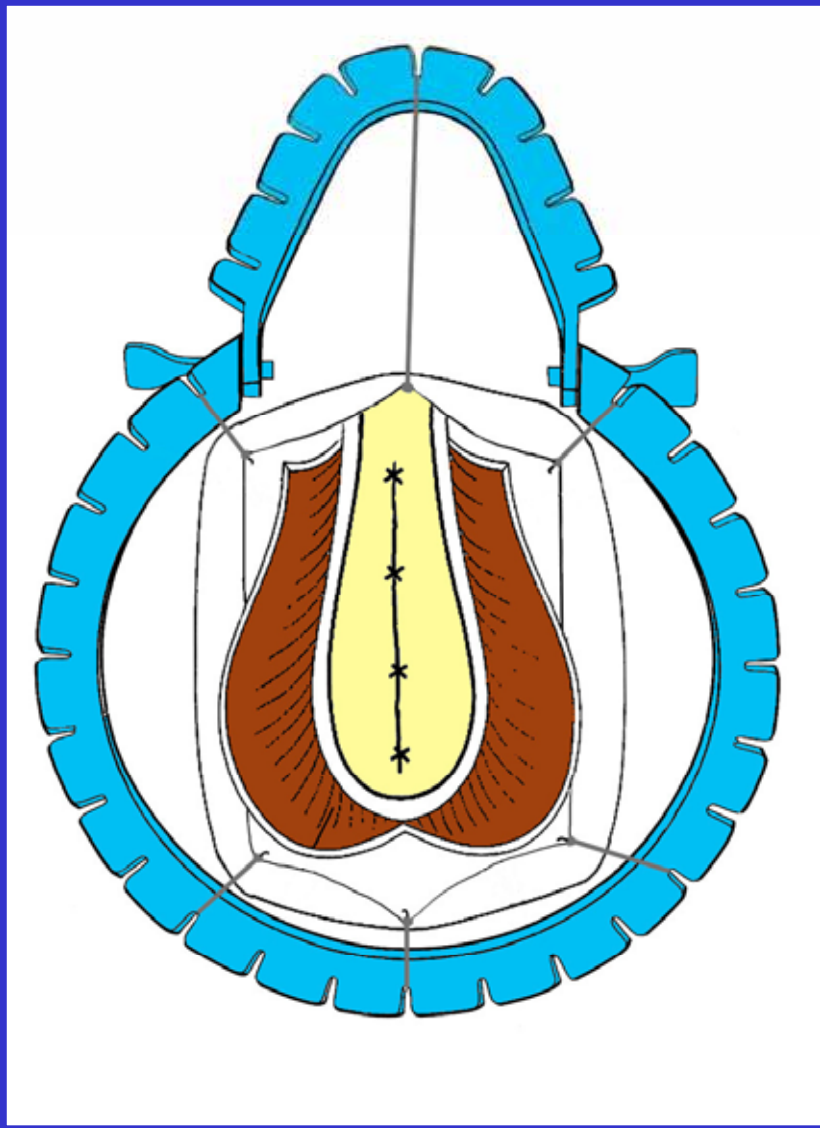
Center for Reconstructive Urethral Surgery



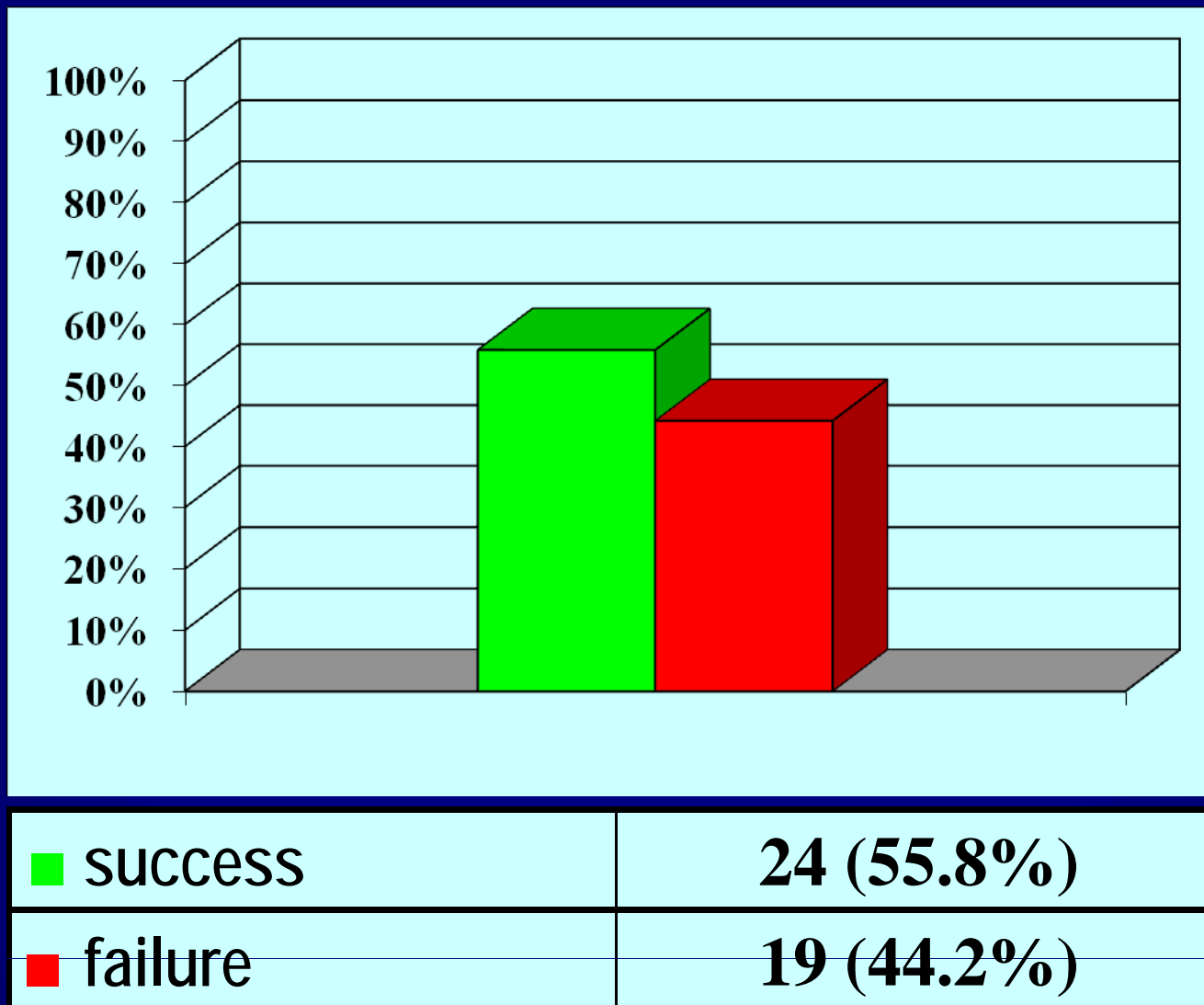








Results of 43 two-stage urethroplasty

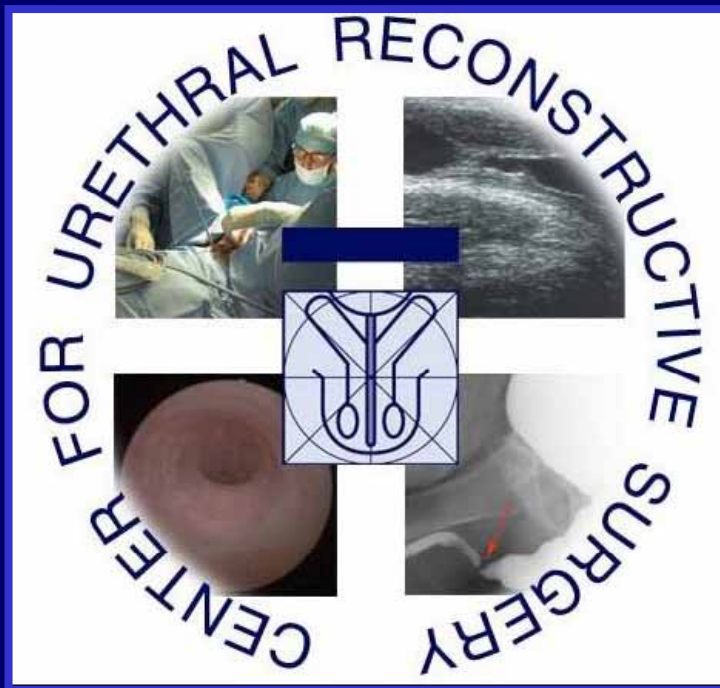


Conclusion

- **Reconstructive surgery for urethral strictures is continually evolving and the superiority of one approach over another is not yet clearly defined**
- **The reconstructive urethral surgeon must be fully able in the use of different surgical techniques to deal with any condition of the urethra at the time of surgery**



www.urethralcenter.it



What can you find in www.urethralcenter.it?

- Up-to-date Information on urethral pathology and surgery
- Everything you need to know about urethral stricture diseases
- How to make a diagnosis
- All the surgical techniques performed at our Center
- An up-to-date database of surgical outcome
- Information and opportunities for "hands-on" training
- Up-to-date literature
- The articles published by Guido Barbagli
- The books published by Guido Barbagli
- The lectures presented by Guido Barbagli at Meetings and Congress
- The history of urethral surgery
- An Atlas of Surgical Techniques
- Video
- Comments and suggestion for the urologists of XXI century
- ... and more!

The website is up-to-date monthly

**Next month, this lecture will be fully available in
our website**

Thank you !



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