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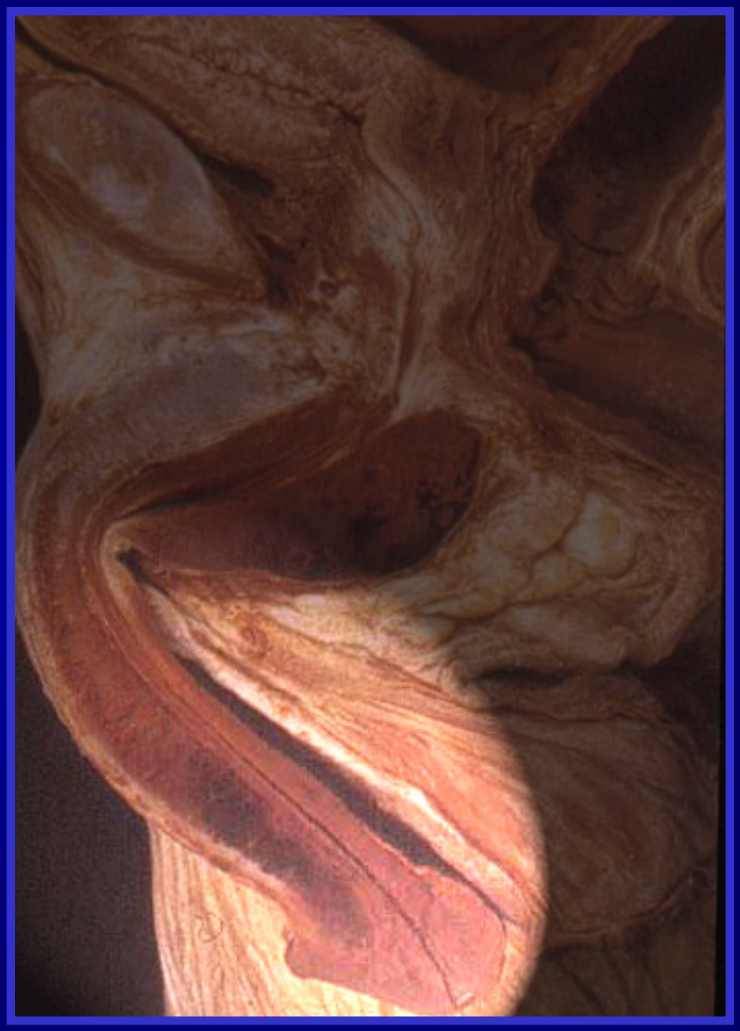
Hong Kong Urological Association
Urethroplasty Workshop
Division of Urology – Tuen Mun Hospital
Hong Kong
February 9 - 10, 2009

Penile and bulbar urethroplasty

Surgical techniques and results

Penile urethra

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



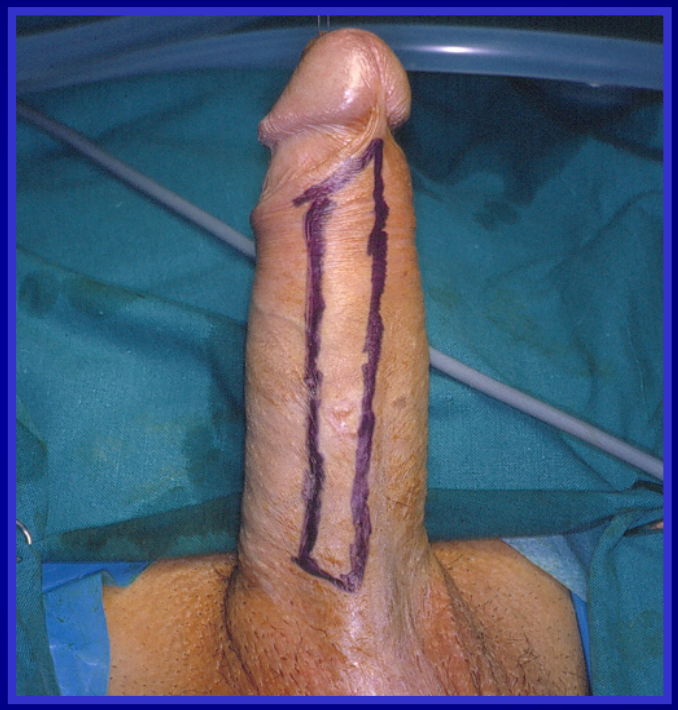
Etiology of penile urethral strictures

- Failed hypospadias repair
- Lichen sclerosus

- Trauma
- Instrumentation
- Catheter
- Infection
- Other cause

In penile urethral strictures due to:

- Trauma
- Instrumentation
- Catheter
- Infection
- Other cause

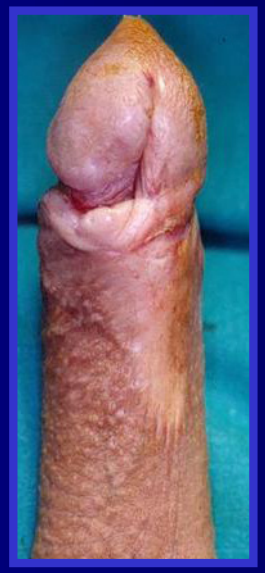


The penis is normal: one-stage repair

In penile urethral strictures due to:

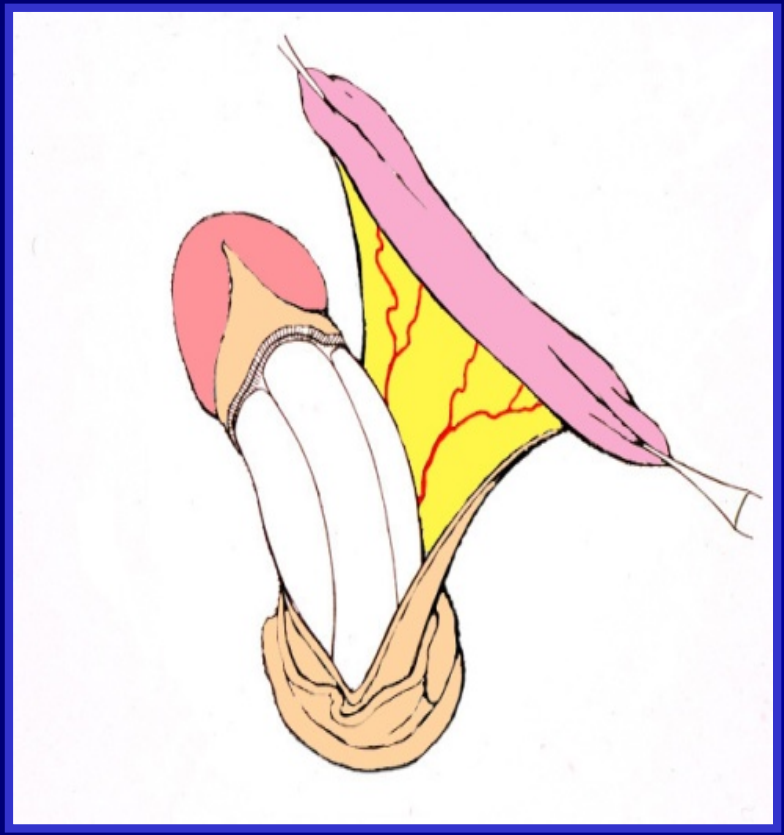
Failed hypospadias repair

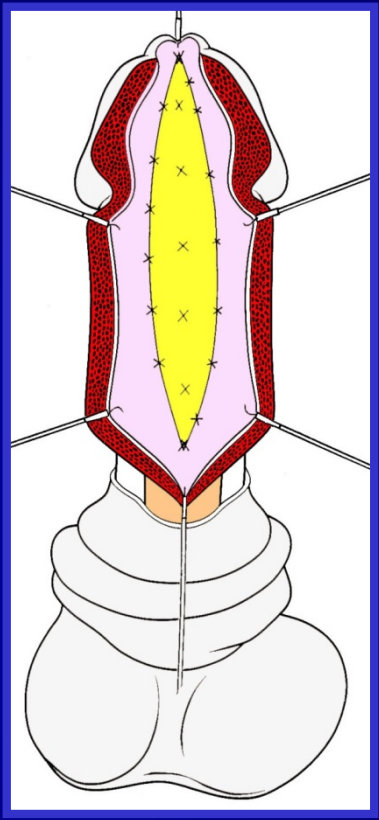
Lichen sclerosus



The penis is abnormal: two-stage repair

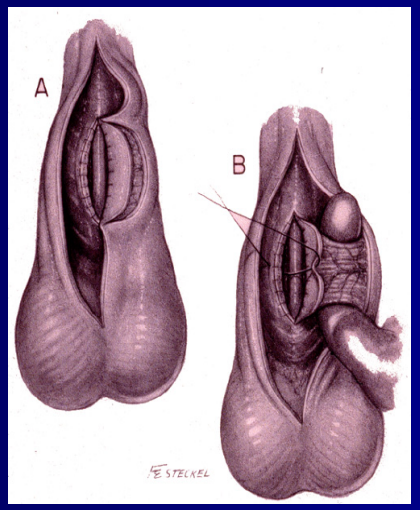
One-stage penile urethroplasty





Flap or graft?

One-stage flap urethroplasty



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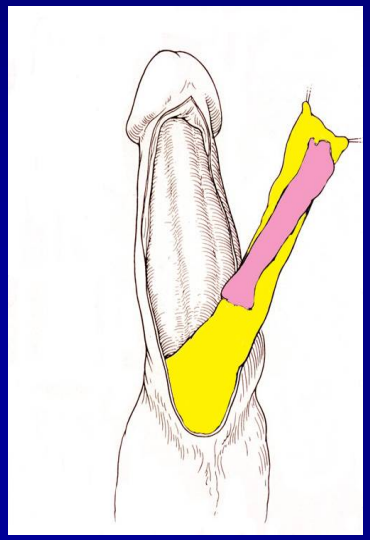
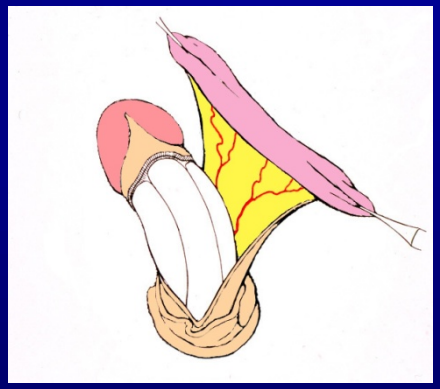
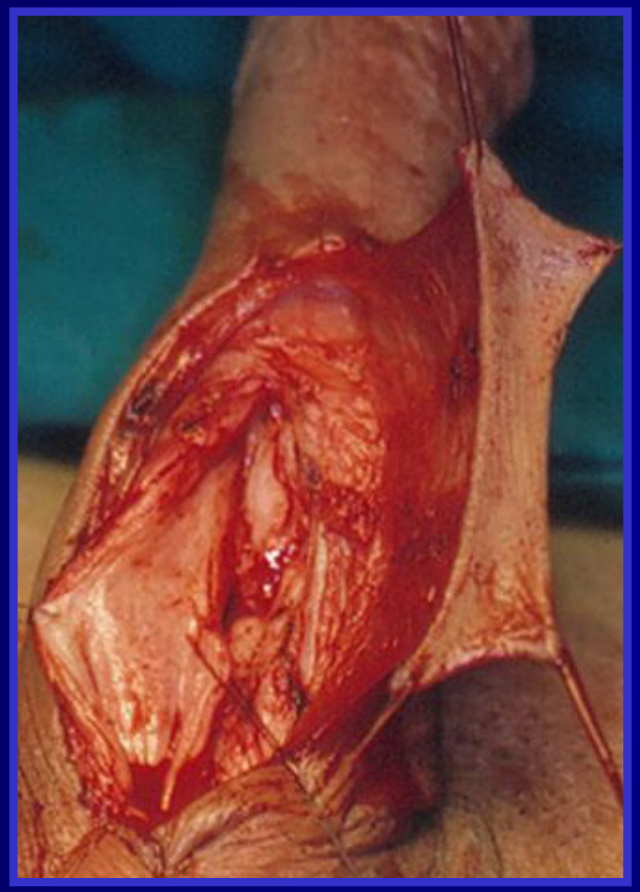


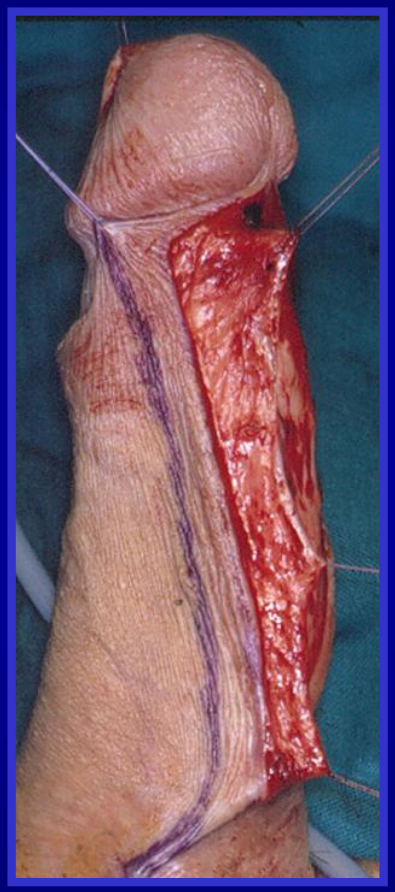
JORDAN

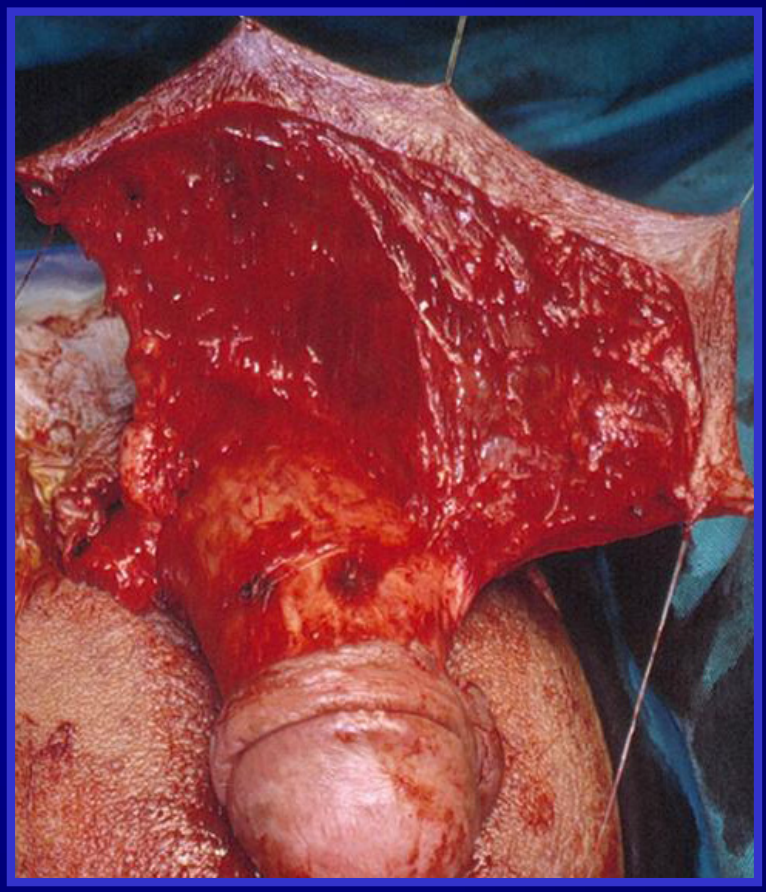


McANINCH

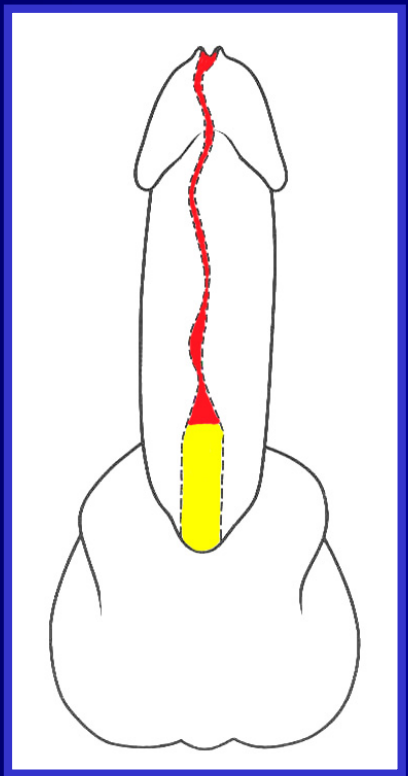
Dartos fascial flap with skin island

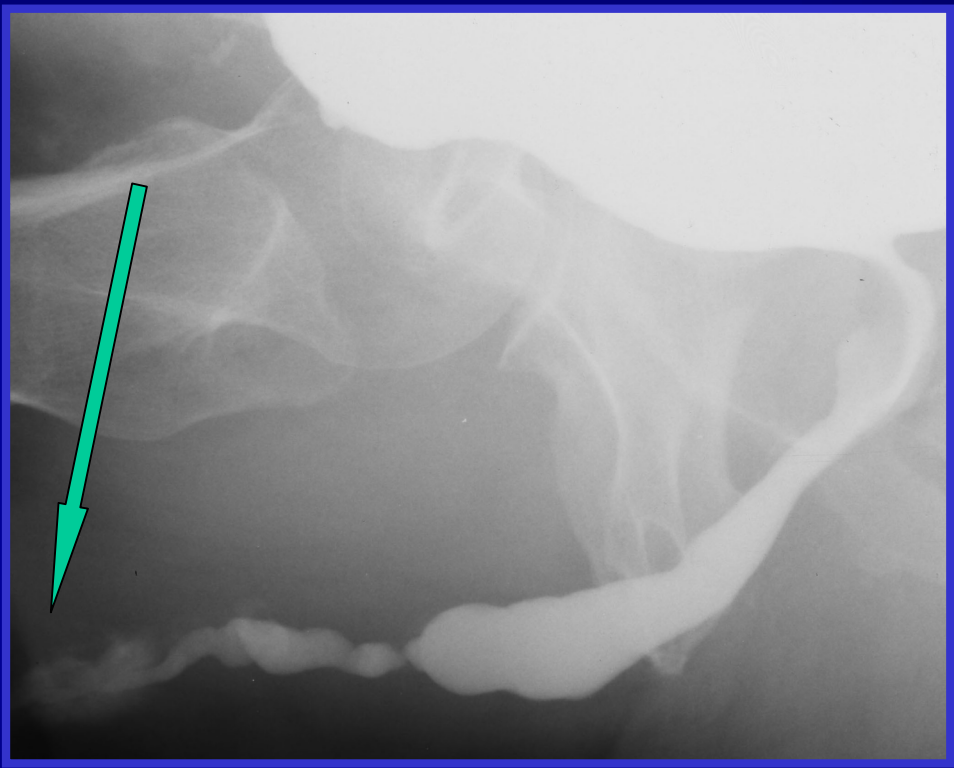






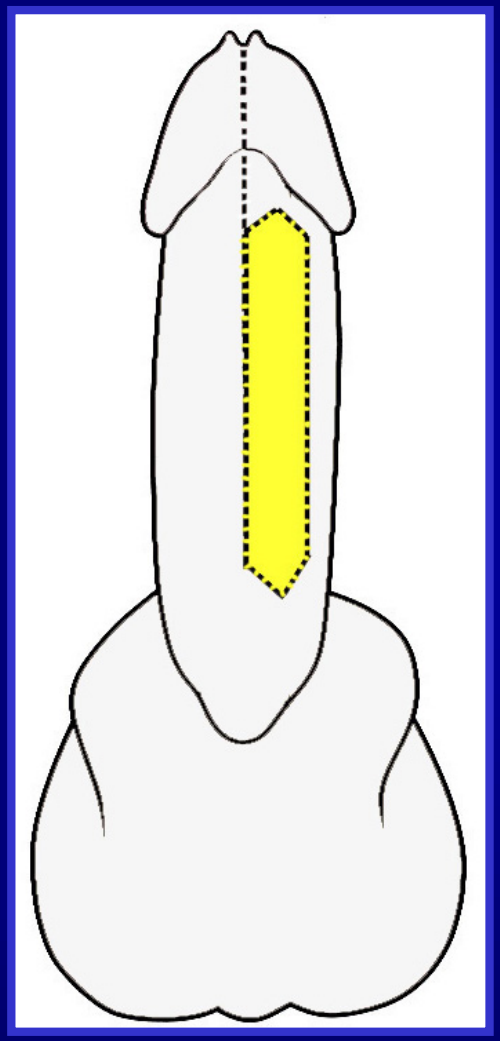
Jordan's flap

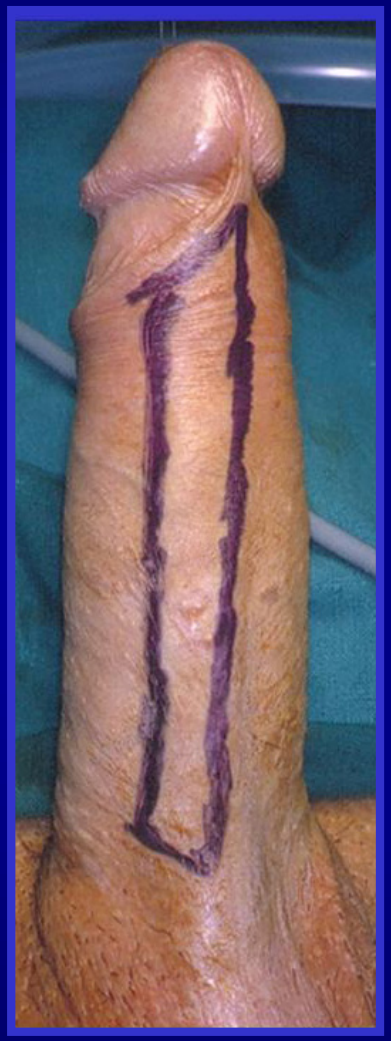




Penile urethral stricture involving external urinary meatus

Jordan's flap





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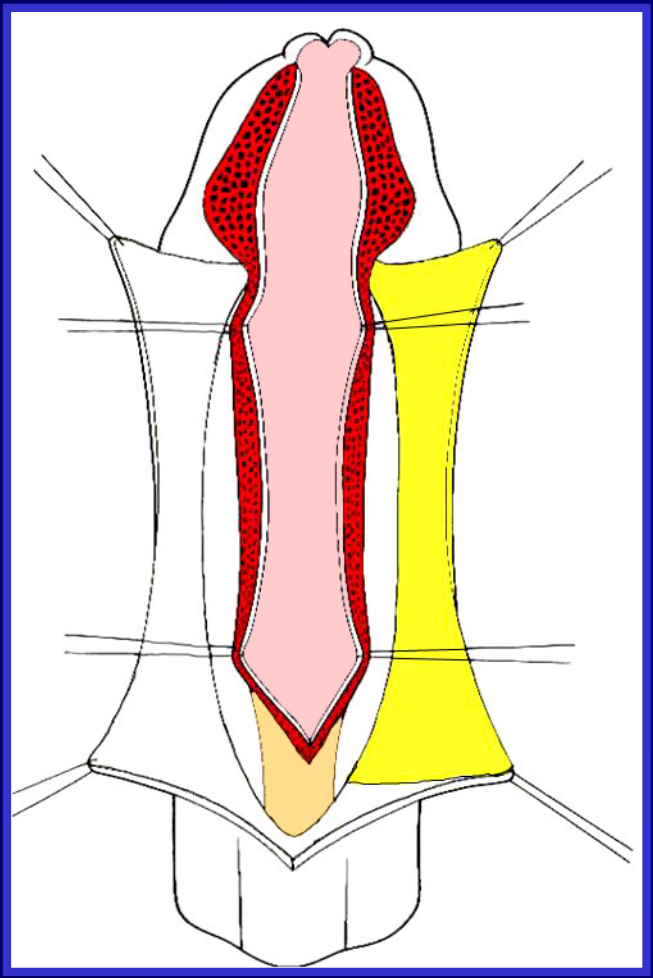

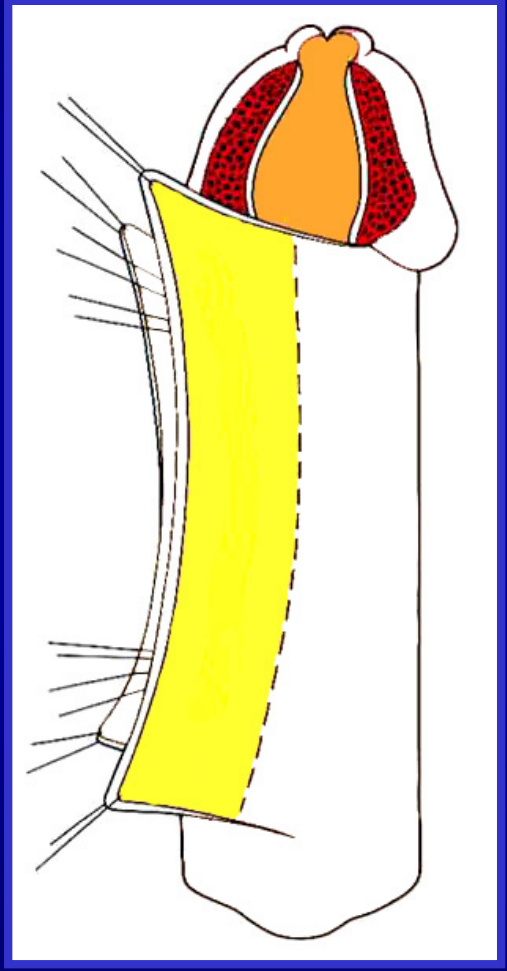

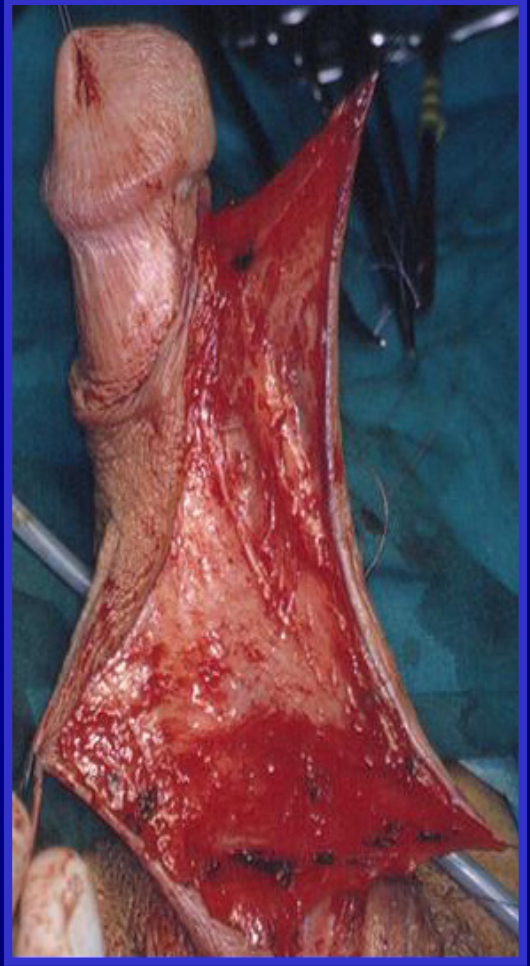

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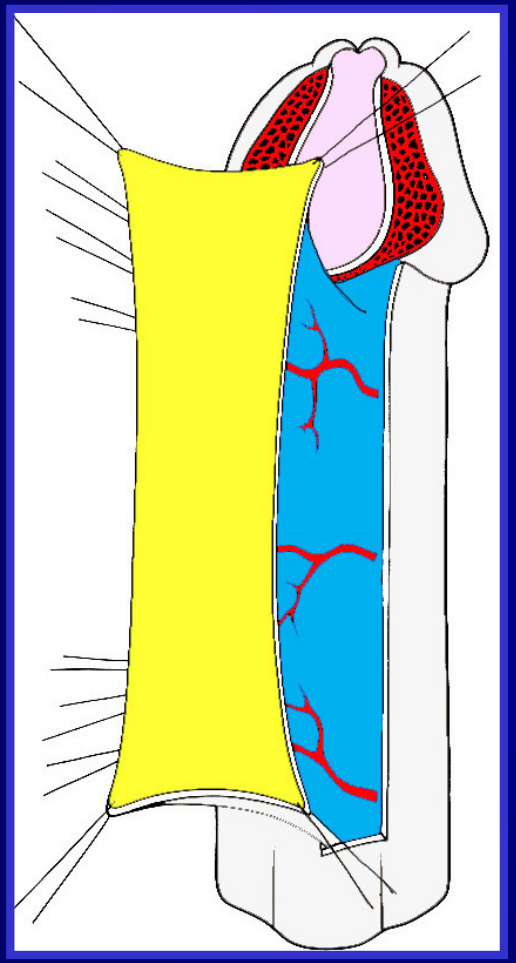

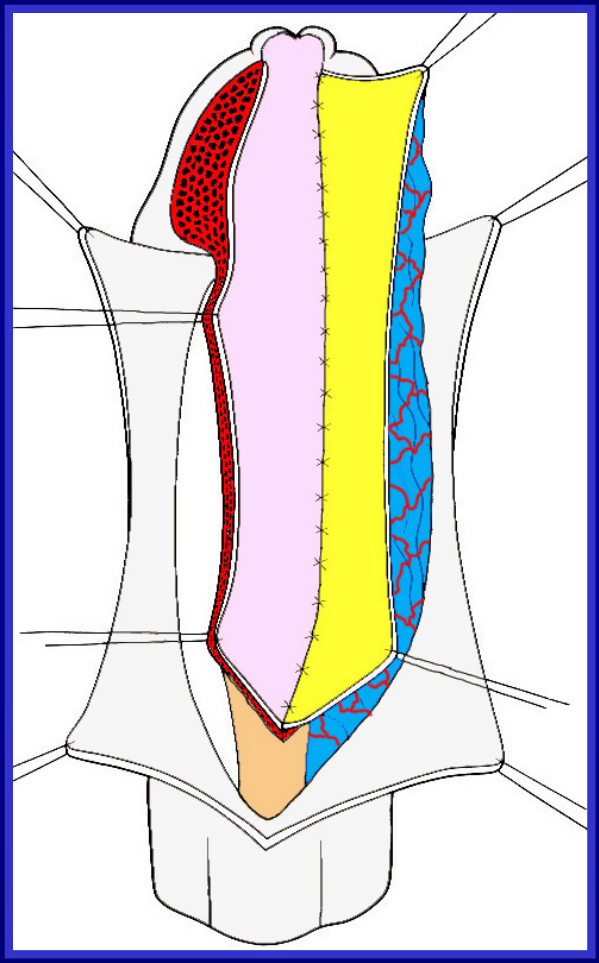

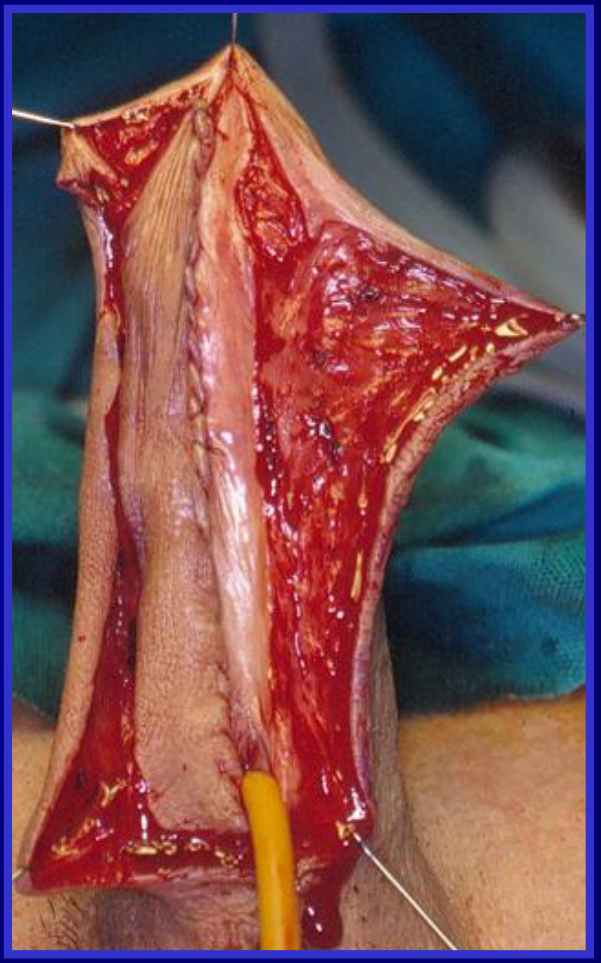

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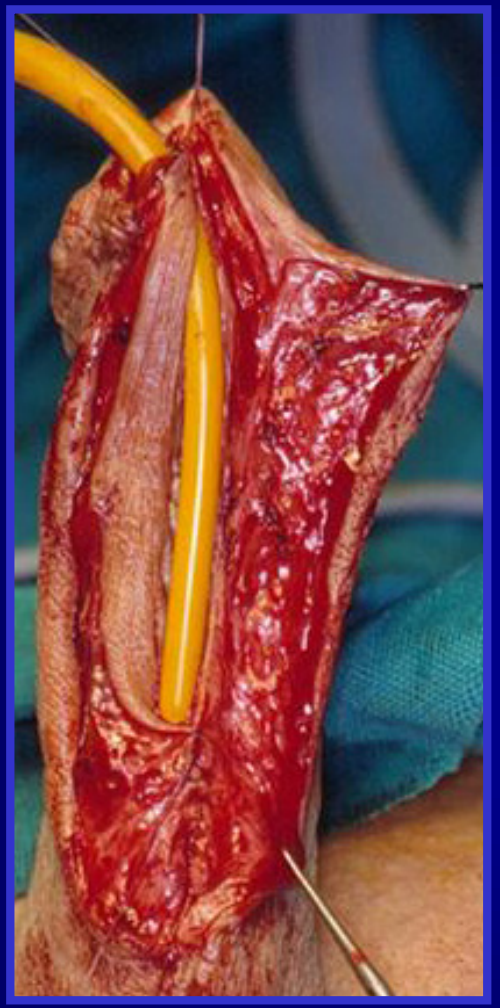

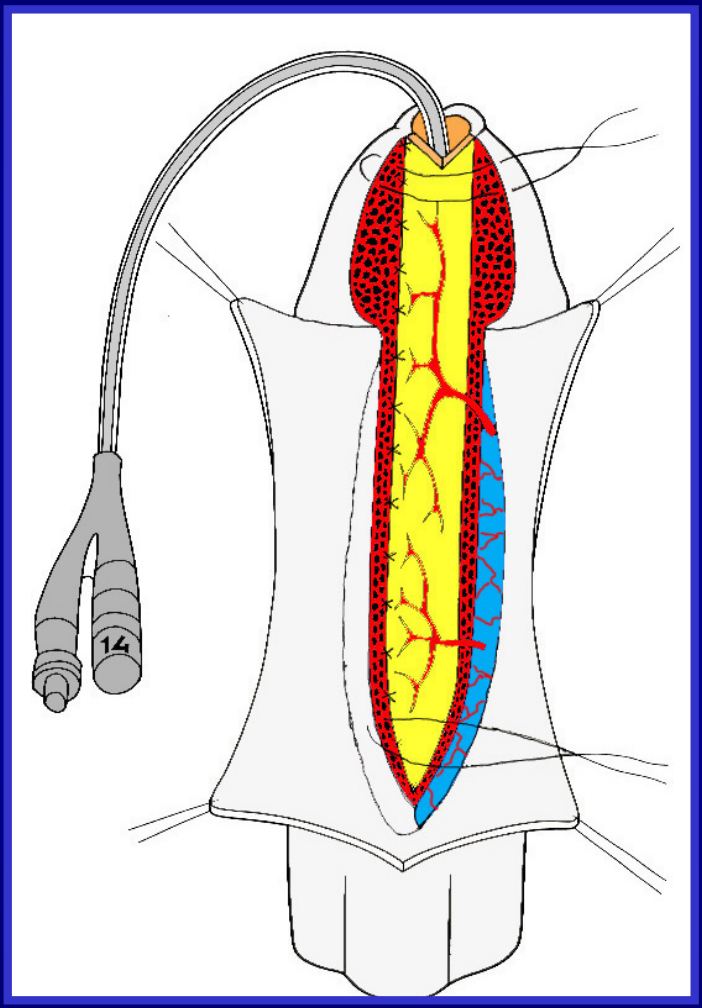

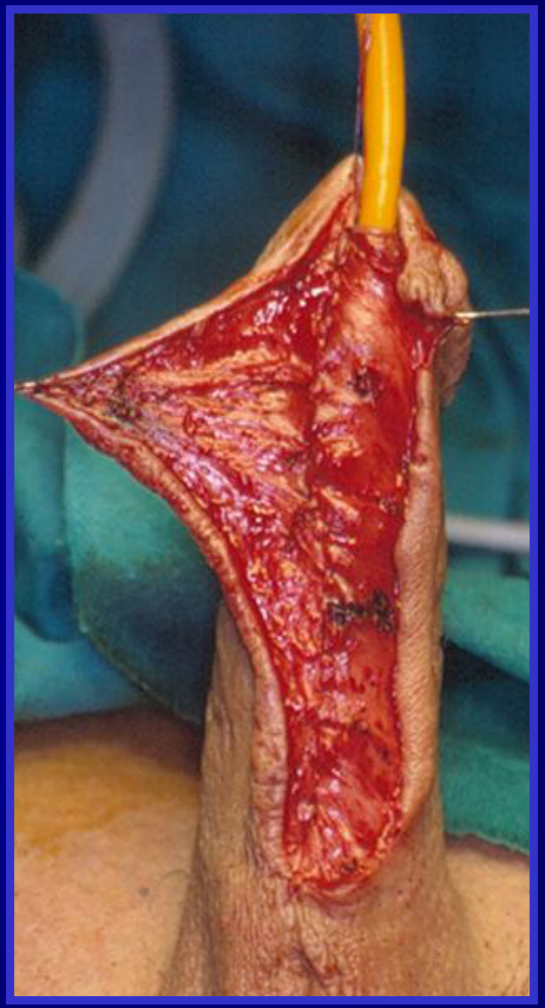

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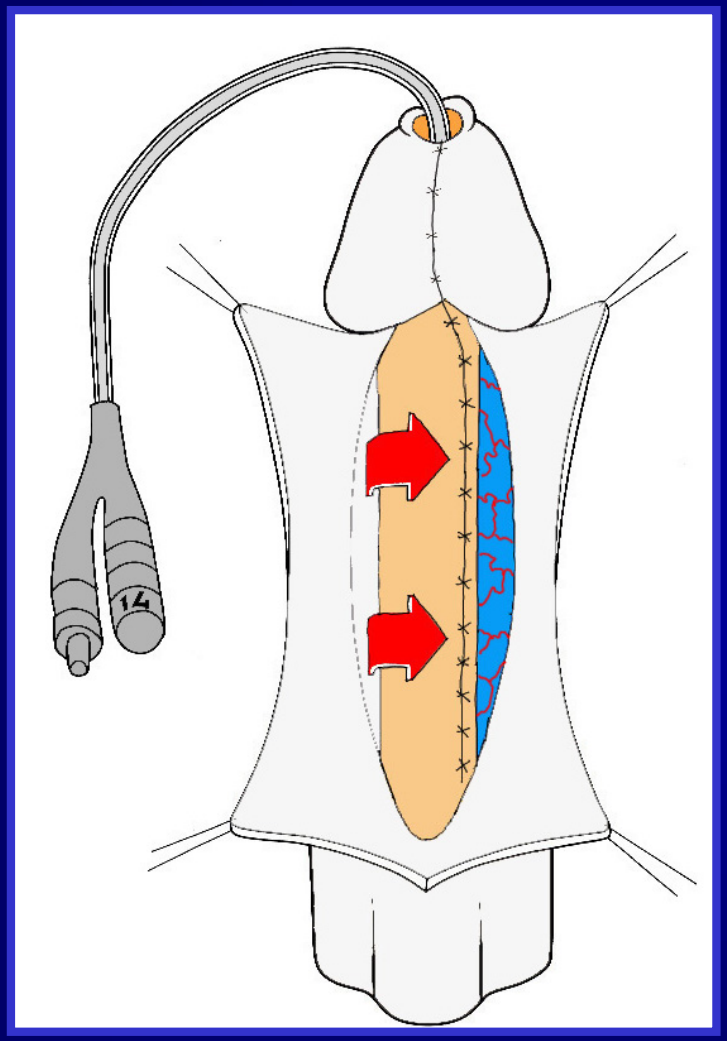
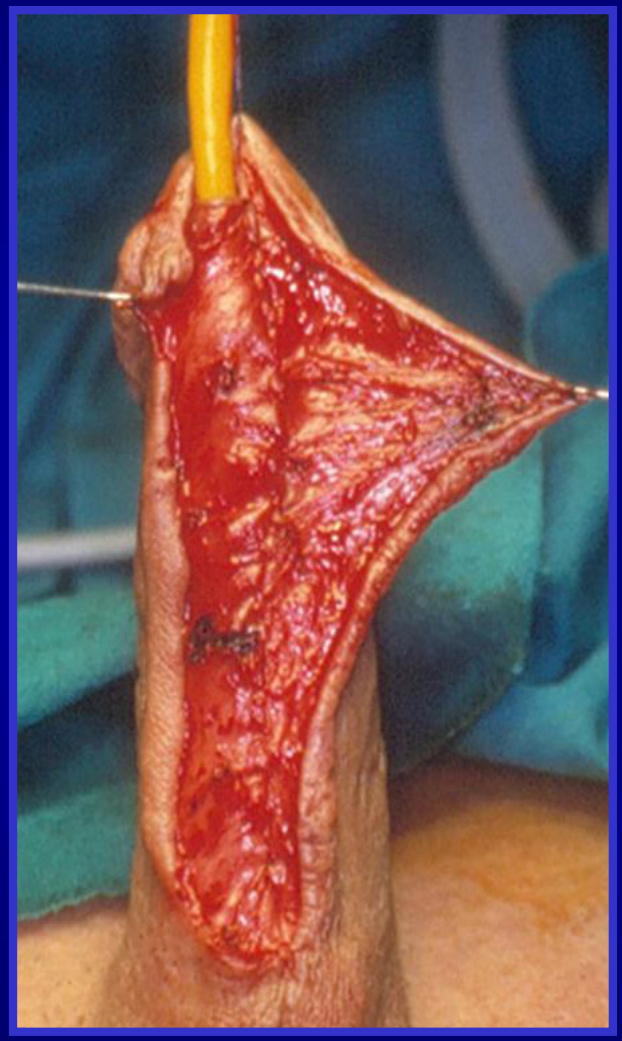
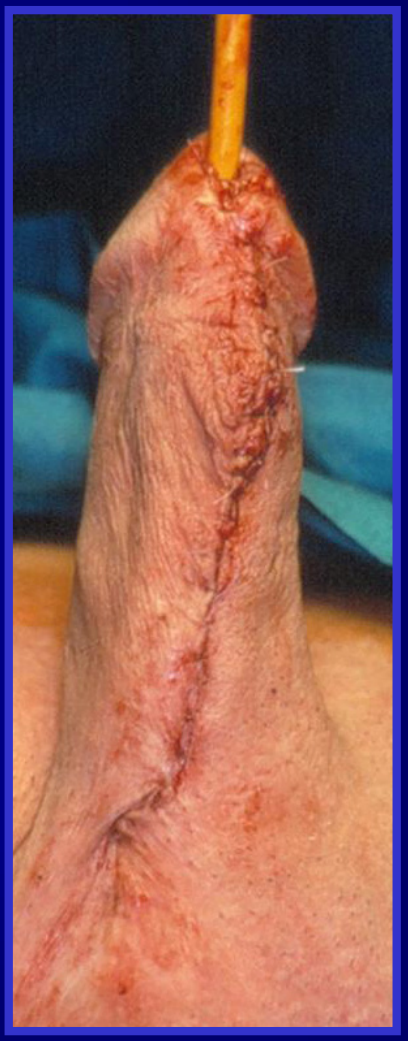
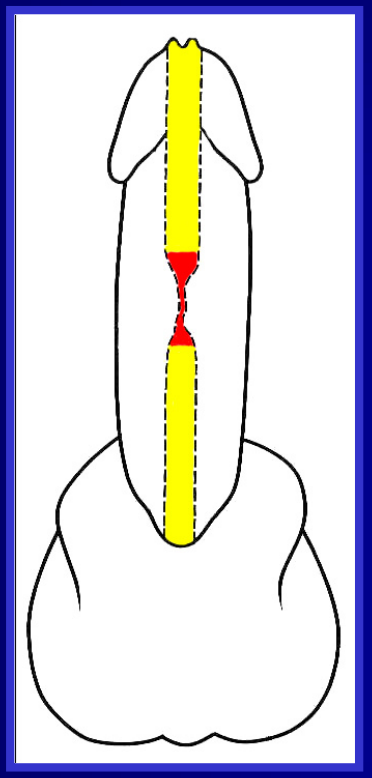
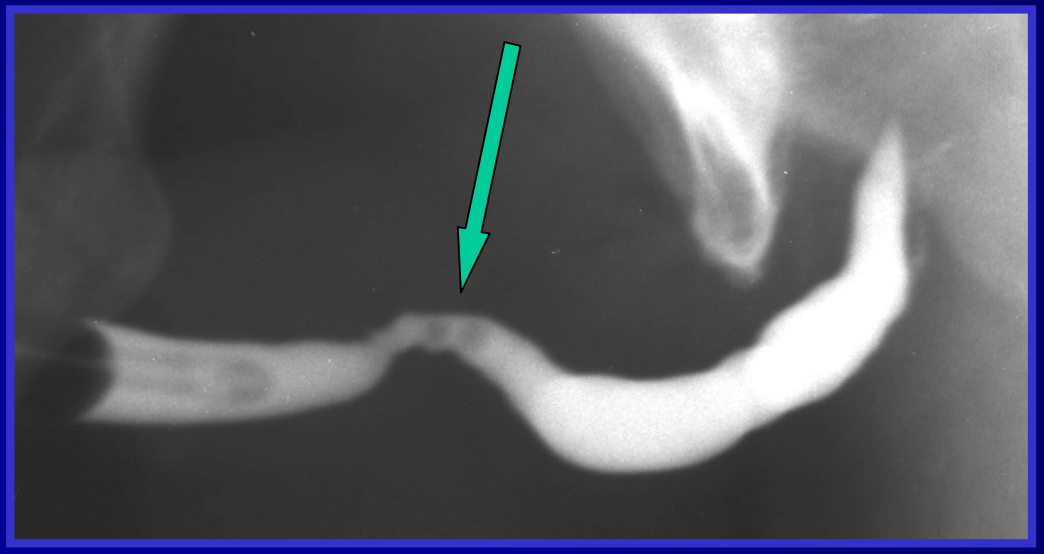






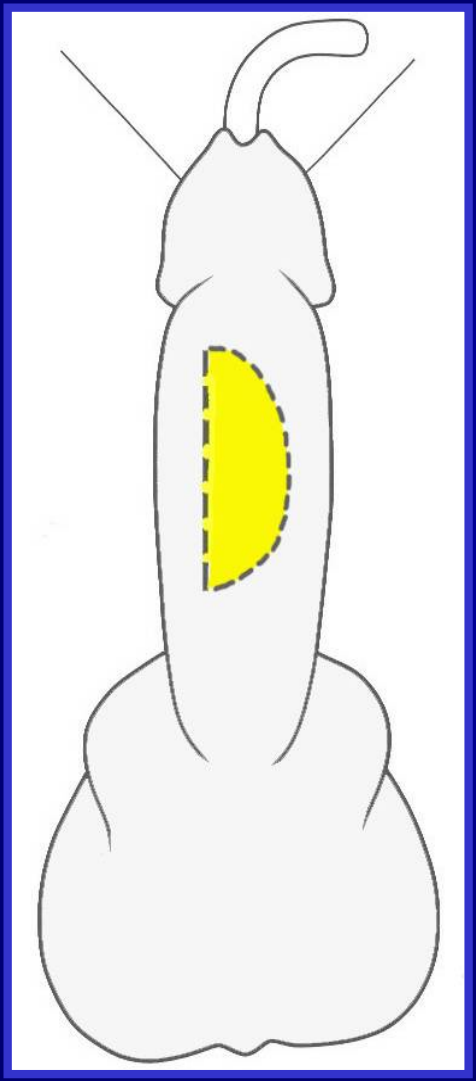
Orandi's flap

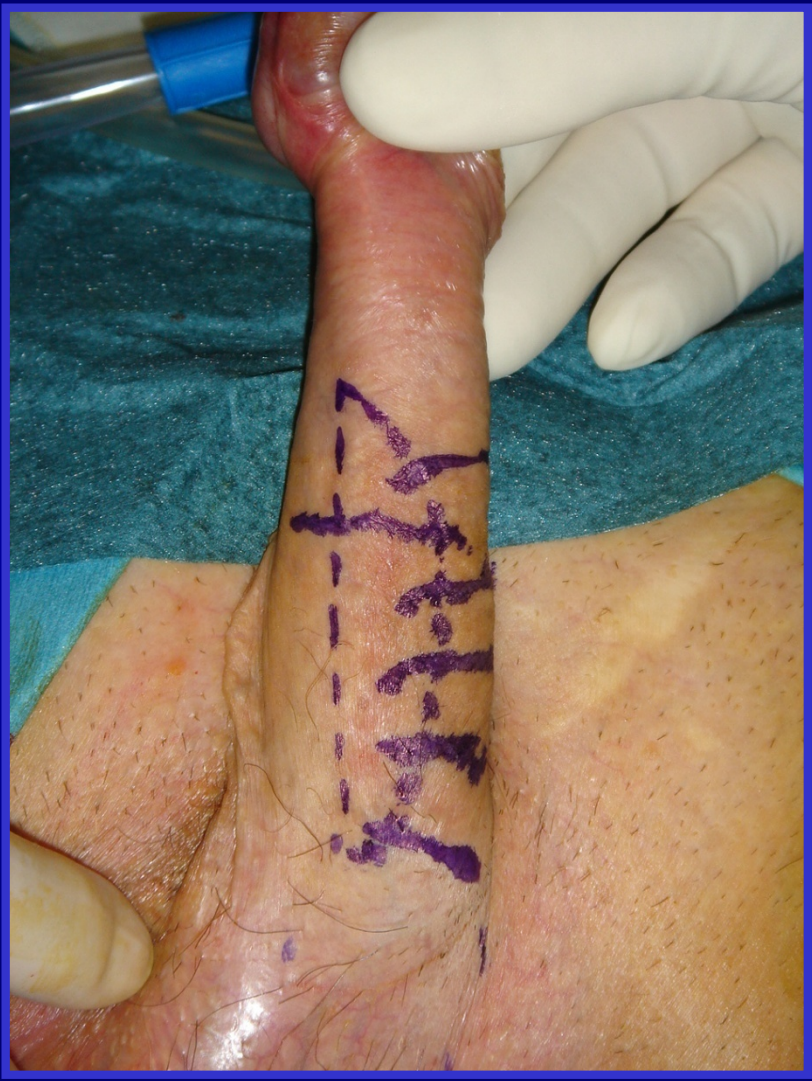




Penile urethral stricture in the middle tract of the shaft

Orandi's flap





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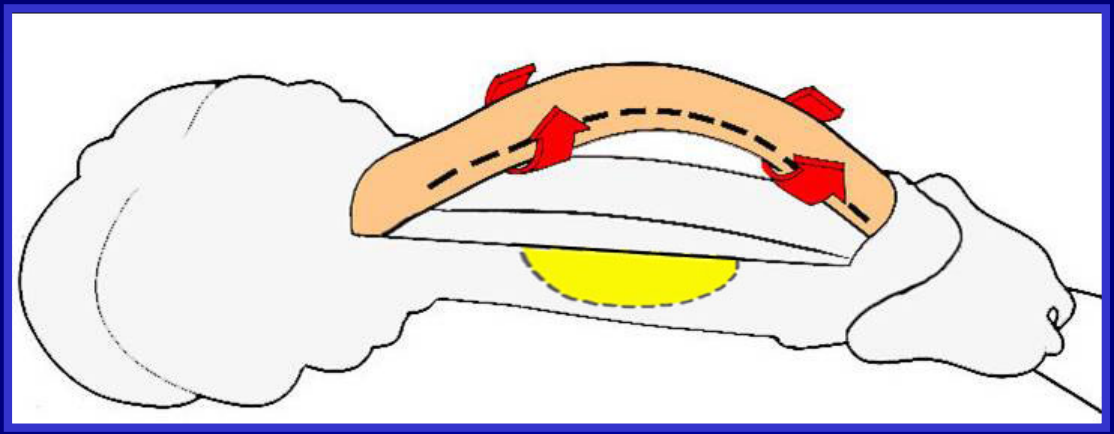

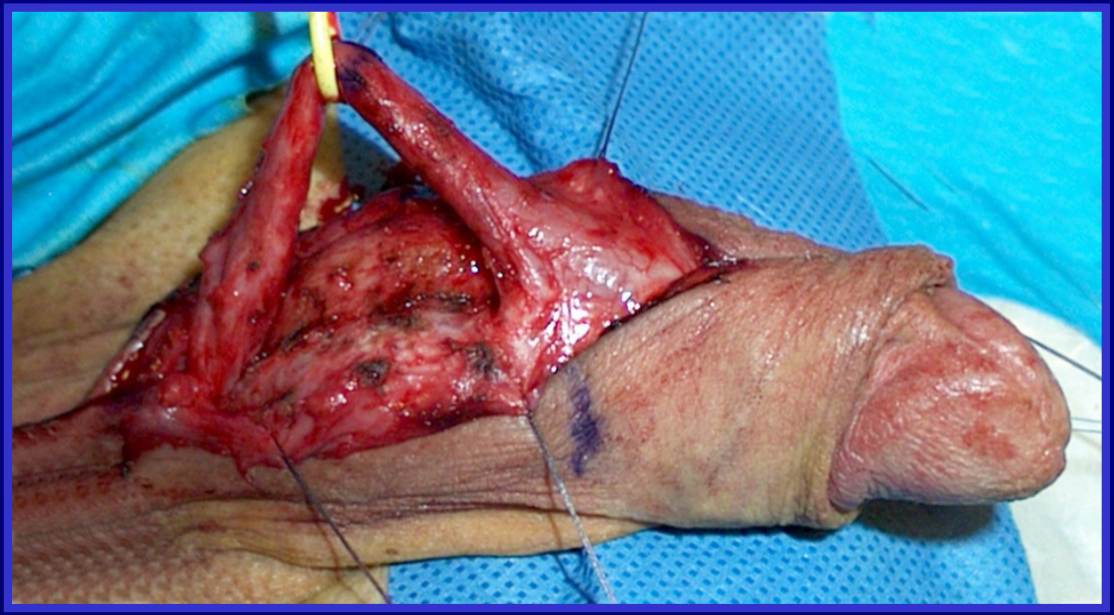

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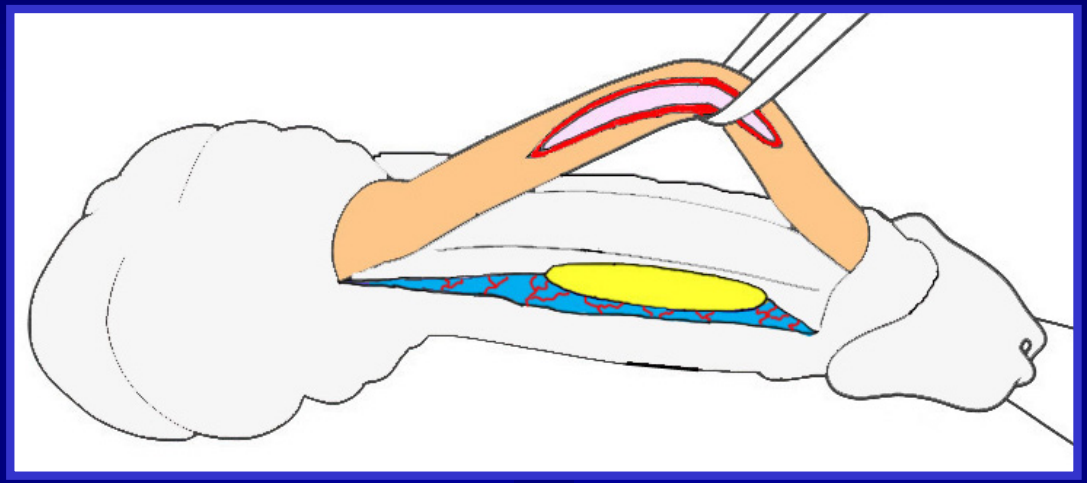

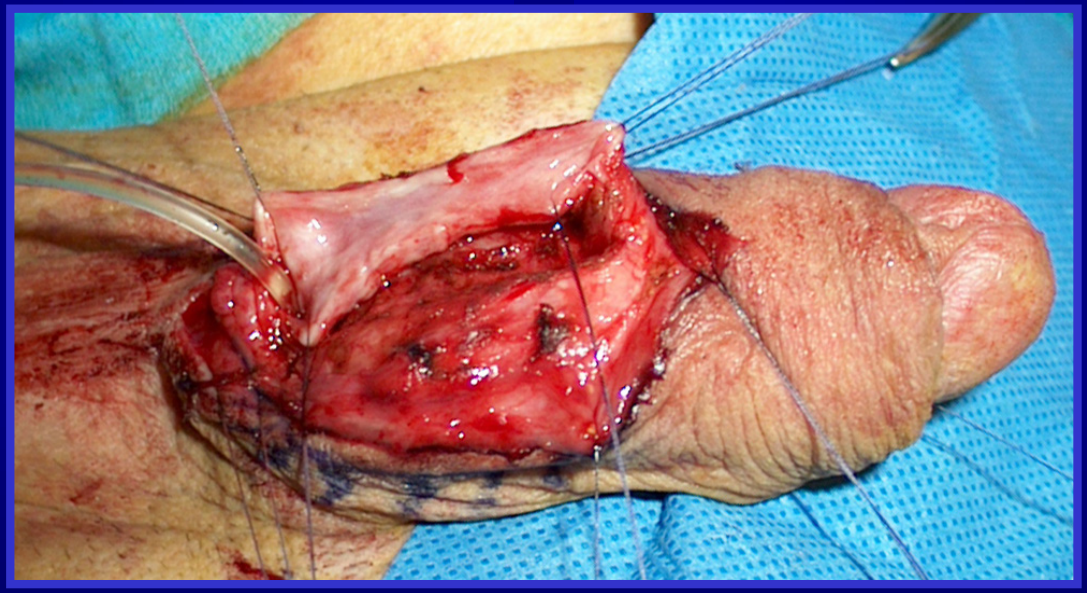

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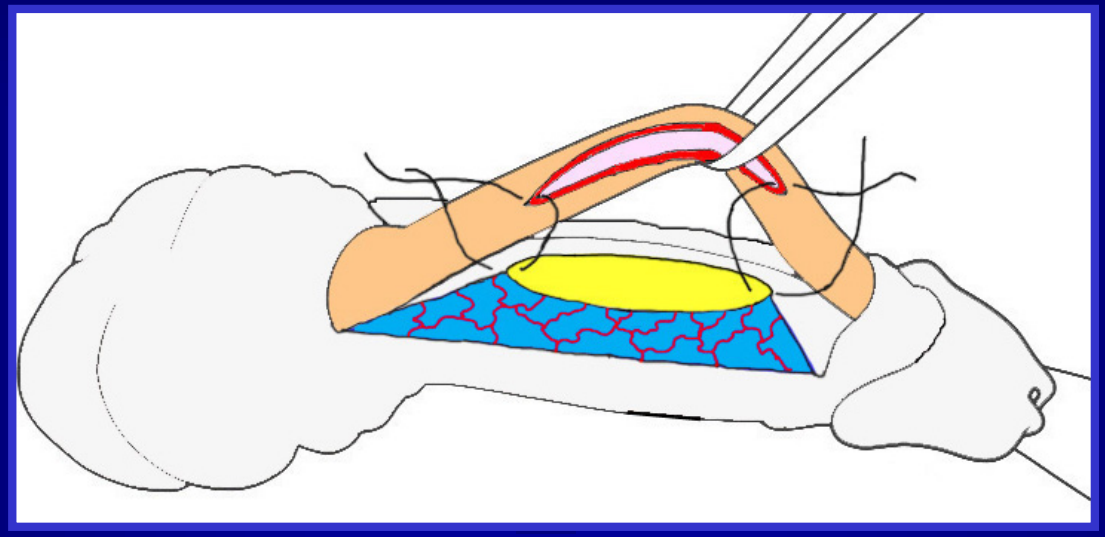

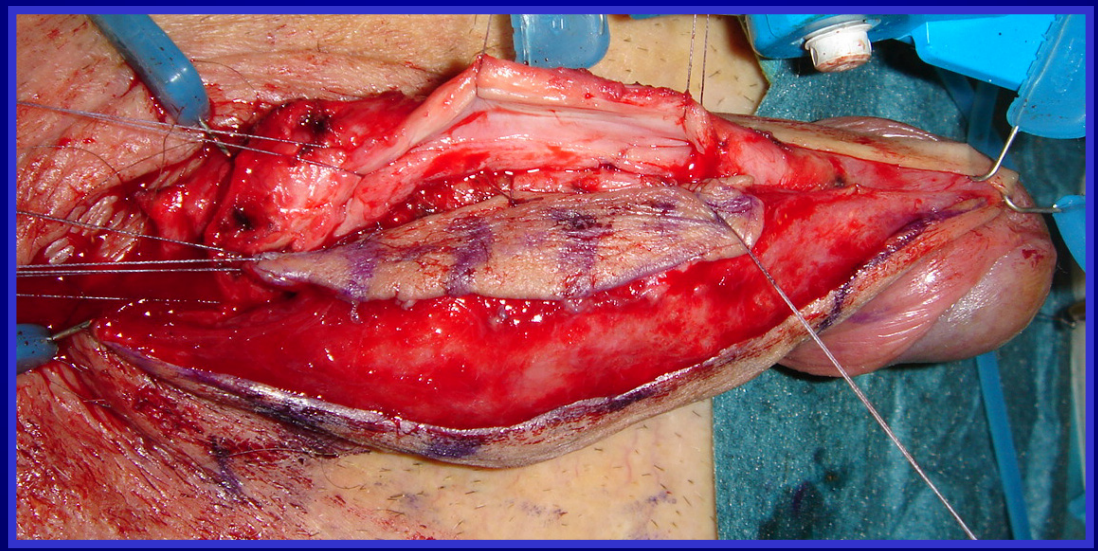

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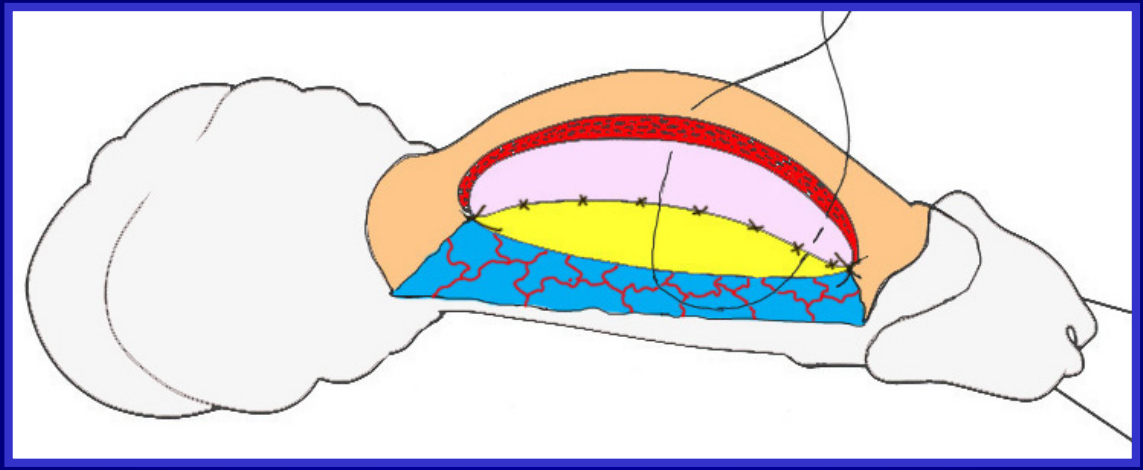

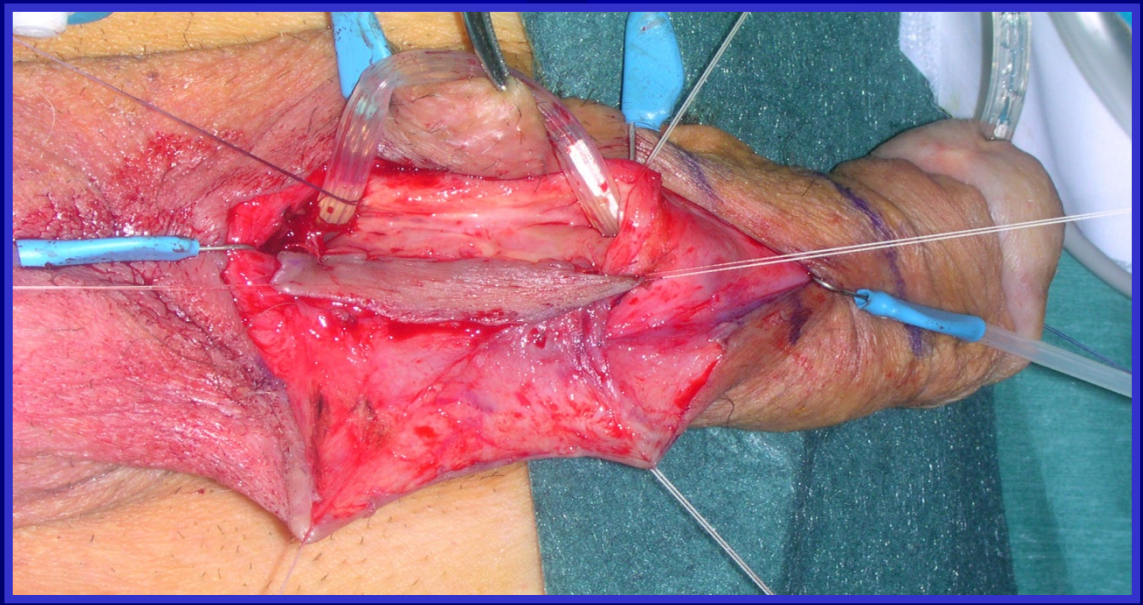

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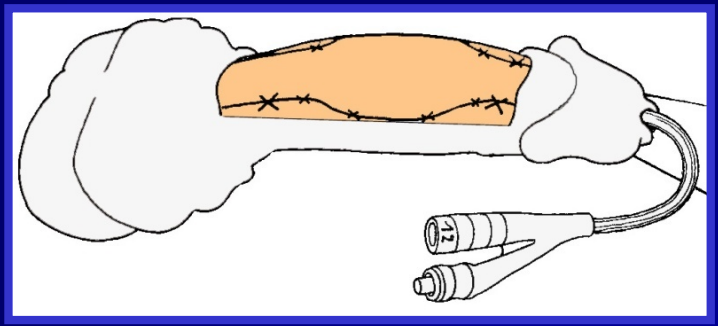
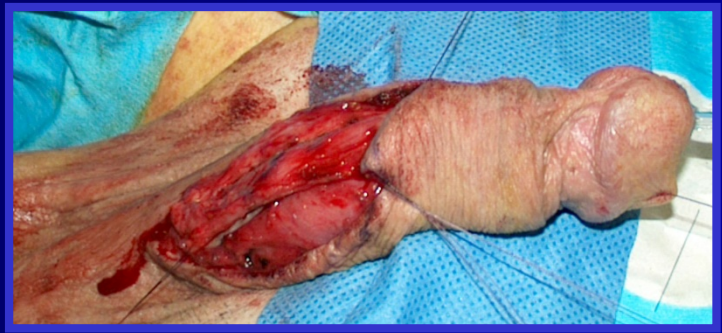
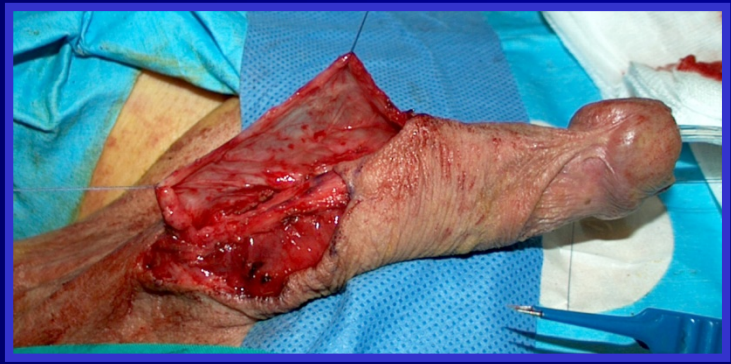
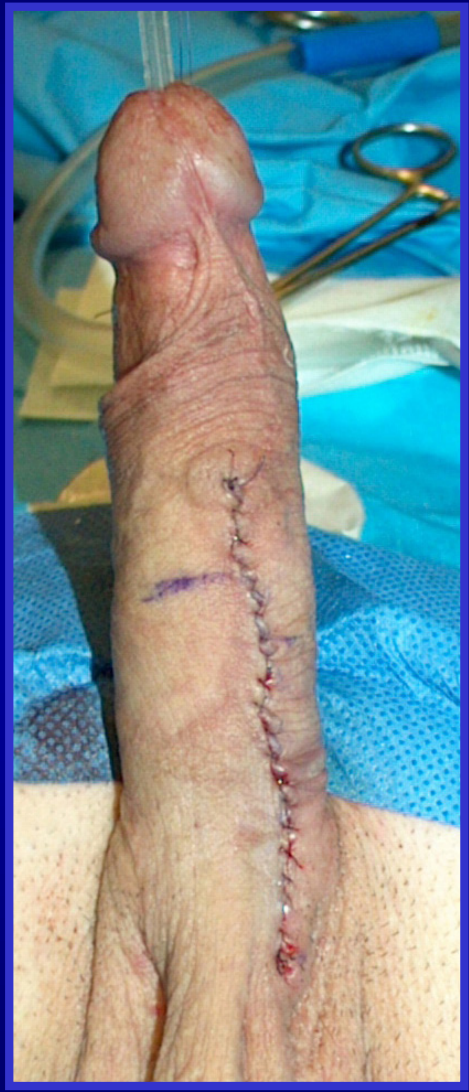
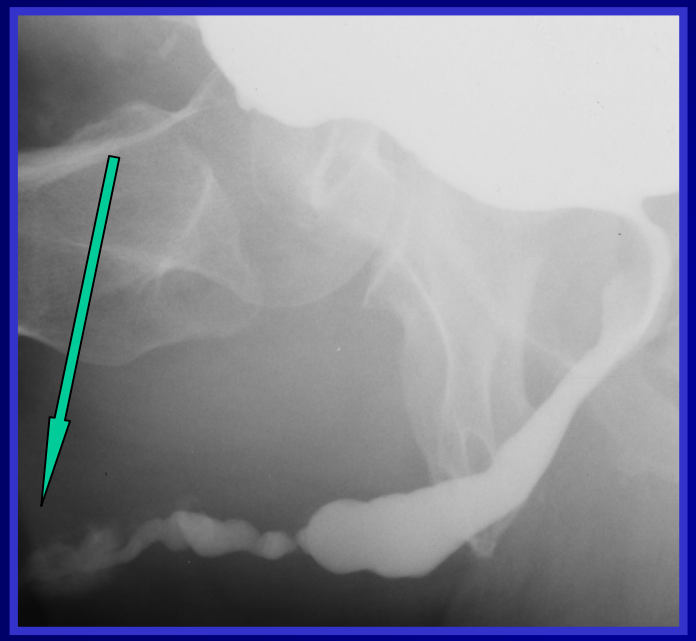


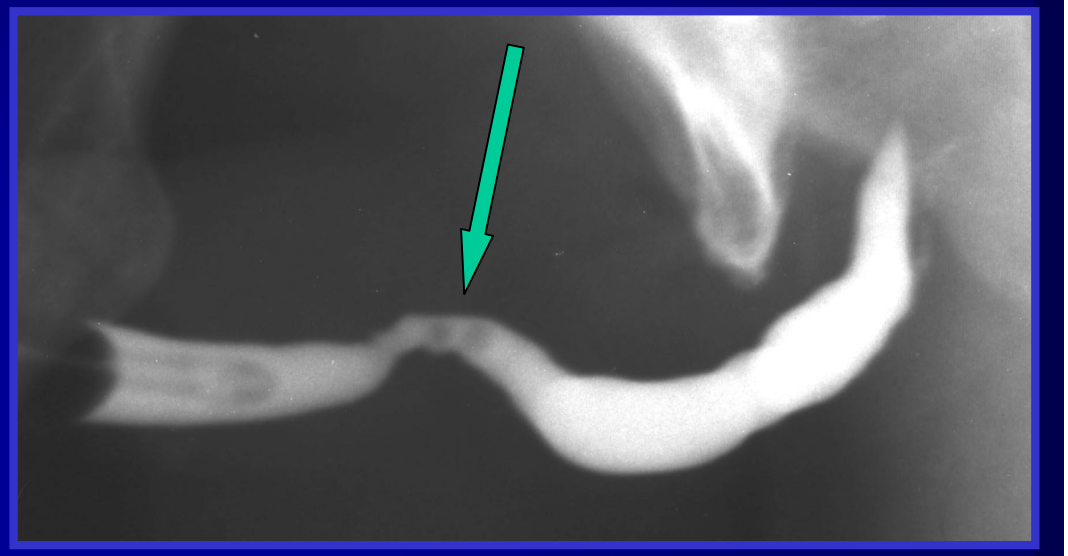






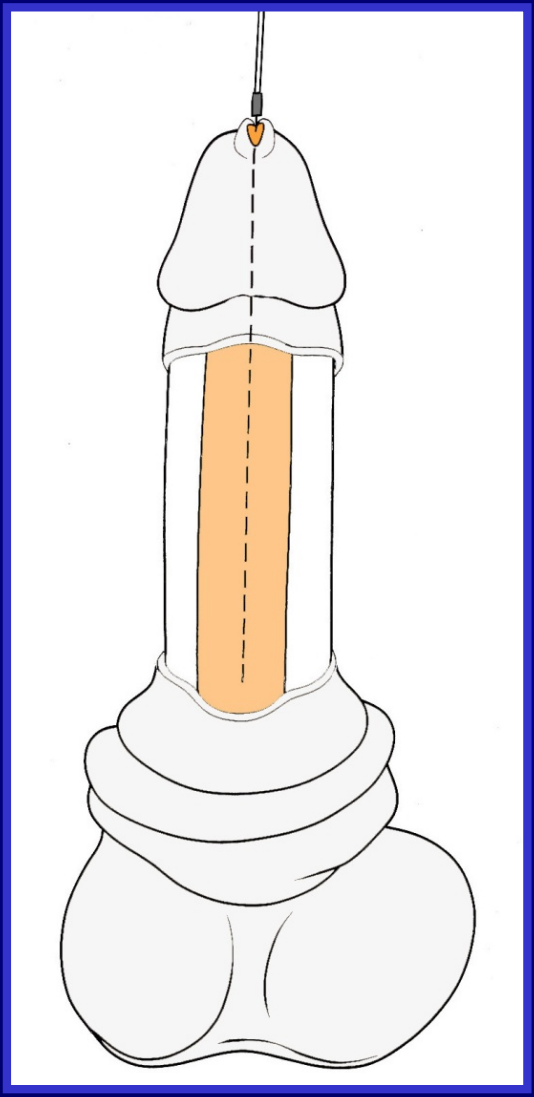
Asopa's graft

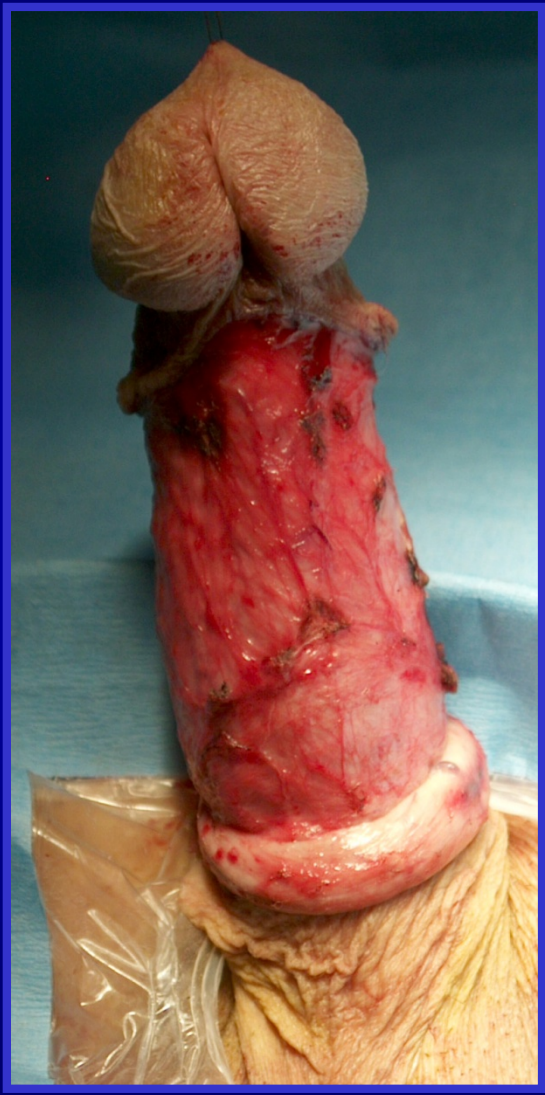




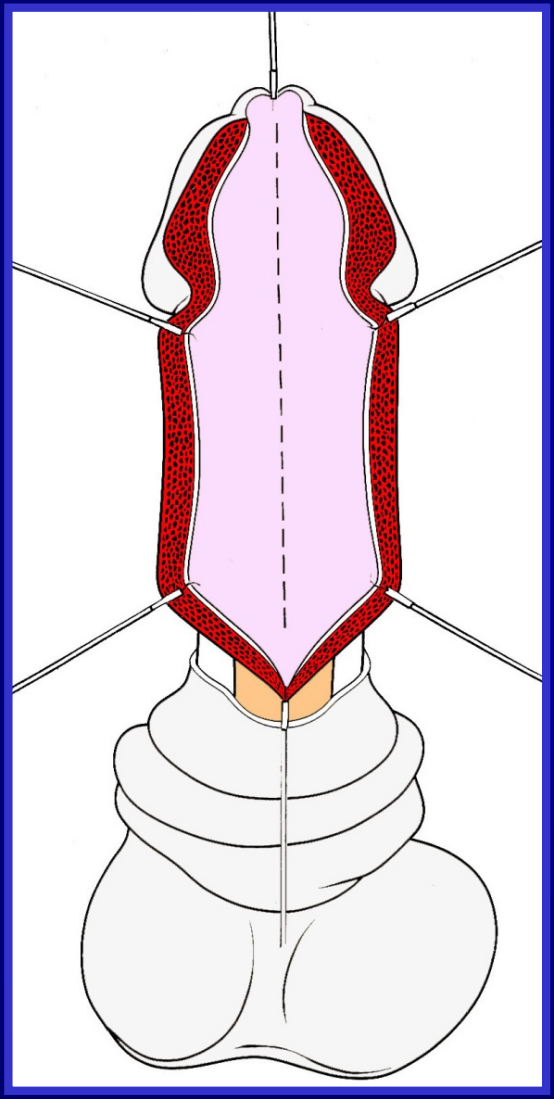
Penile urethral stricture involving external urinary meatus or in the middle tract of the shaft

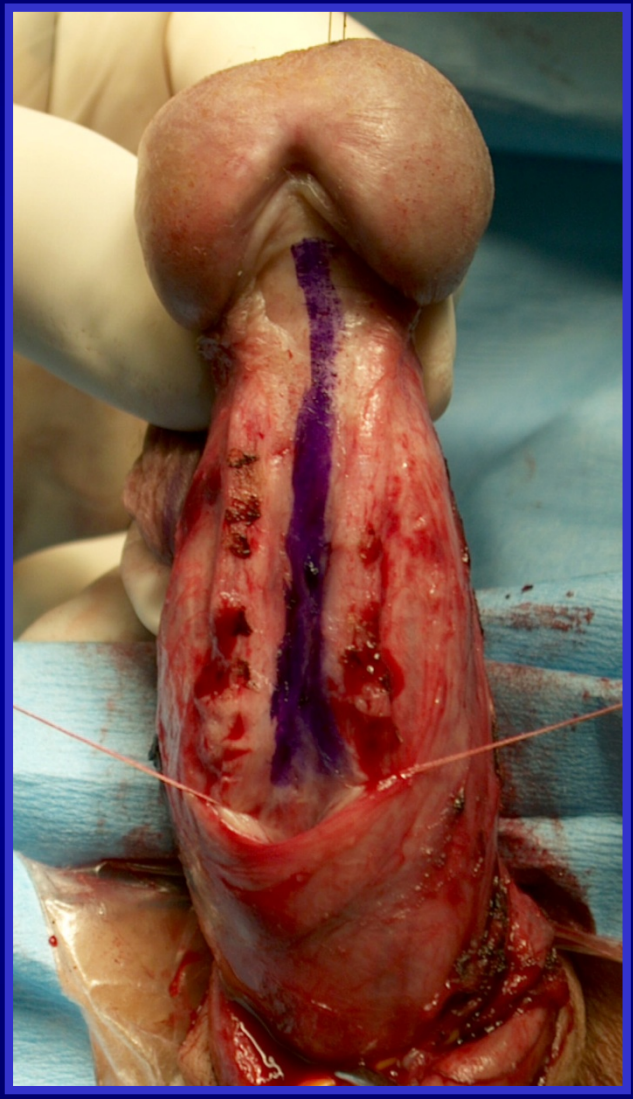
Asopa's graft



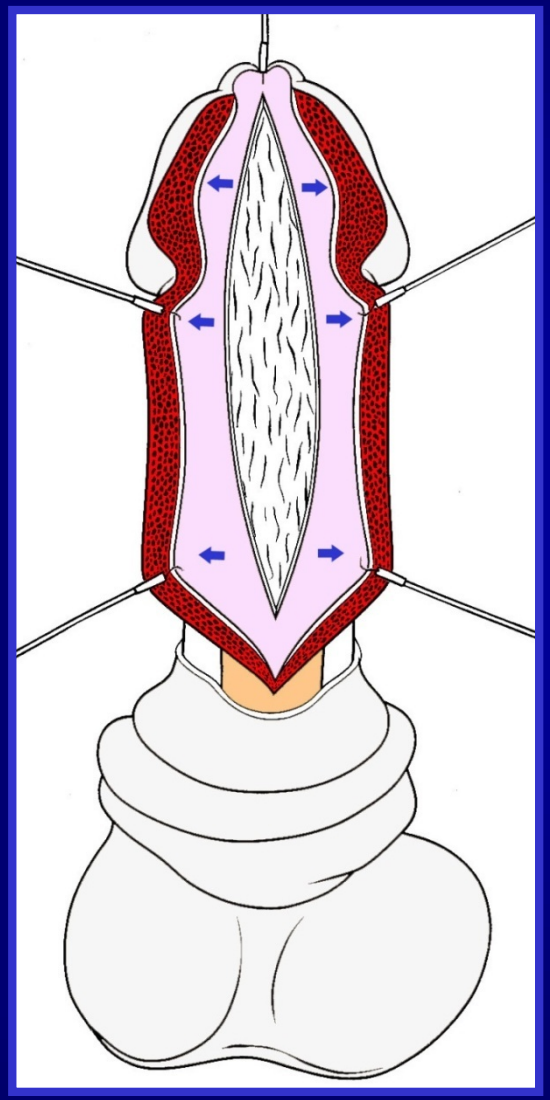


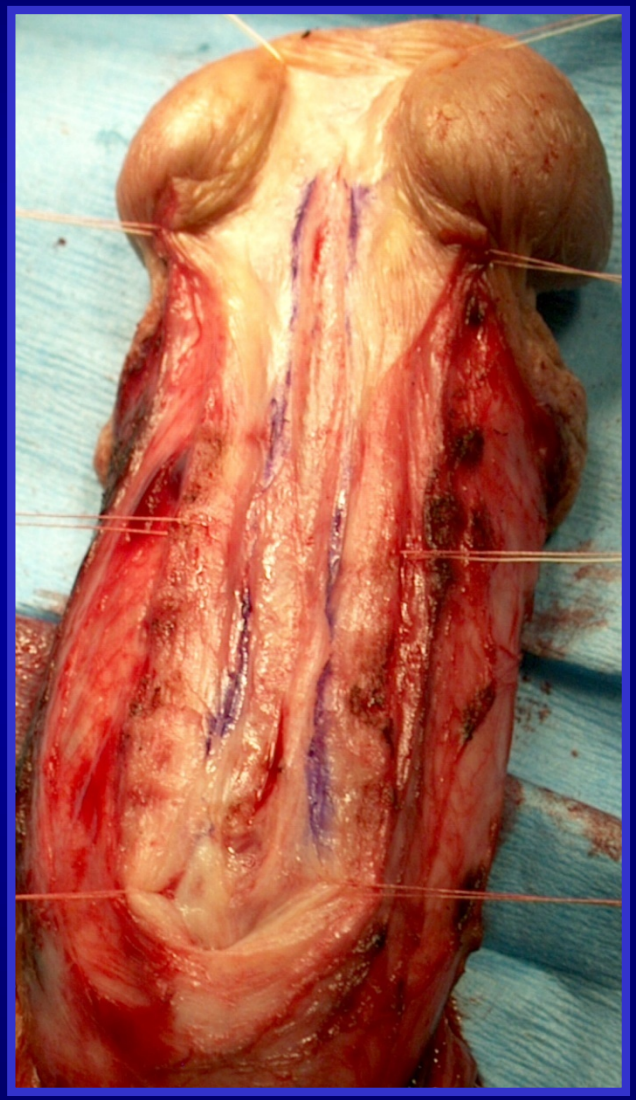
Asopa's graft



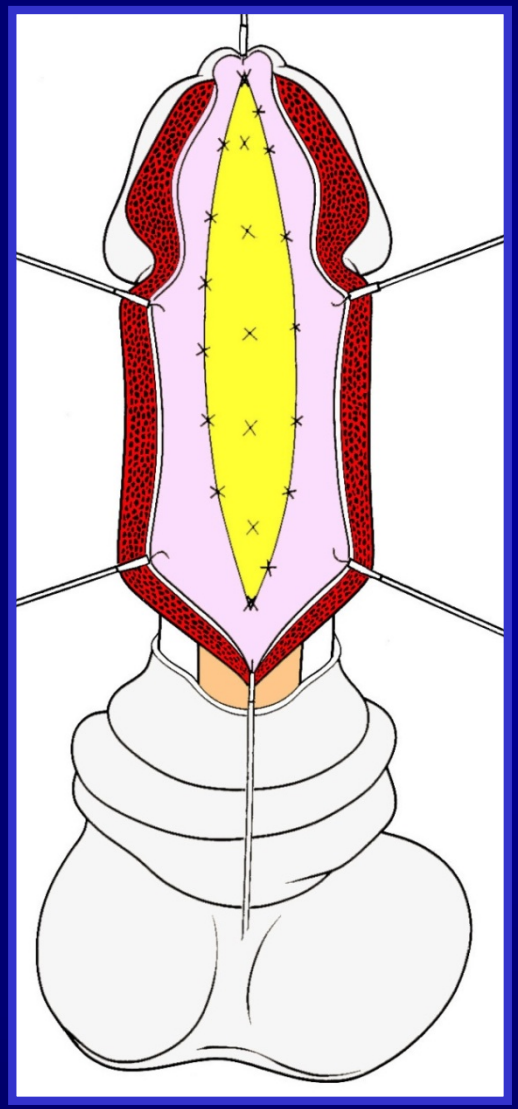


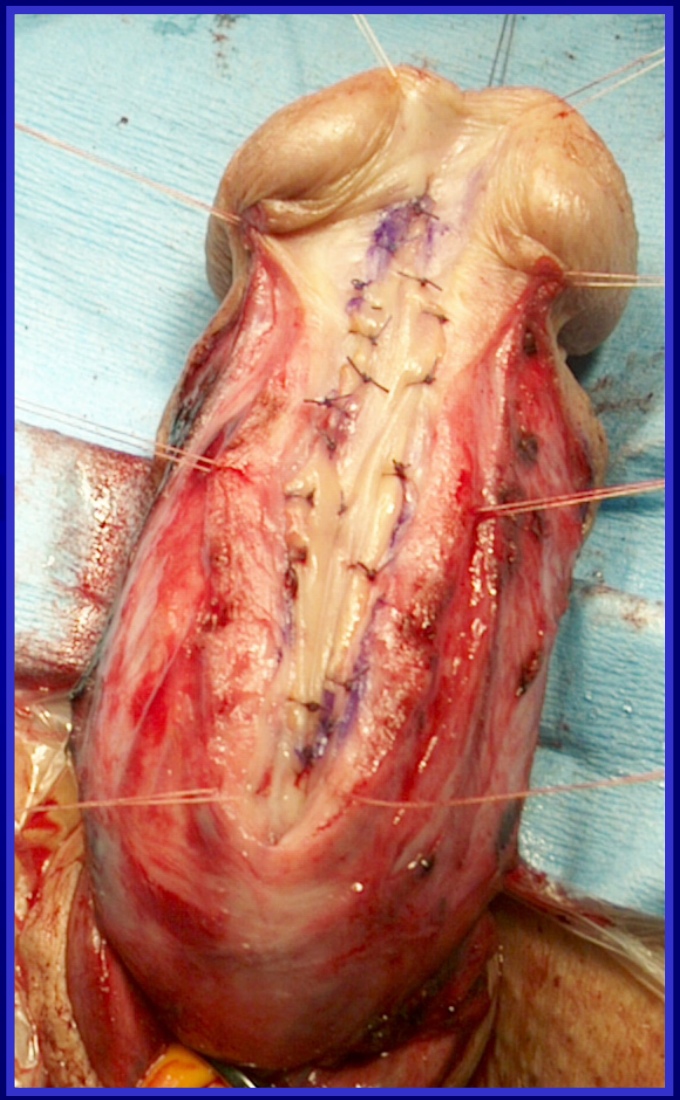
Asopa's graft



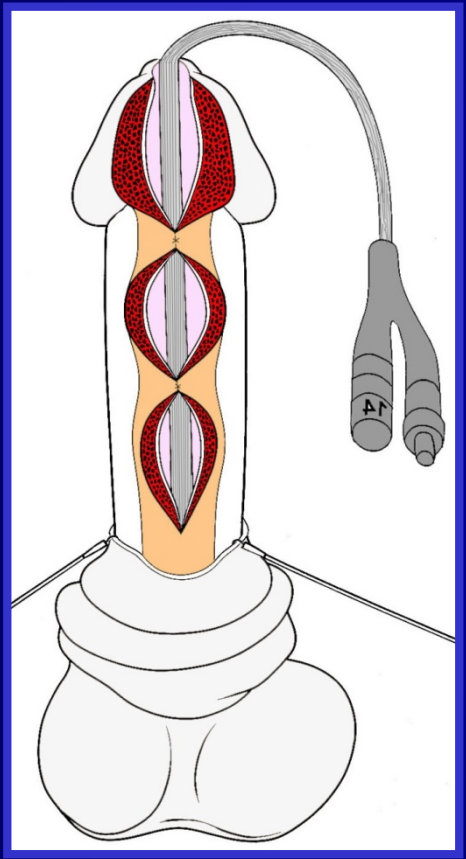


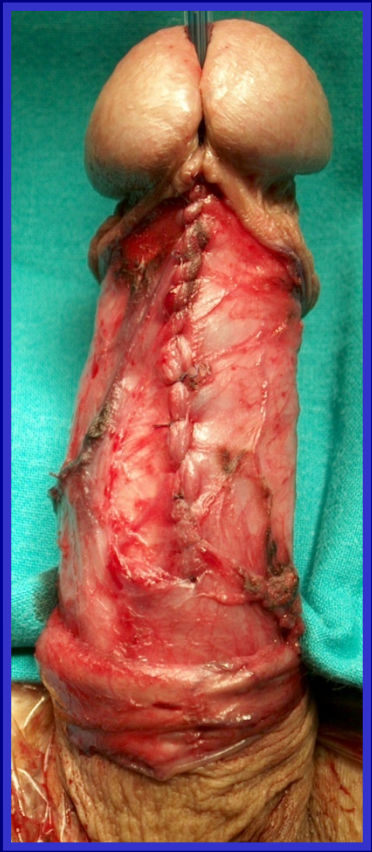
Asopa's graft

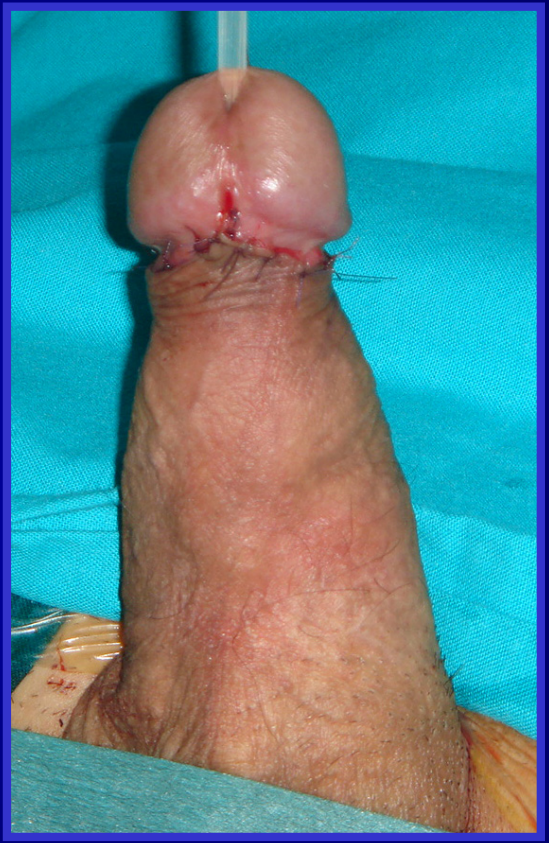




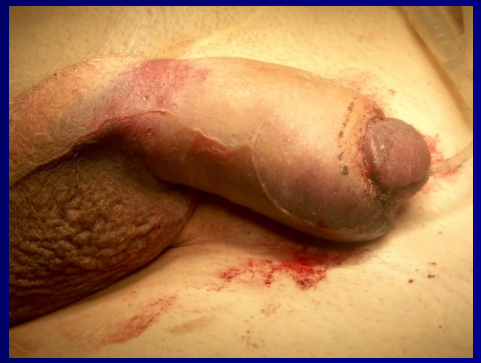
Asopa's graft



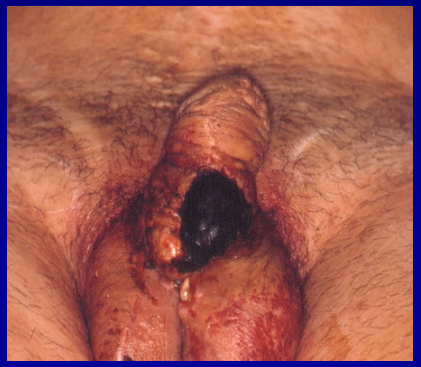




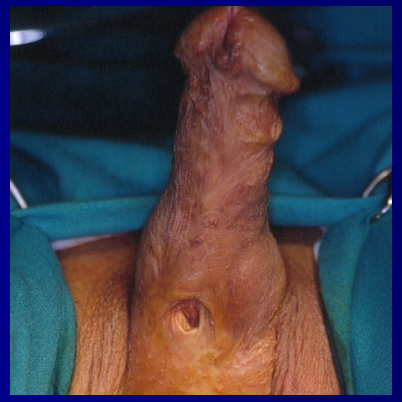
Complications following one-stage flap or graft penile urethroplasty



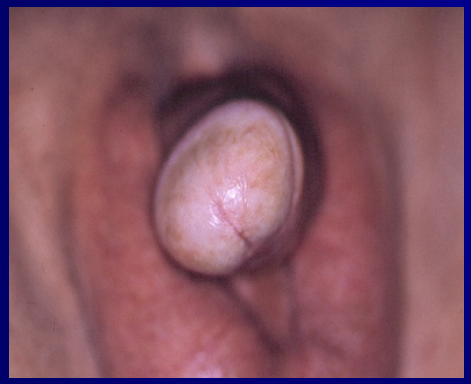
penile hematoma



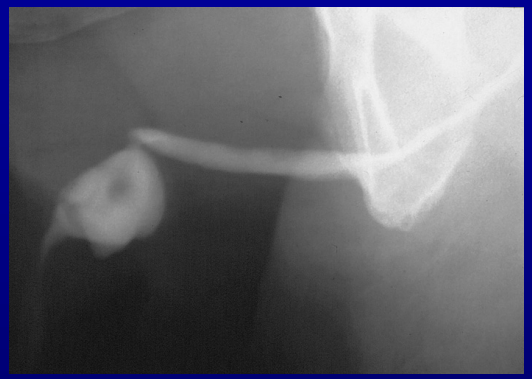
skin necrosis



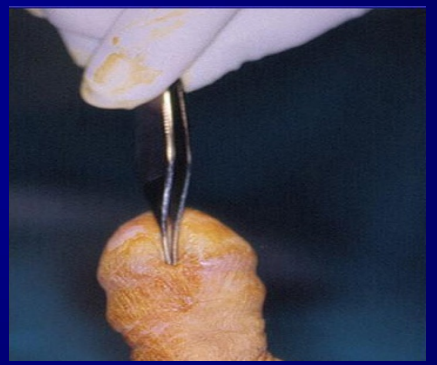
fistula



penile-glans torsion



sacculation



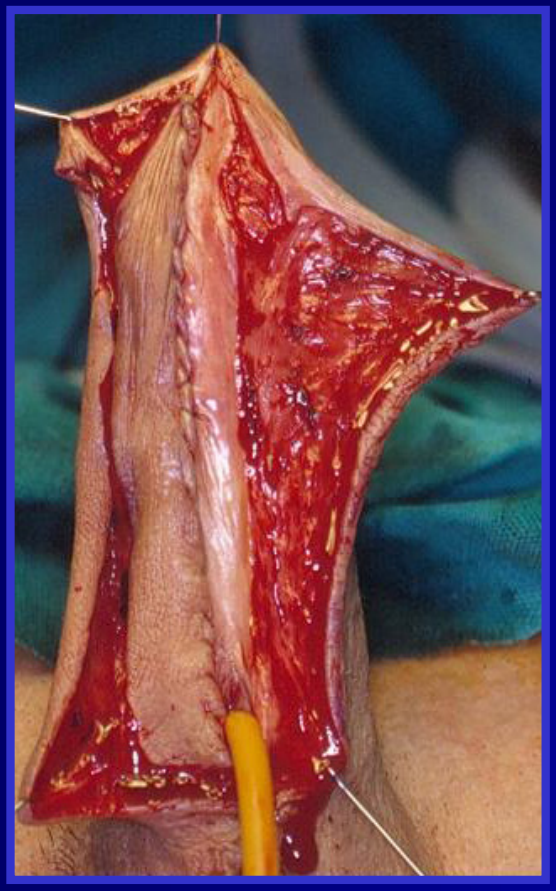
meatal stenosis

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%

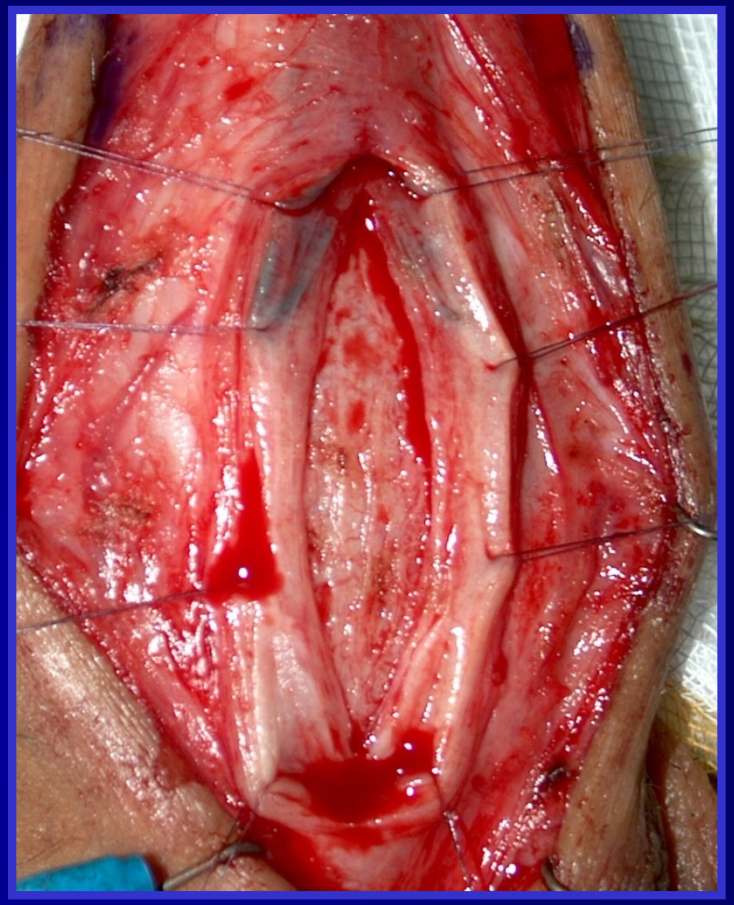
Barbagli G. et al, BJU Int 2008



flap

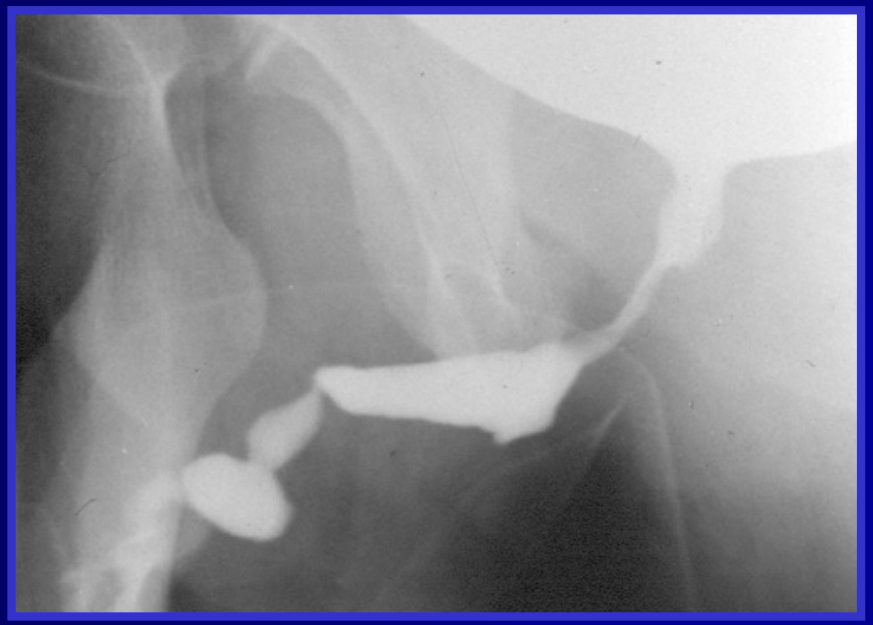
?

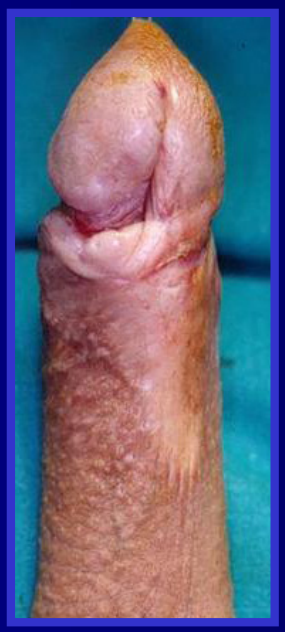
graft



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's background, training and preference

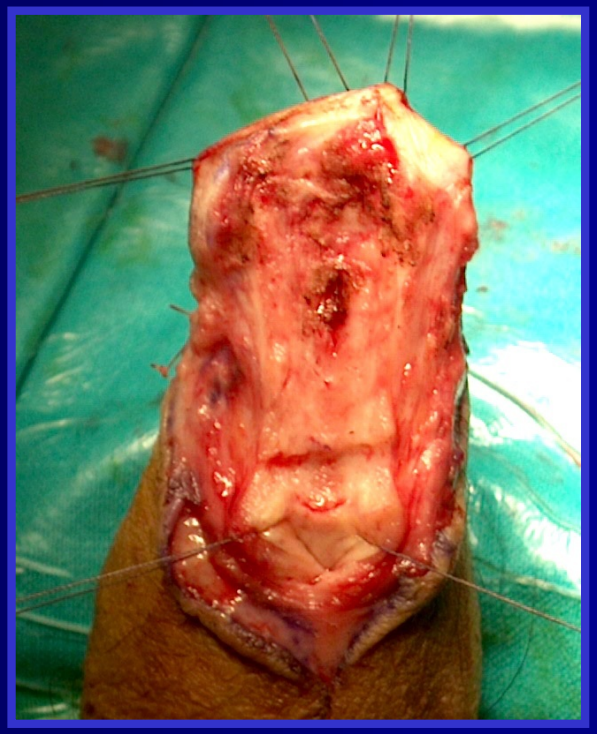
Two-stage urethroplasty using oral mucosal graft

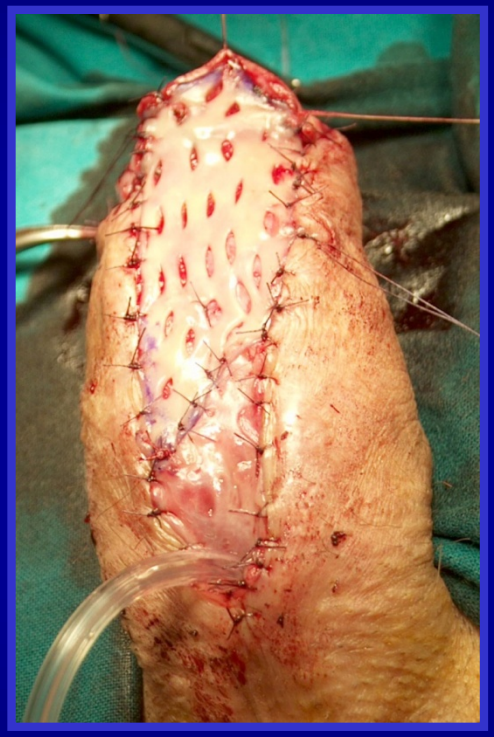


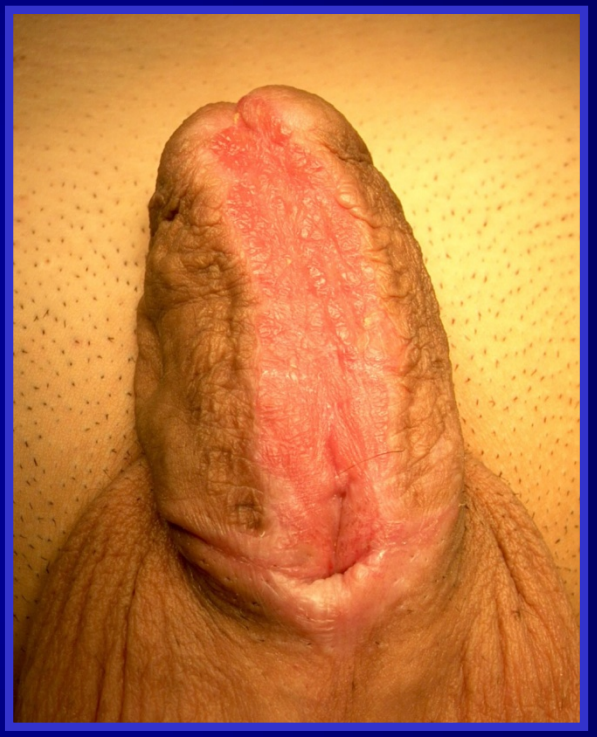


Penile urethral stricture in patient with failed hypospadias repair or lichen sclerosus

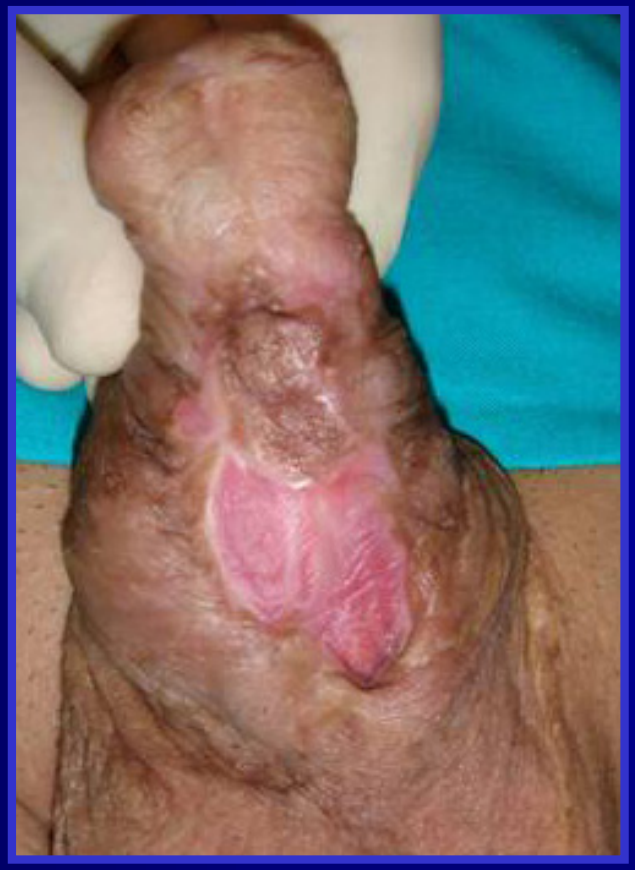
First stage







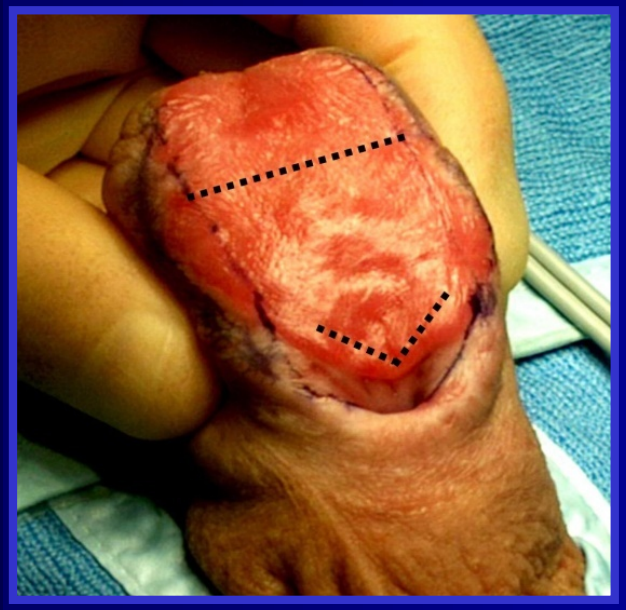
Complications following the first stage of urethroplasty

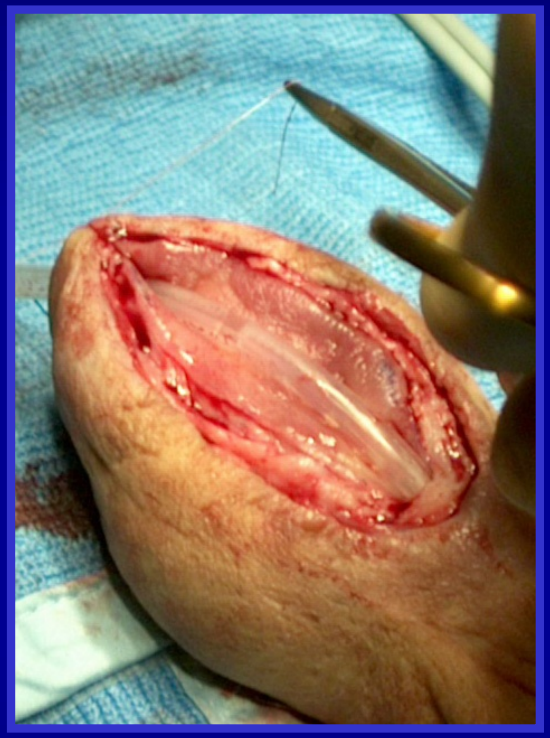


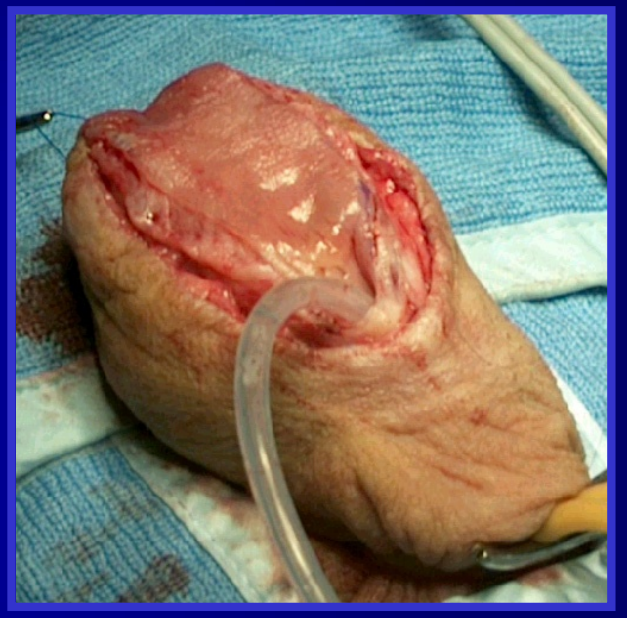
10-39% of patients showed scarring of the initial graft, requiring new grafting procedures

Barbagli et al., Eur Urol, 2006

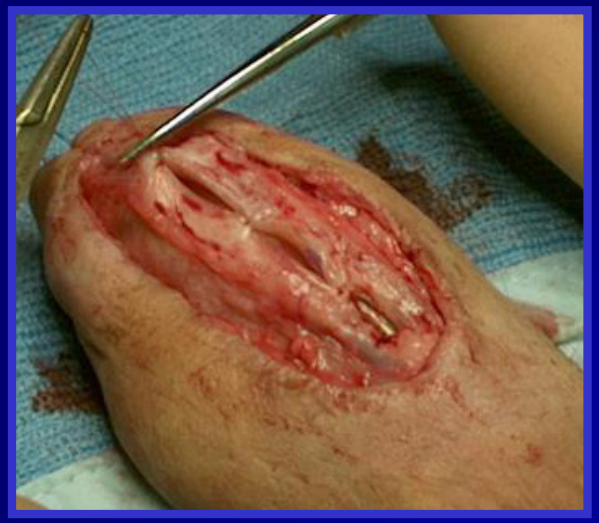
Second stage

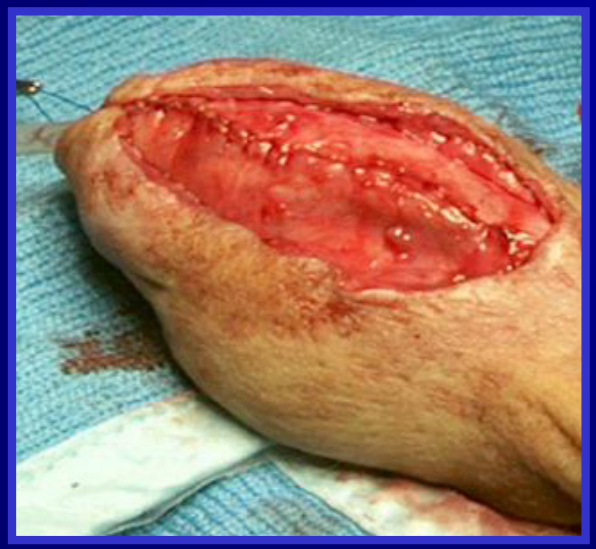


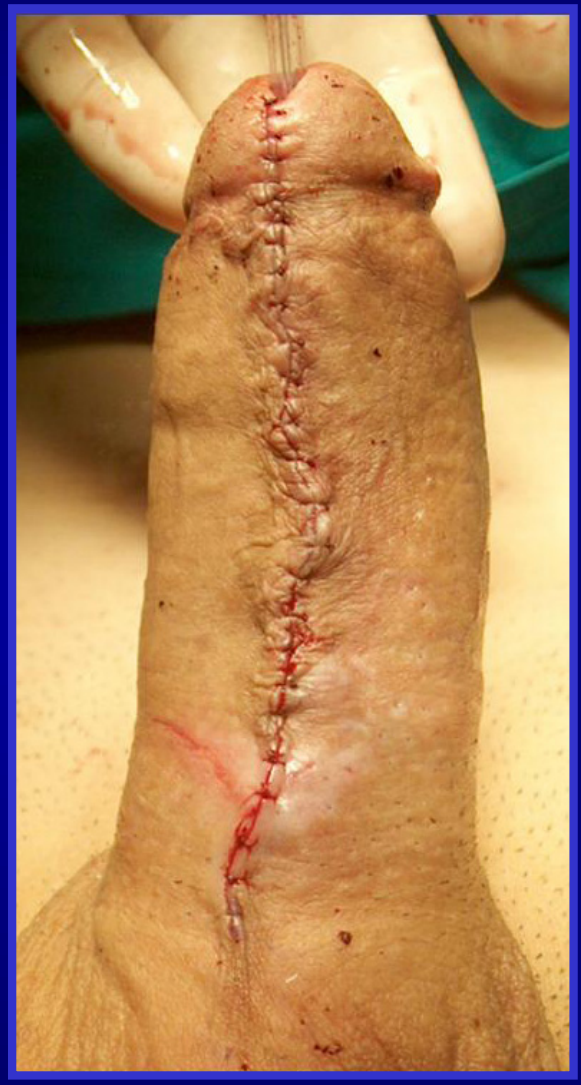




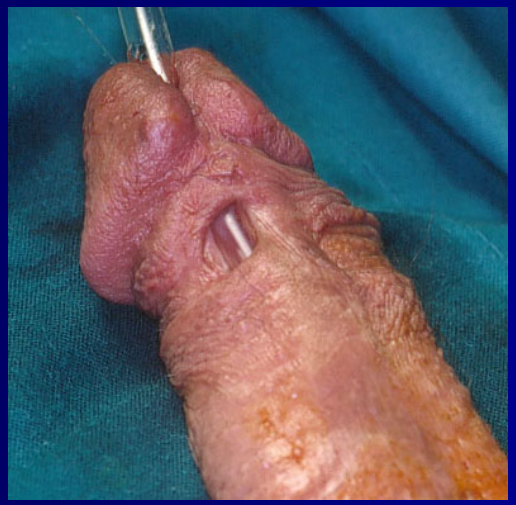
Second stage



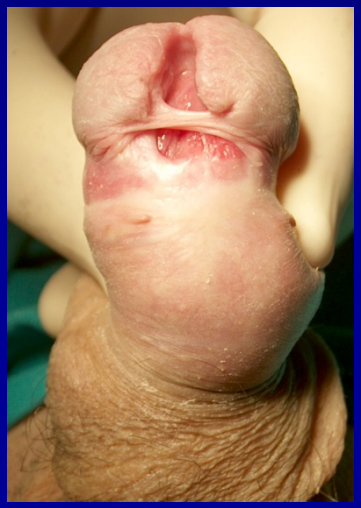




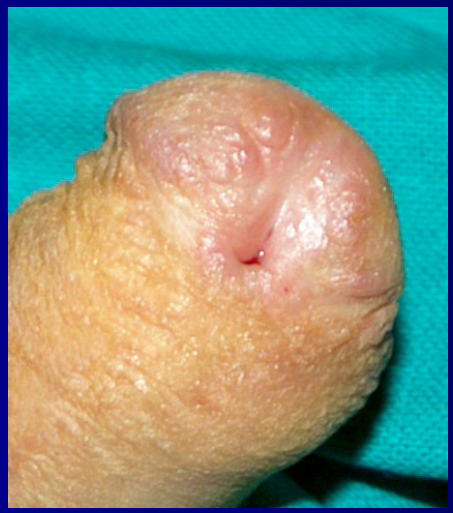
Complications following the second stage of urethroplasty



fistula



glans dehiscence



meatal stenosis

30% of patients showed complications following the second stage of urethroplasty, requiring surgical revision

Barbagli et al., Eur Urol, 2006

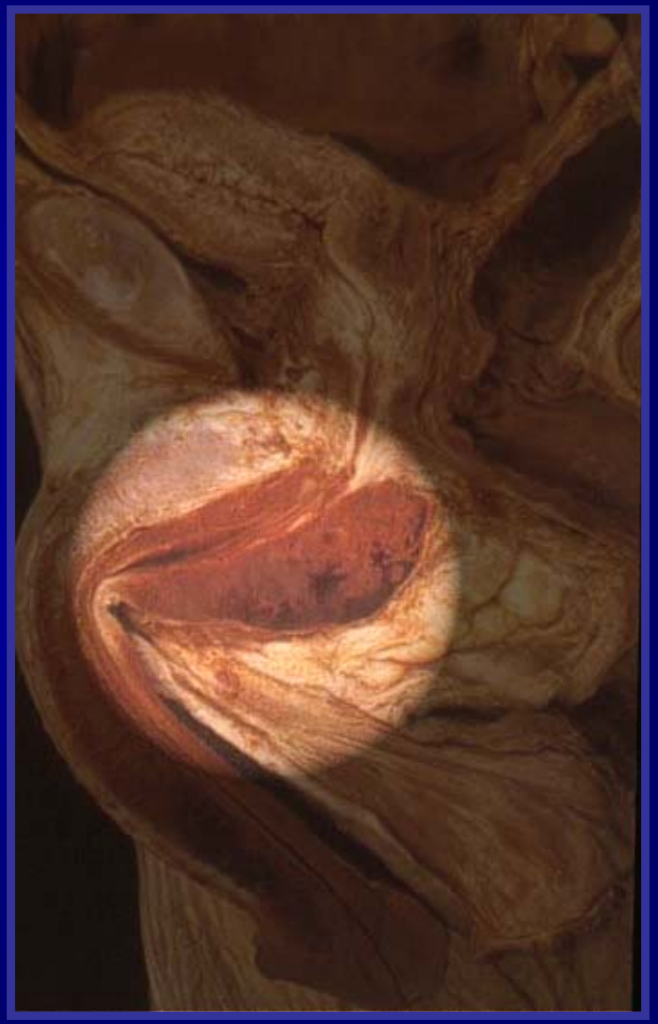
Conclusions

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

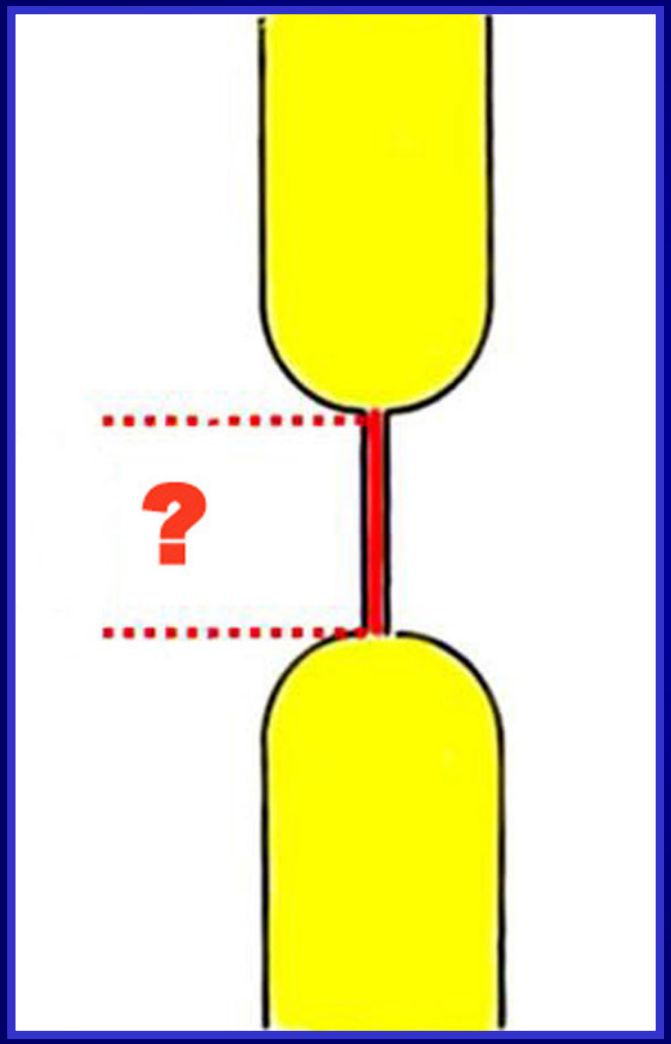
Moreover, this two-stage procedure, also in the hands of the skilled surgeon, showed a high complication rate, either following the first stage or the second stage

Bulbar urethra

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



Which type of urethroplasty ?



1 - 2 cm: end-to-end anastomosis

2 – 4 cm: augmented anastomotic repair

> 4 cm: substitution urethroplasty

stricture associated with local adverse conditions: two-stage urethroplasty

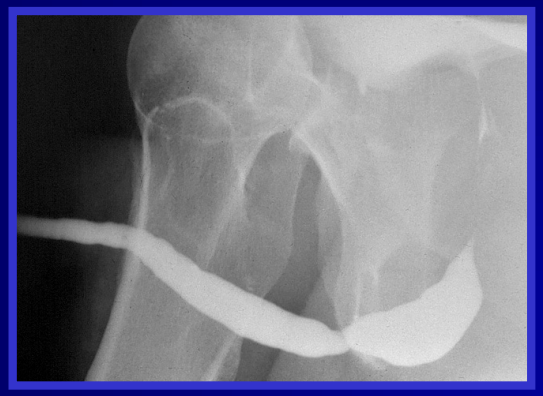
Preparation of the patient

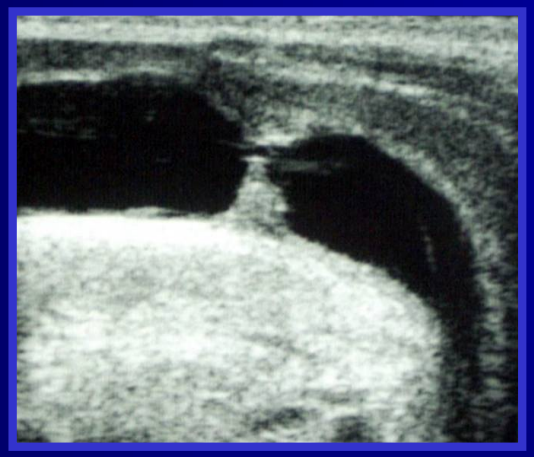
Simple lithotomy position

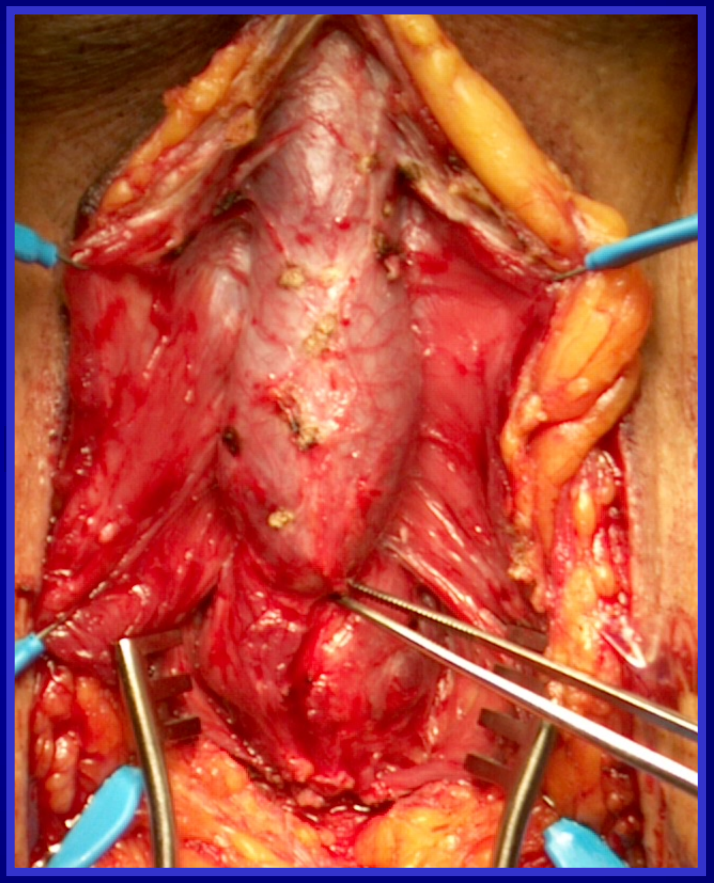
Preparation of the patient

Allen stirrups with sequential inflatable compression sleeves

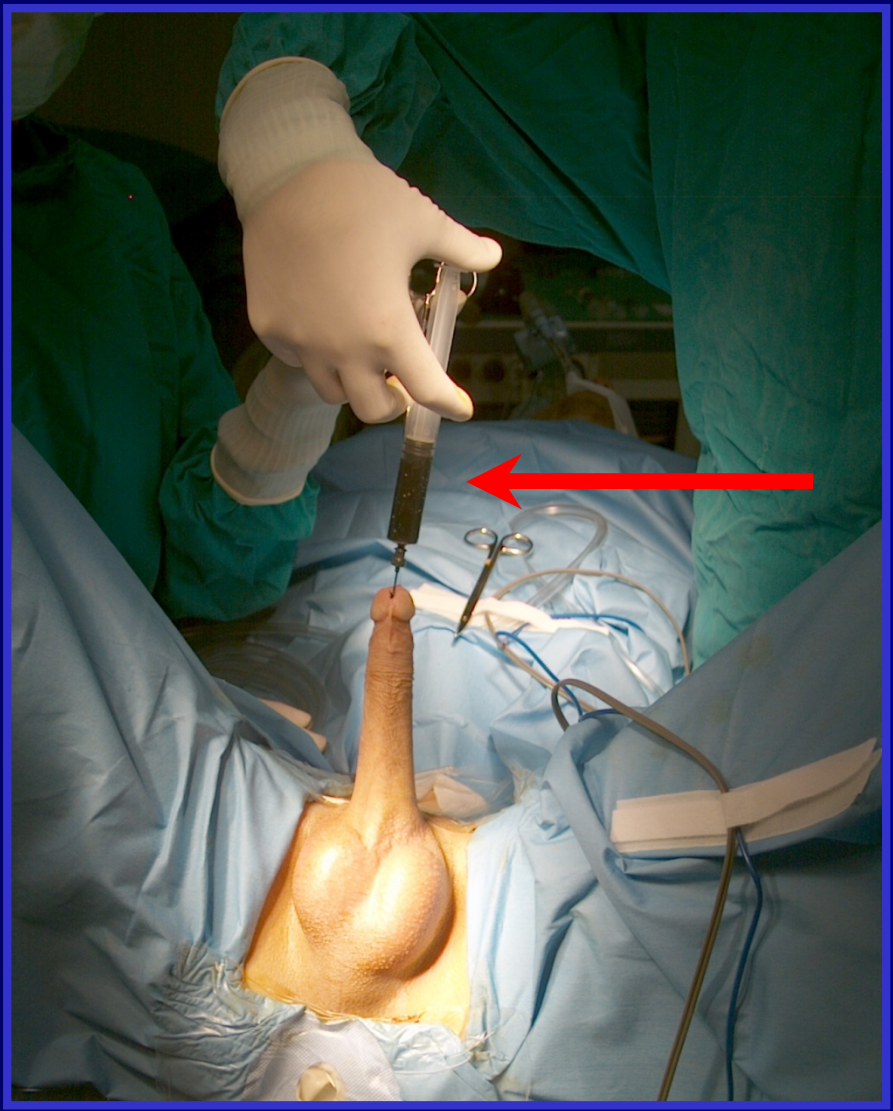
1 - 2 cm bulbar urethral stricture



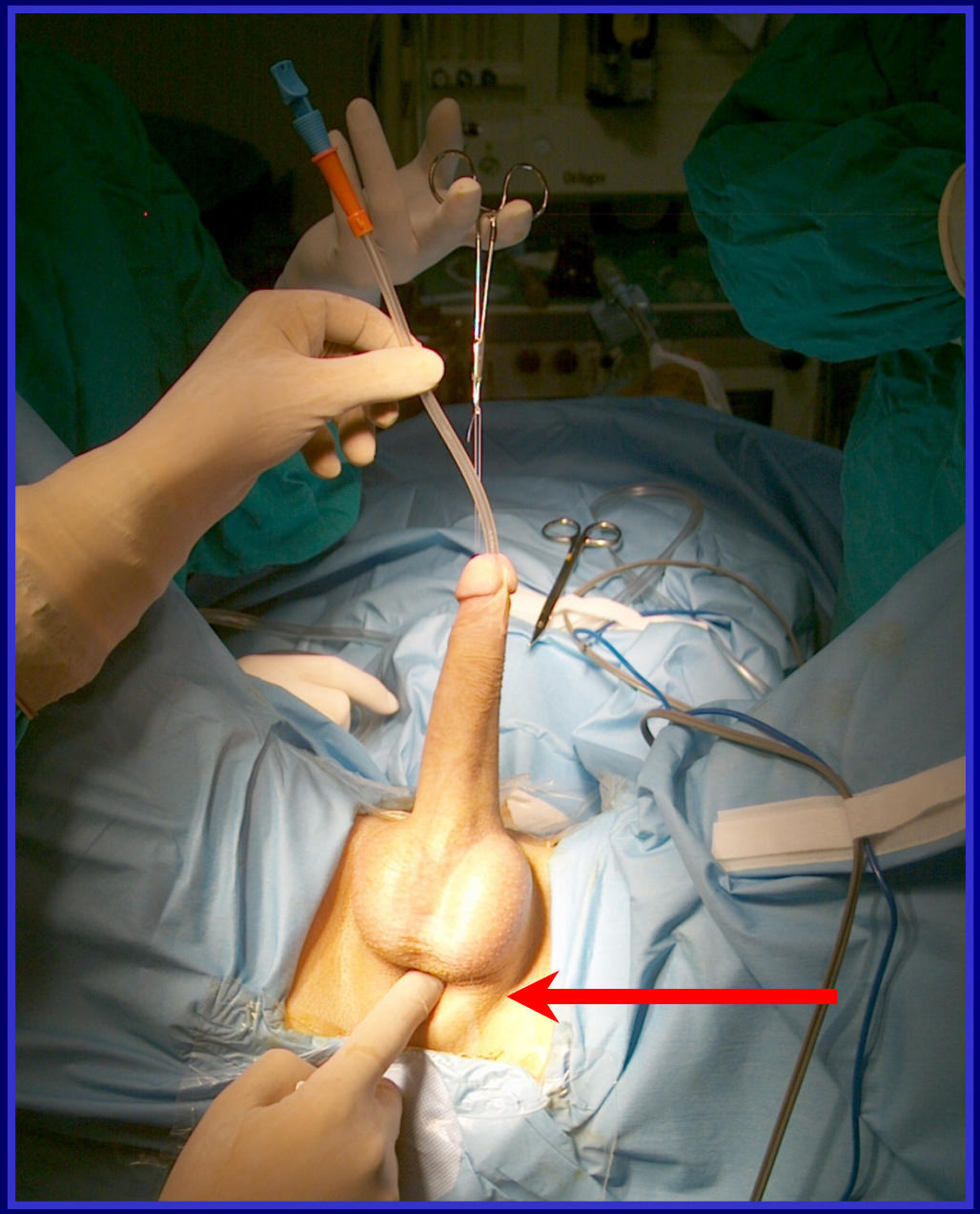




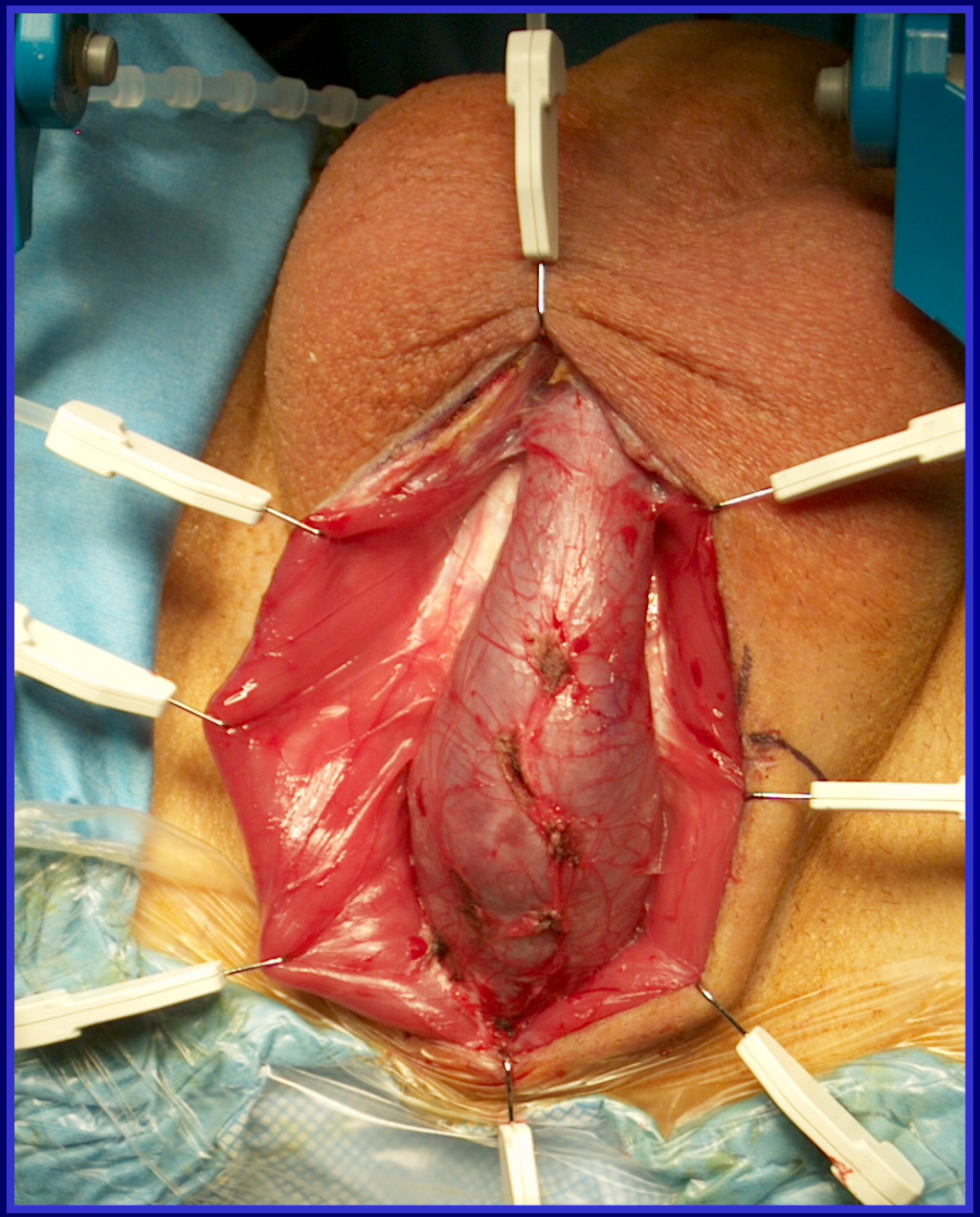
End-to-end anastomosis



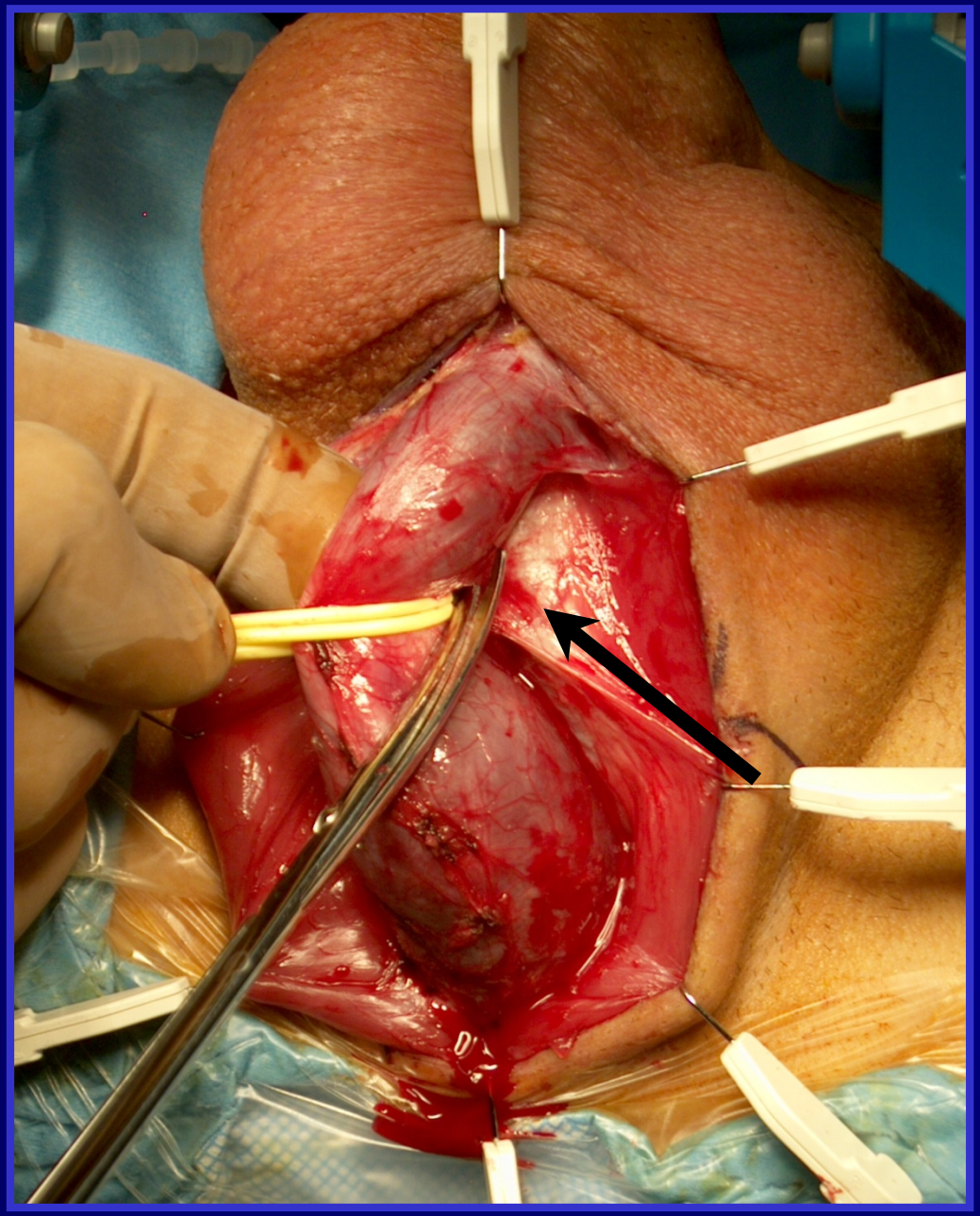
Methylene blue is injected into the urethra



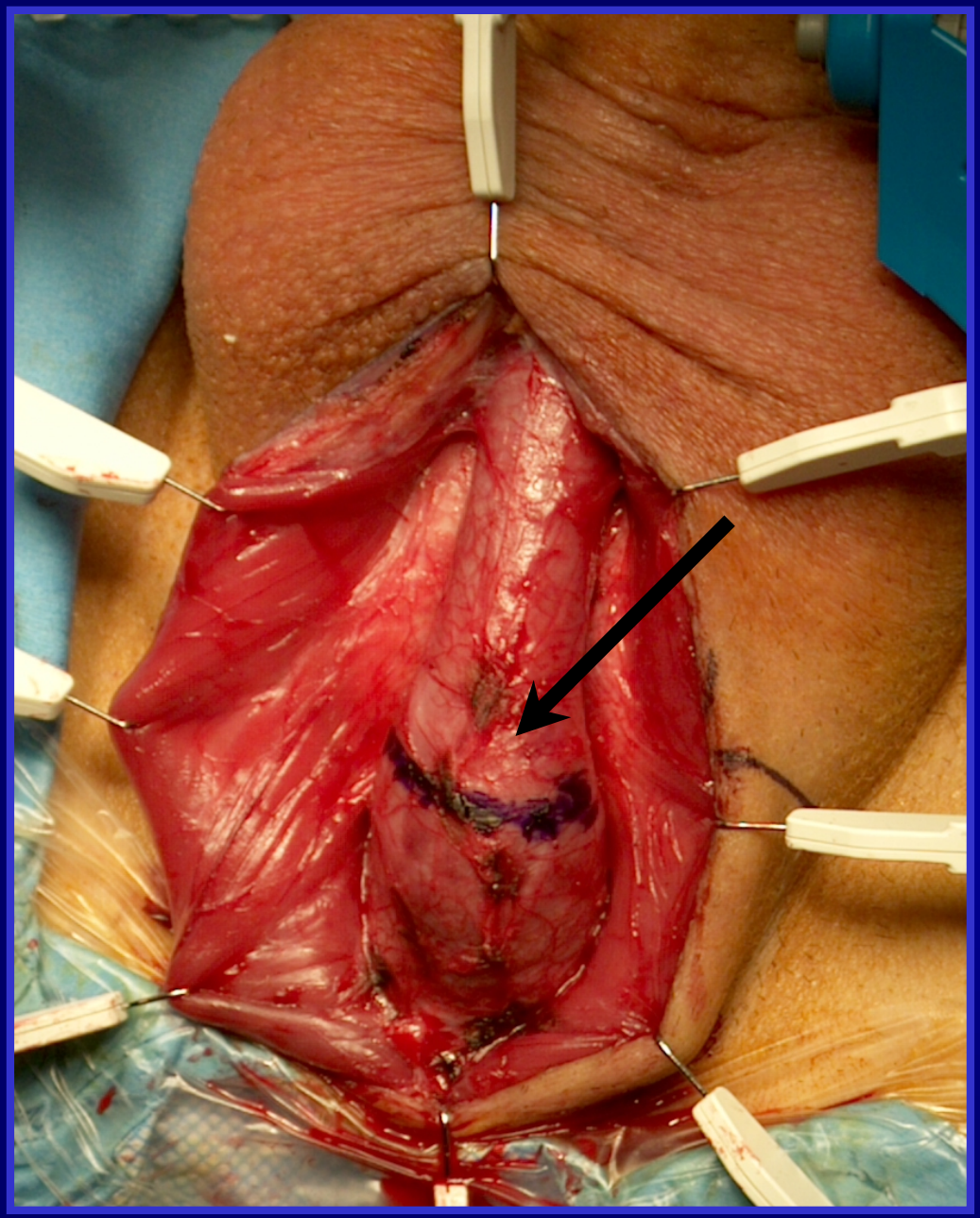
The distal extent of the stenosis is identified by inserting a 16-French catheter with a soft round tip



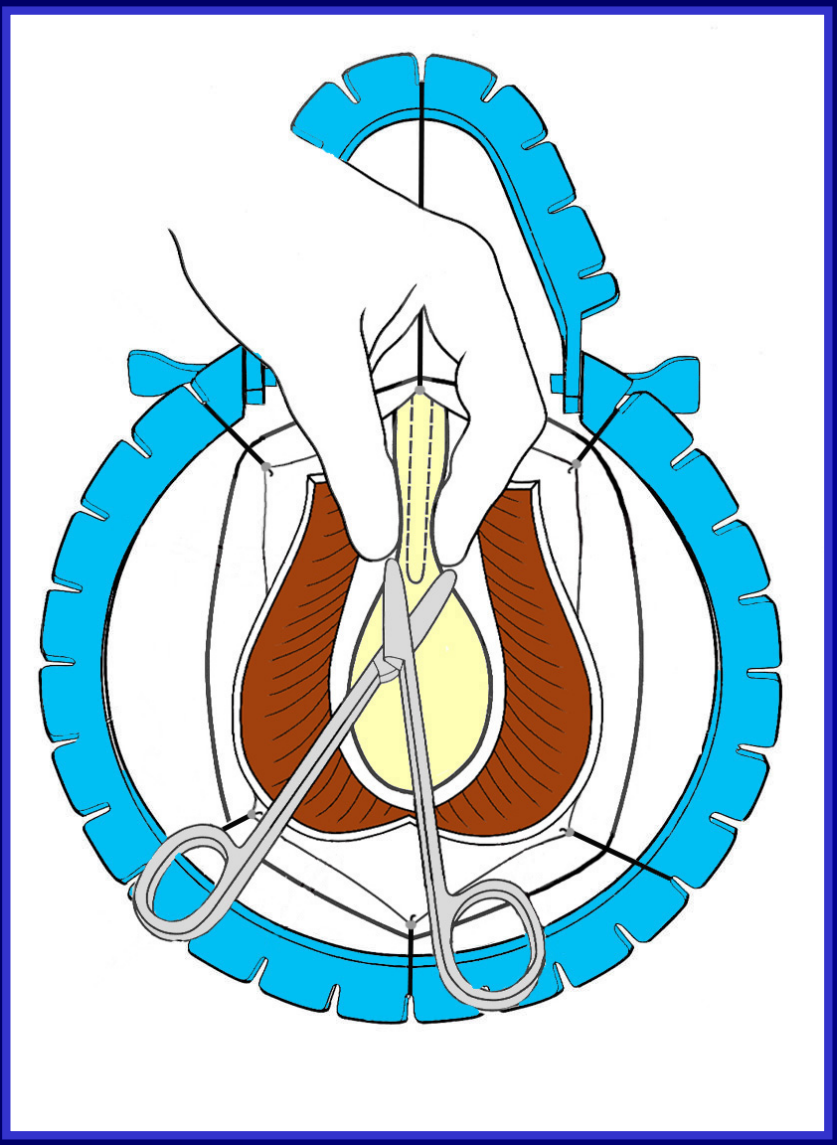
The urethra is freed from the bulbocavernous muscle

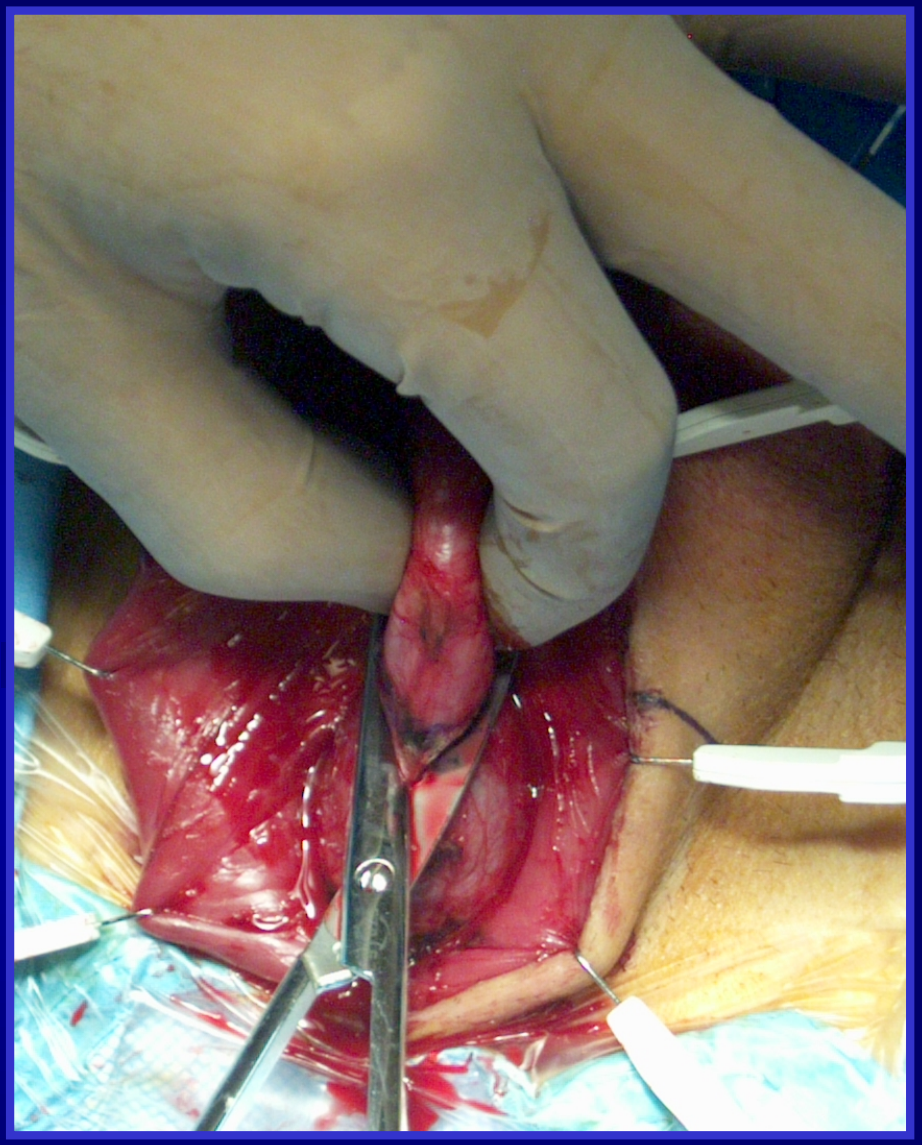


The urethra is dissected from the corpora cavernosa

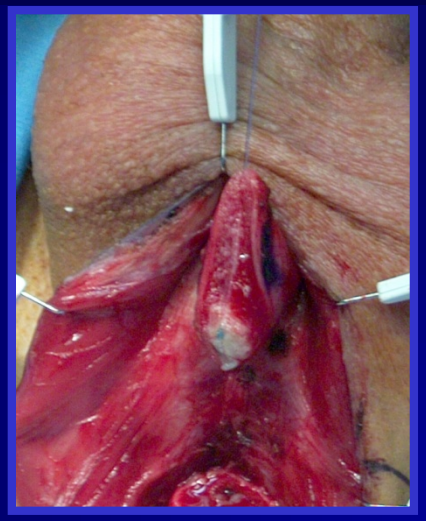


The distal extent of the stenosis is identified and outlined

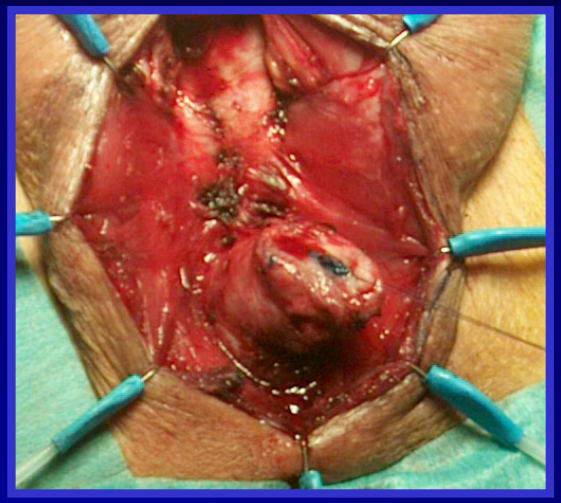




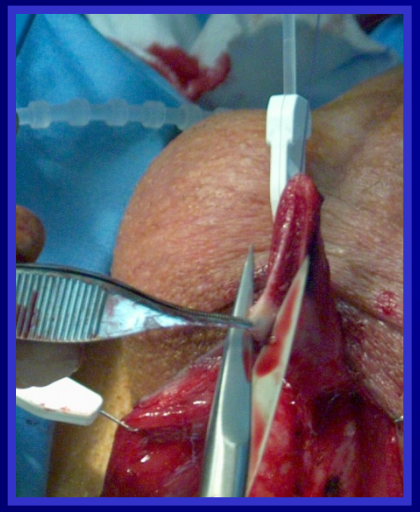
The urethra is transected at the stricture level

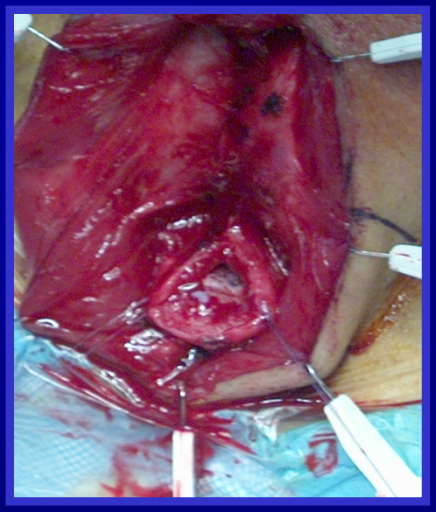


distal end

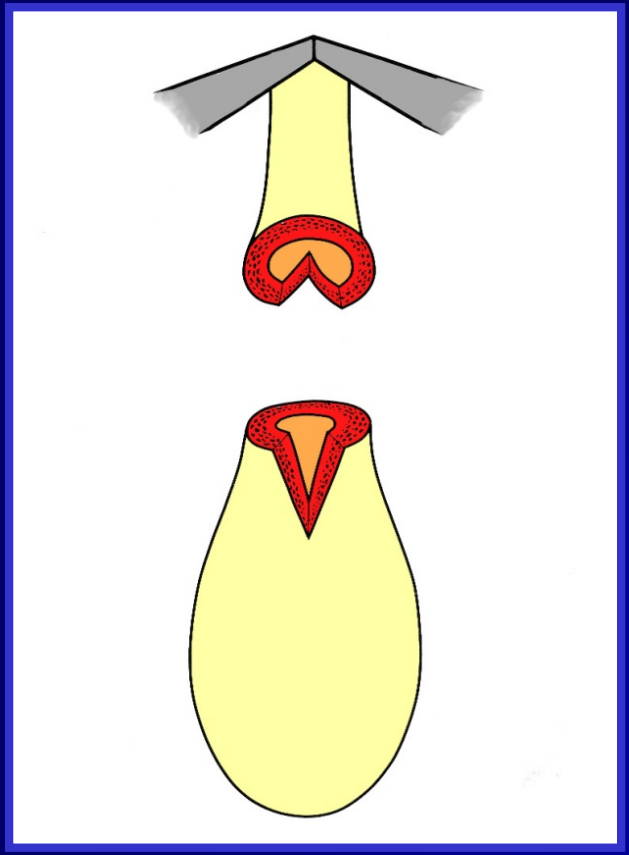


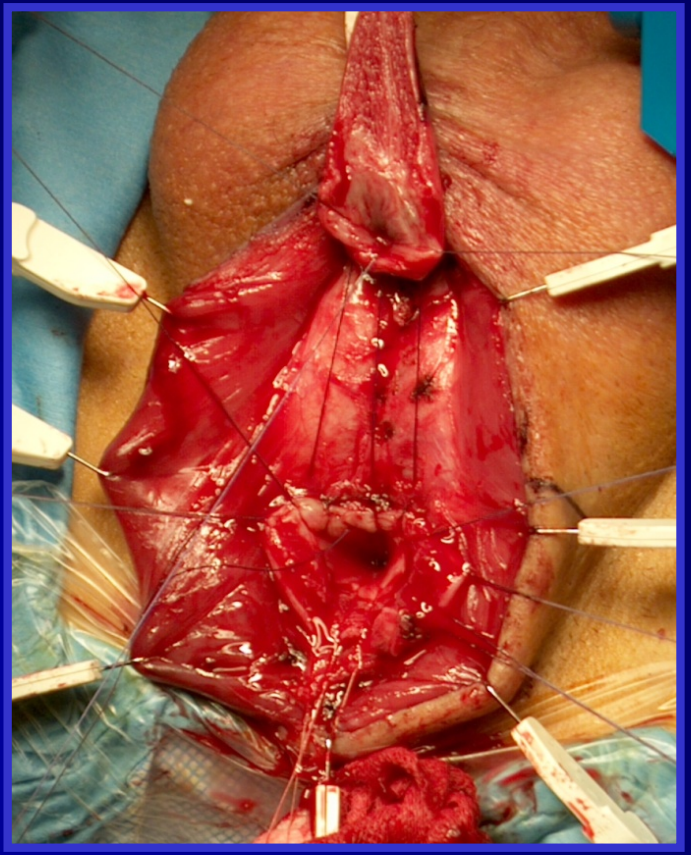
proximal end





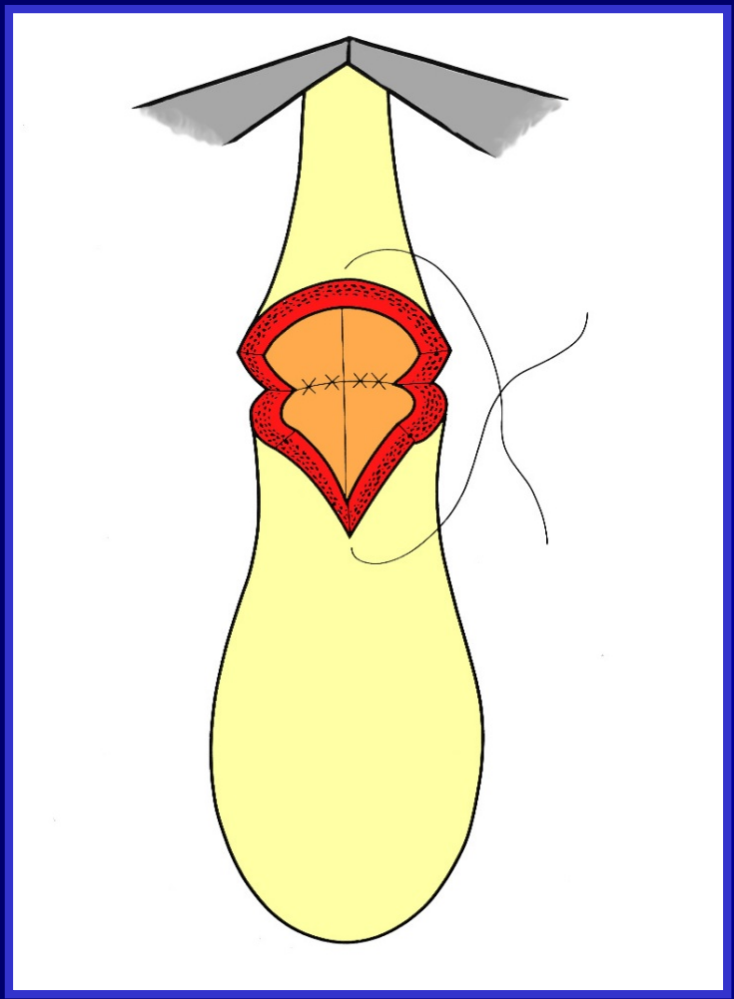
The stricture is removed

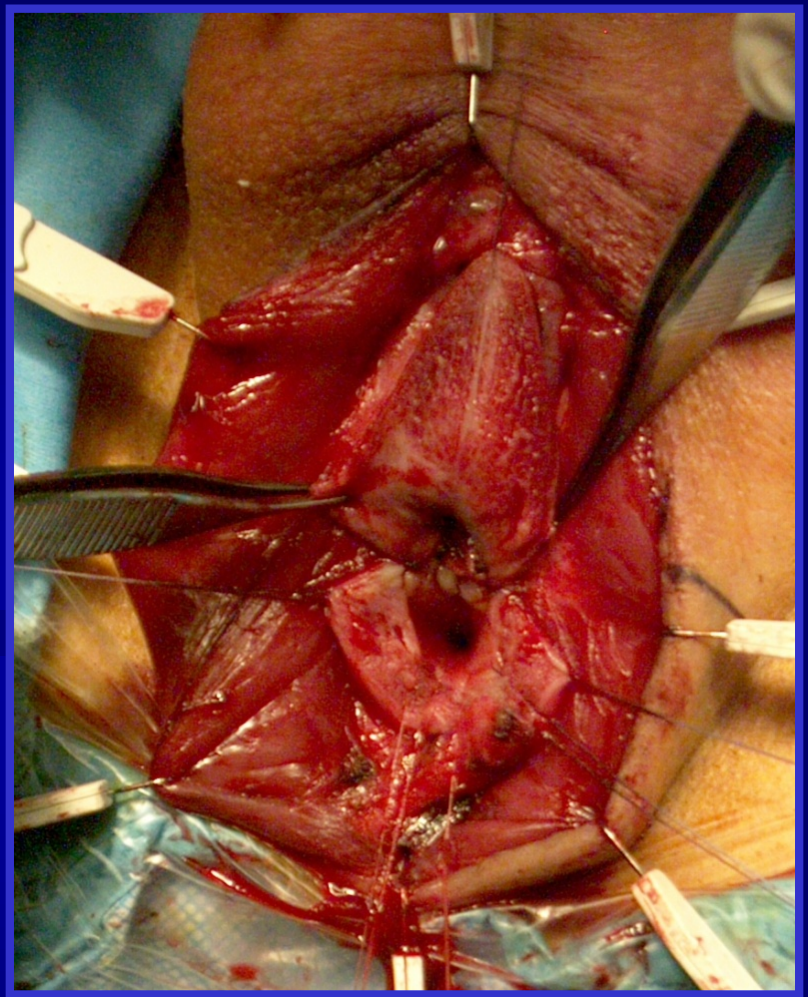




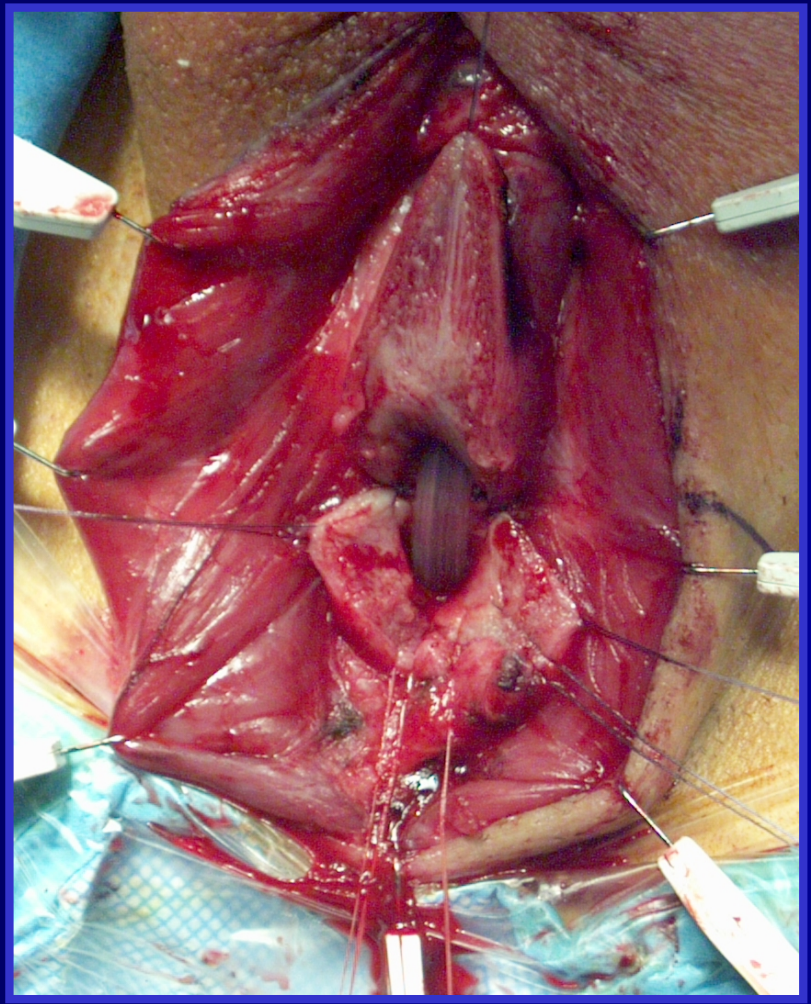
The urethra is spatuled for 1 cm on both ends

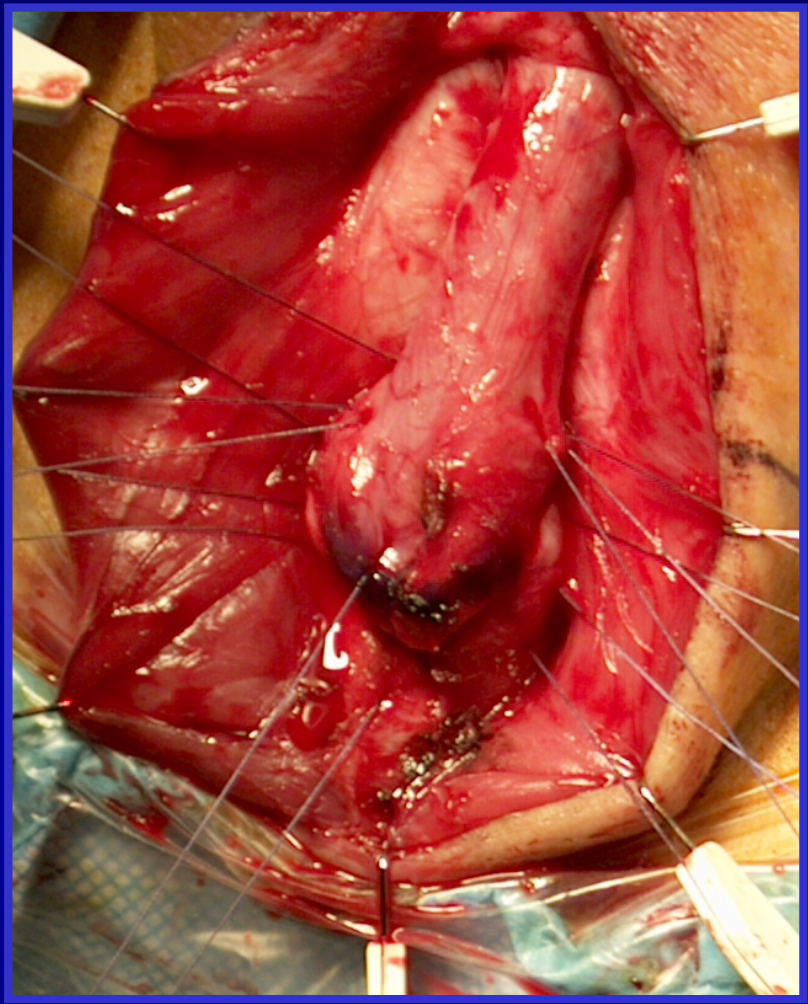
A total of 10 interrupted 4-zero polyglactin sutures are put in place before tying



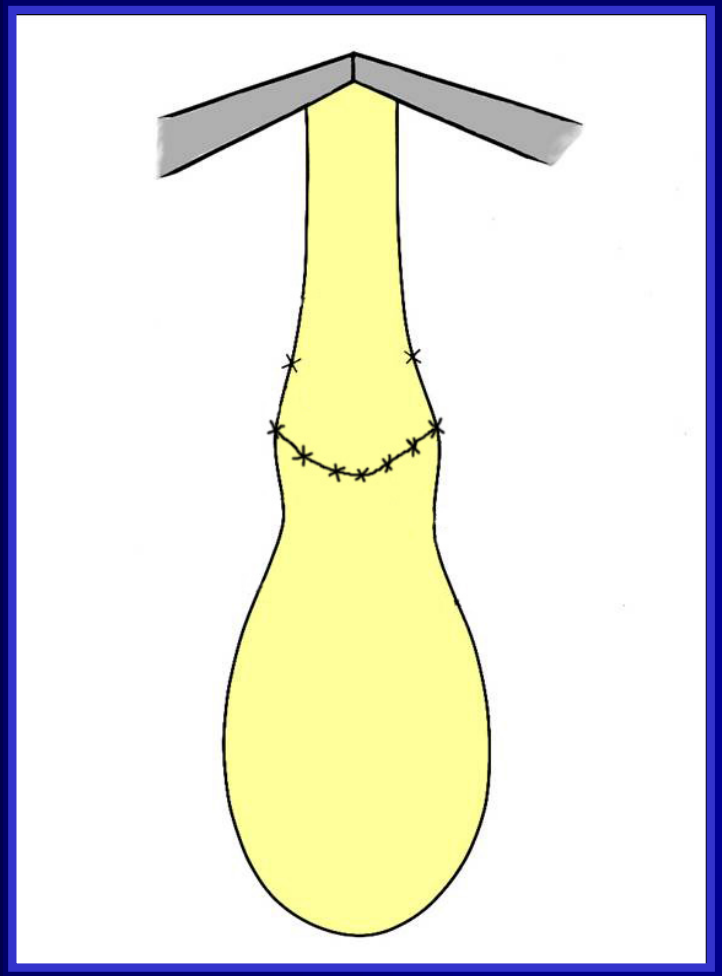


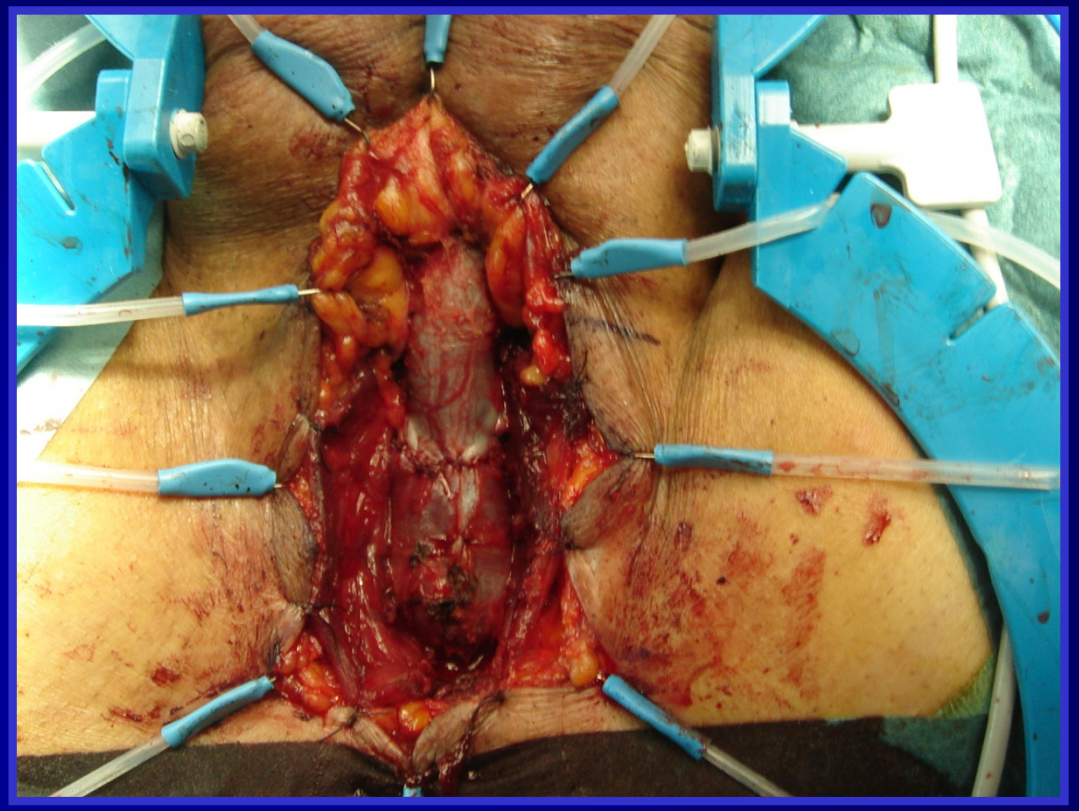
The anastomosis is completed on the roof





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

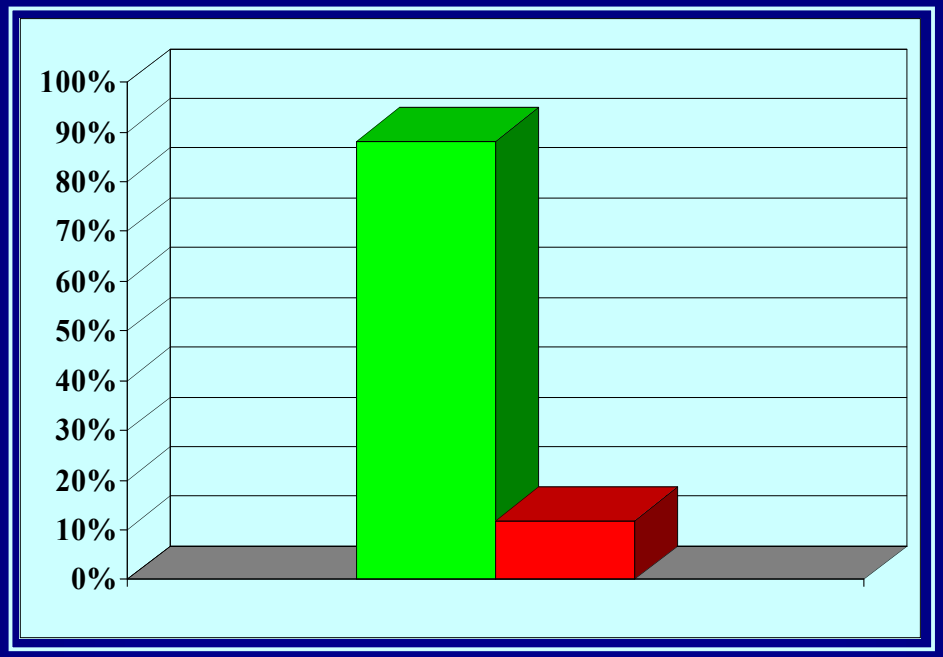




The anastomosis is completed

Results on 176 patients who underwent end-to-end anastomosis

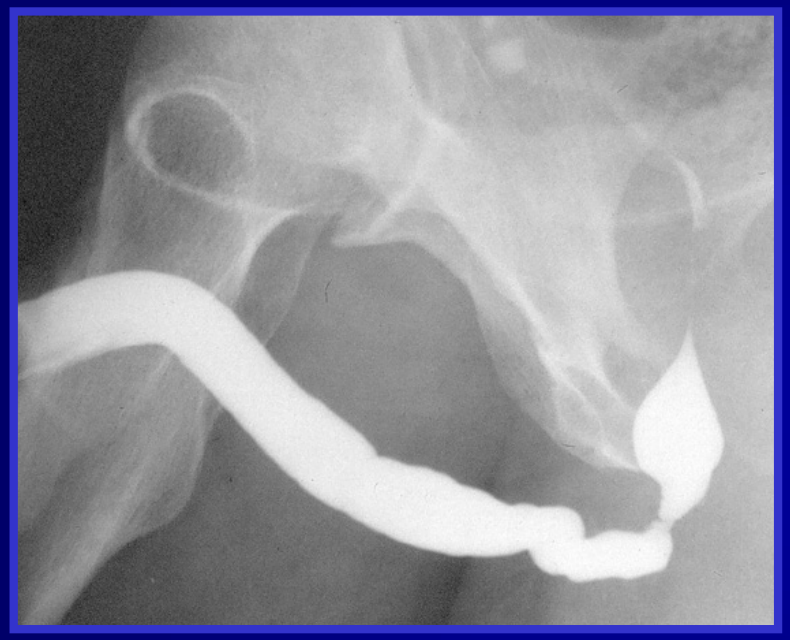
Mean follow-up 75 months (12 – 273 months)

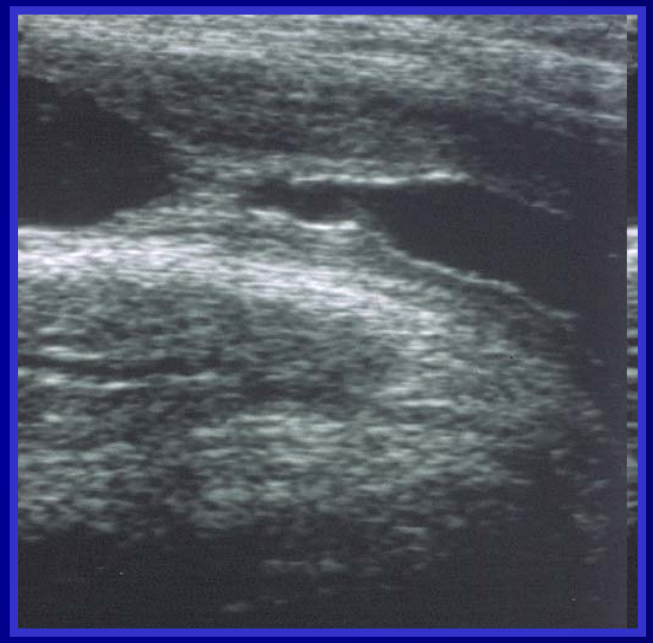


success	155 (88.1%)
failure	21 (11.9%)

www.urethralcenter.it

2 - 4 cm bulbar urethral stricture



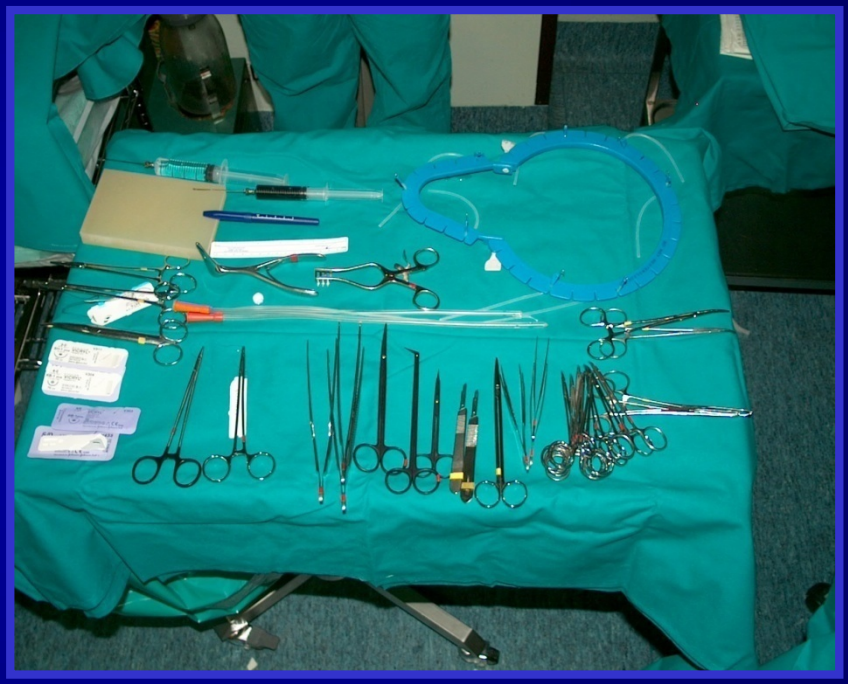


Augmented anastomosic repair using oral graft

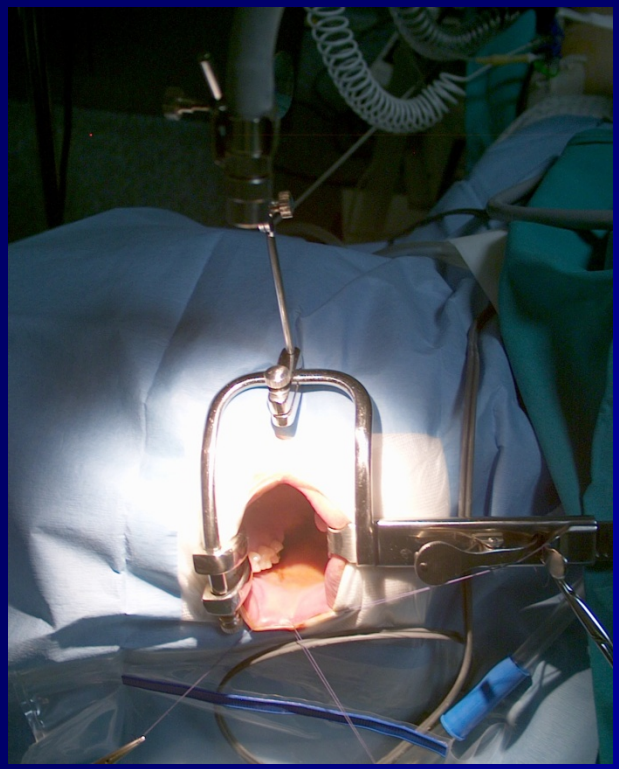
Two surgical teams work simultaneously

Two sets of surgical instruments

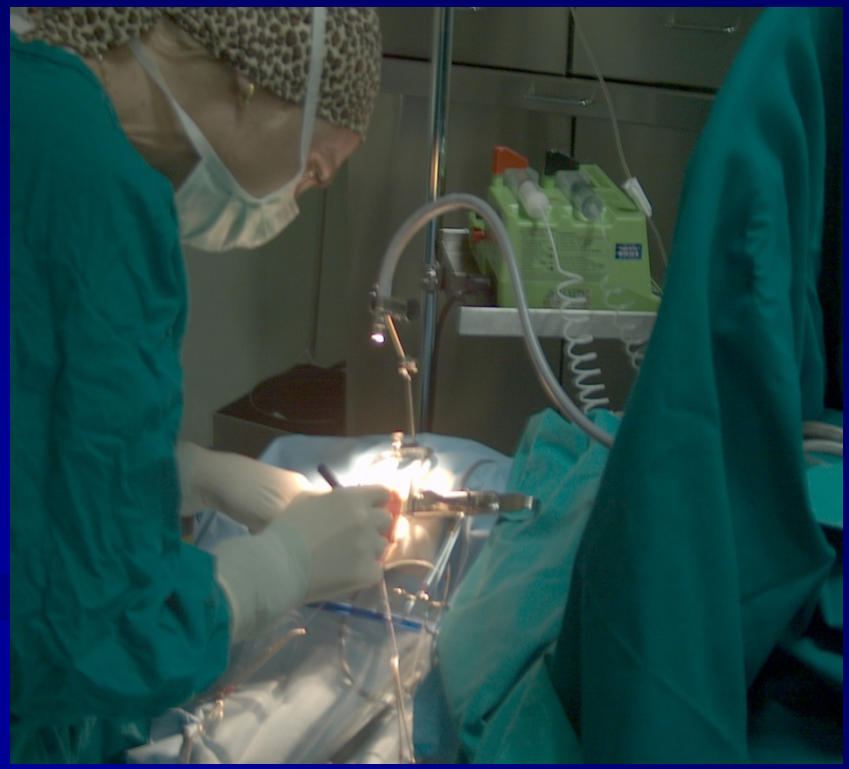
Oral mucosa



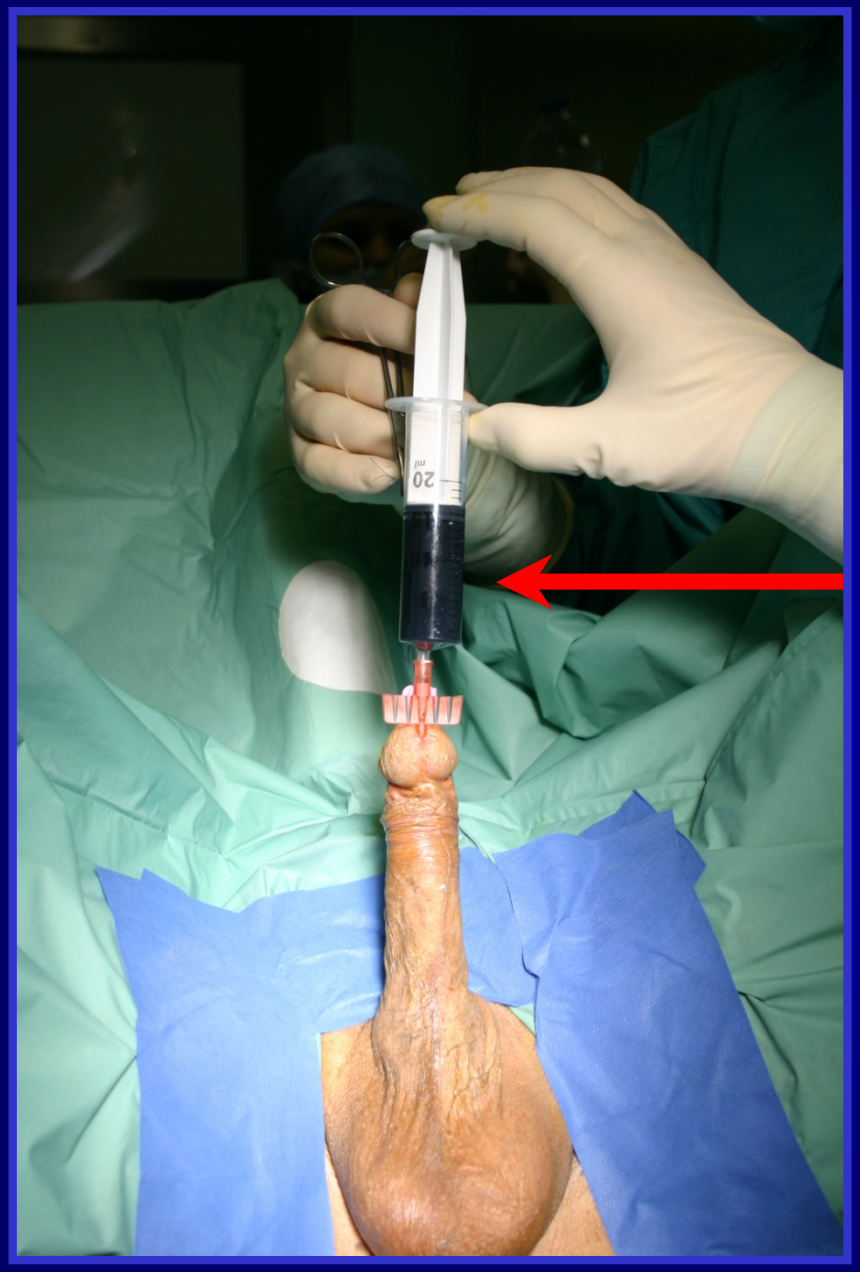
Urethroplasty



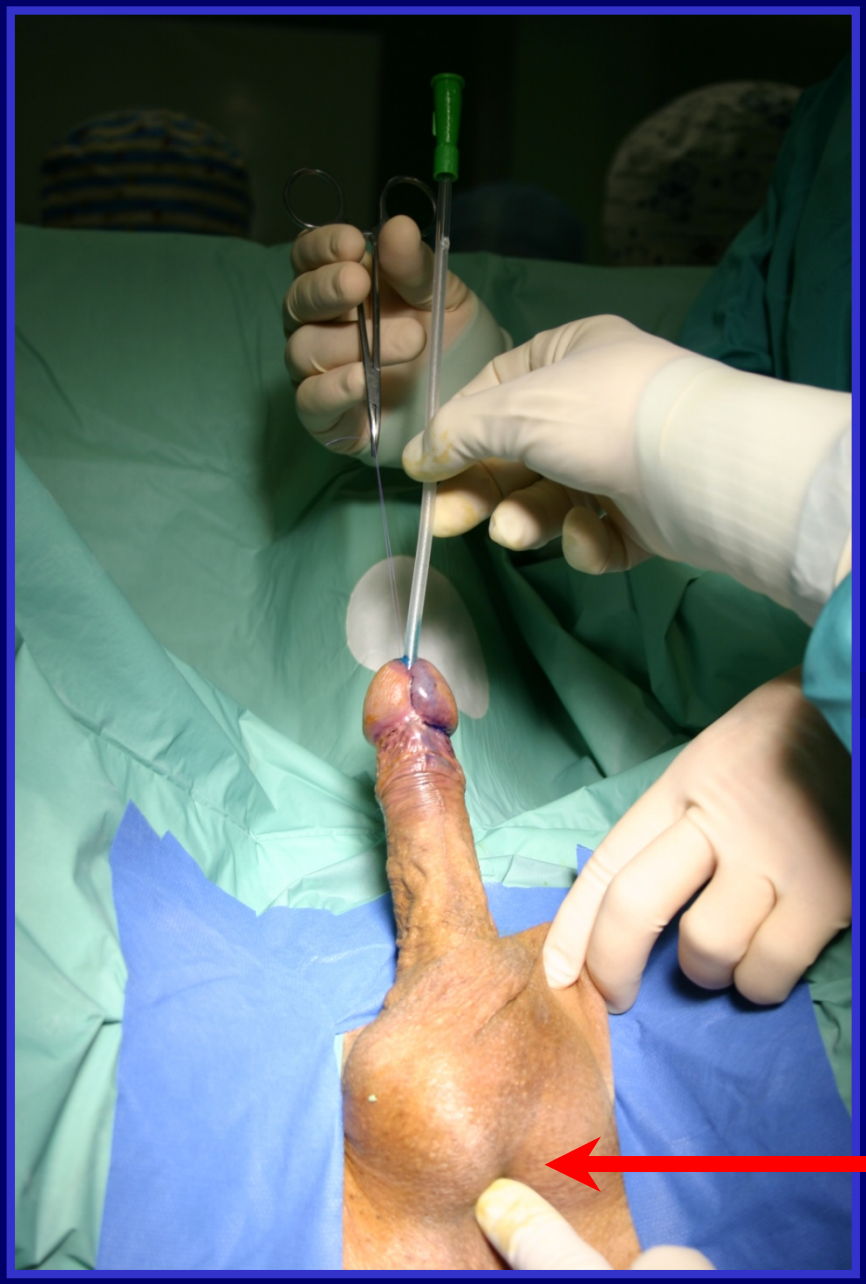
Appropriate mouth retractor



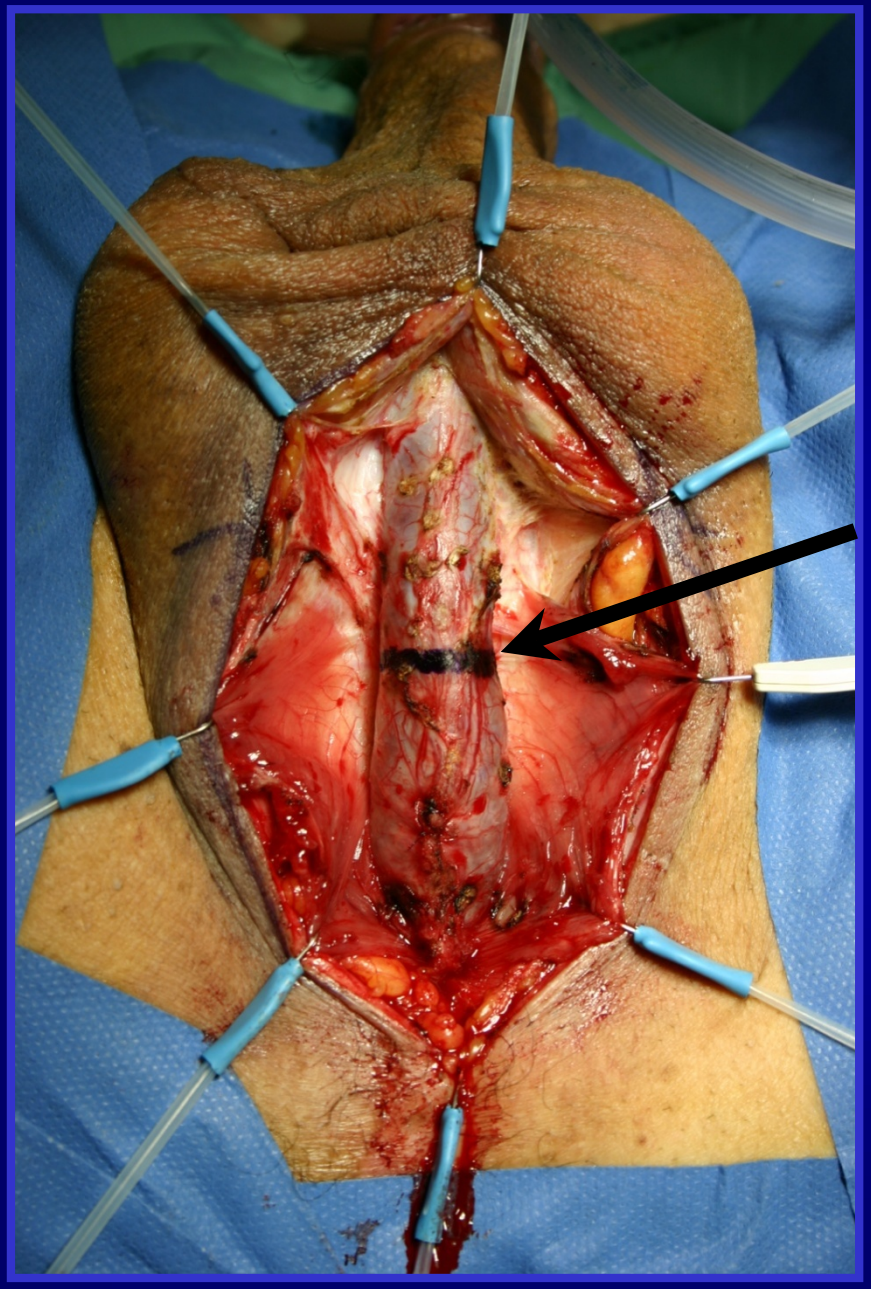
Only one assistant is needed to harvest the oral graft



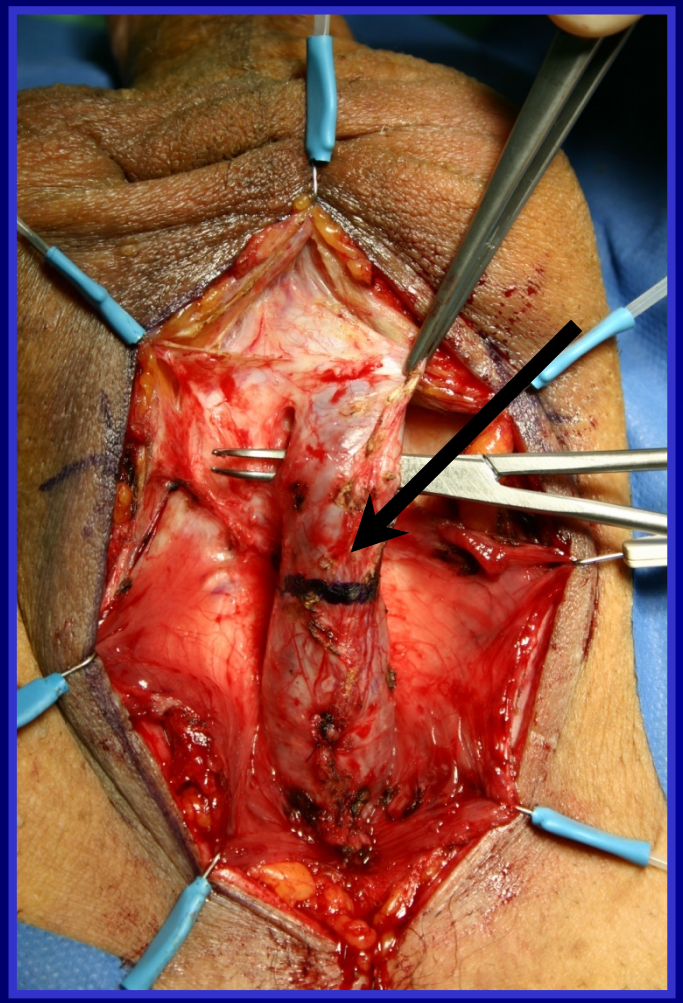
Methylene blue is injected into the urethra

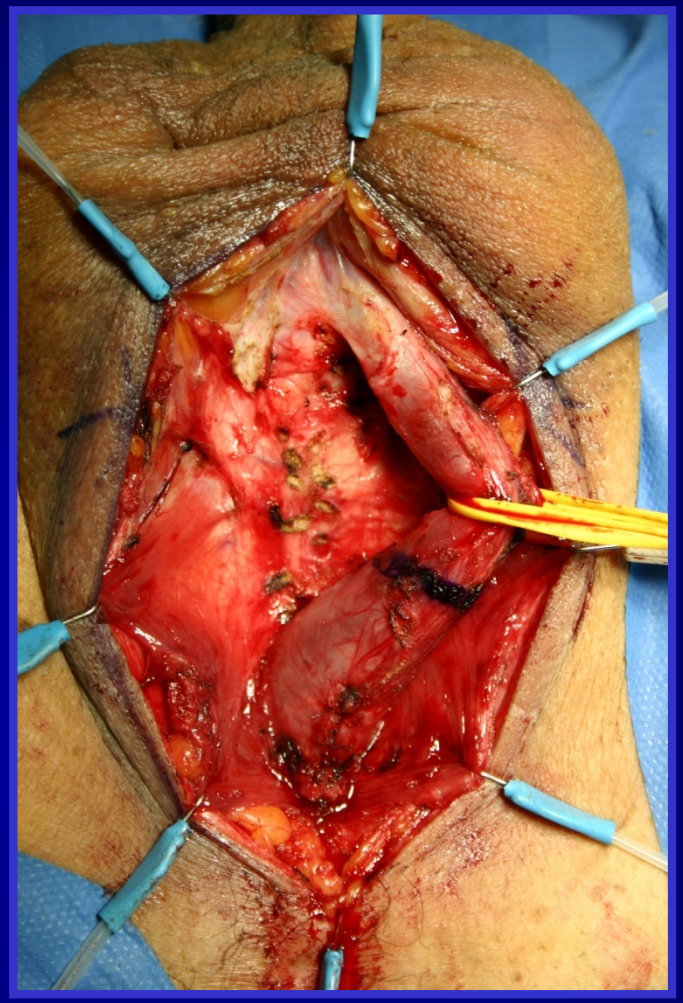


The distal extent of the stenosis is identified by inserting a 16-French catheter with a soft round tip

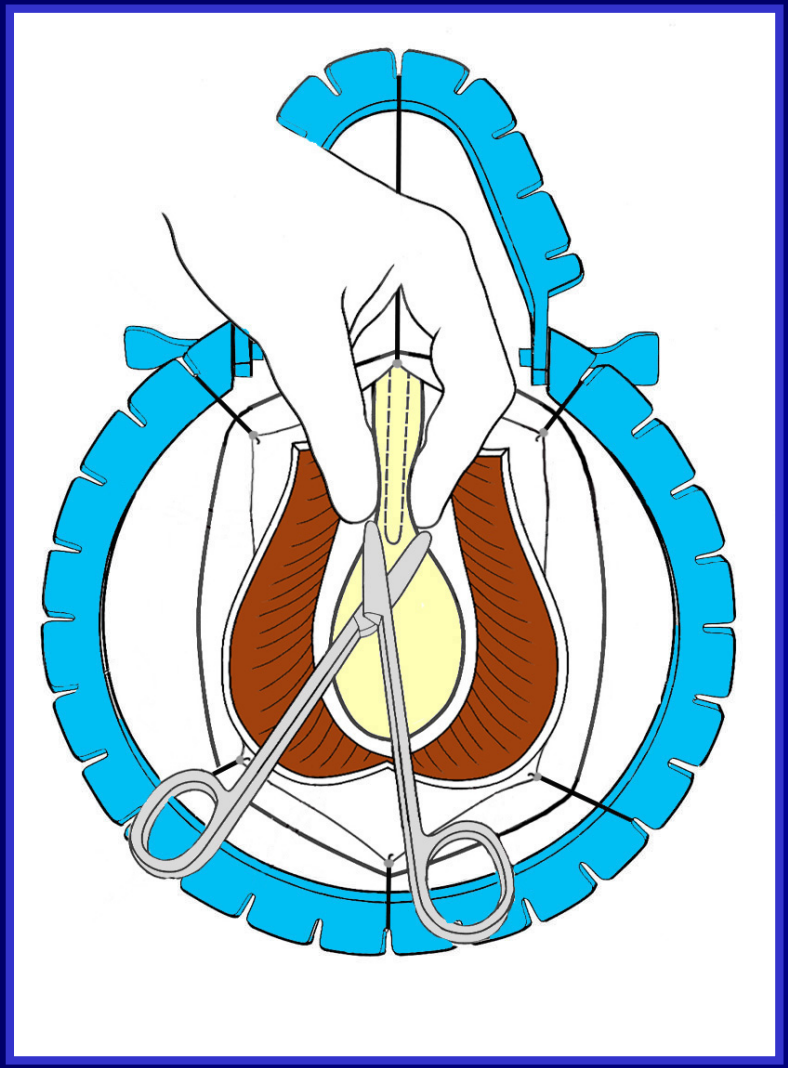


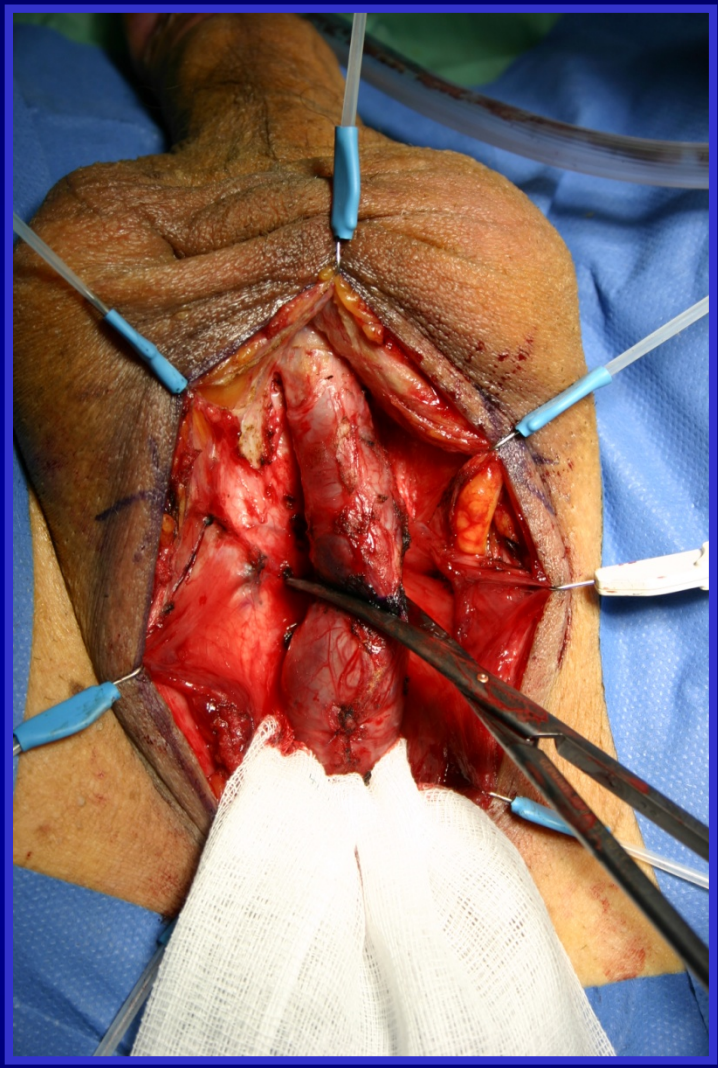
The distal extent of the stenosis is identified and outlined



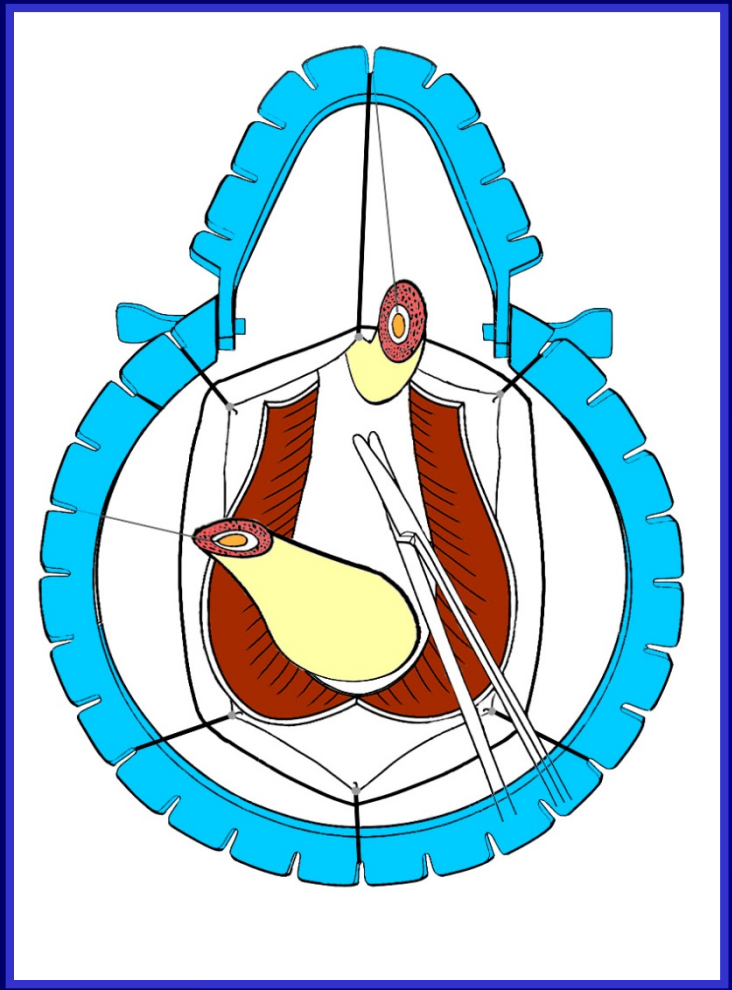


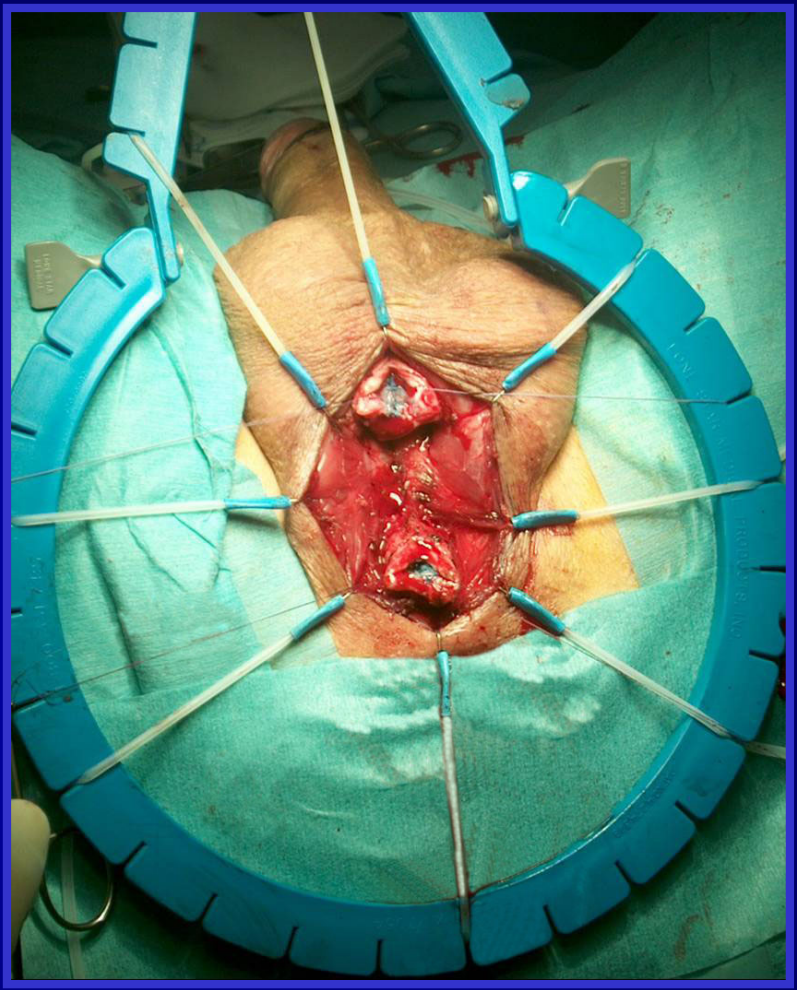
The urethra is dissected from the corpora cavernosa



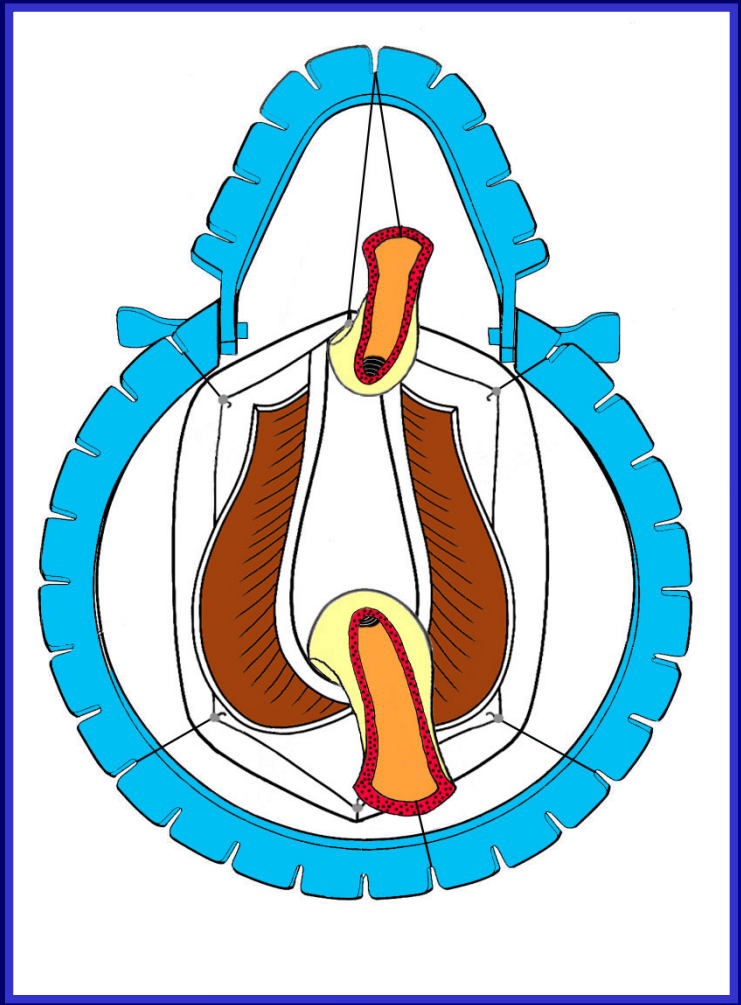


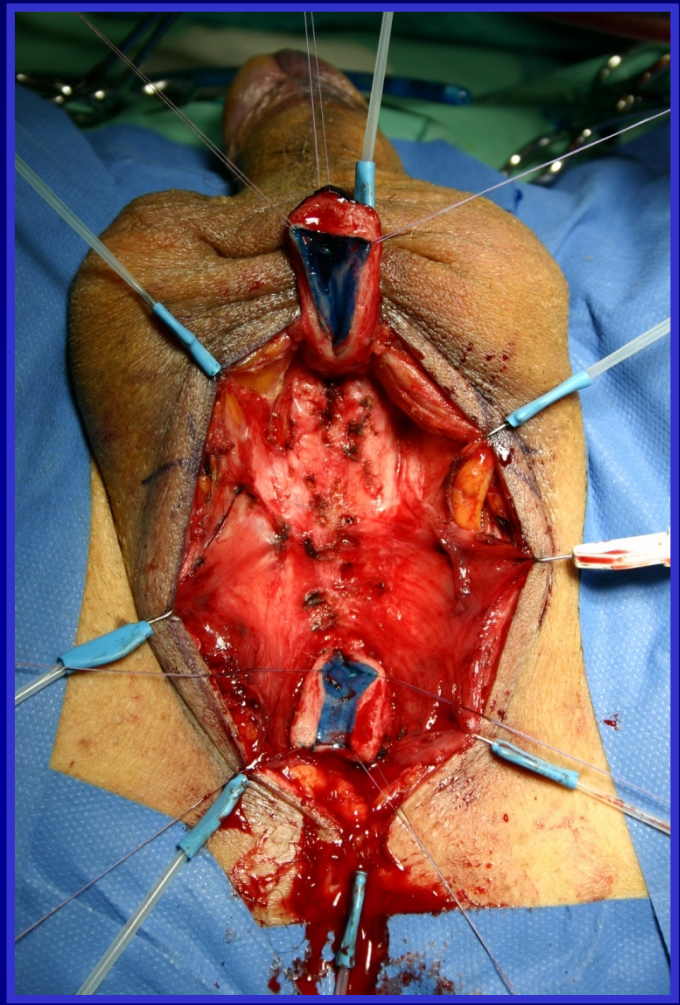
The urethra is transected at the stricture level



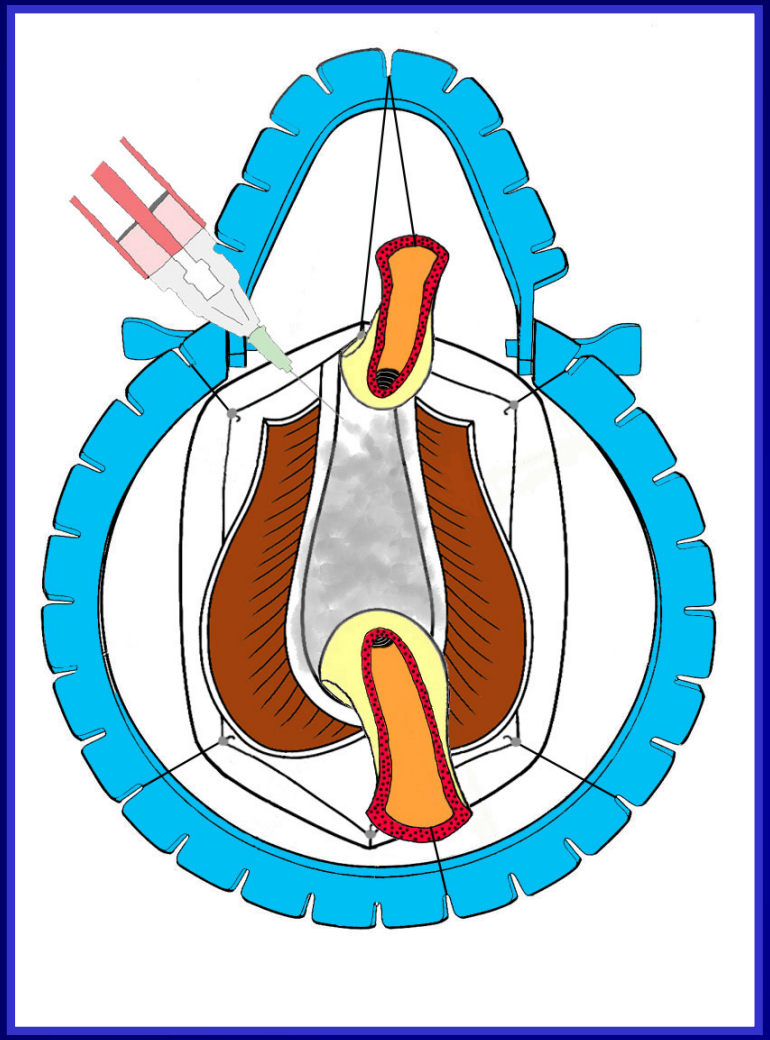


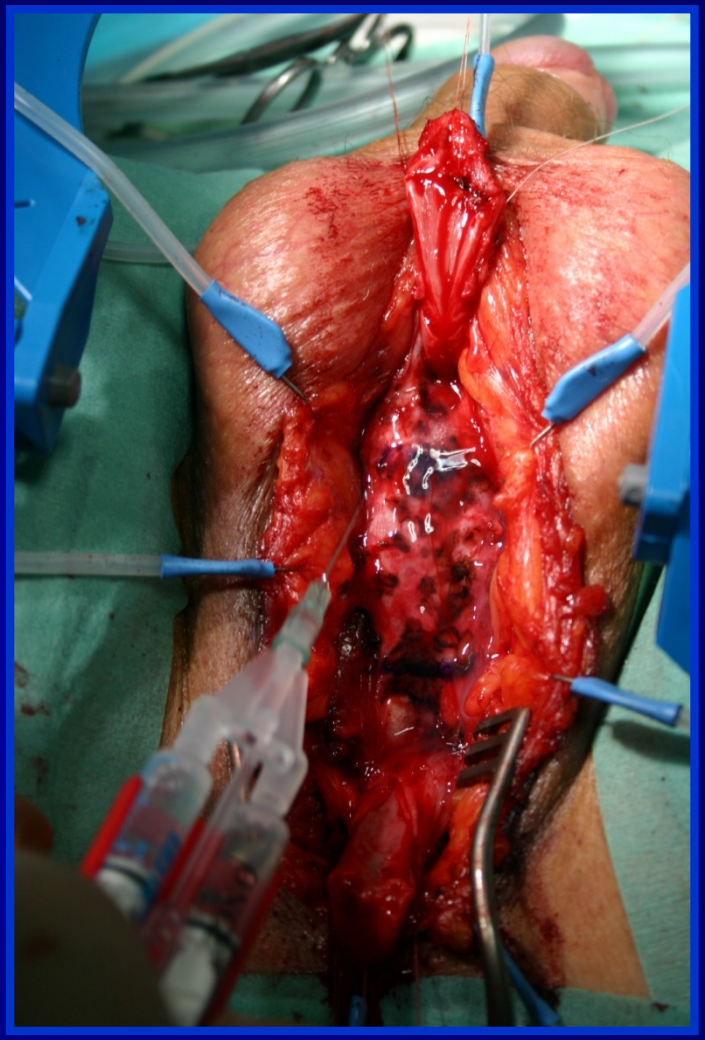
The distal and proximal urethral ends are mobilized from the corpora cavernosa



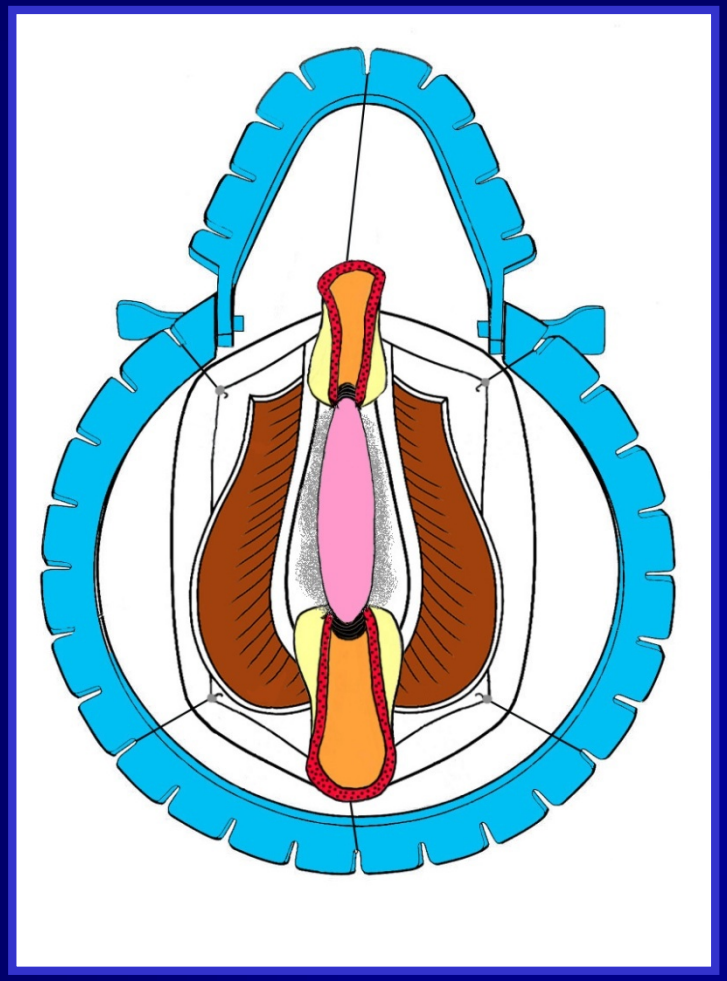


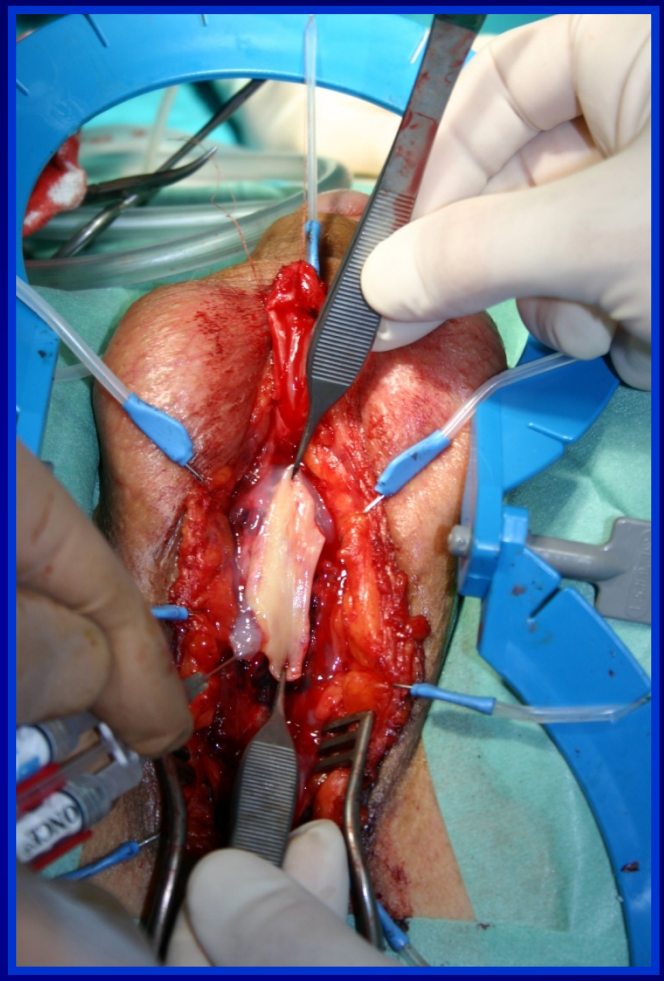
The distal and proximal urethral ends are fully spatuled along the dorsal surface



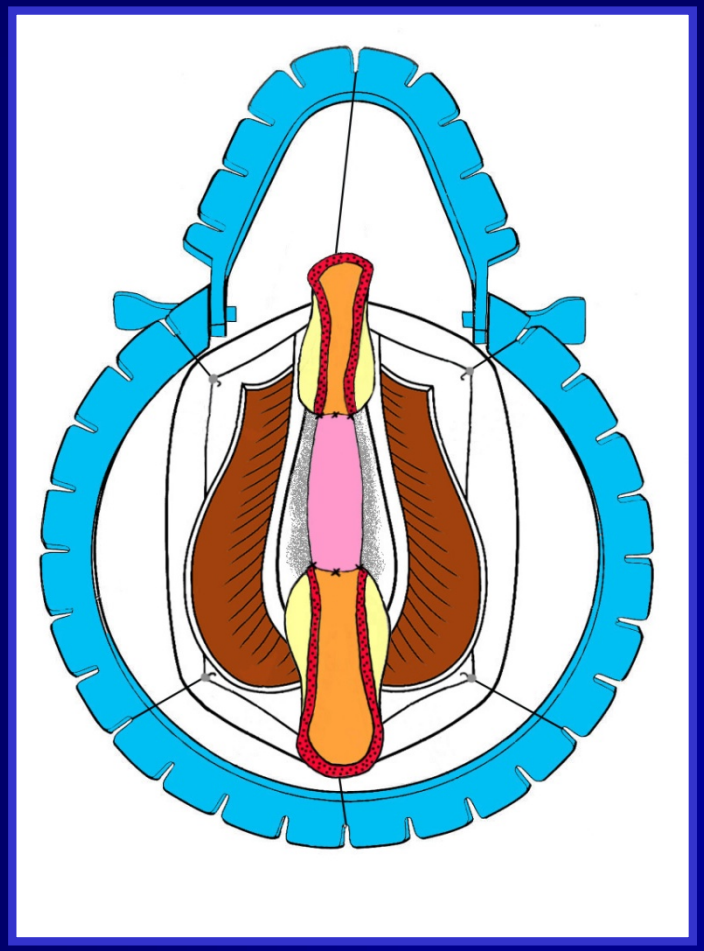


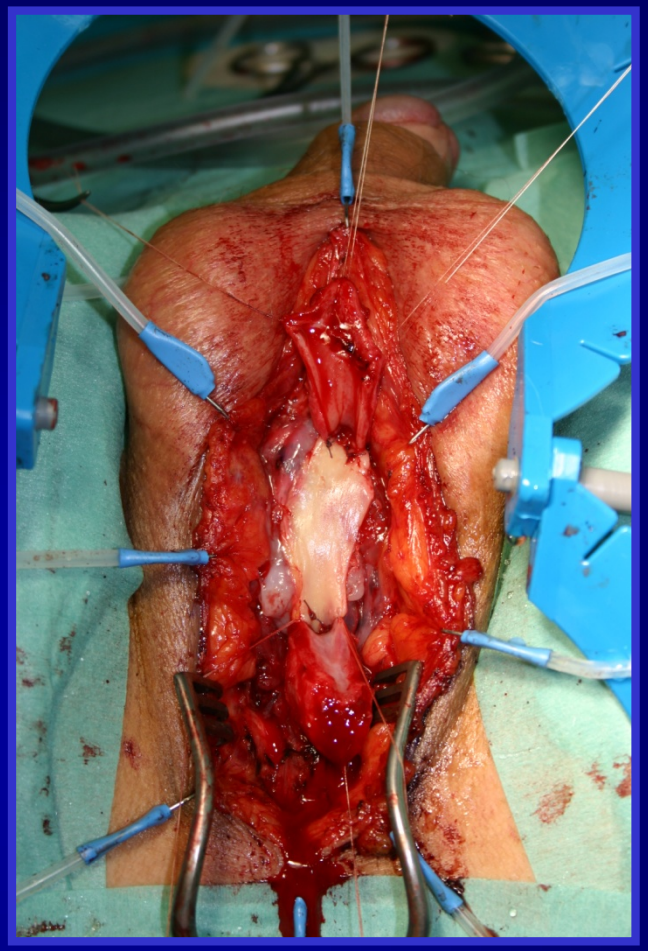
Two ml of fibrin glue are injected over the urethra



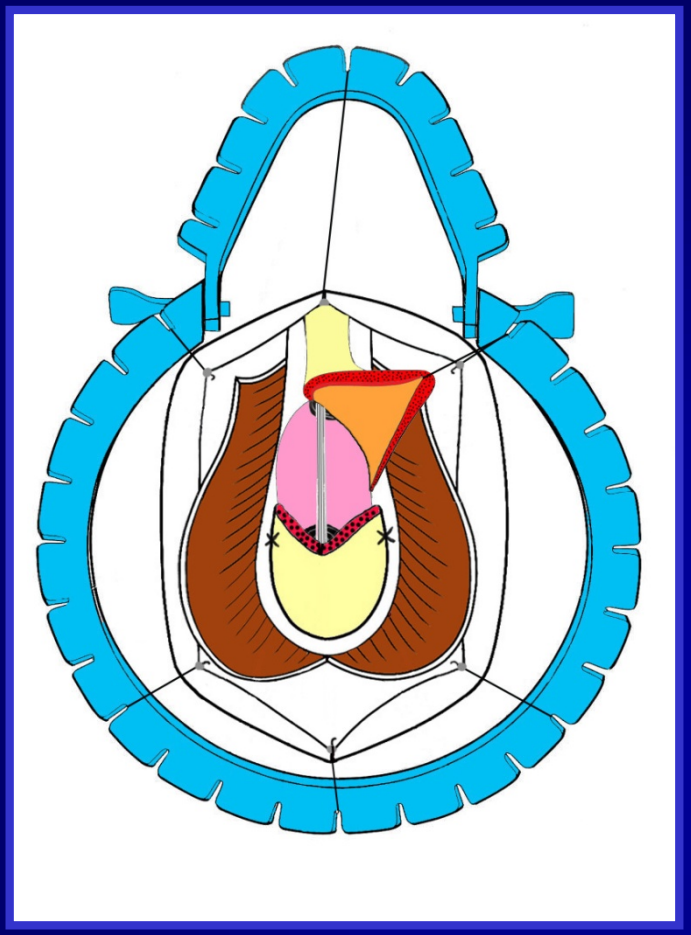


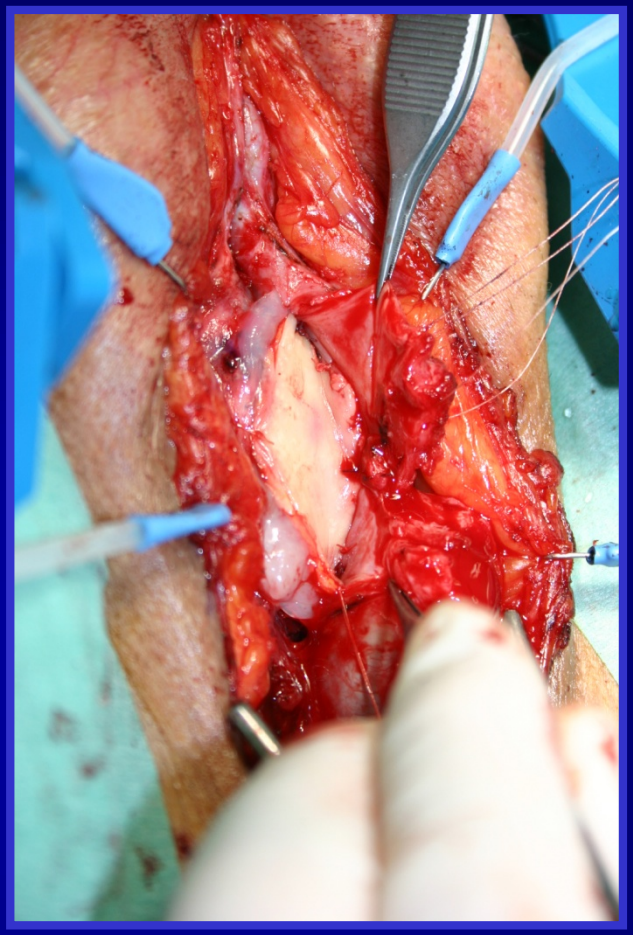
The buccal mucosal graft is applied over the fibrin glue



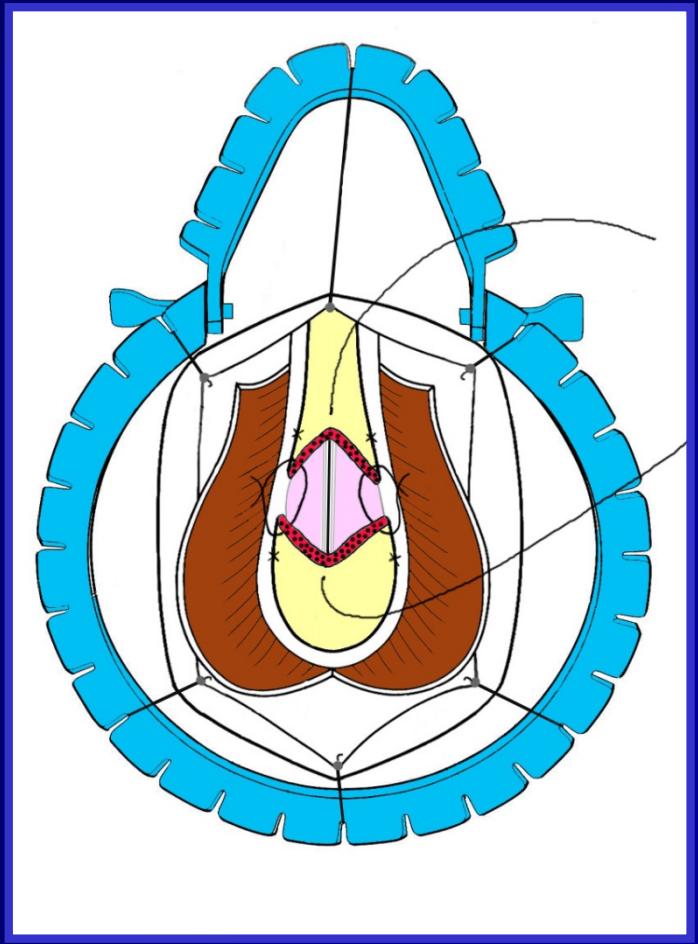


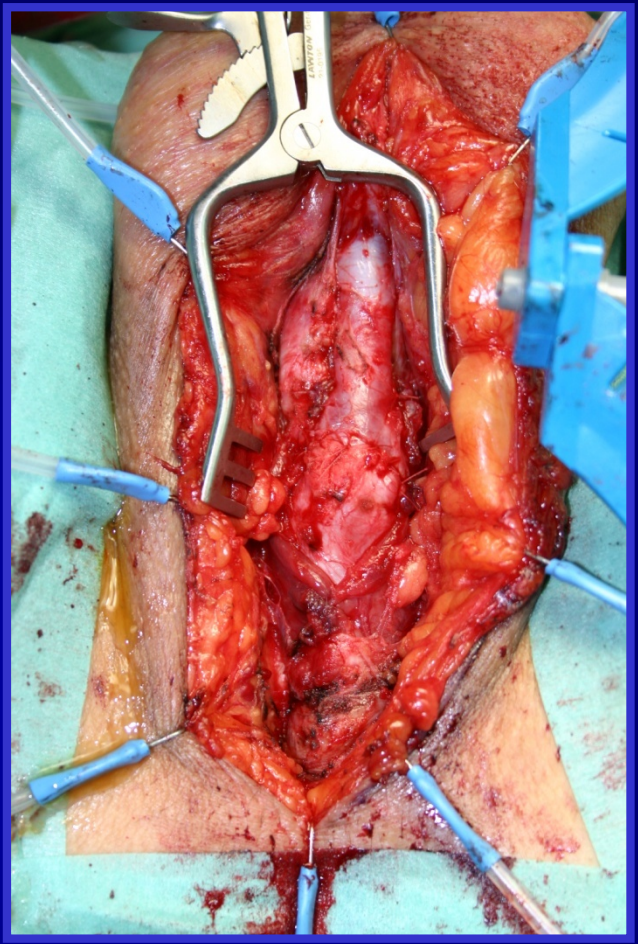
The distal and proximal urethral edges are sutured to the apices of the graft



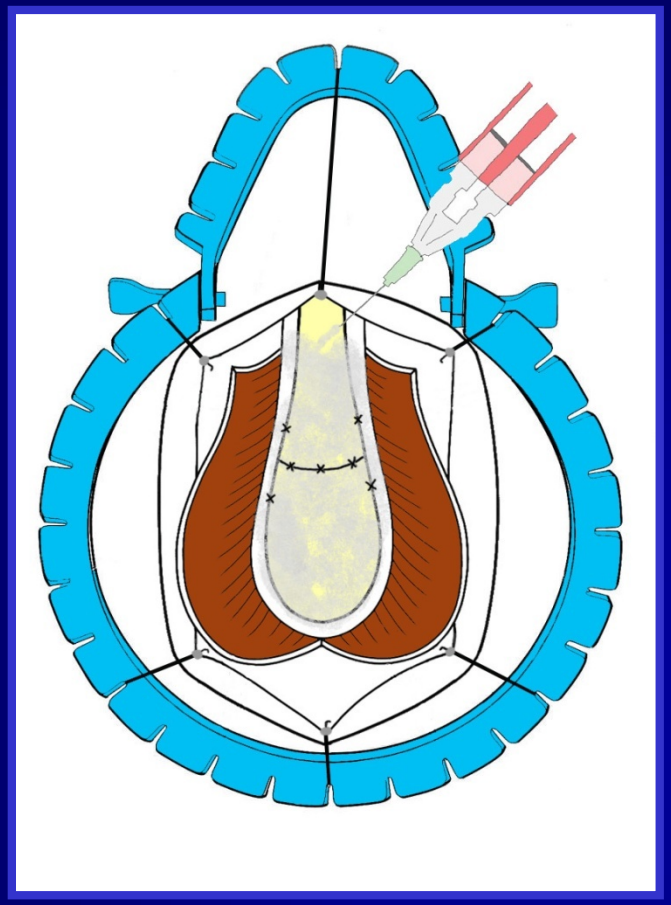


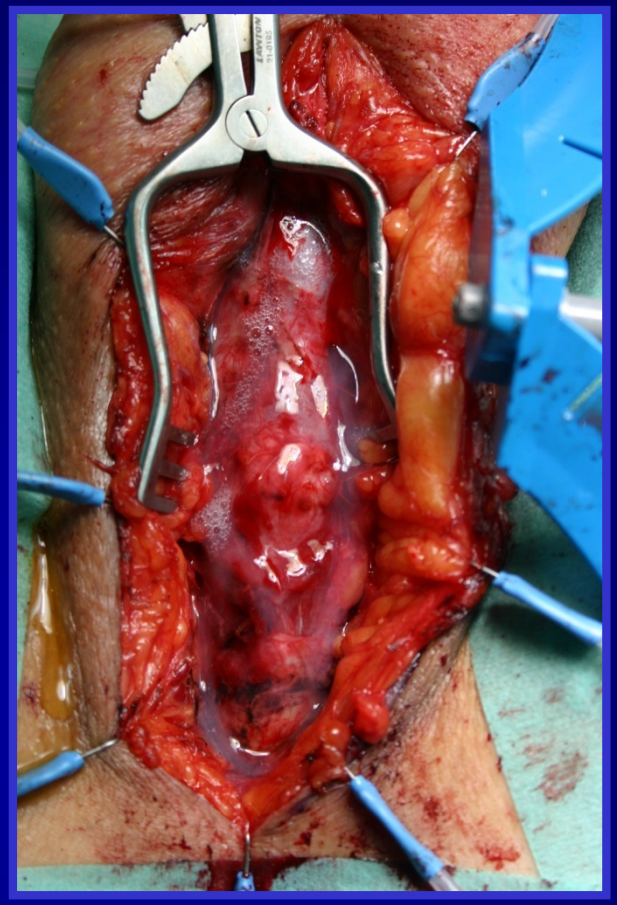
The distal urethra is pulled down and the proximal urethra is pulled up to cover the graft





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

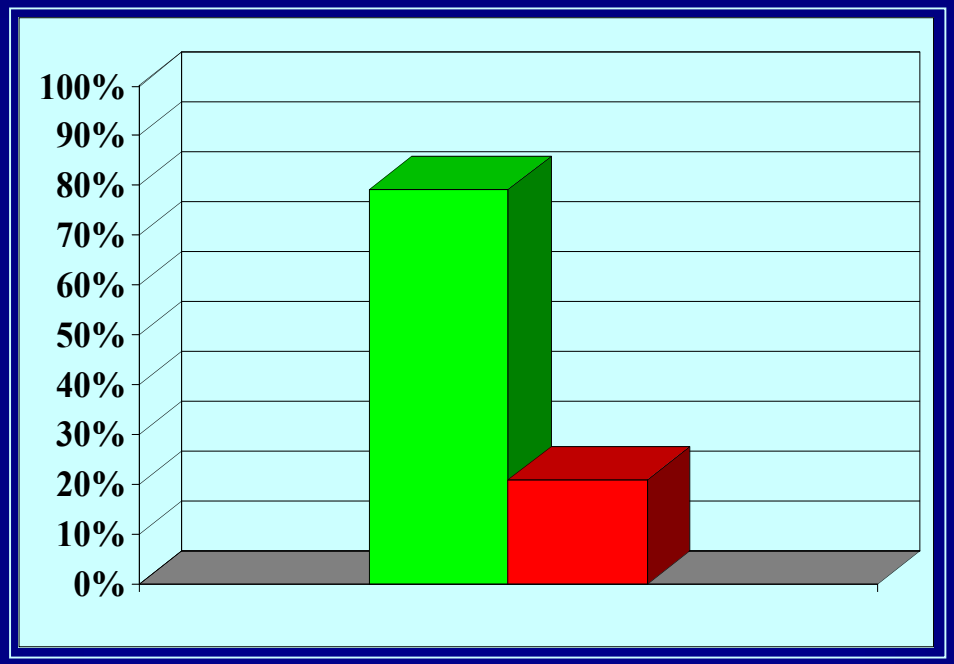




Two ml of fibrin glue are injected over the urethra to prevent urinary leakage

Results on 24 patients who underwent augmented anastomotic repair using dorsal oral mucosal graft

Mean follow-up 48 months (25 – 78 months)



success	19 (79.2%)
failure	5 (20.8%)

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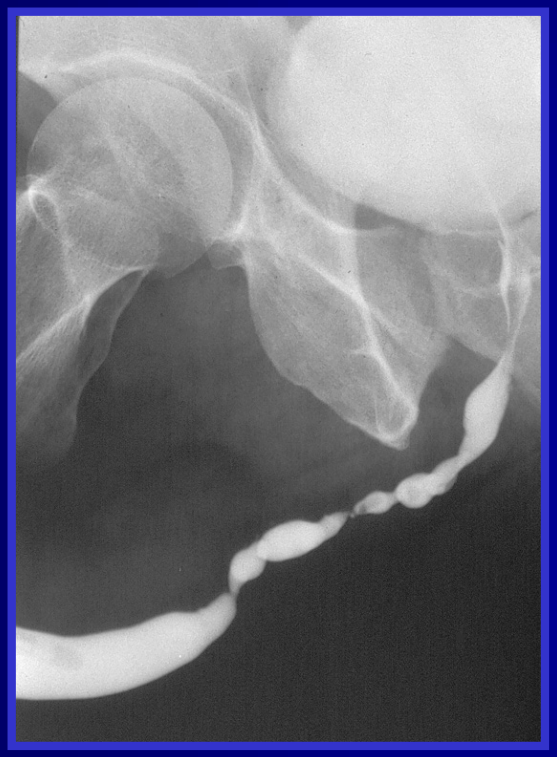
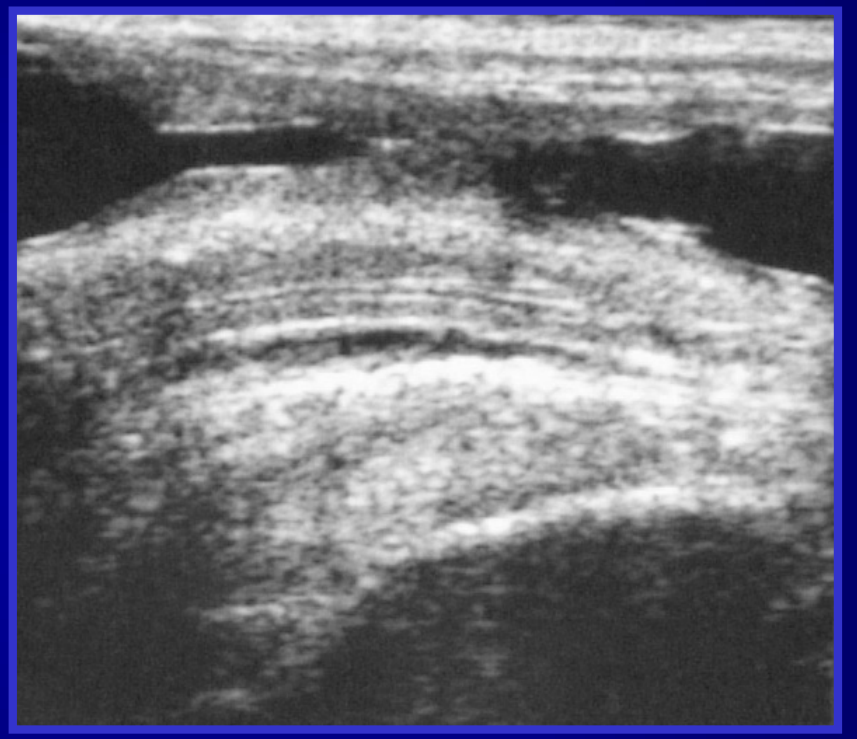
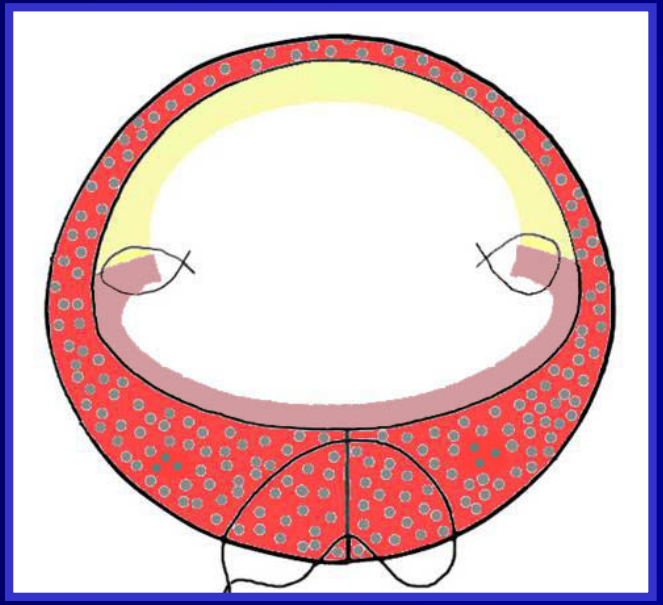
> 4 cm bulbar urethral stricture



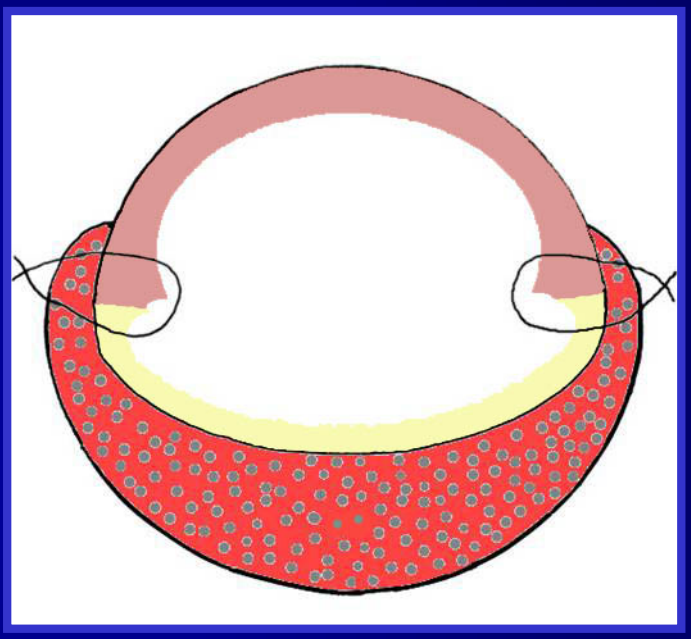


Substitution urethroplasty

Substitution urethroplasty

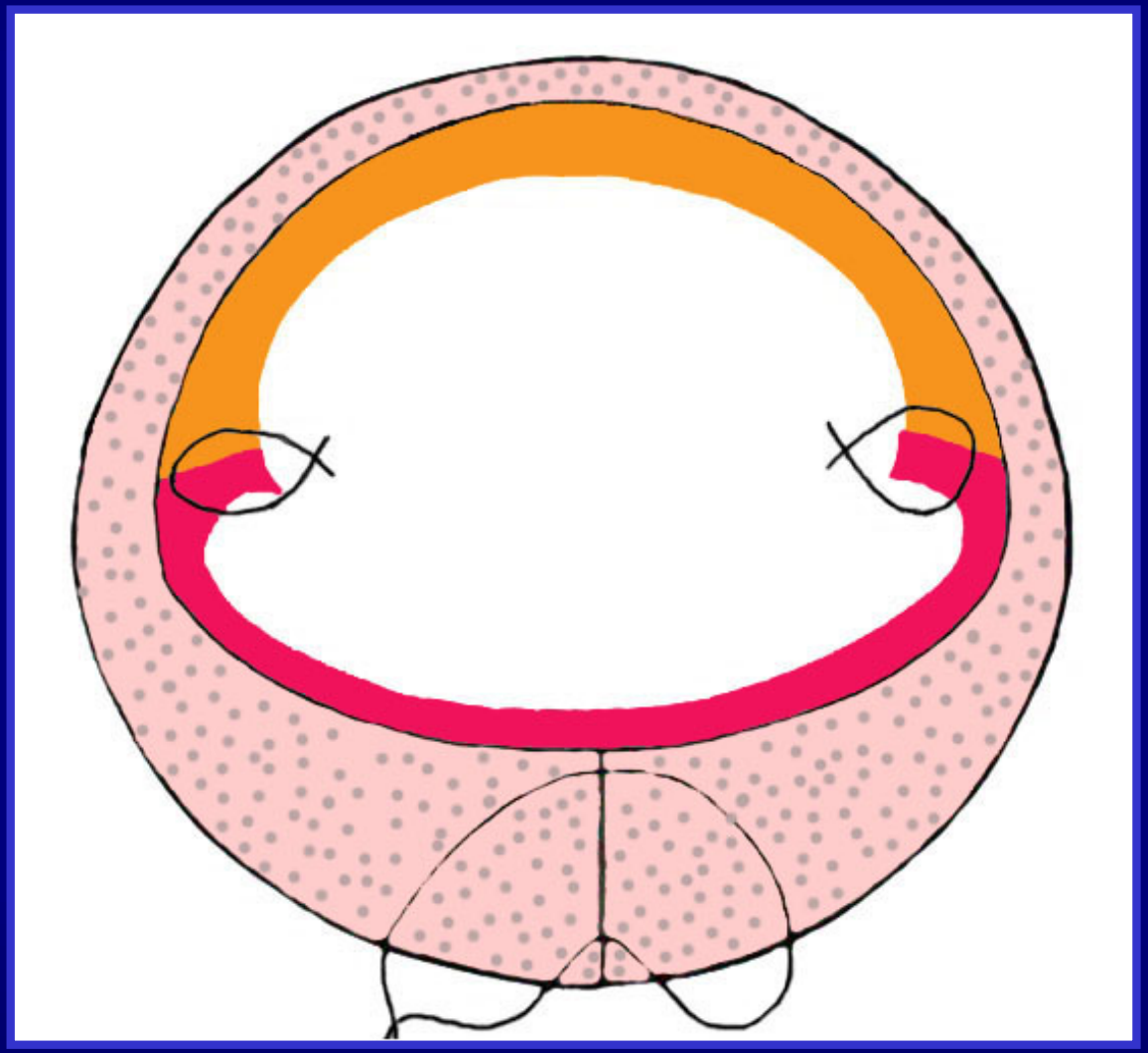


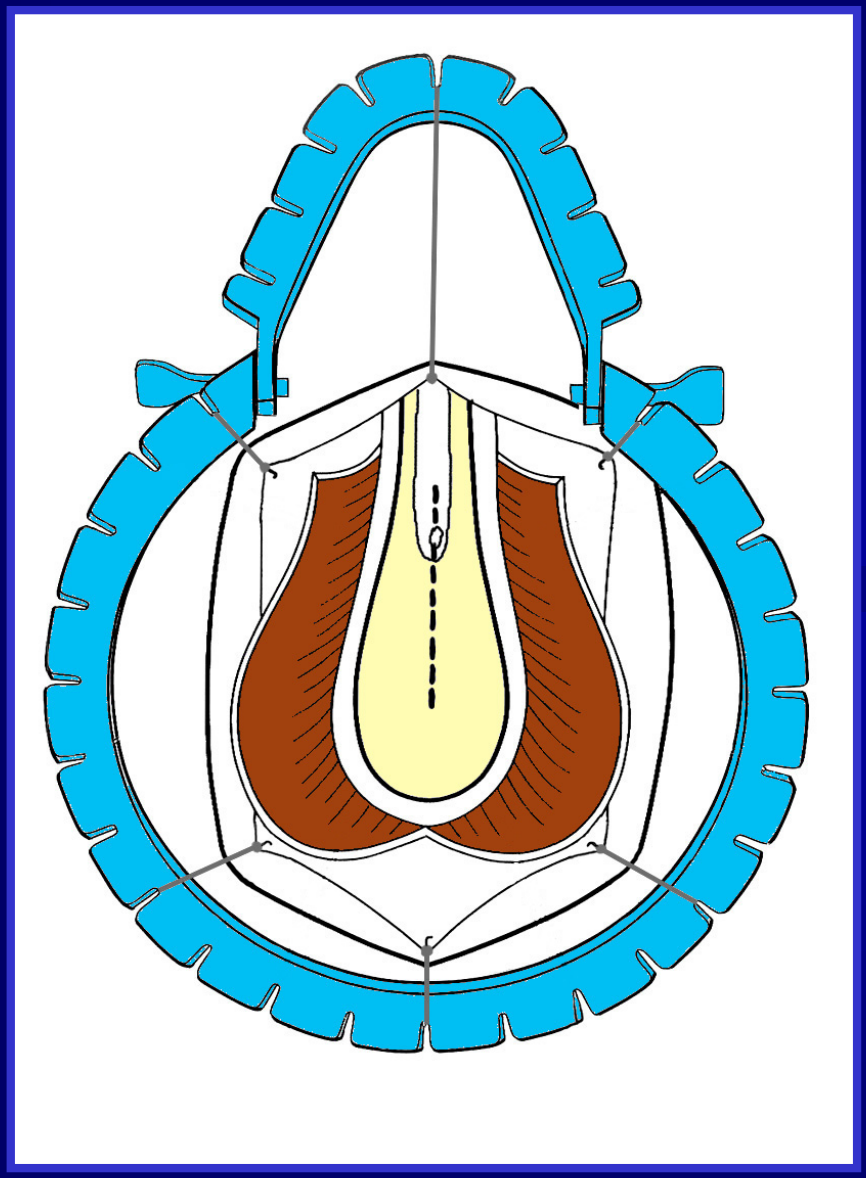
ventral

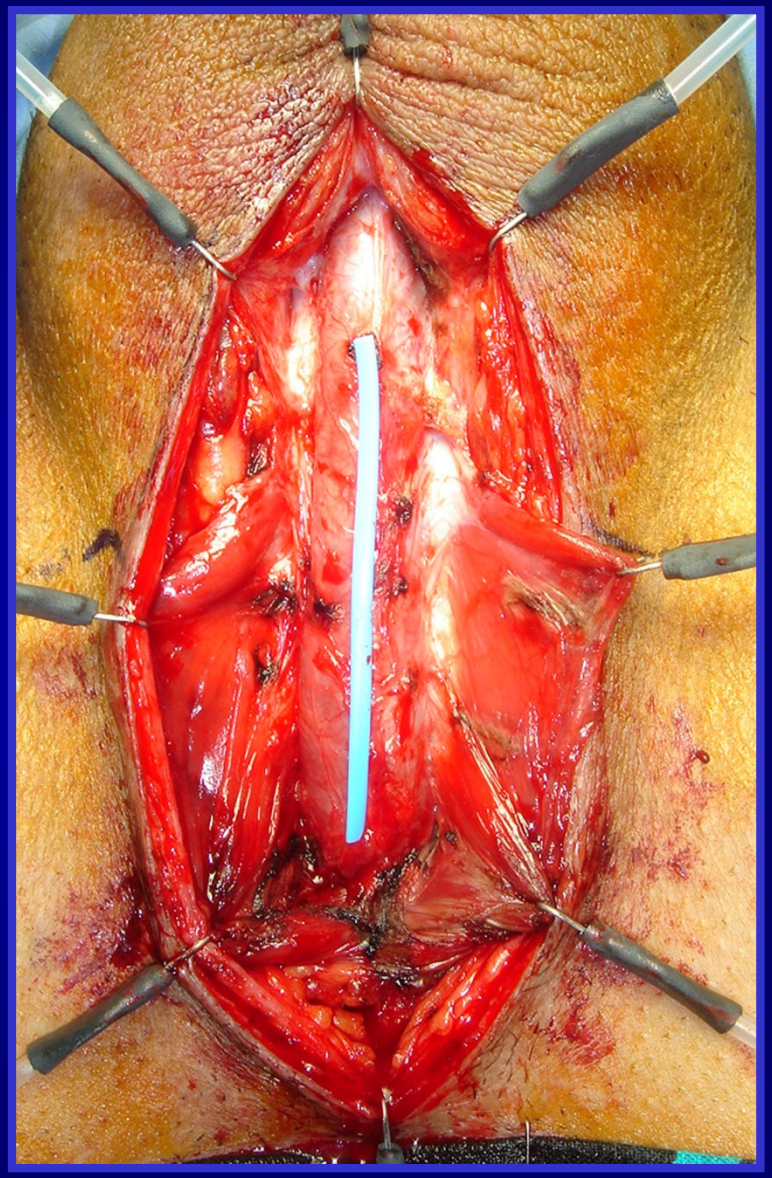


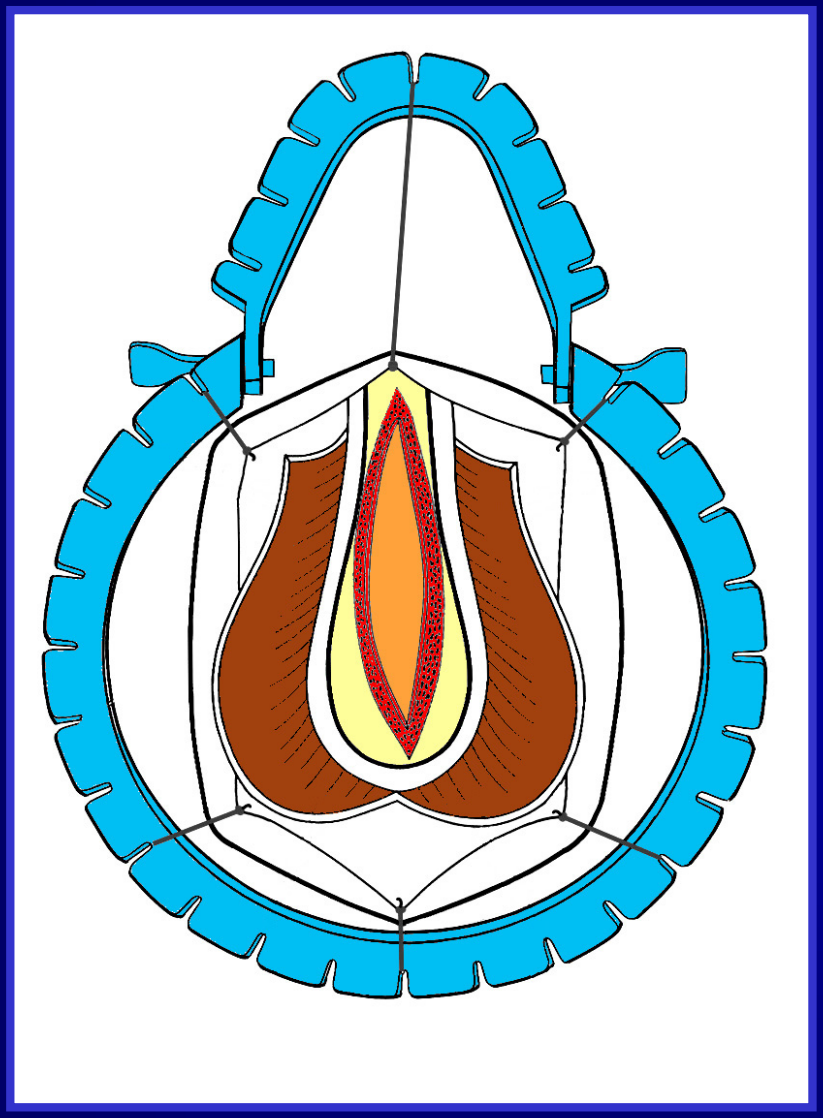
dorsal

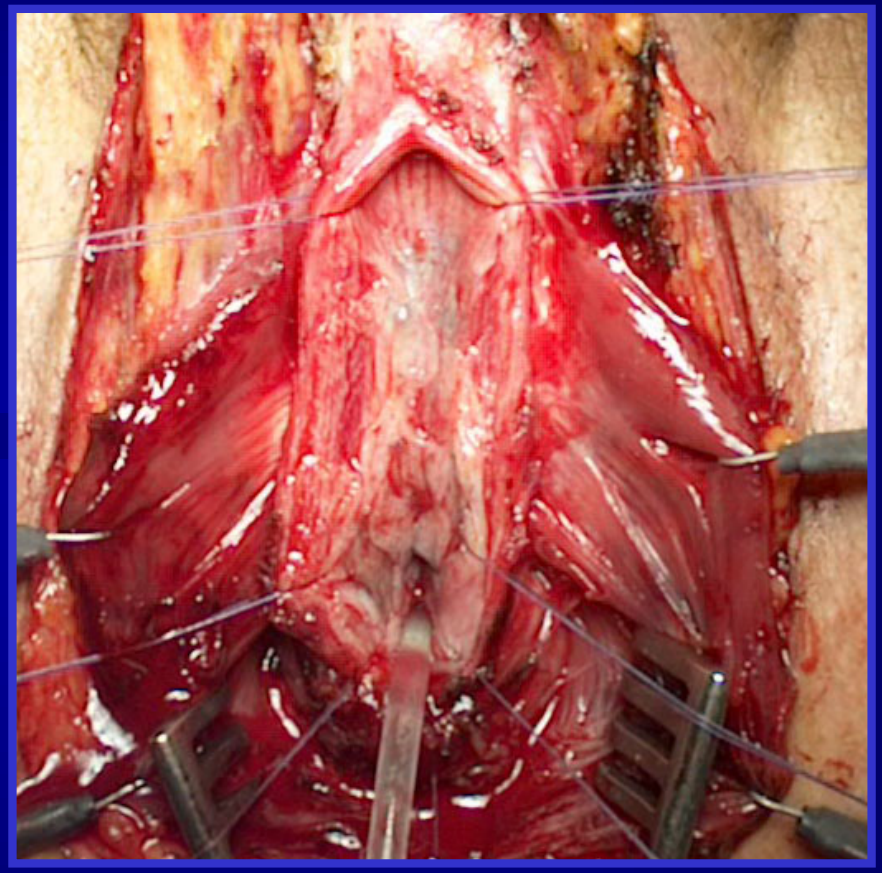
Ventral onlay graft urethroplasty

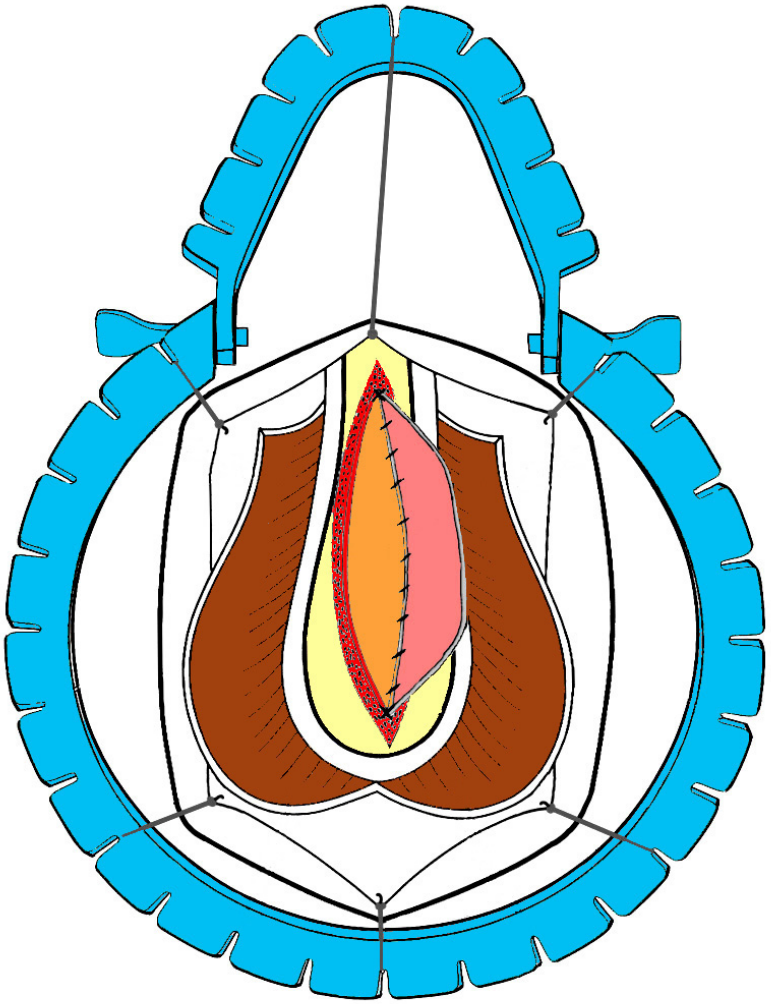


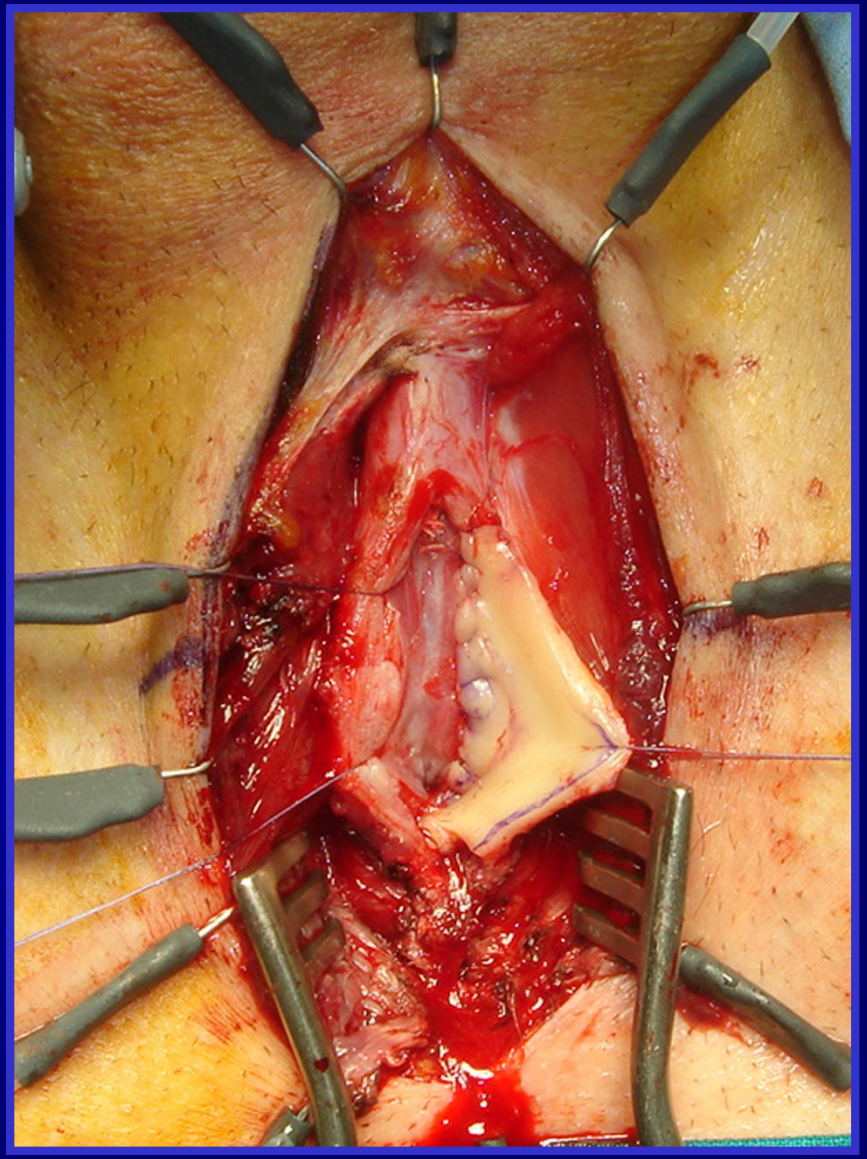


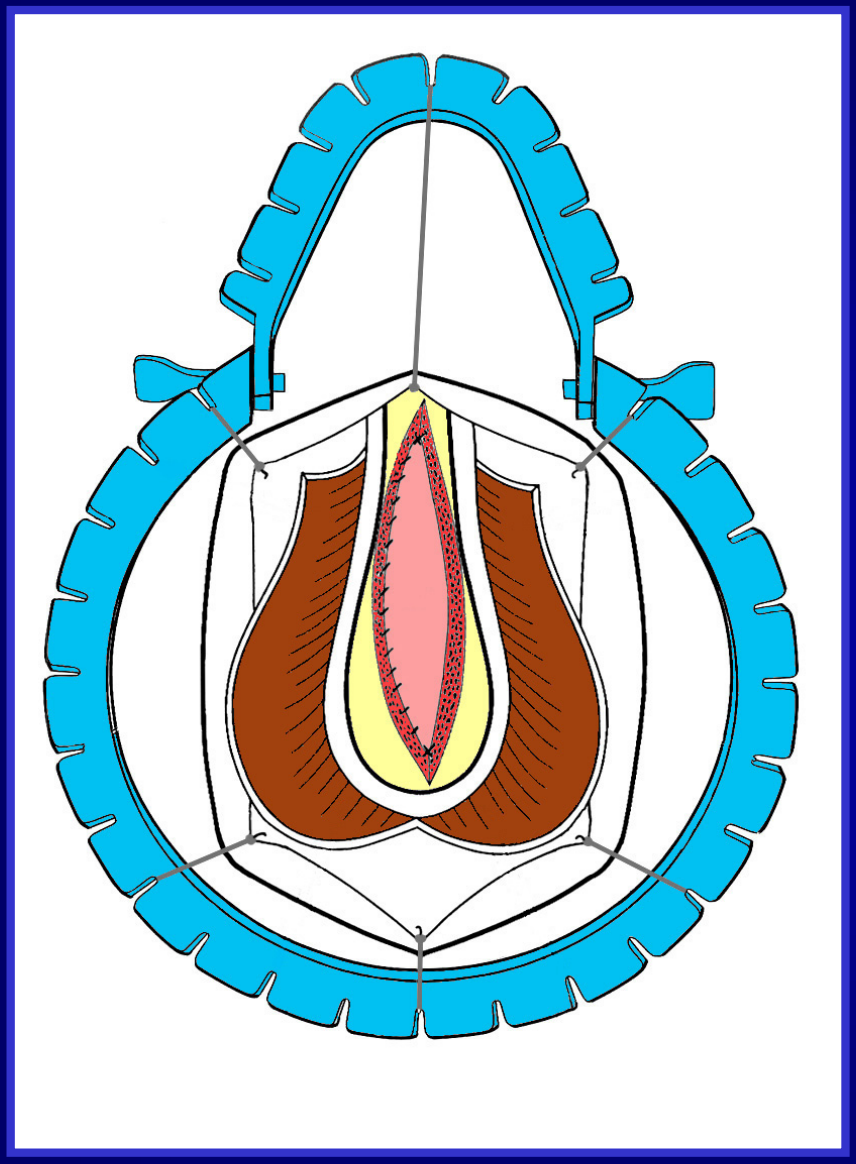


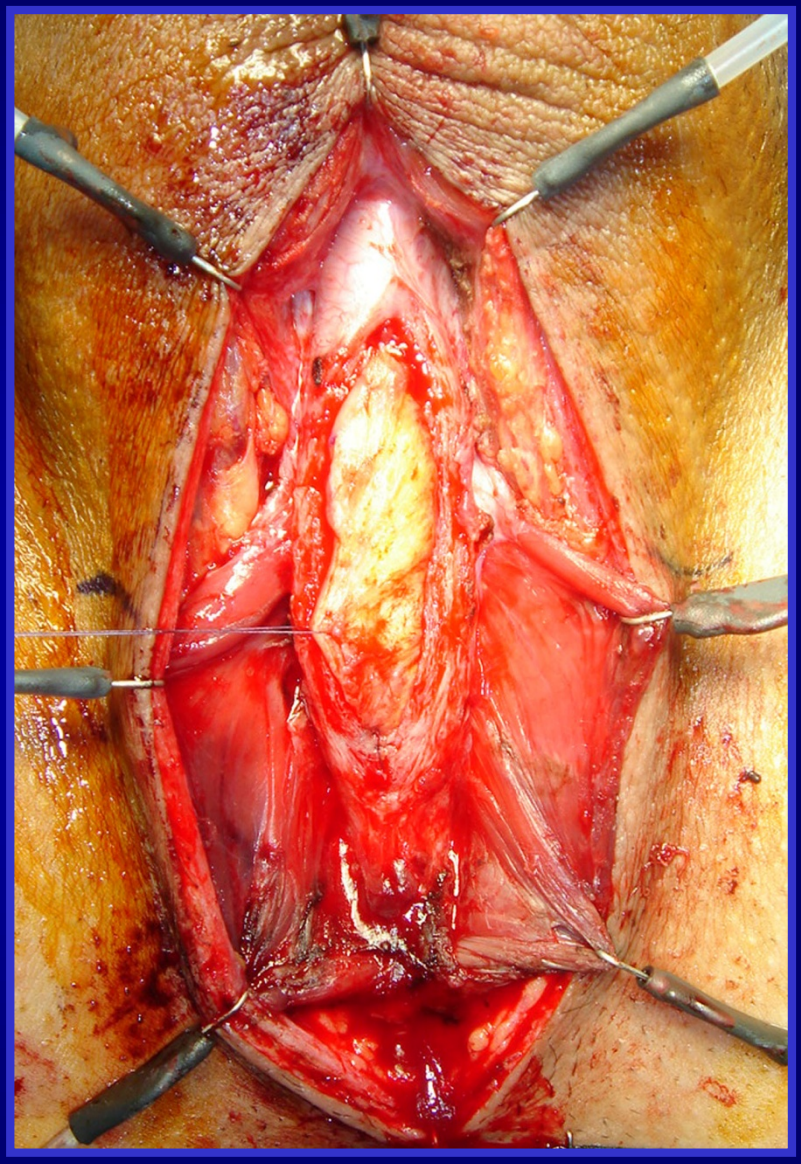


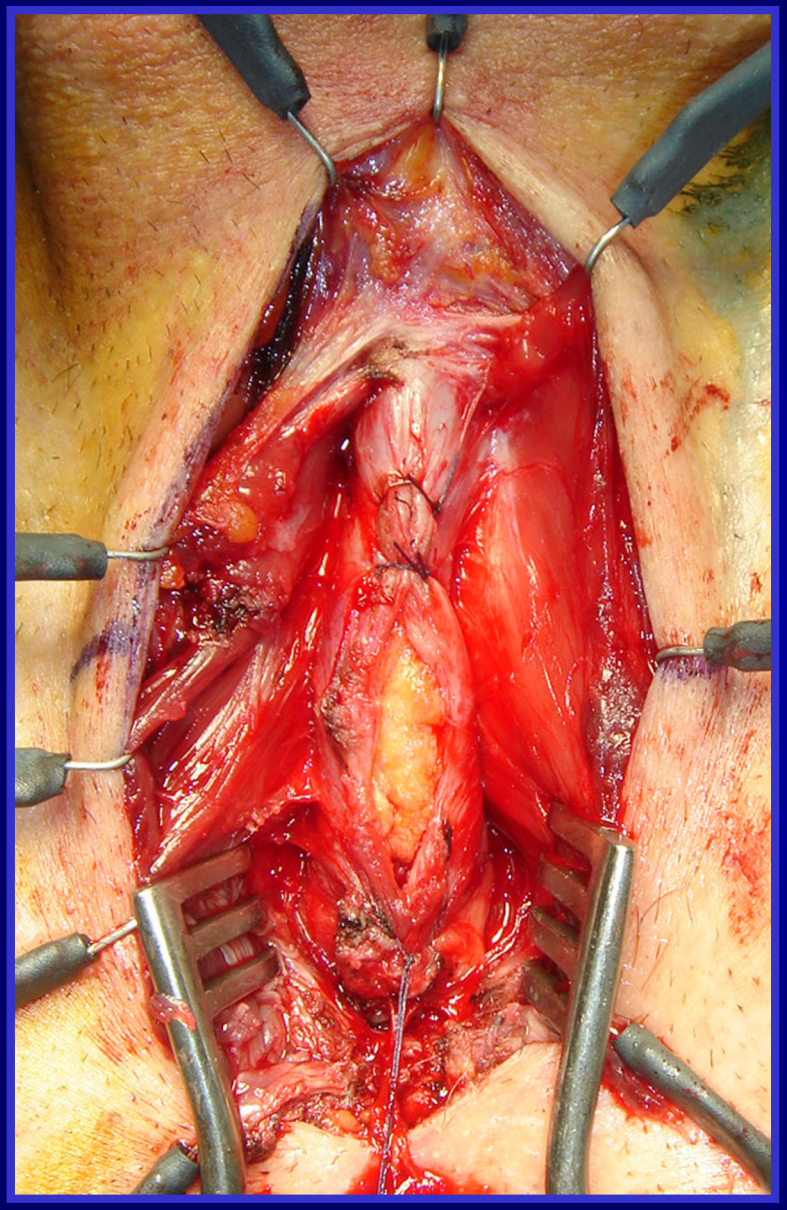


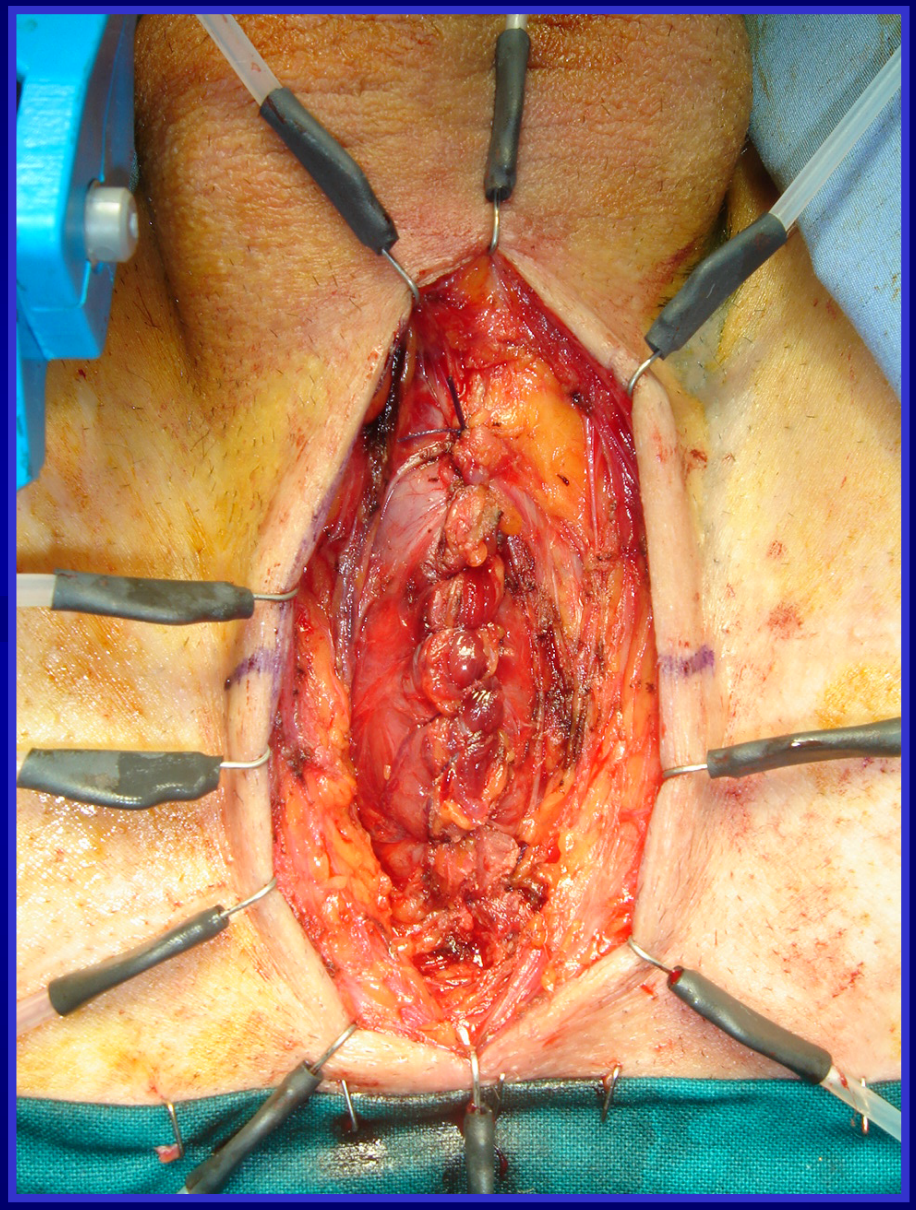






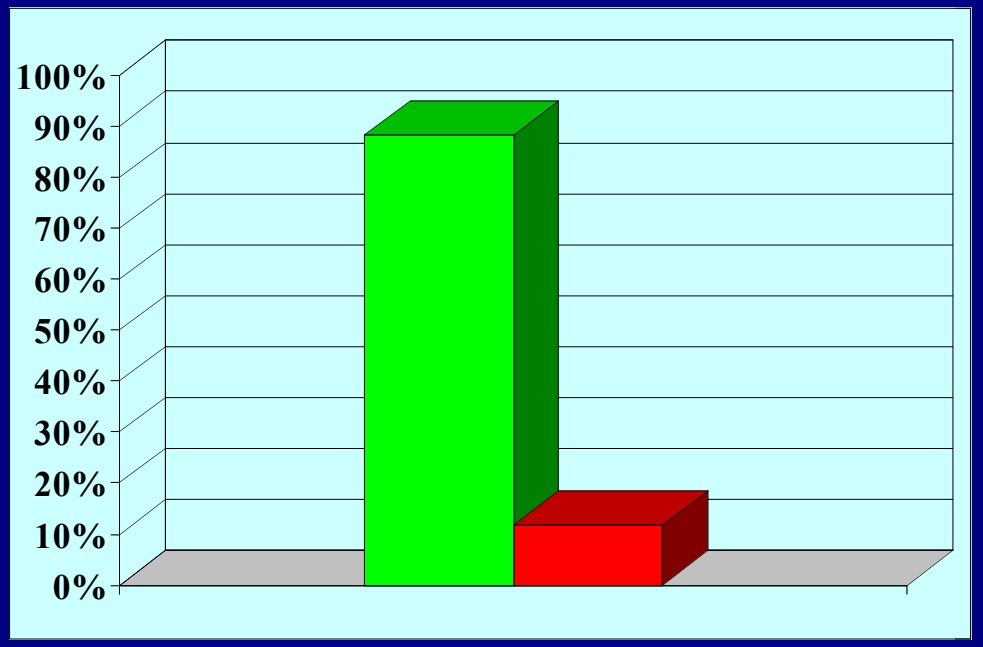






Results on 143 patients who underwent ventral oral mucosal onlay graft urethroplasty

Mean follow-up 38 months (12-103 months)



success	126 (88.1%)
failure	17 (11.9%)

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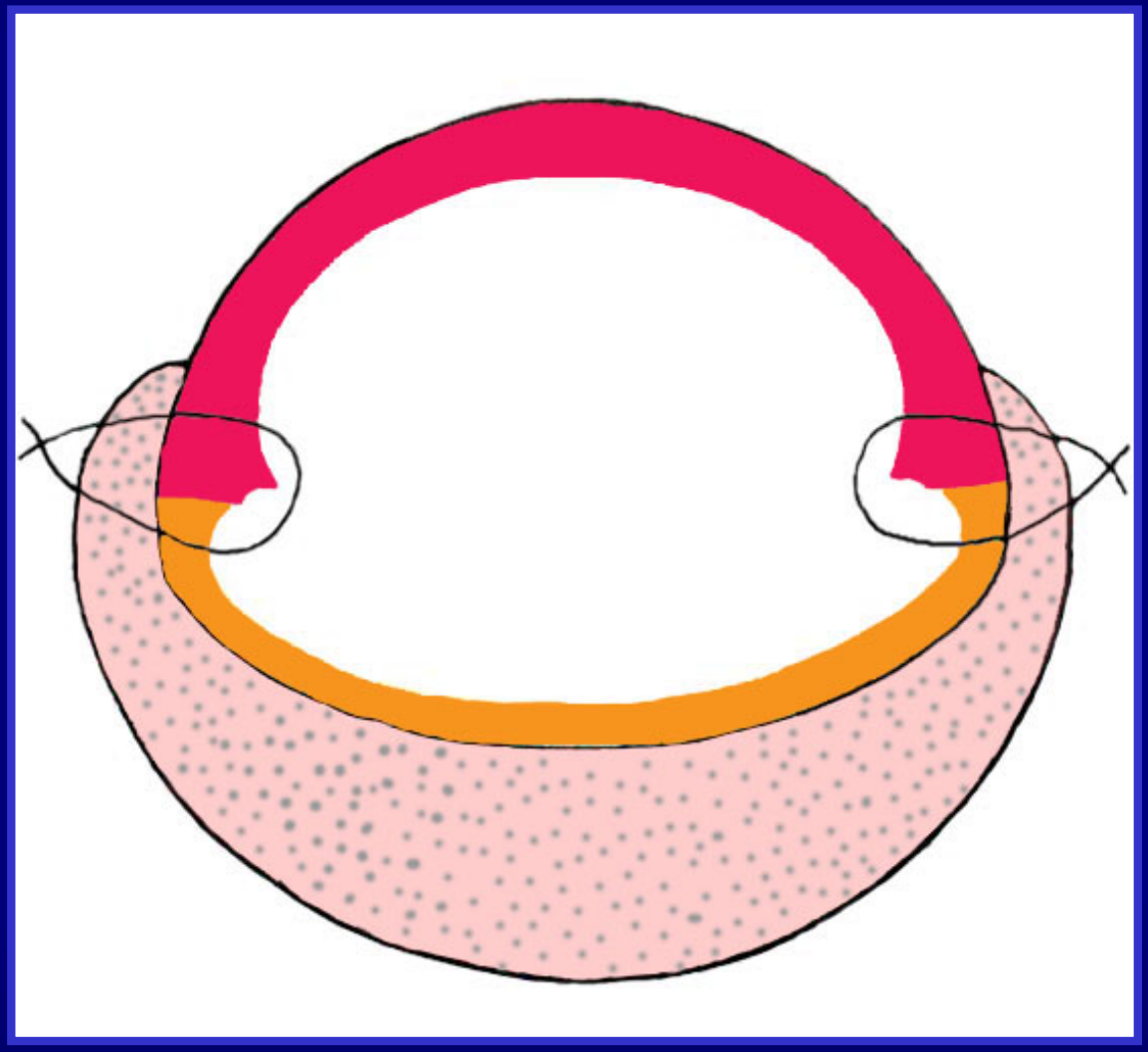
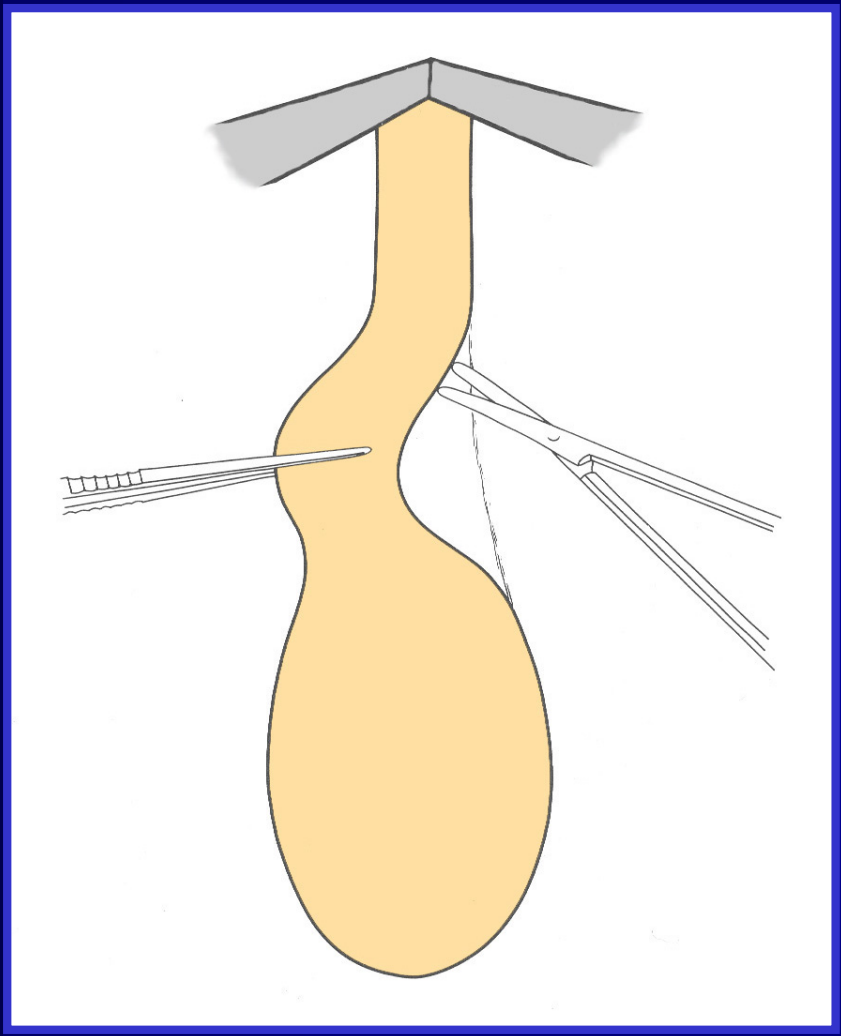
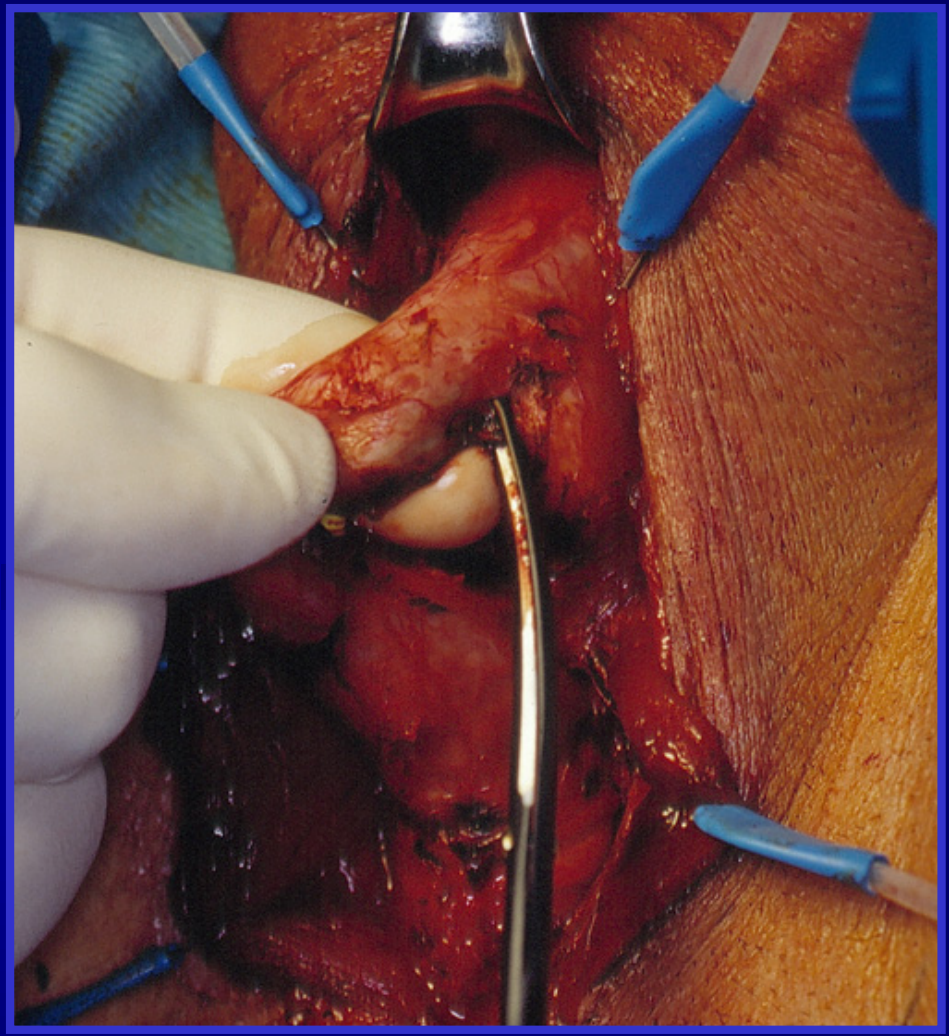
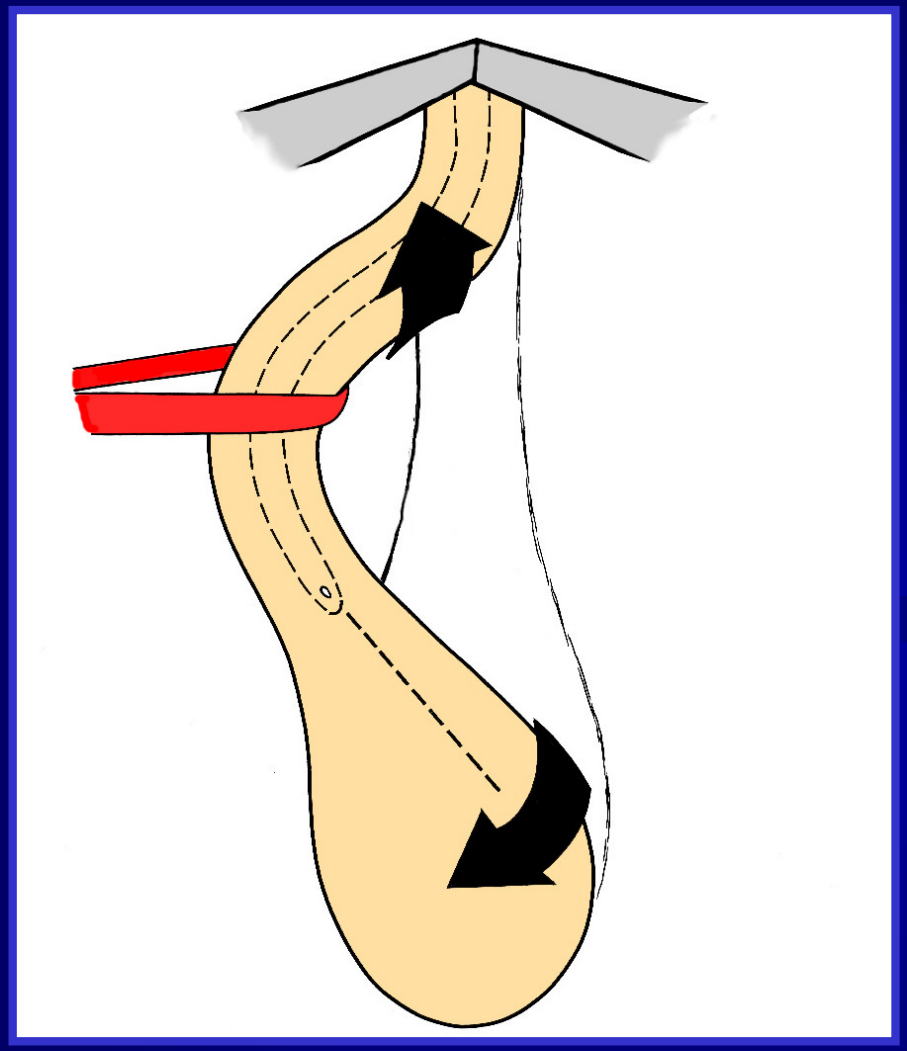
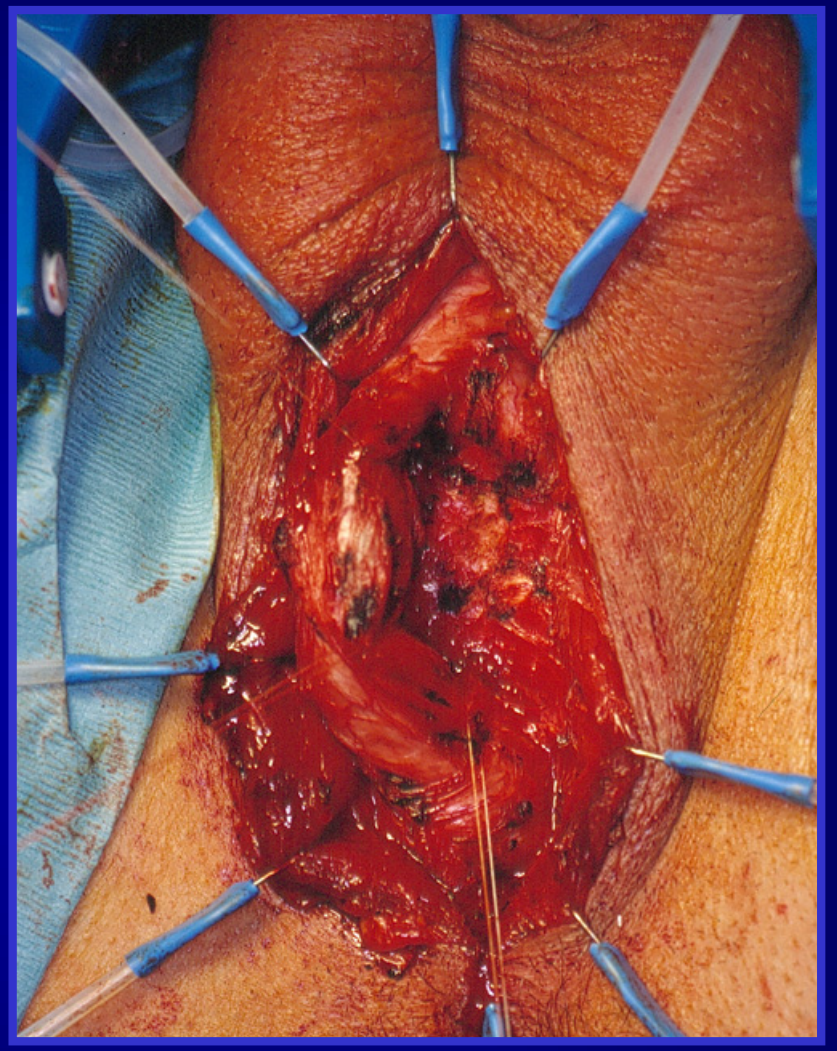
Dorsal onlay graft urethroplasty

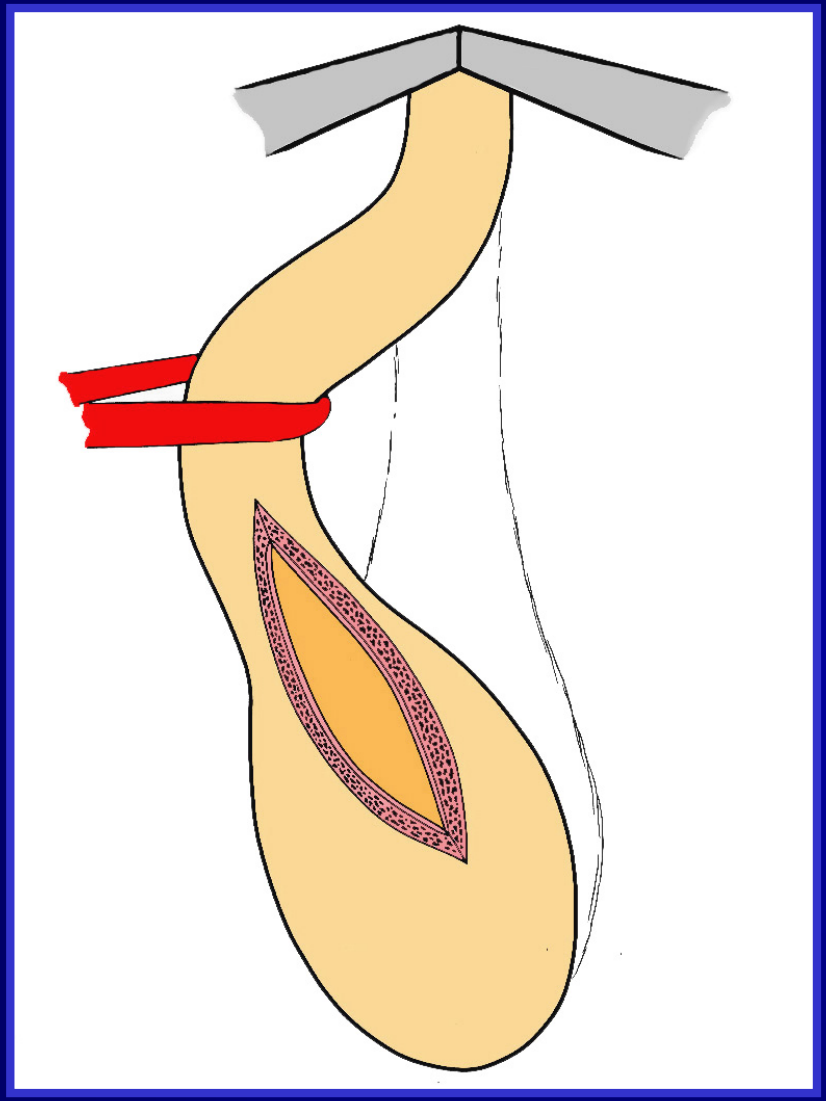


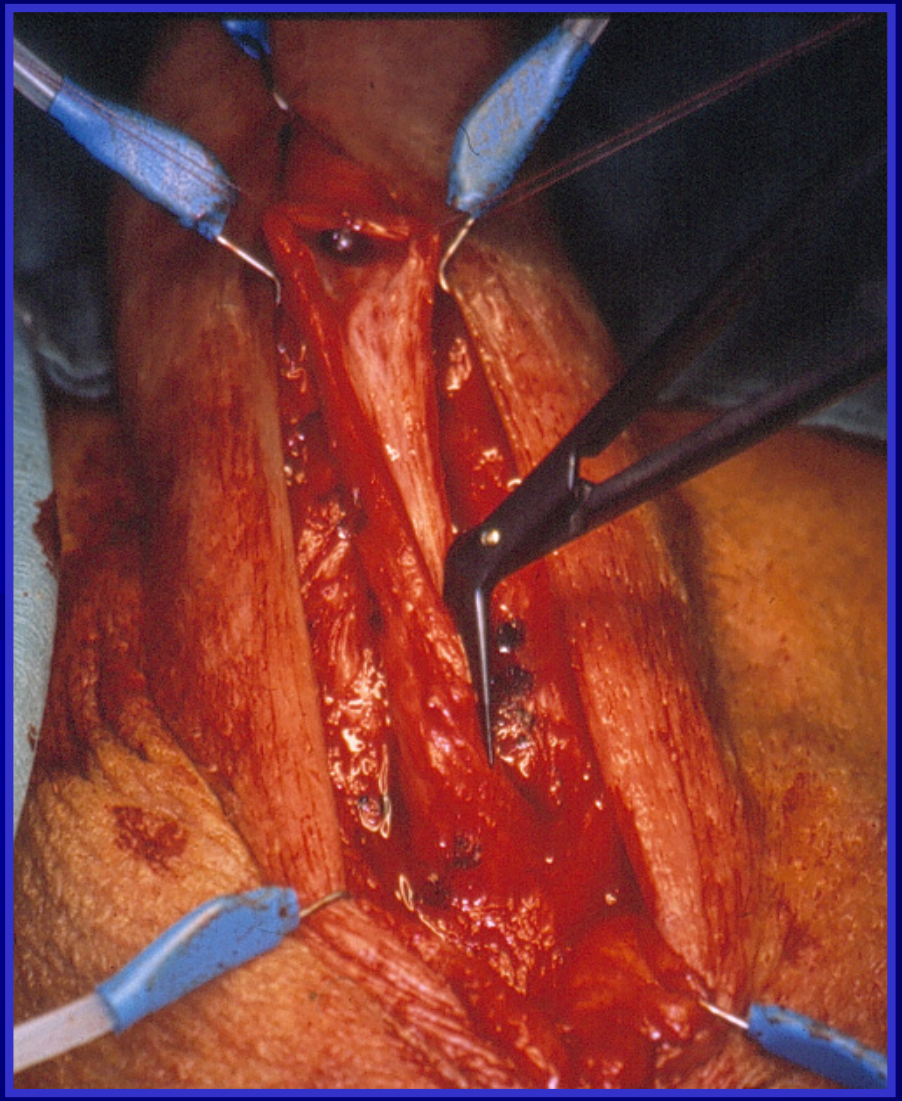


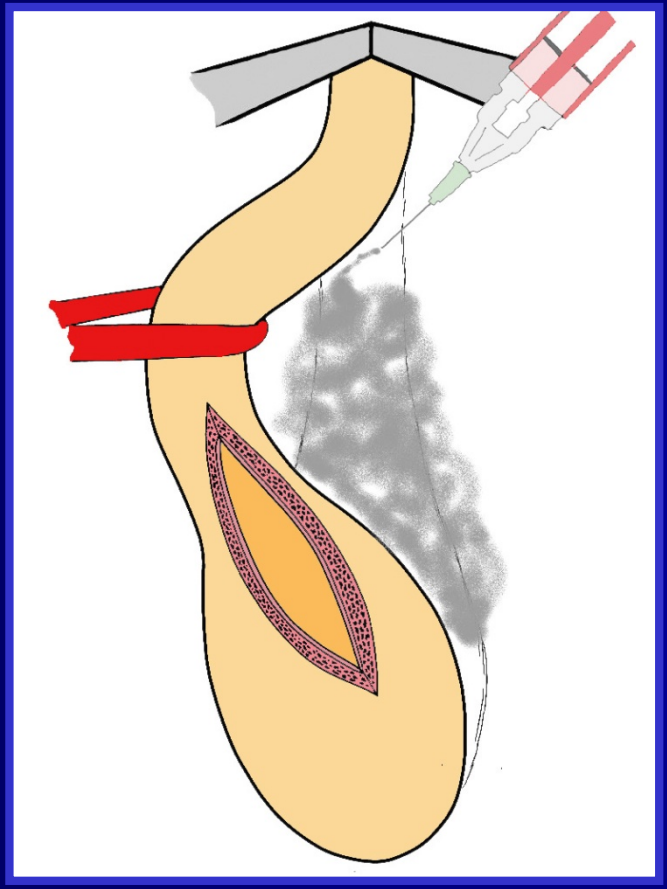


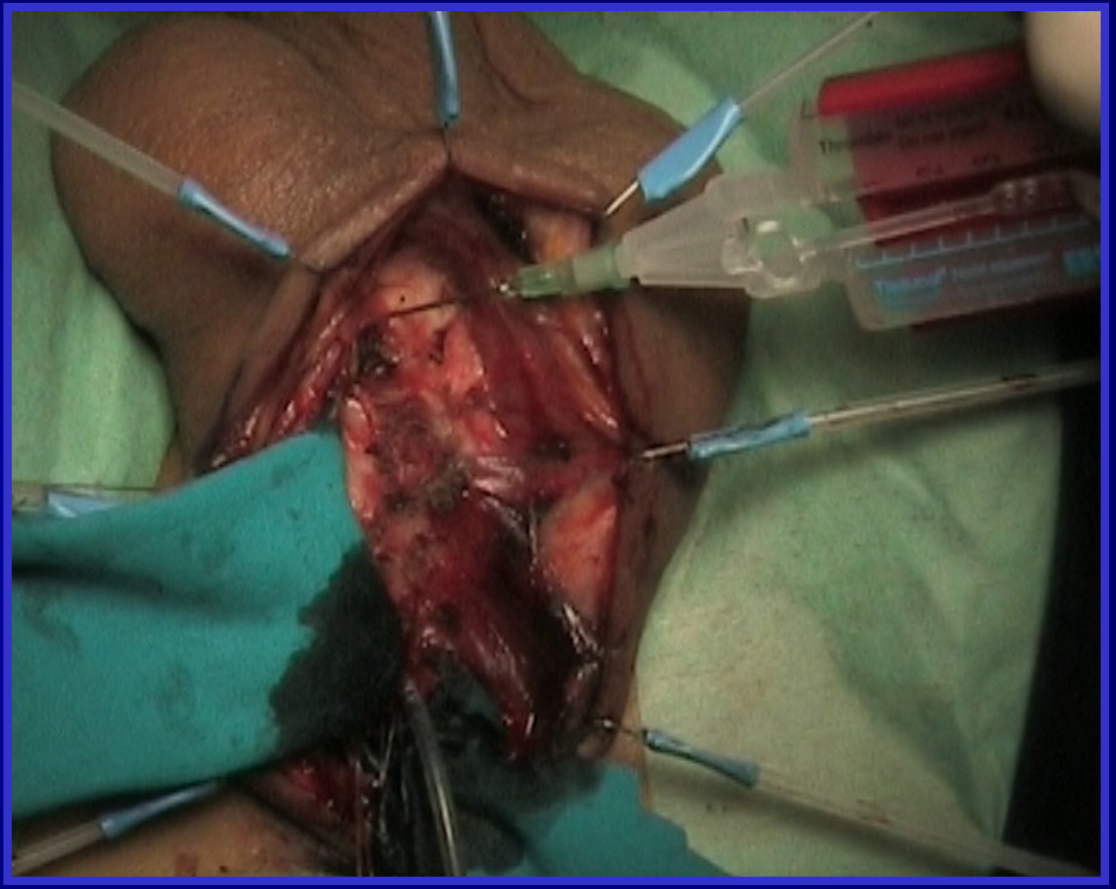


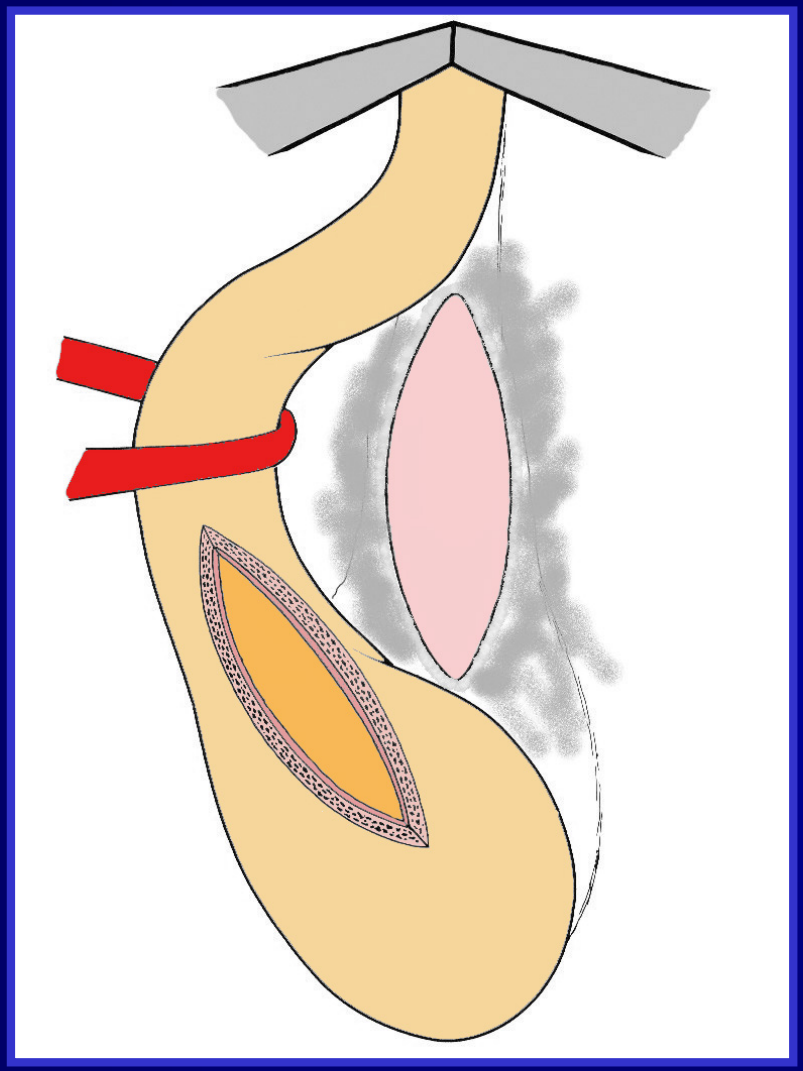


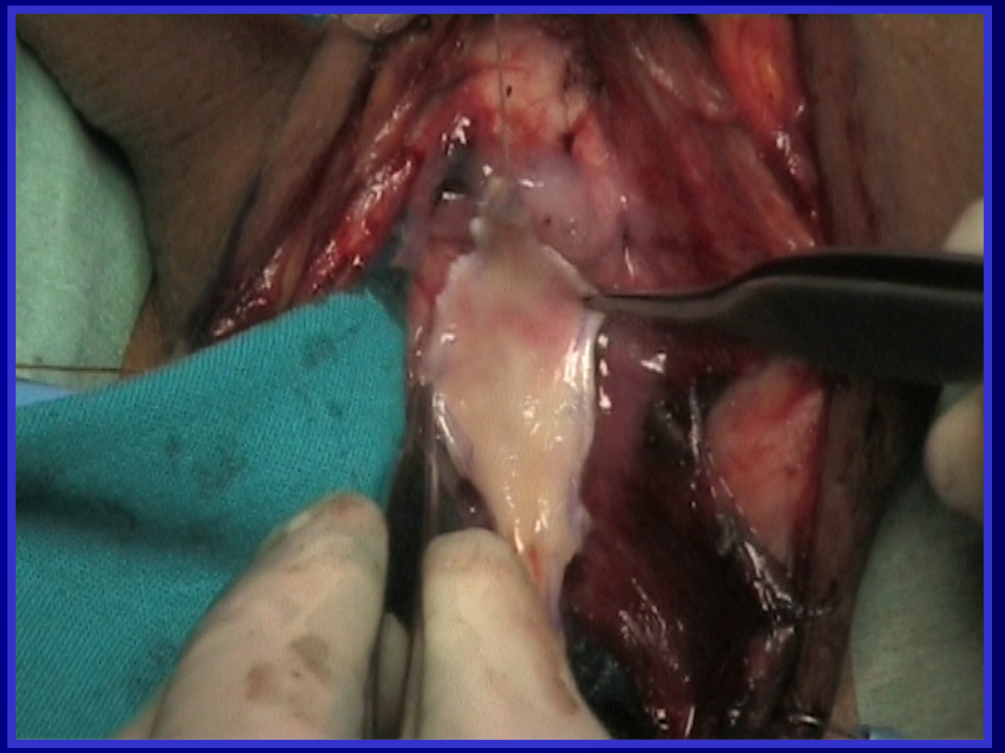


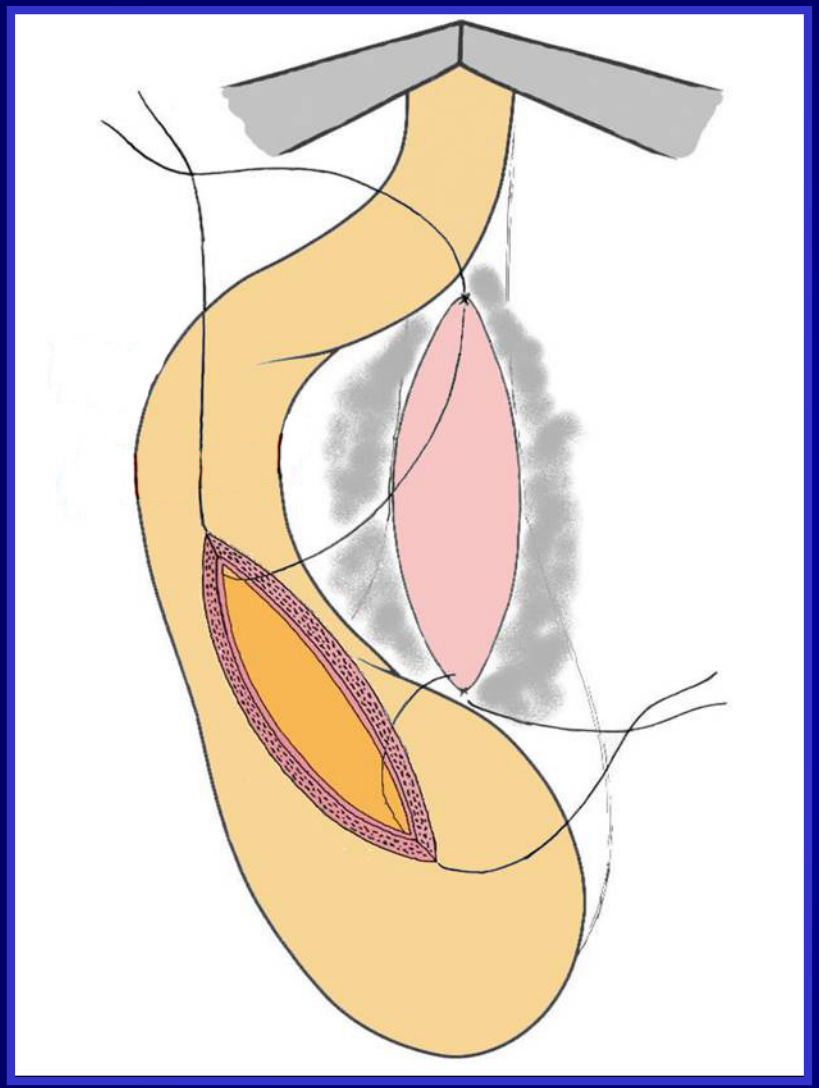


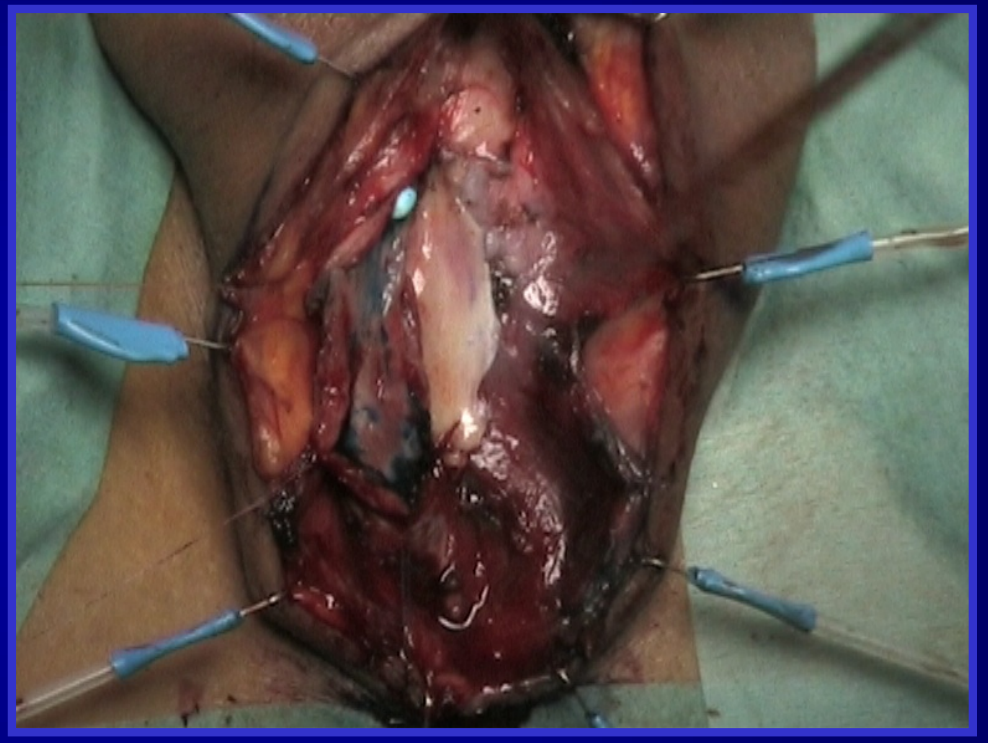


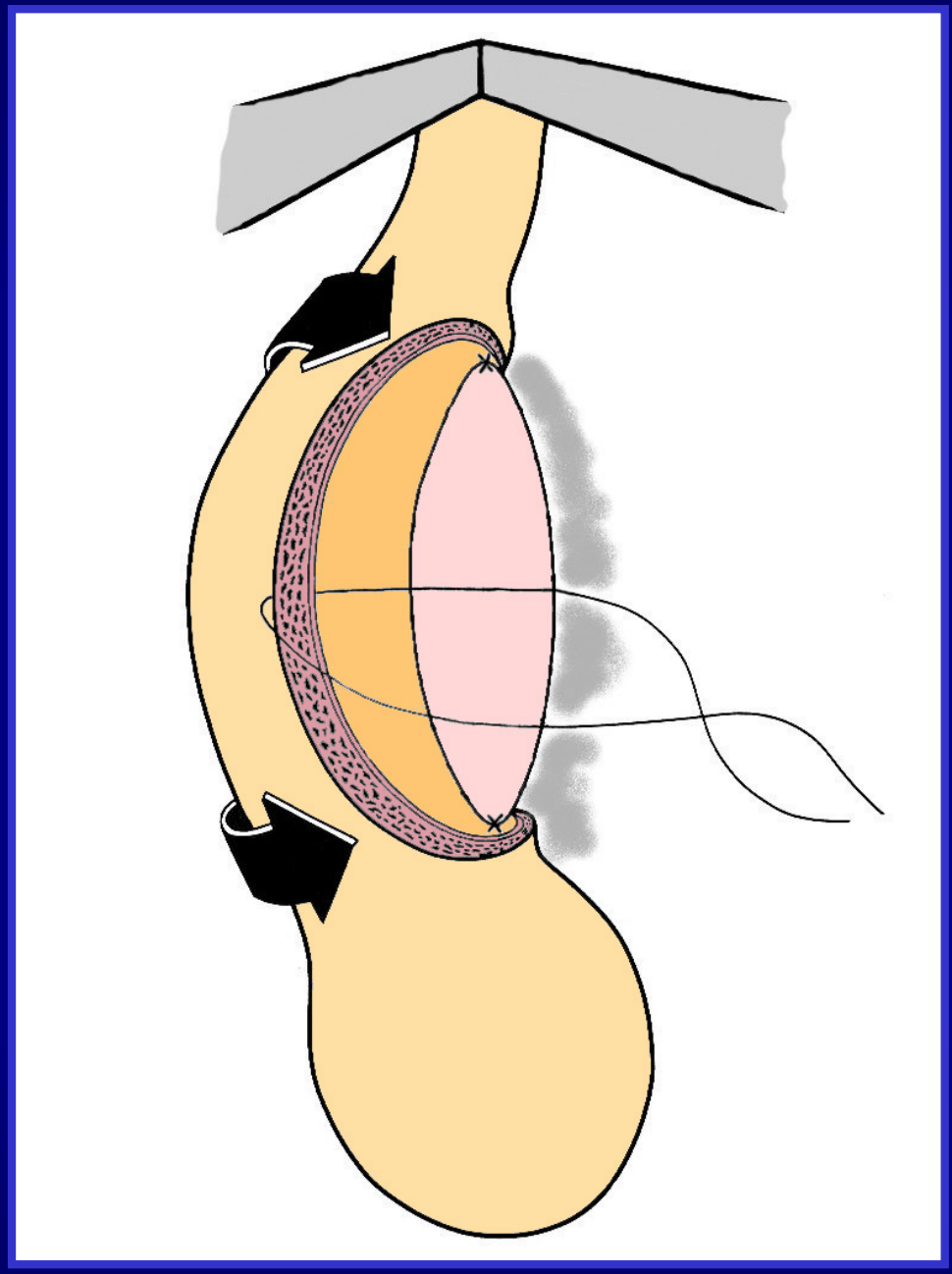


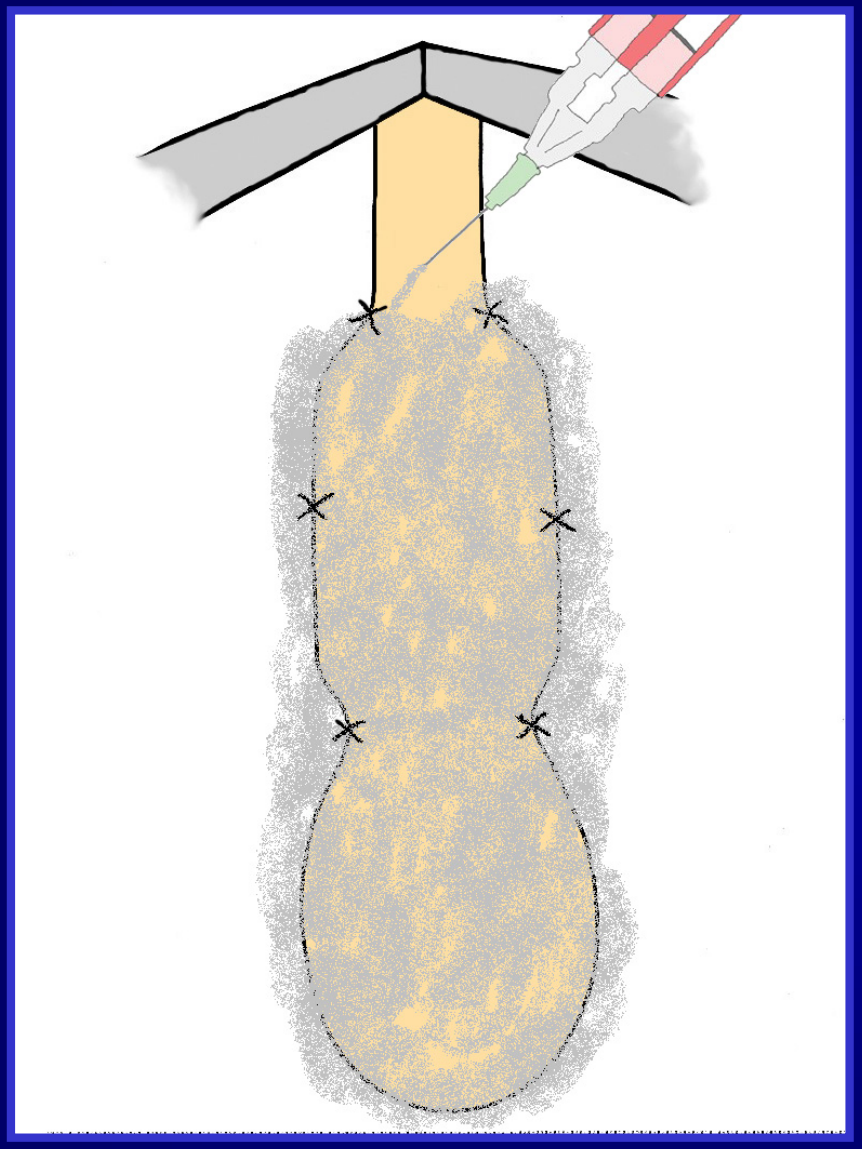


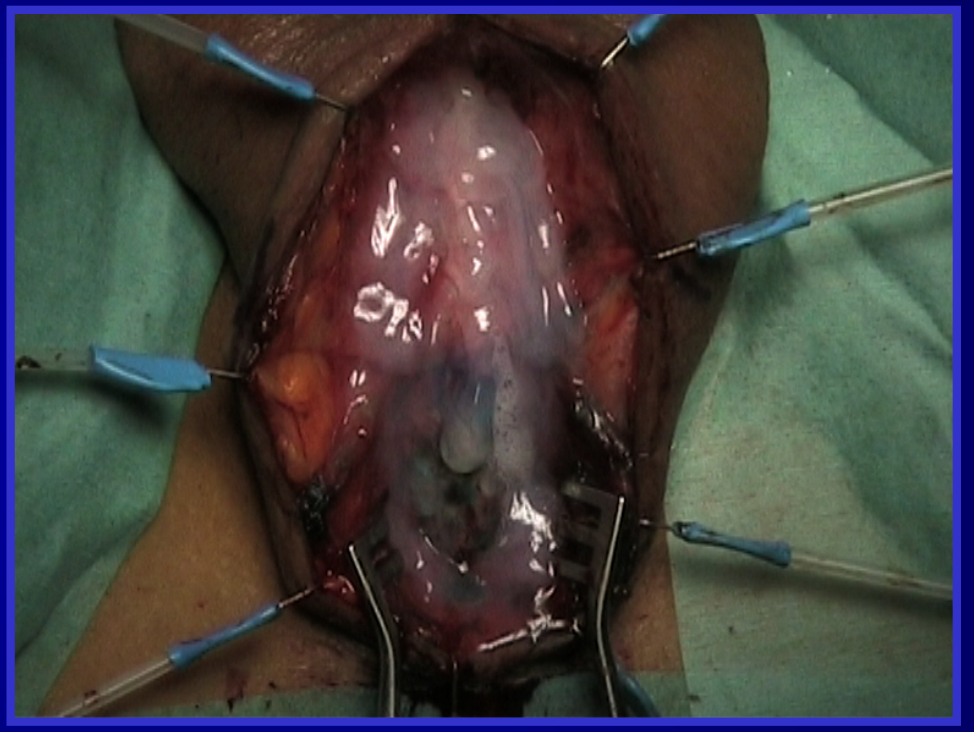






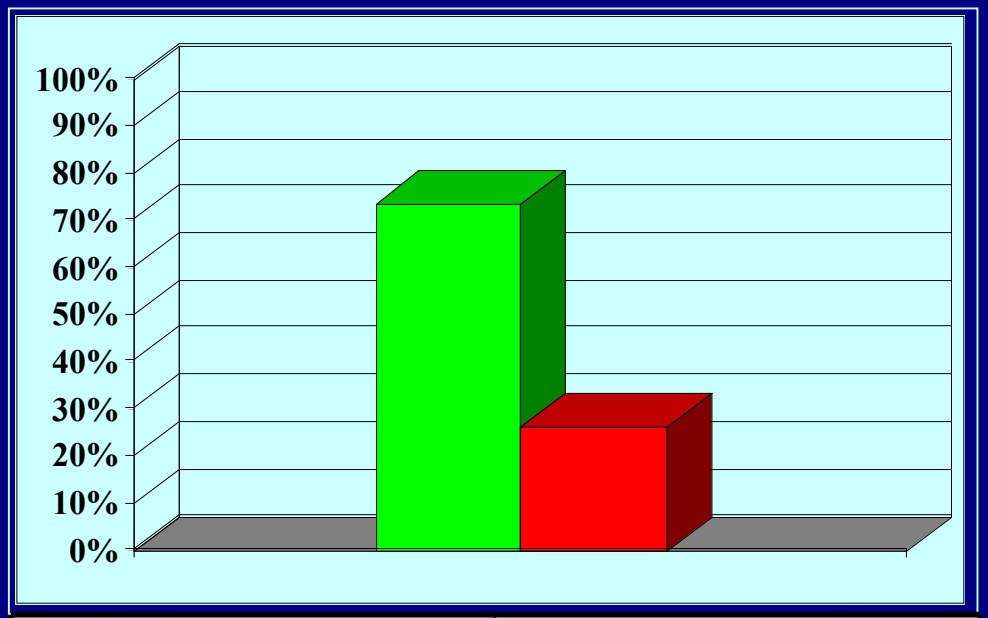






Results on 19 patients who underwent dorsal oral mucosal onlay graft urethroplasty

Mean follow-up 52 months (12 – 117 months)



success	14 (73.7%)
failure	5 (26.3%)

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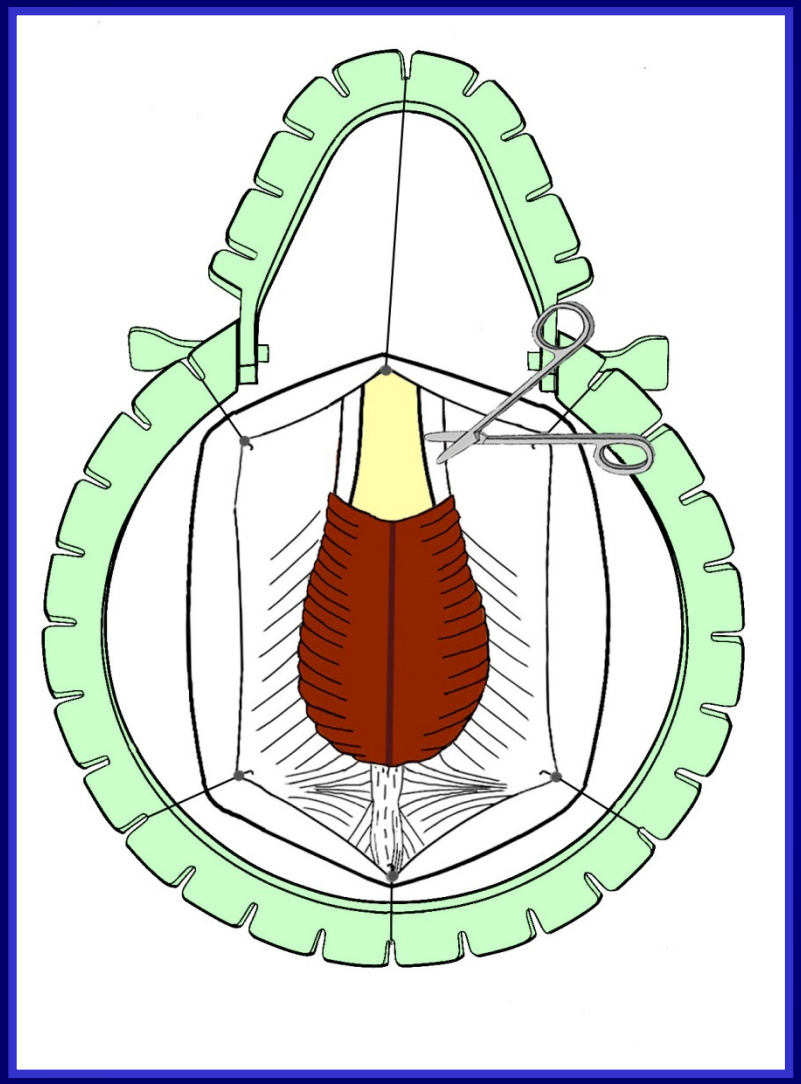
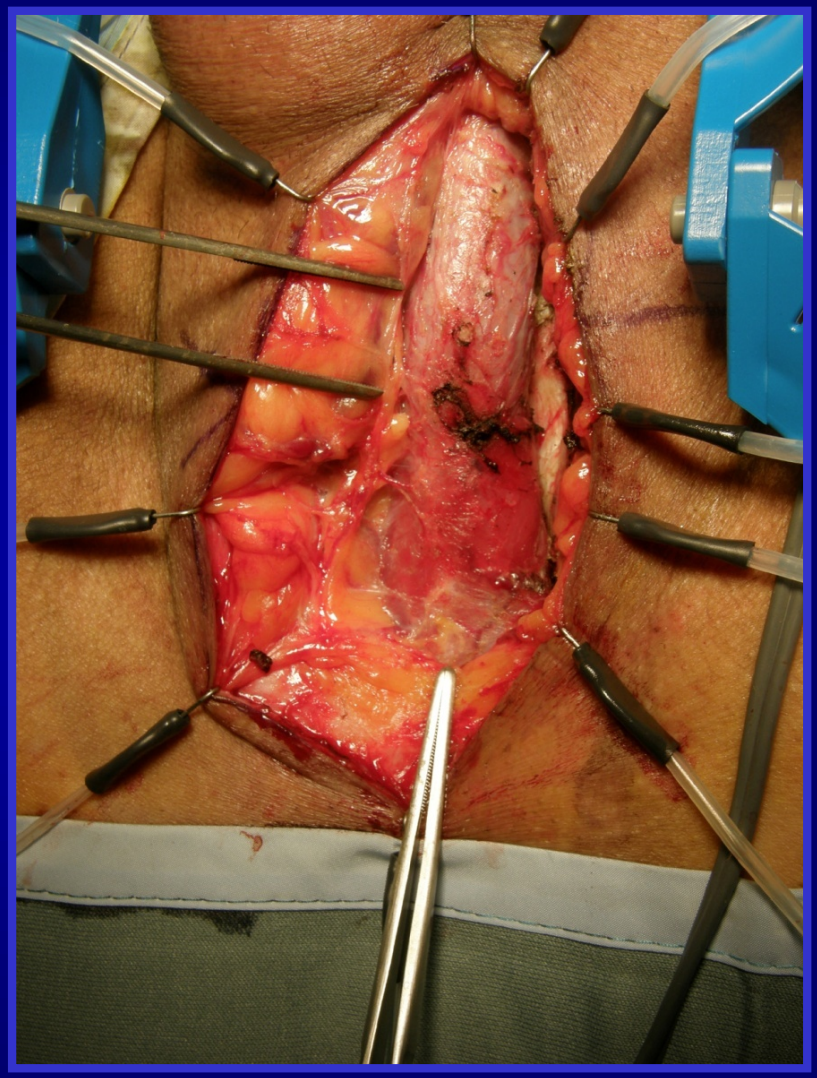
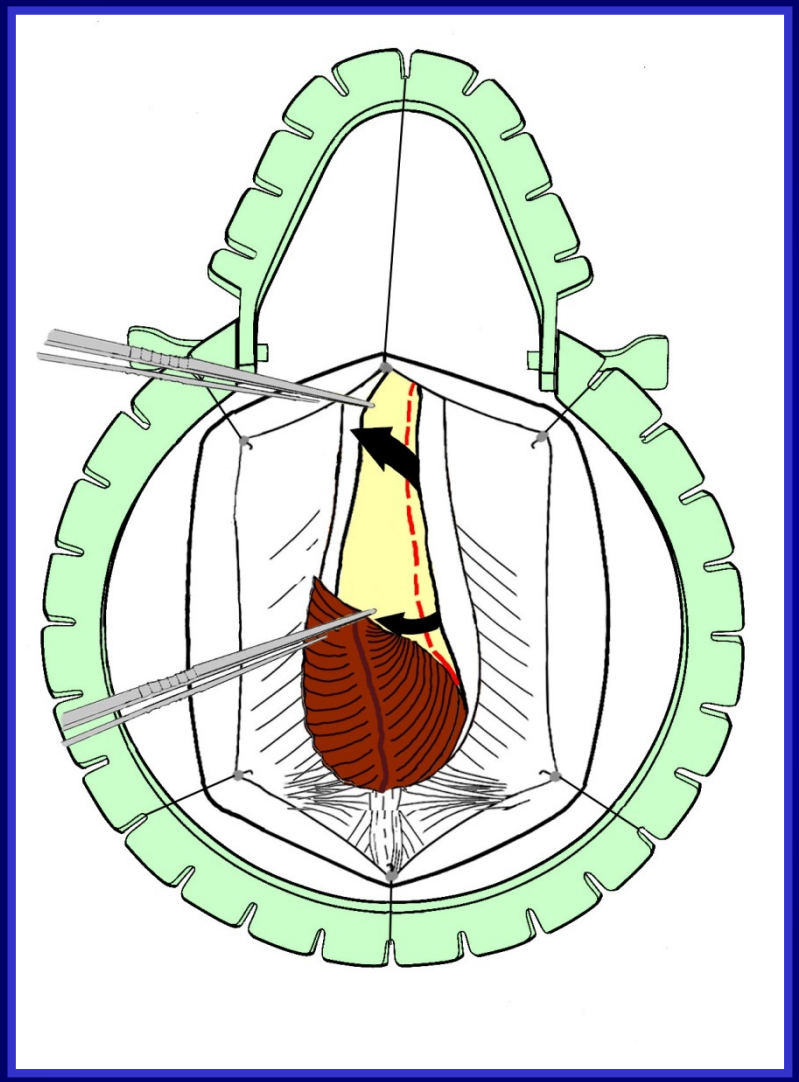
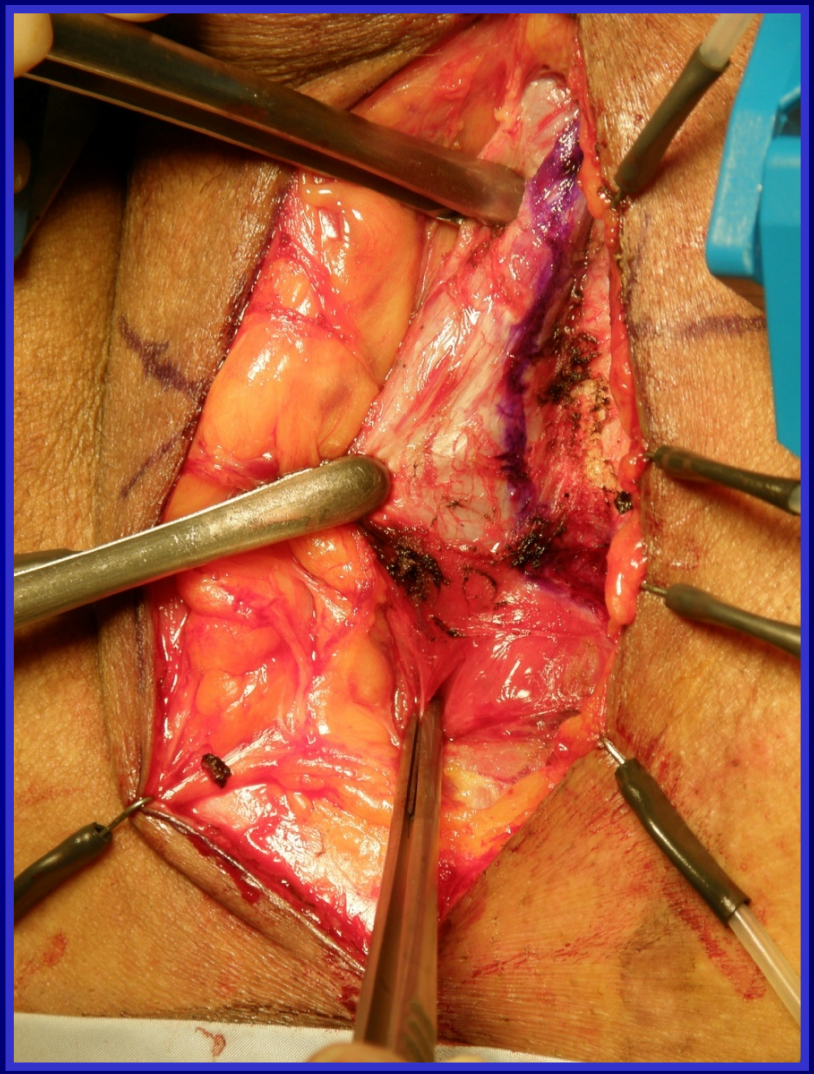
One-sided Anterior Urethroplasty: A New Dorsal Onlay Graft Technique

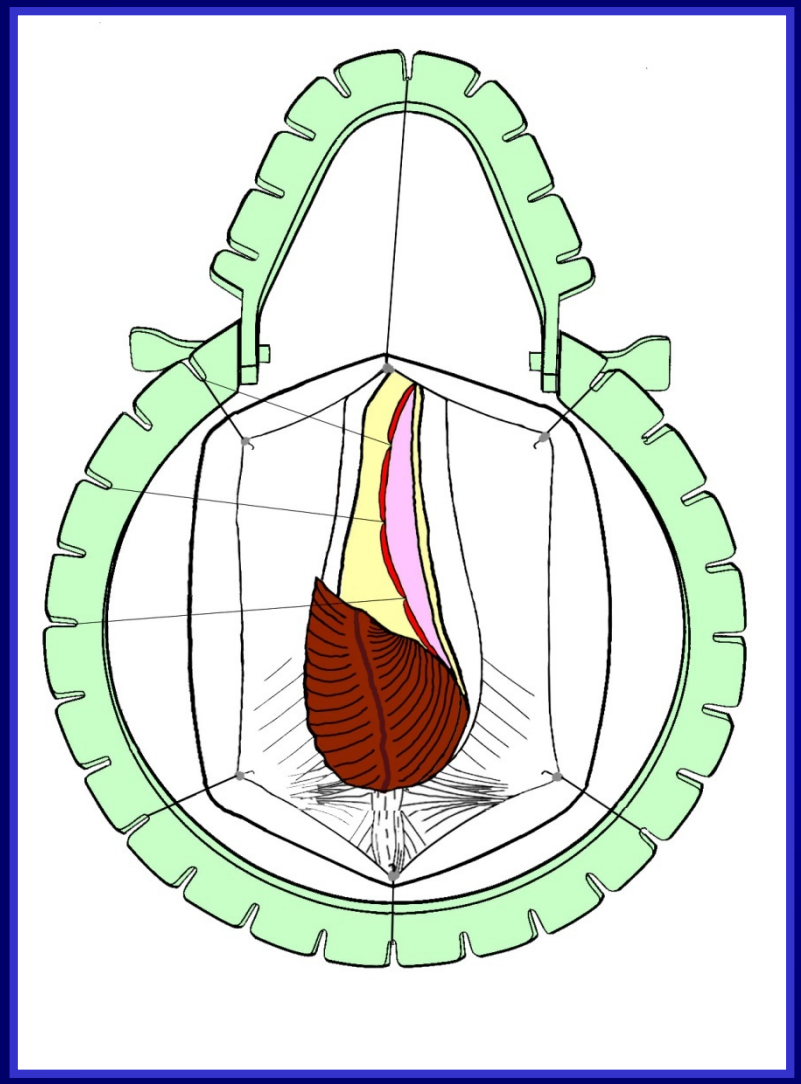
S. B. Kulkarni and G. Barbagli

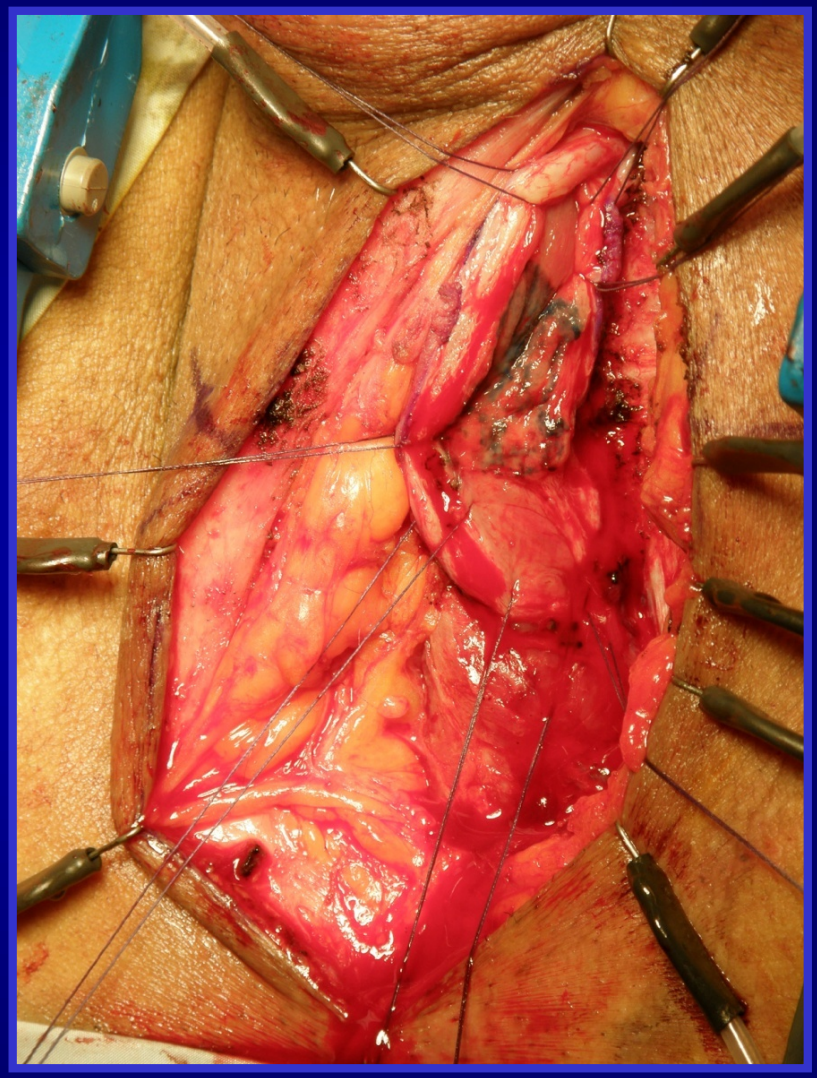


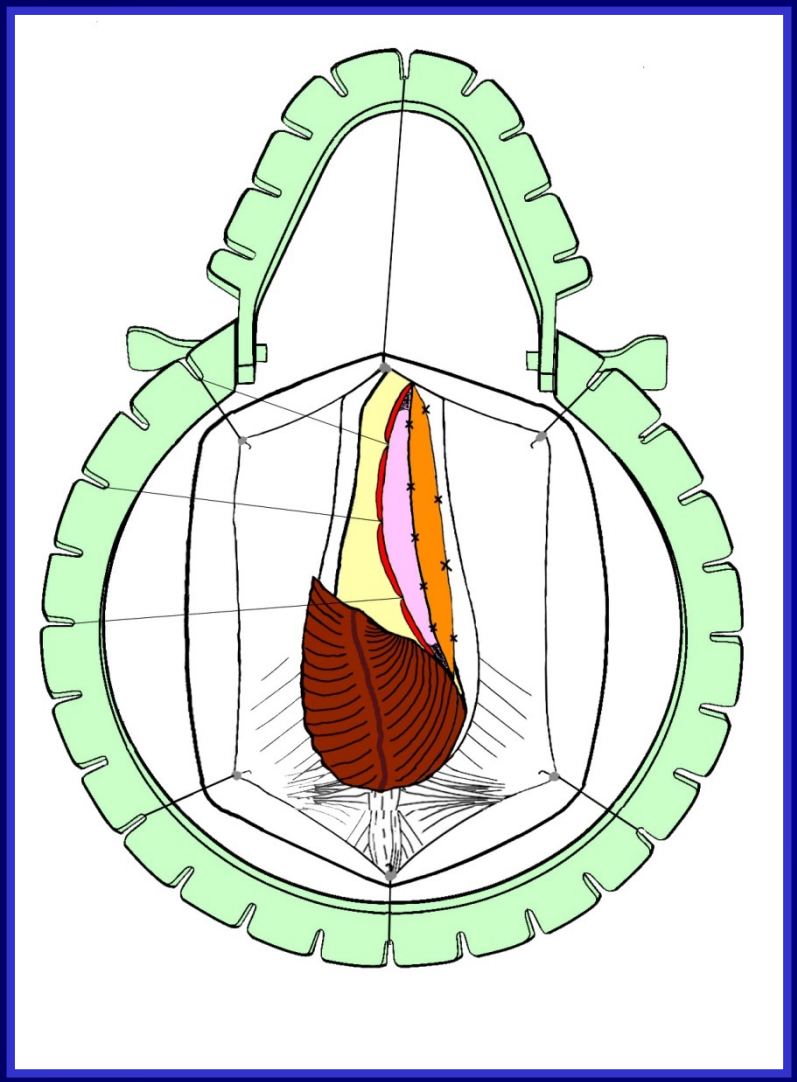


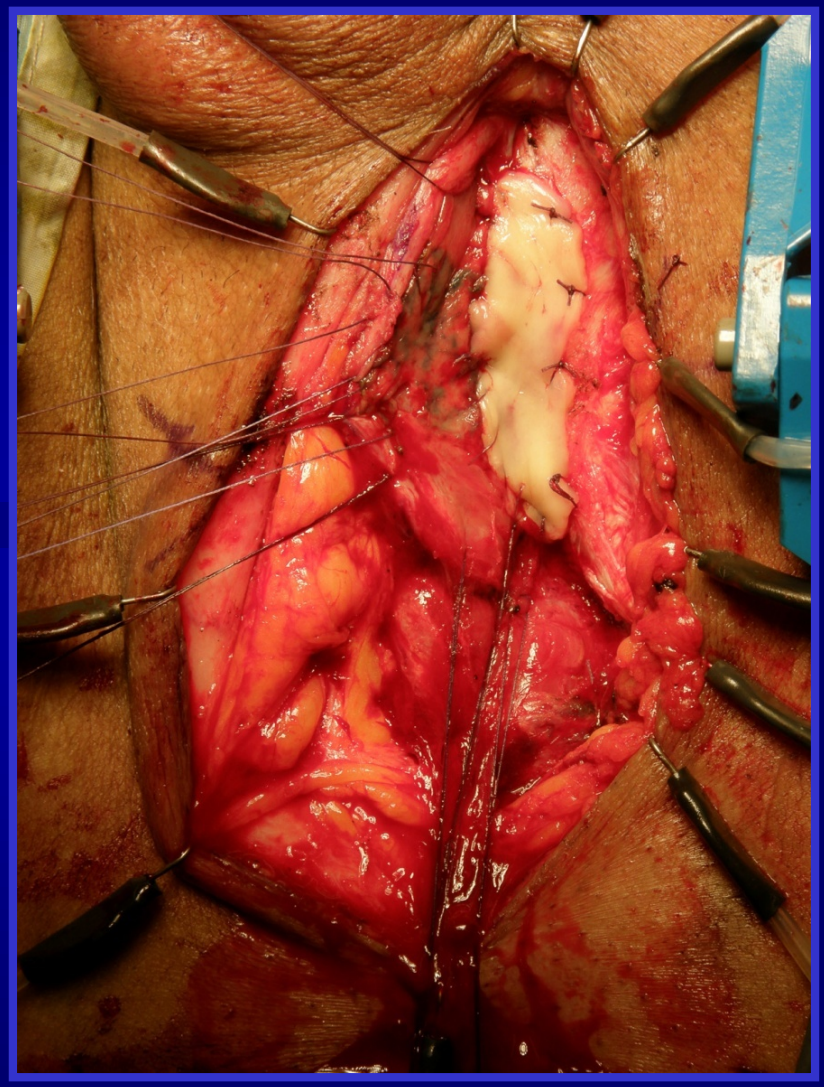


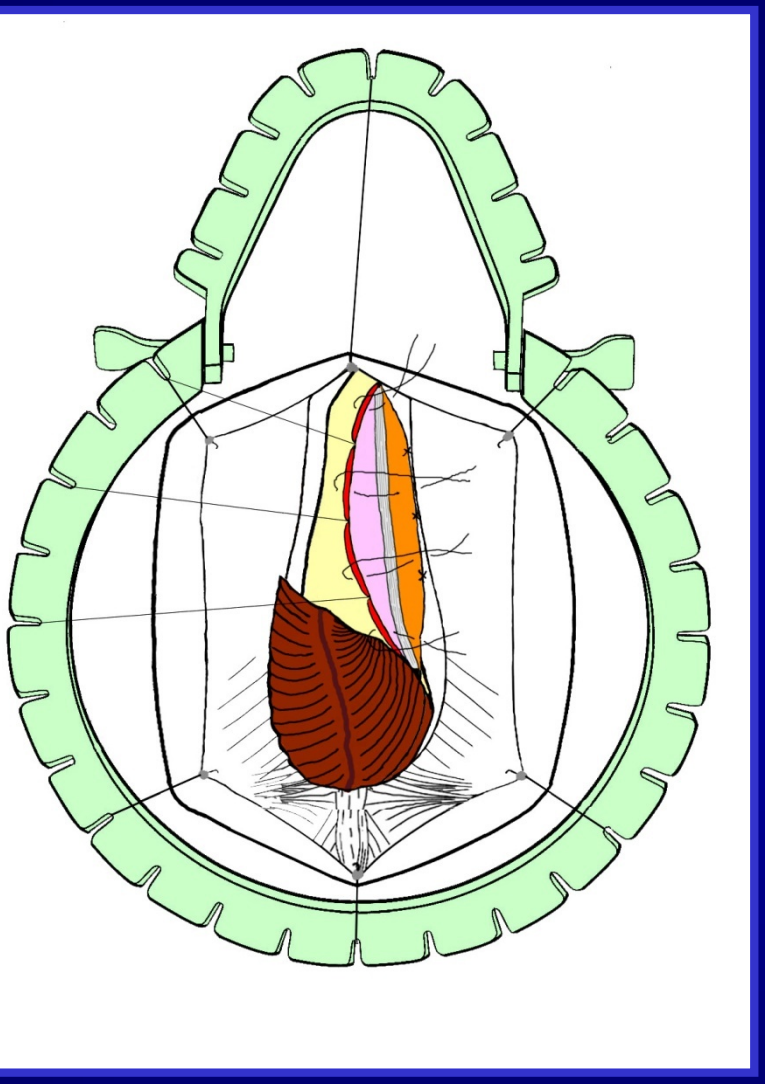


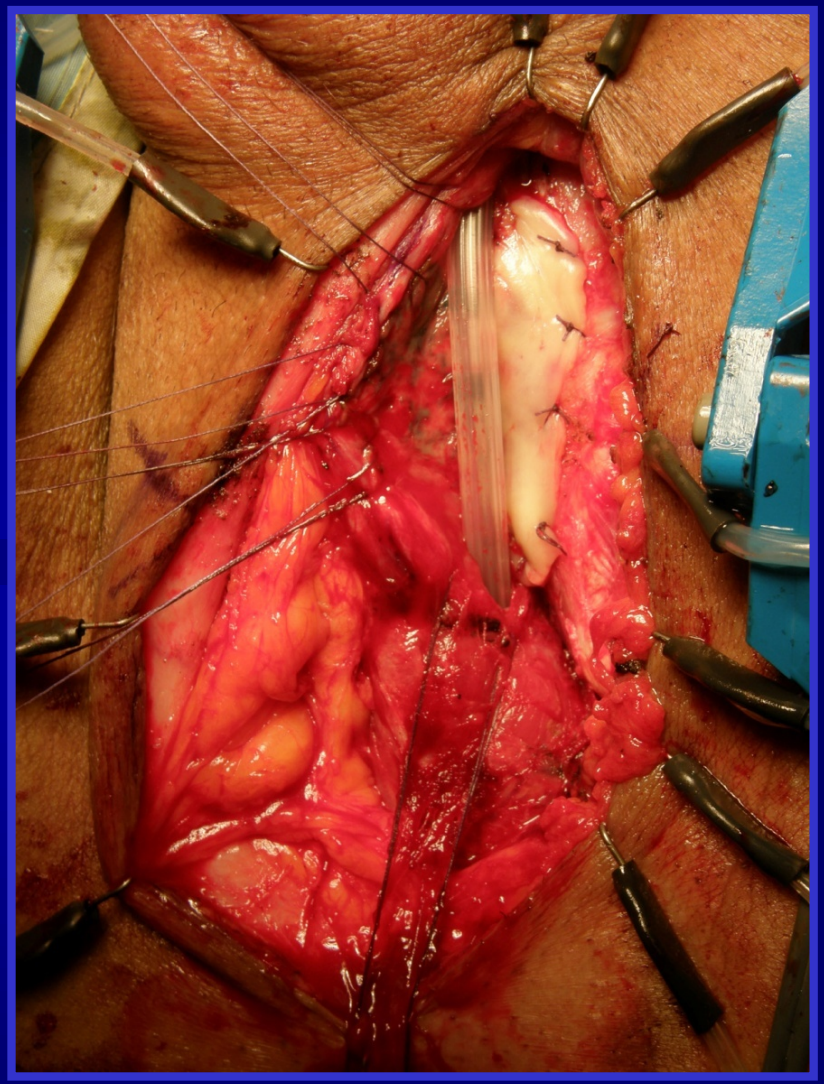


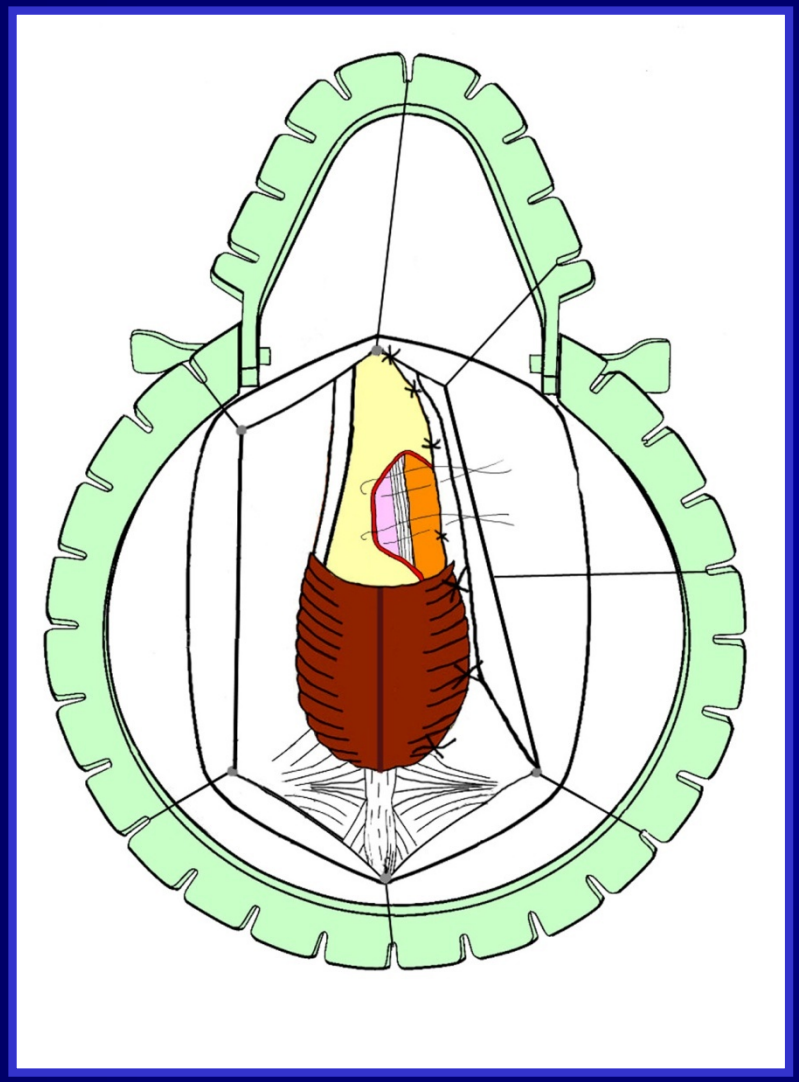


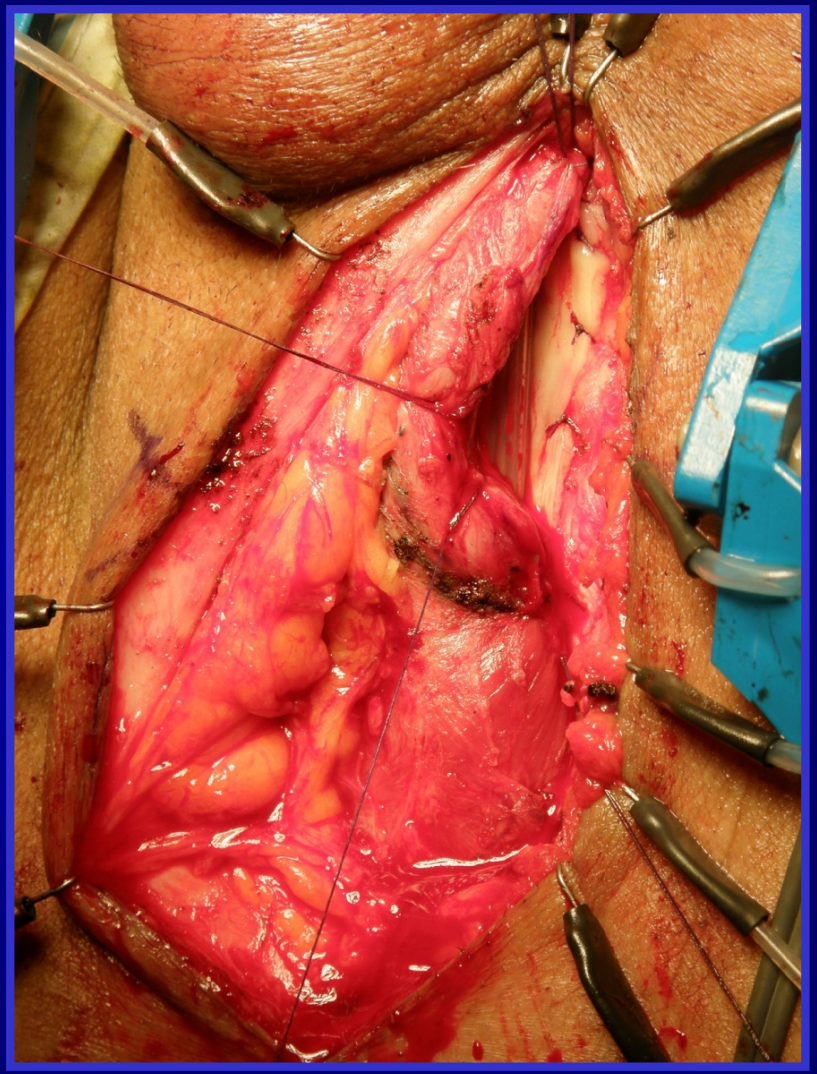


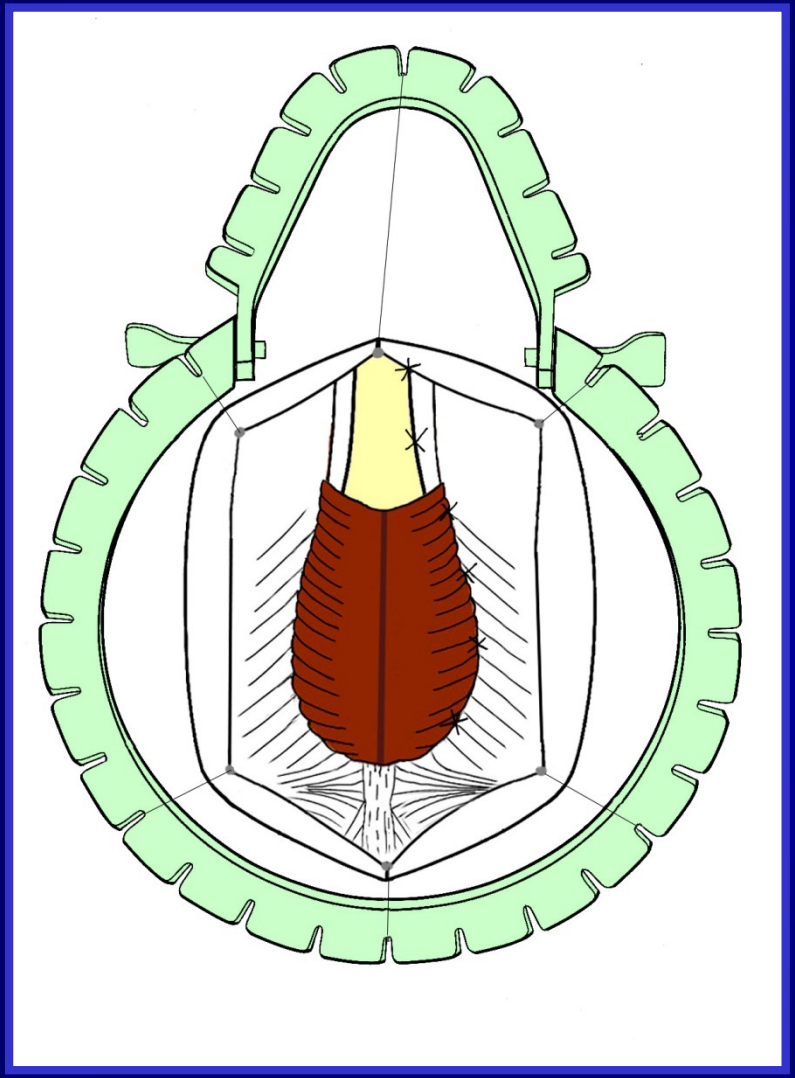


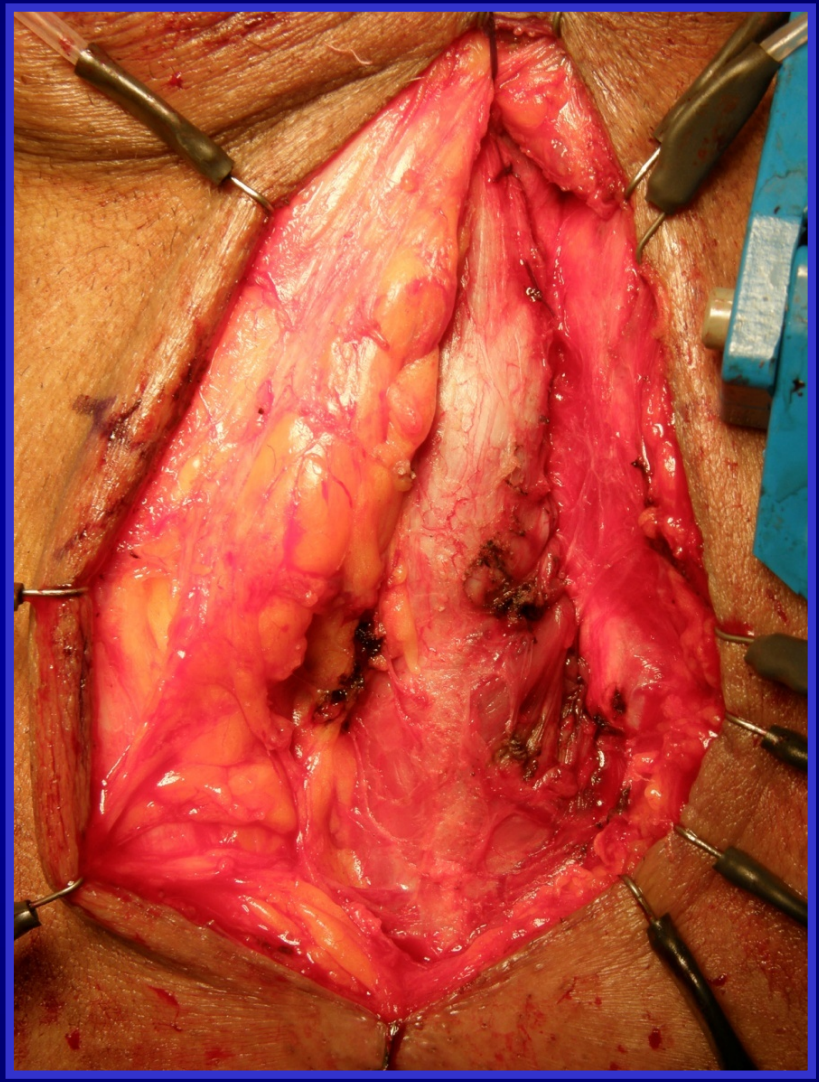


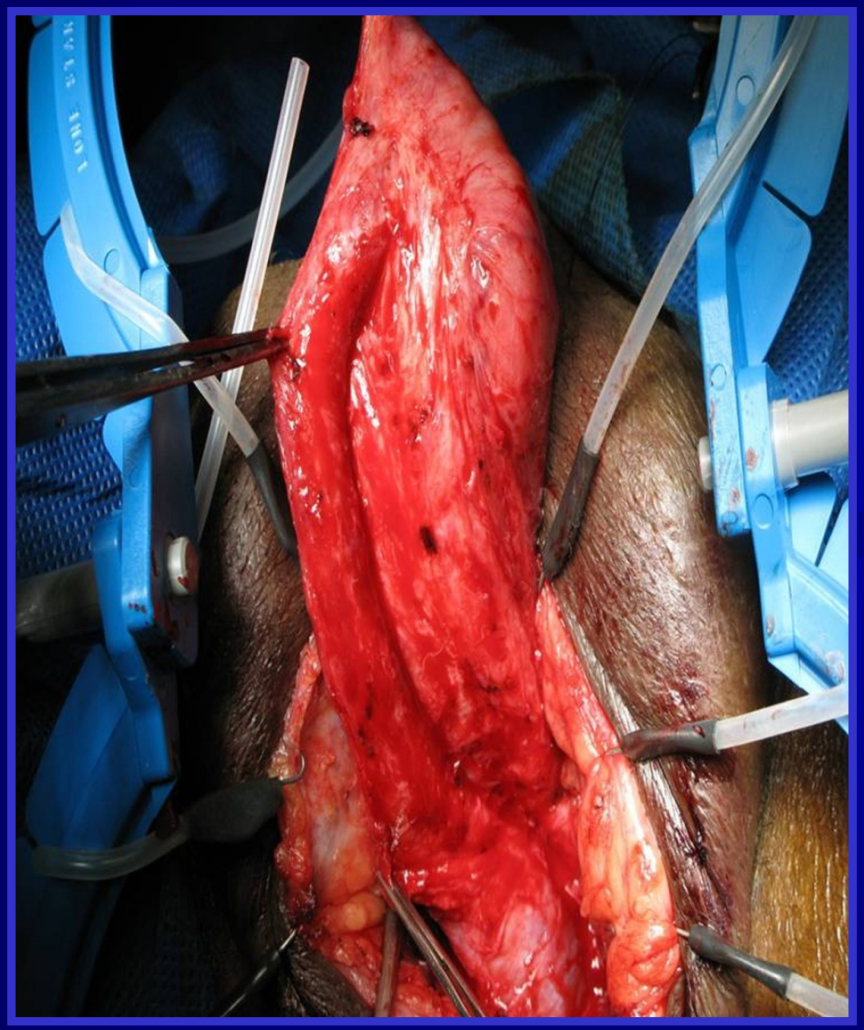


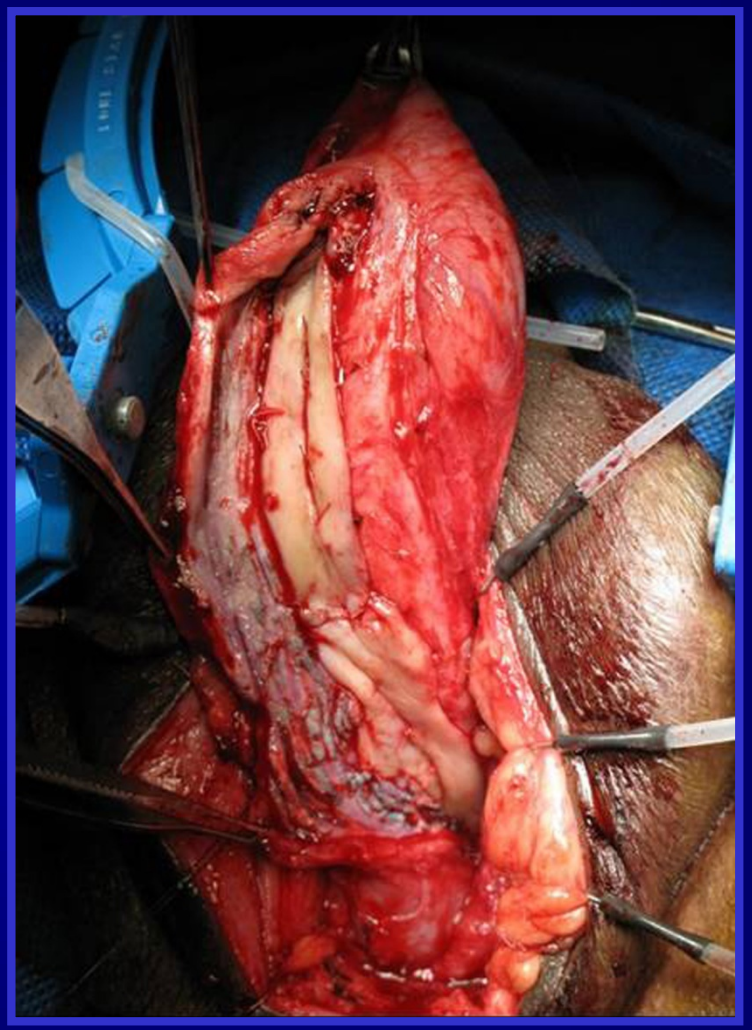






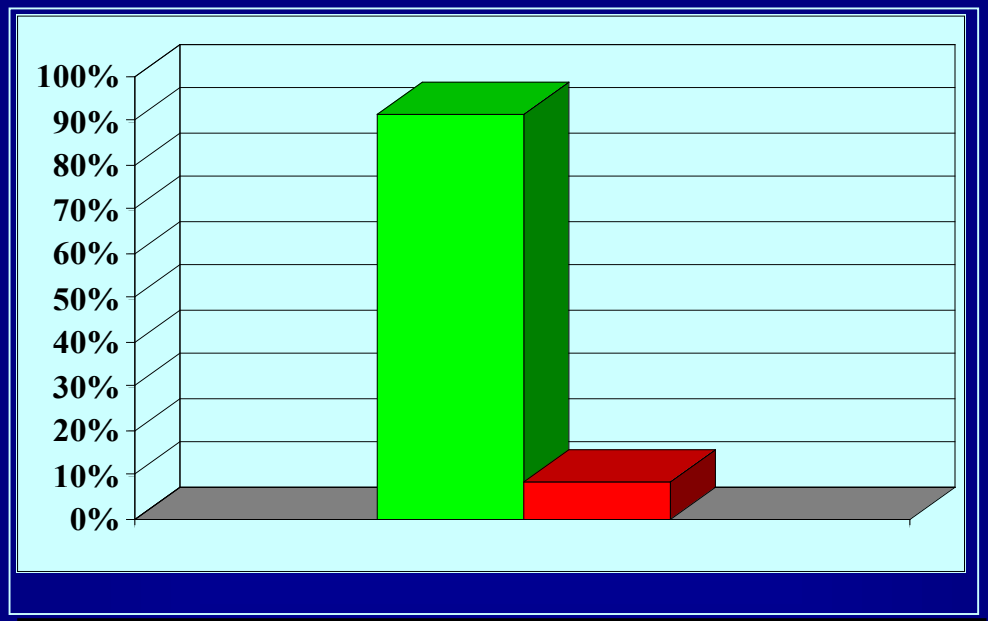






Results on 24 patients who underwent one-sided anterior urethroplasty

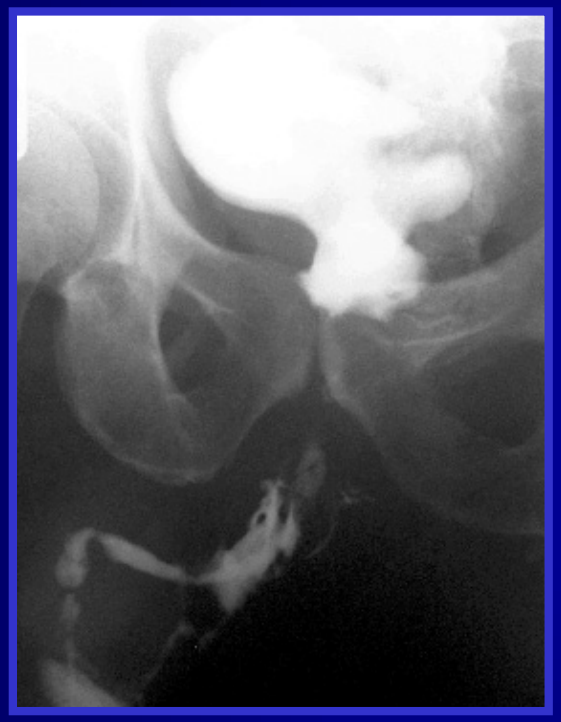
Mean follow-up 22 months (12 – 55 months)

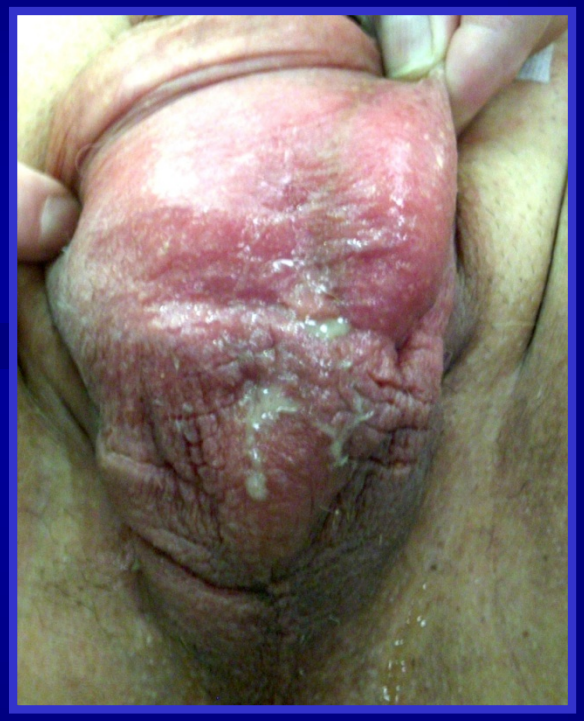


success	22 (91.6%)
failure	2 (8.4%)

BJU Int, 2009, in press

Bulbar urethral stricture associated with local adverse conditions

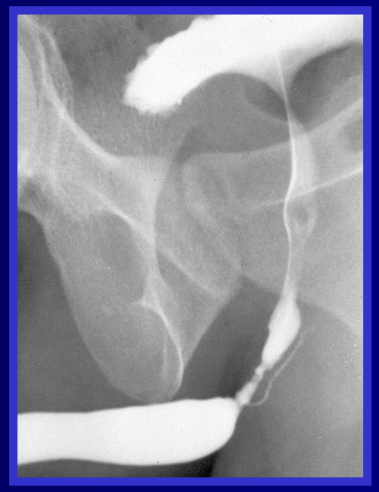


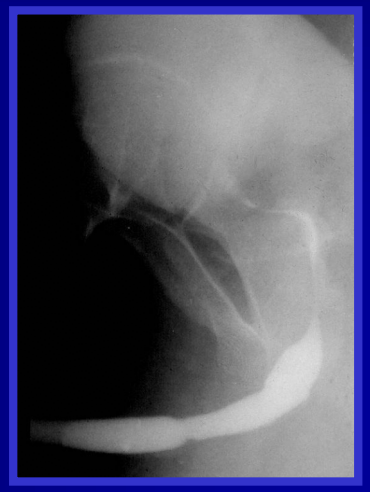


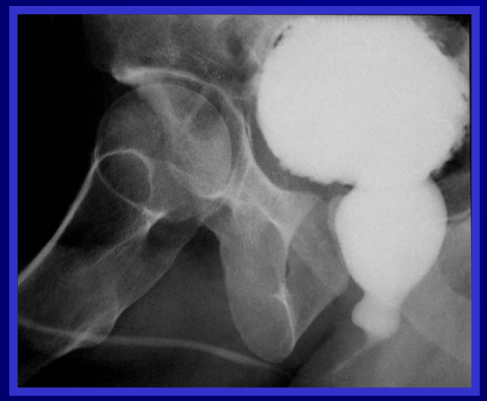
Two-stage urethroplasty

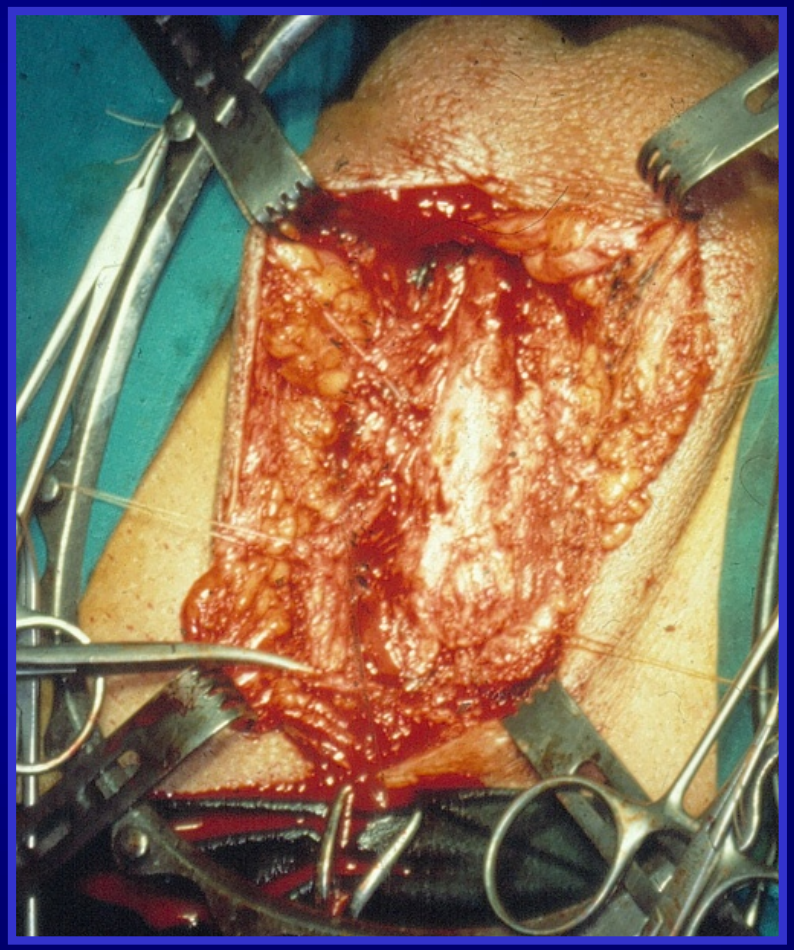
Local adverse conditions

Previous failed open urethroplasty



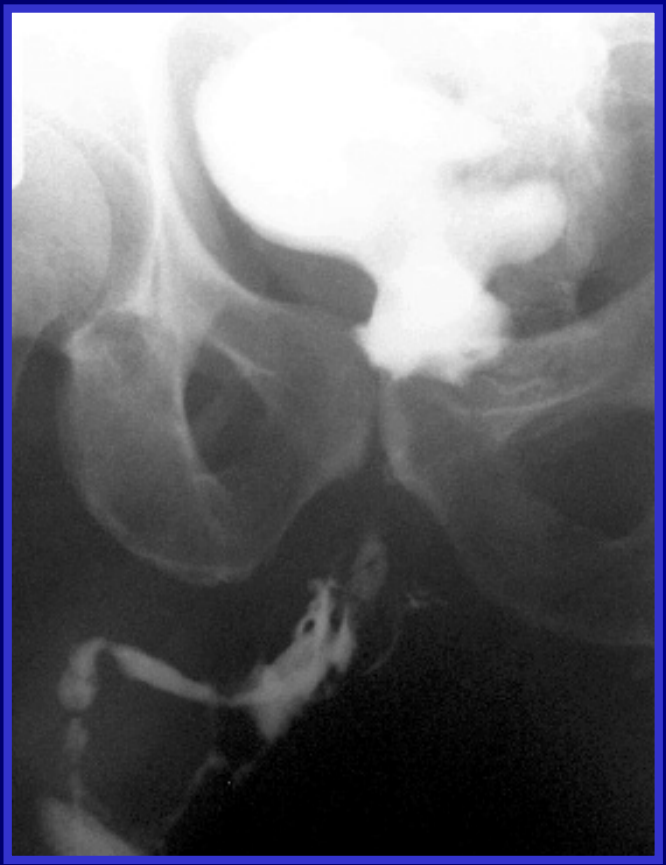


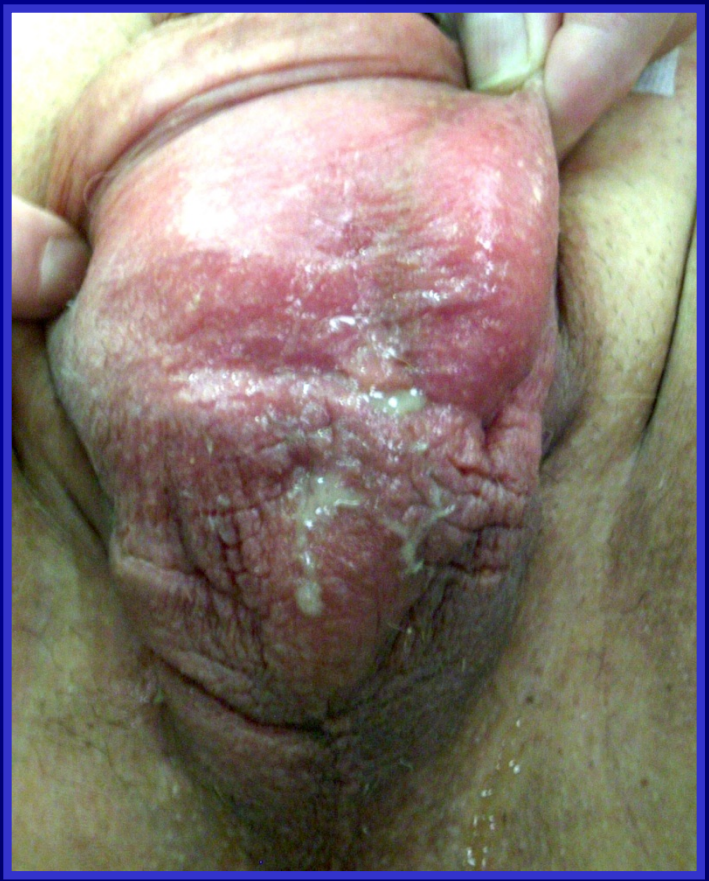




Local adverse conditions

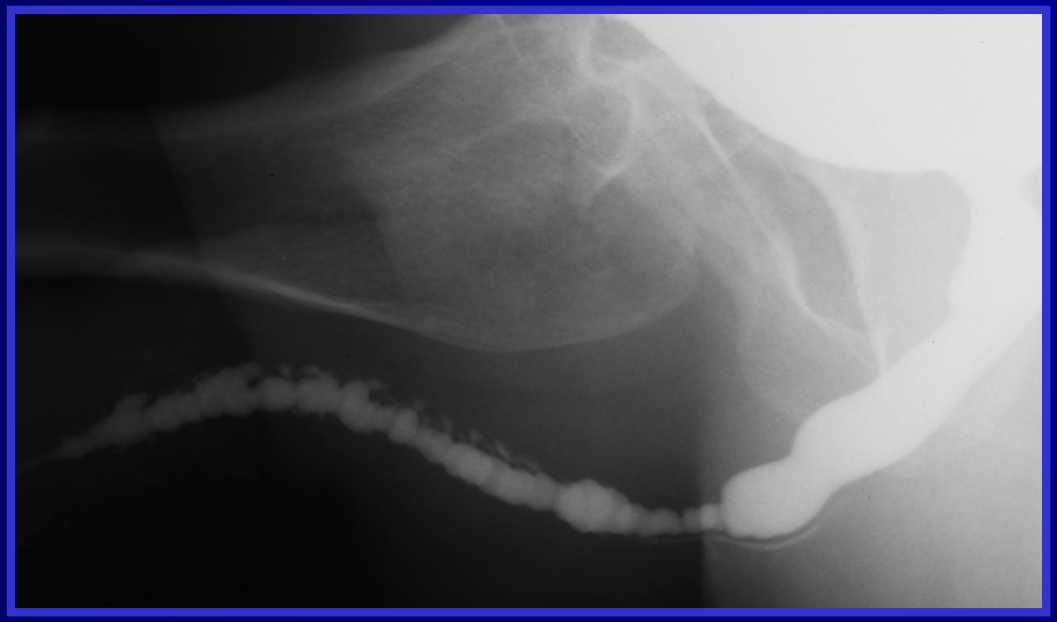
Fistulas and abscess

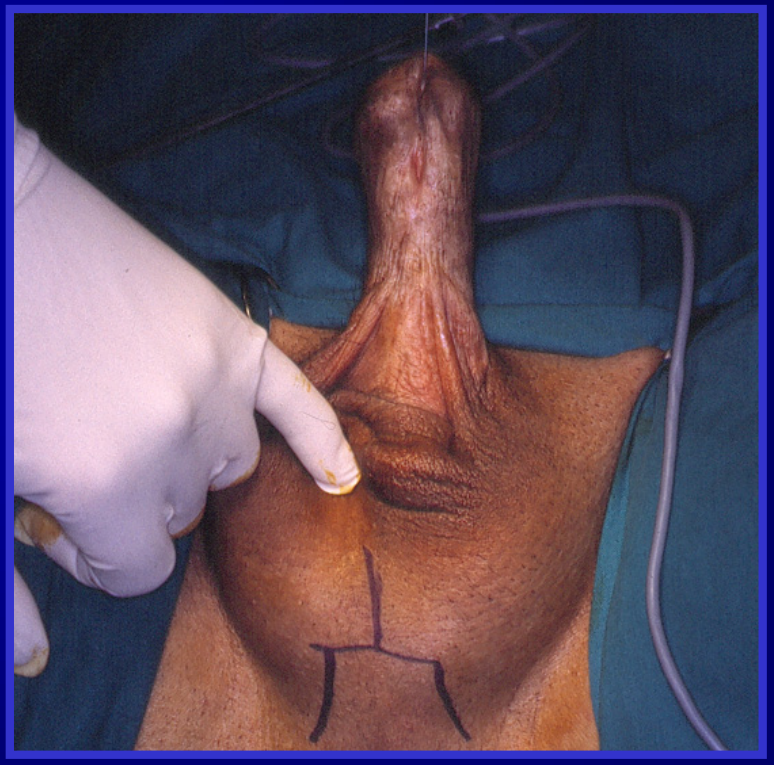




Local adverse conditions

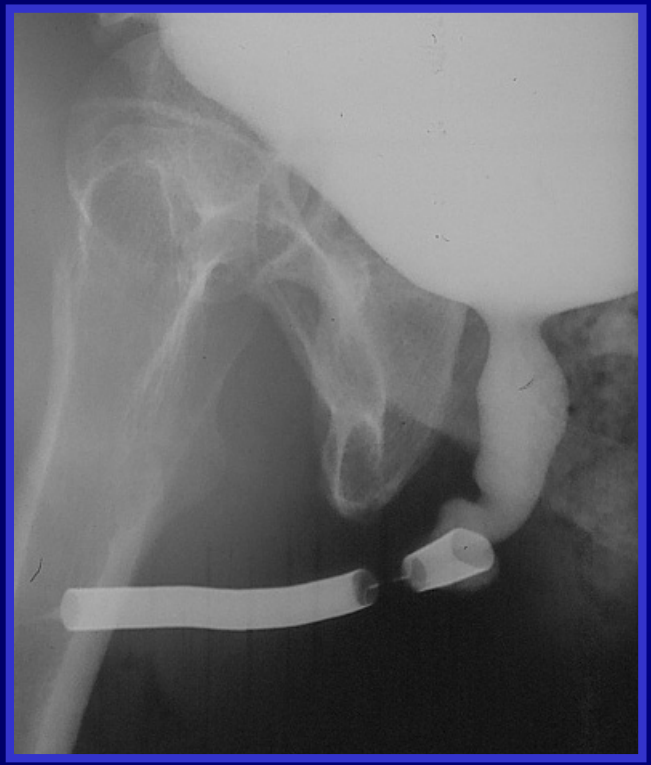
Panurethral stricture associated with lichen sclerosus

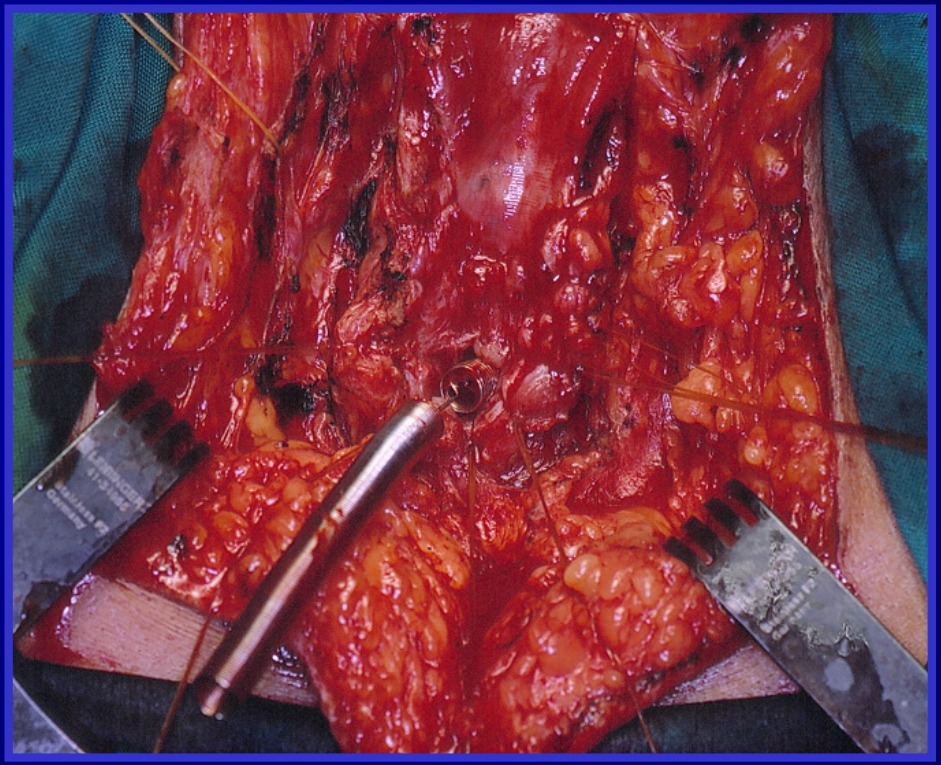




Local adverse conditions

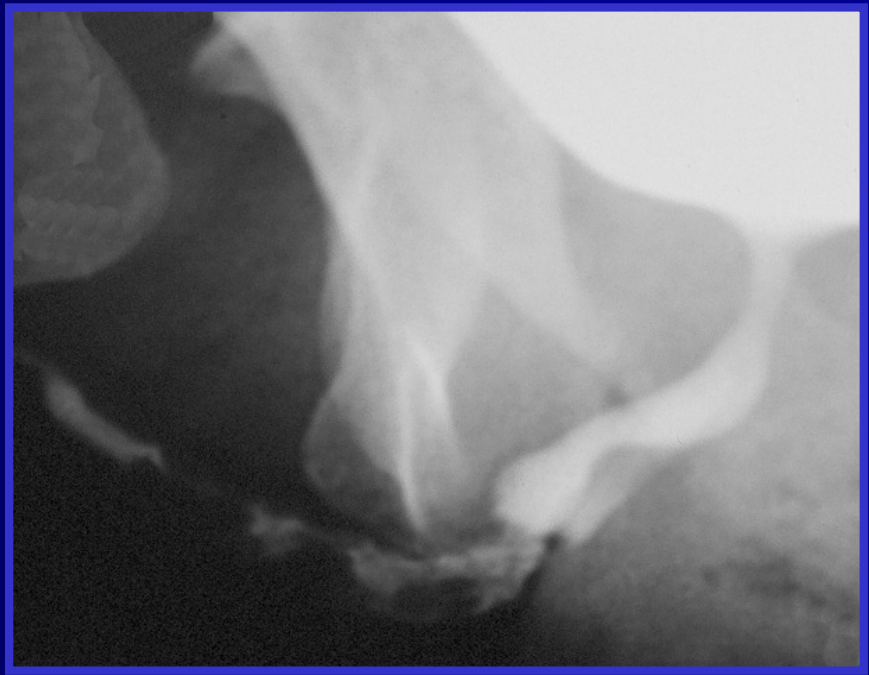
Urethral stent

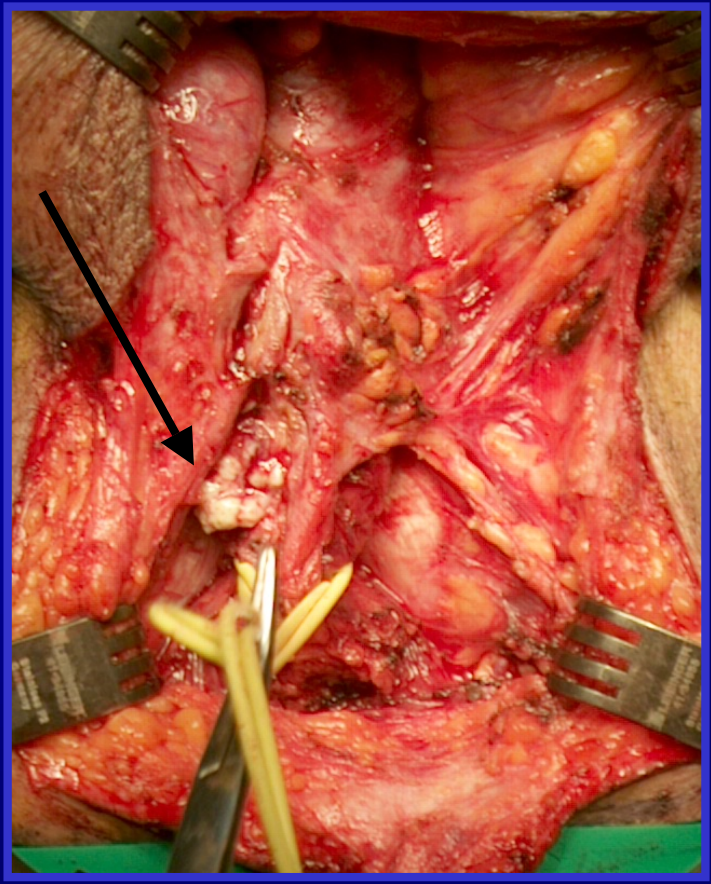




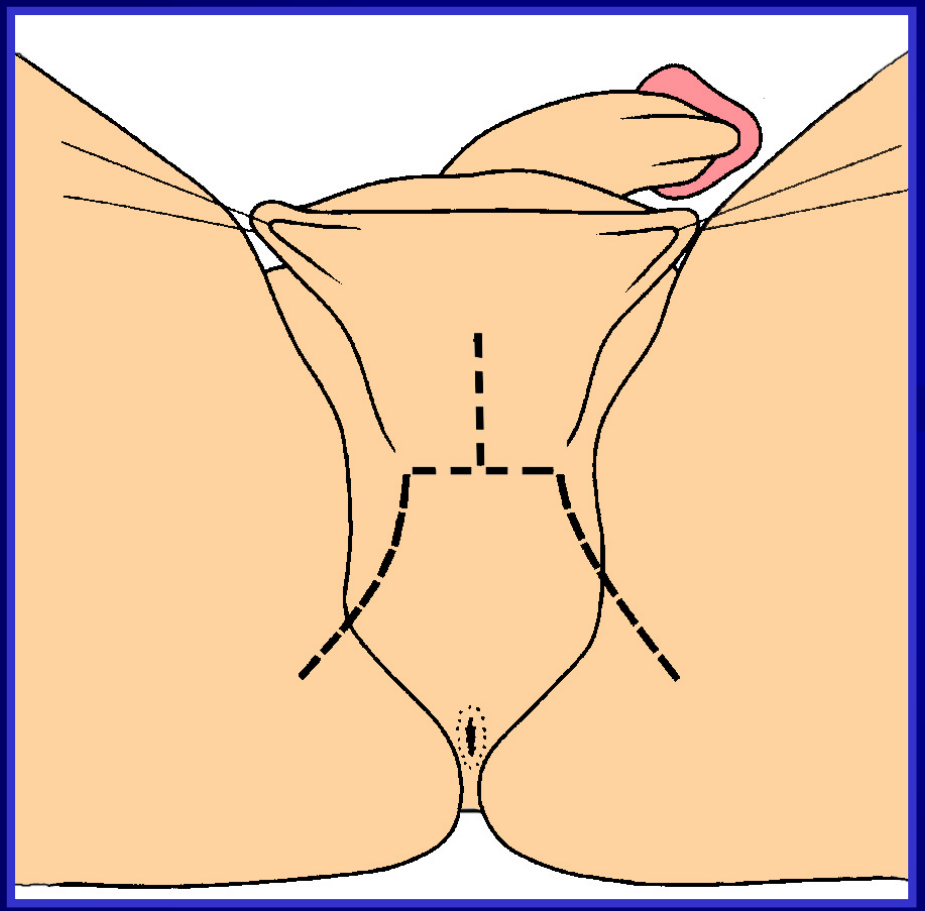
Local adverse conditions

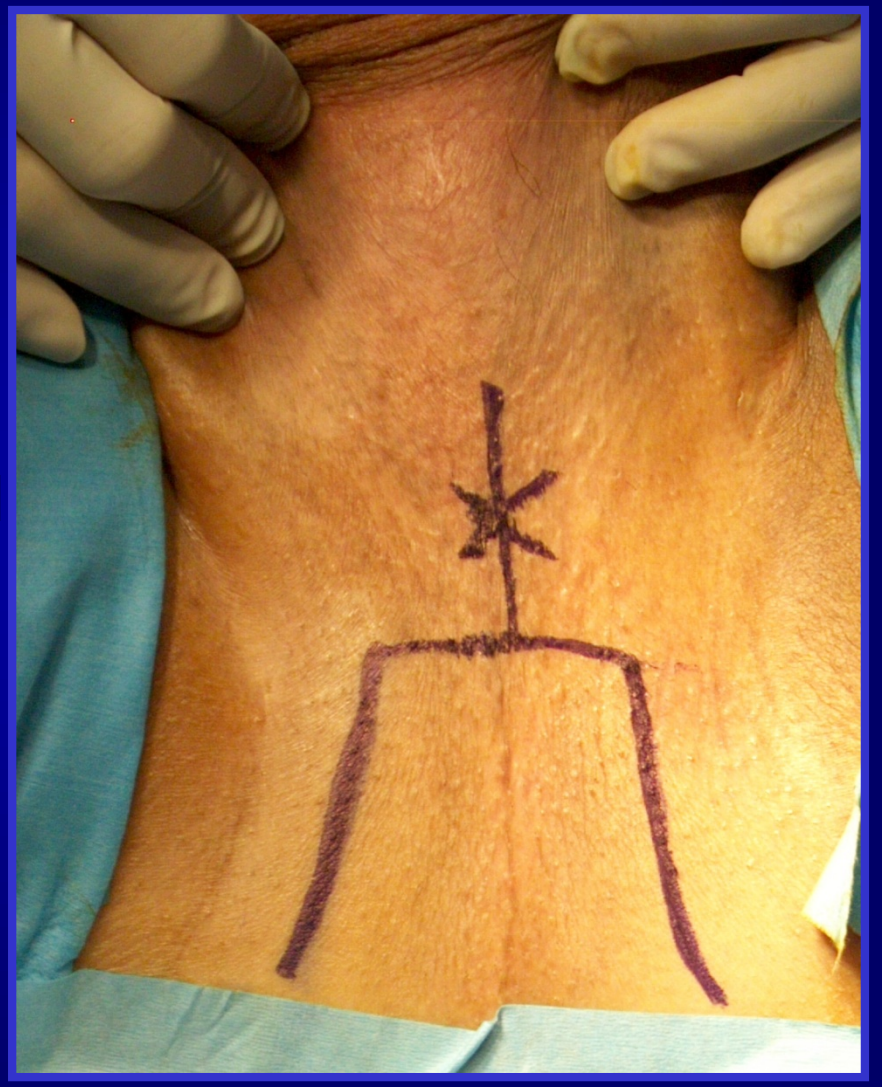
Urethral carcinoma

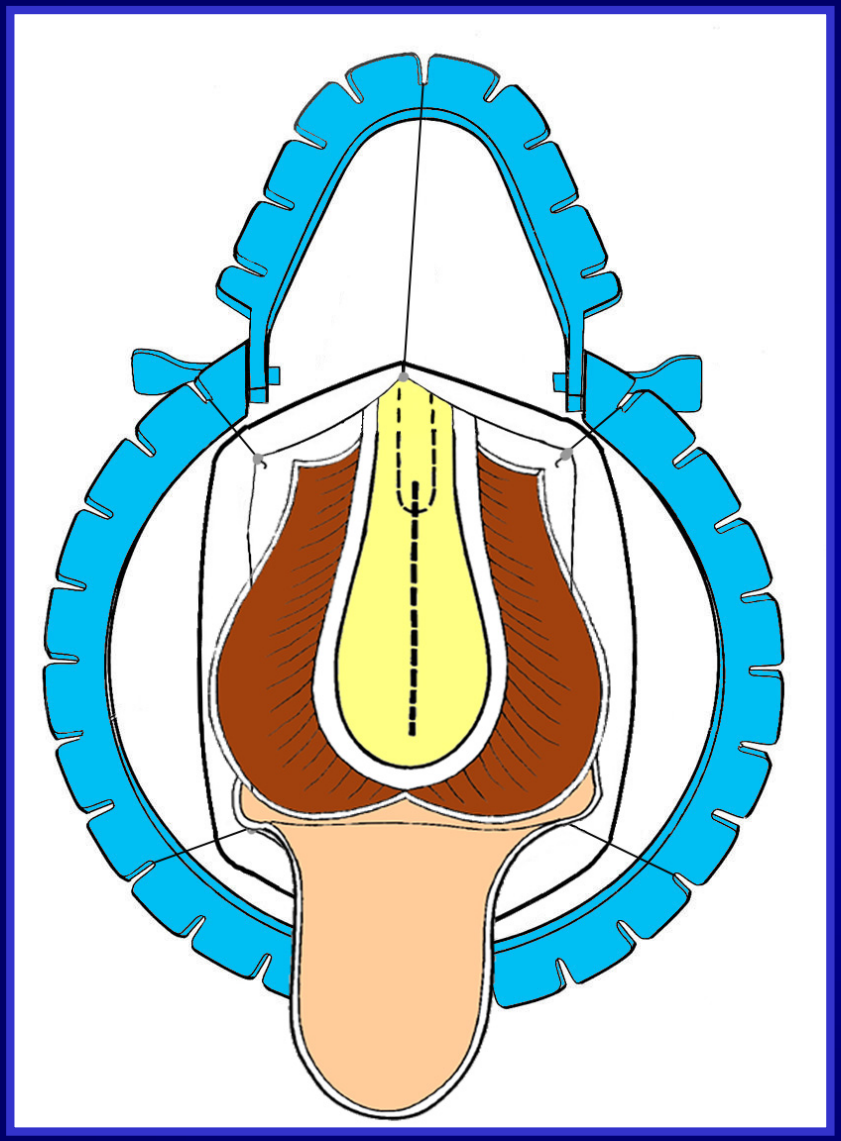


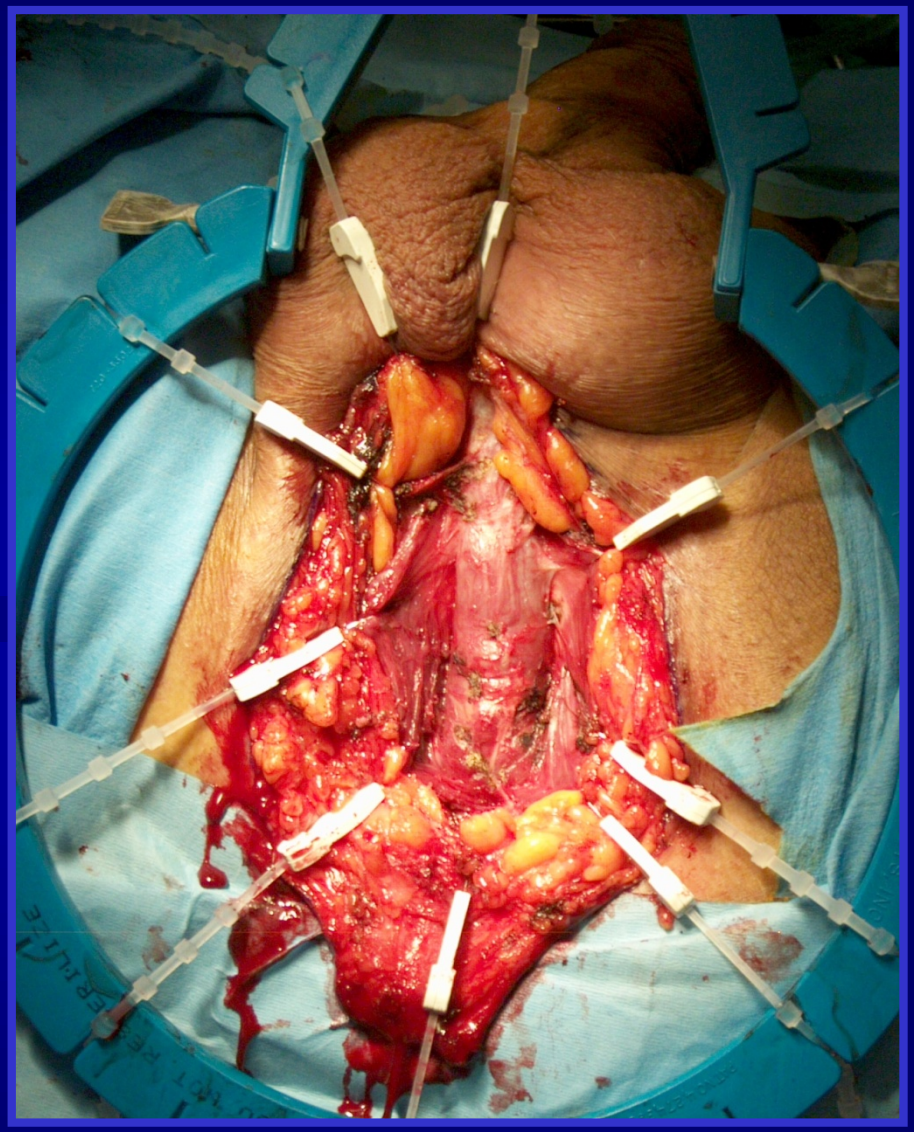


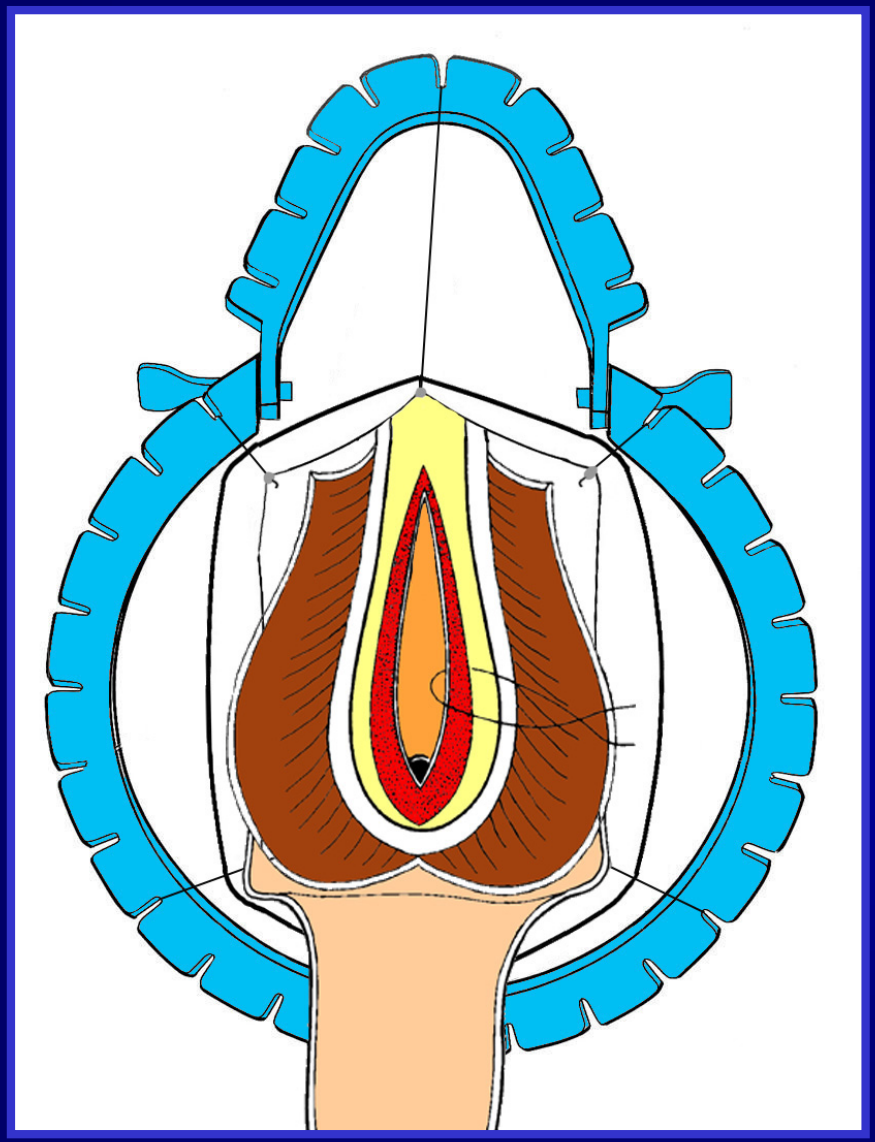
First stage

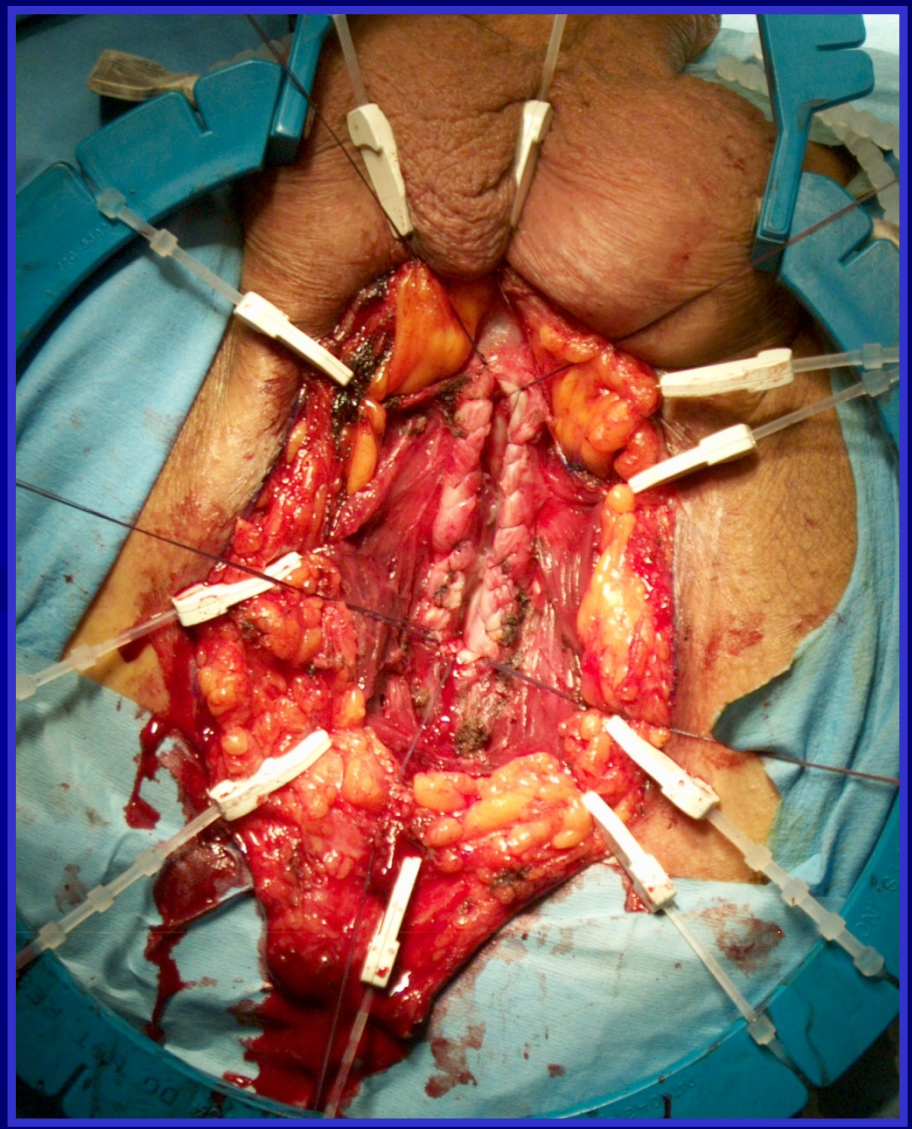


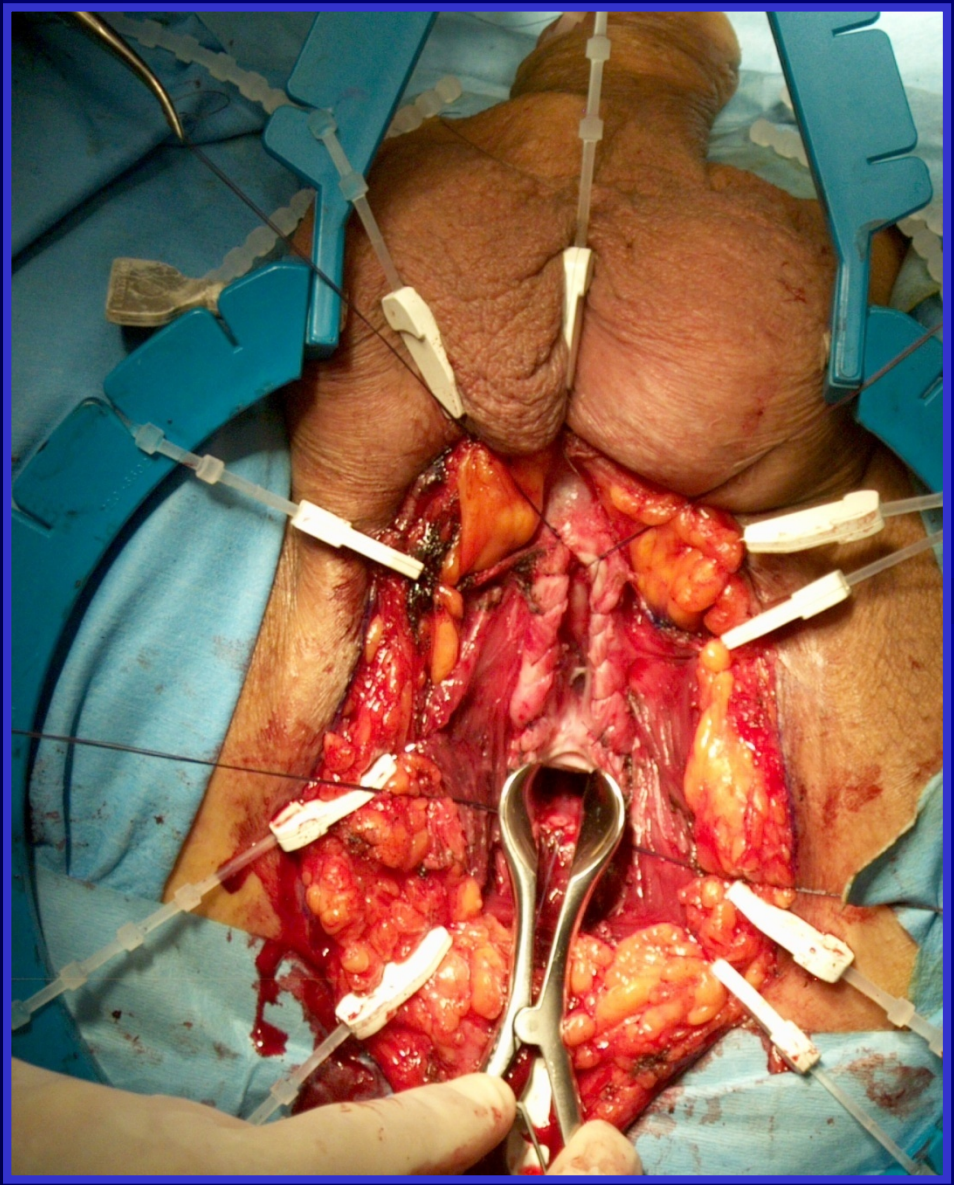


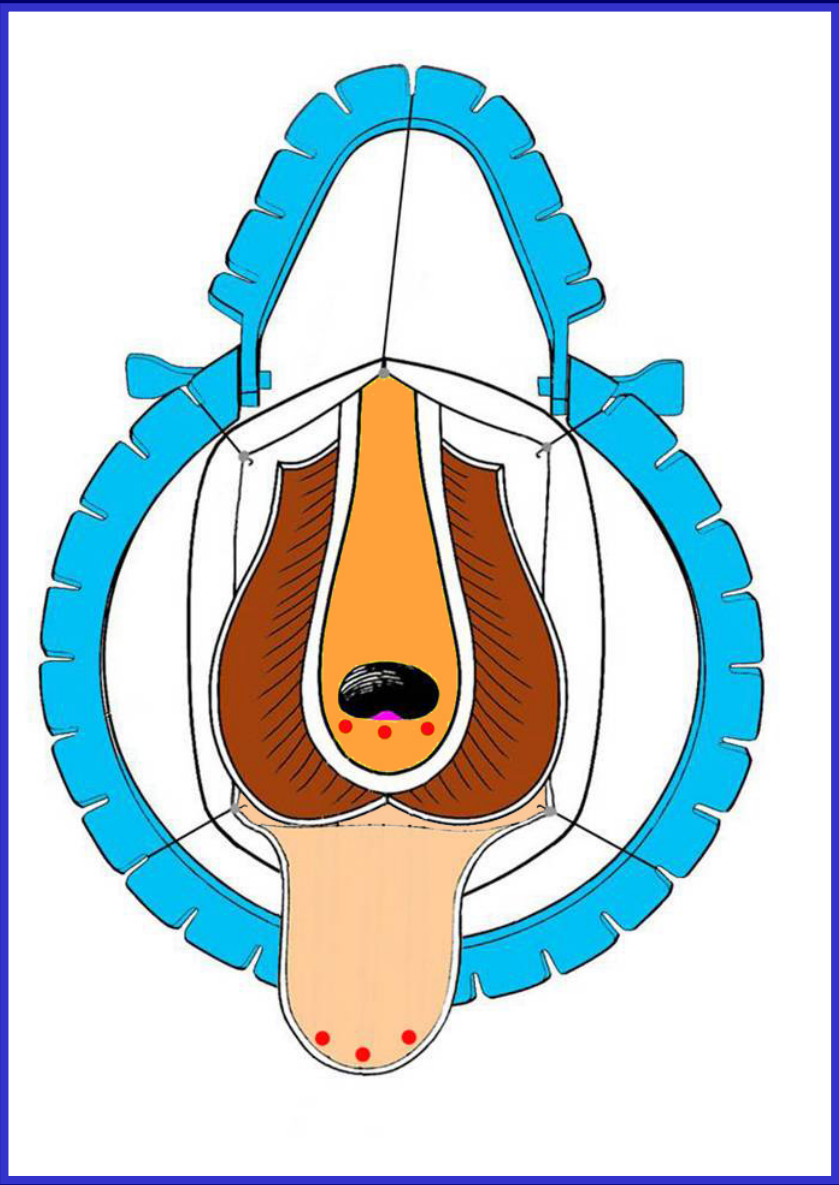




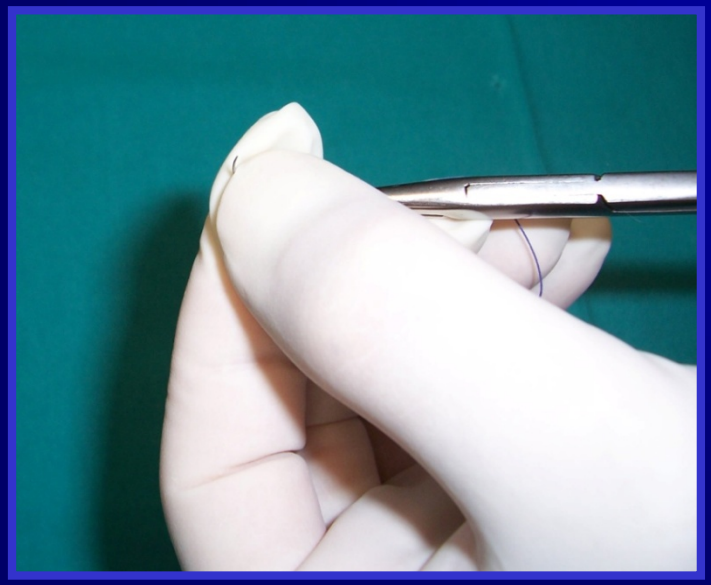


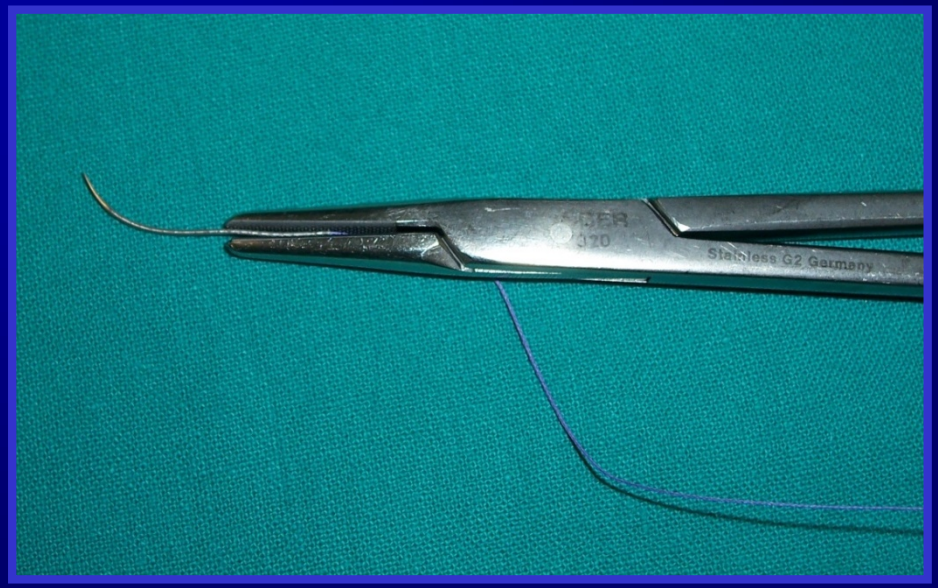




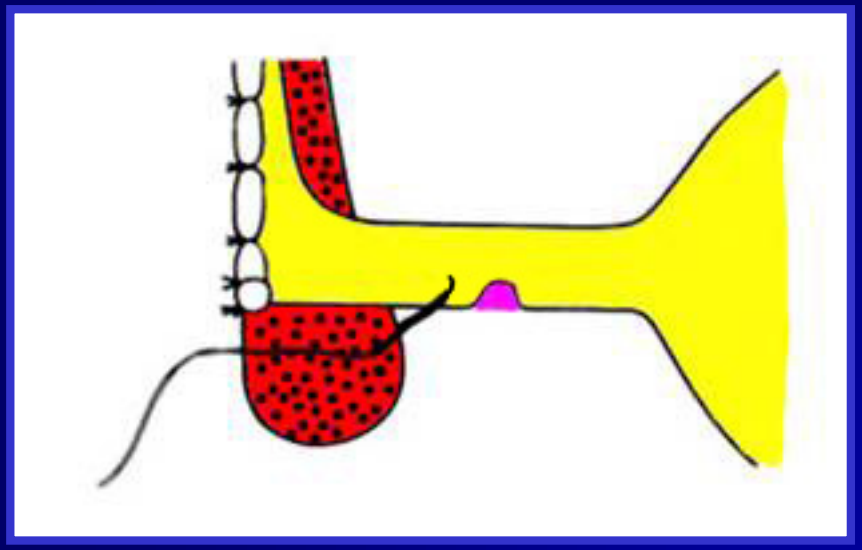


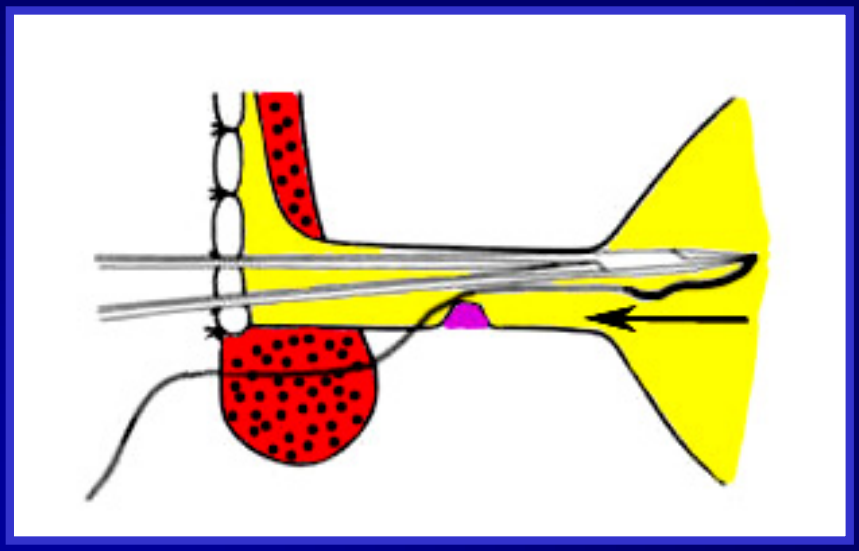
Webster's technique

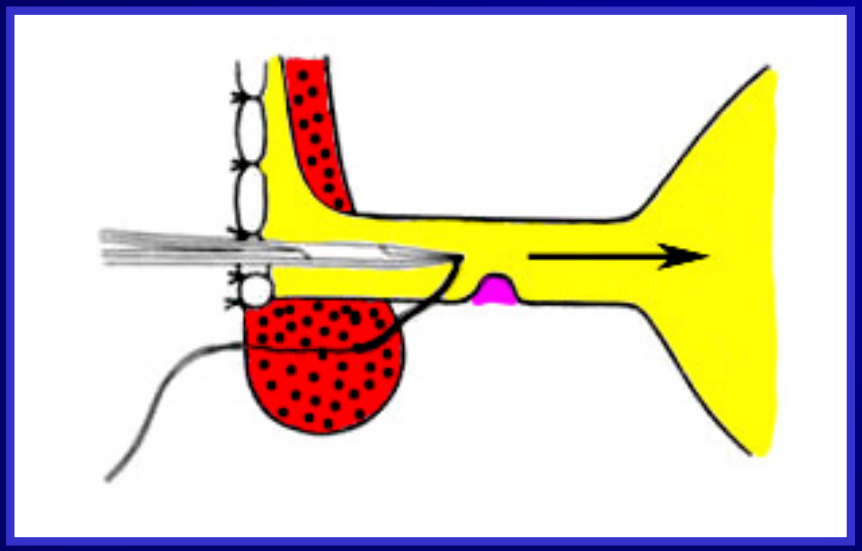


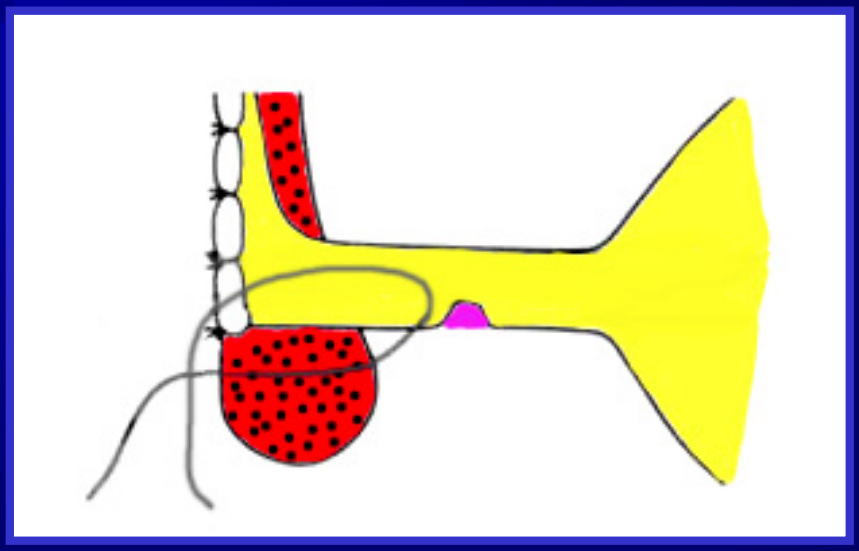


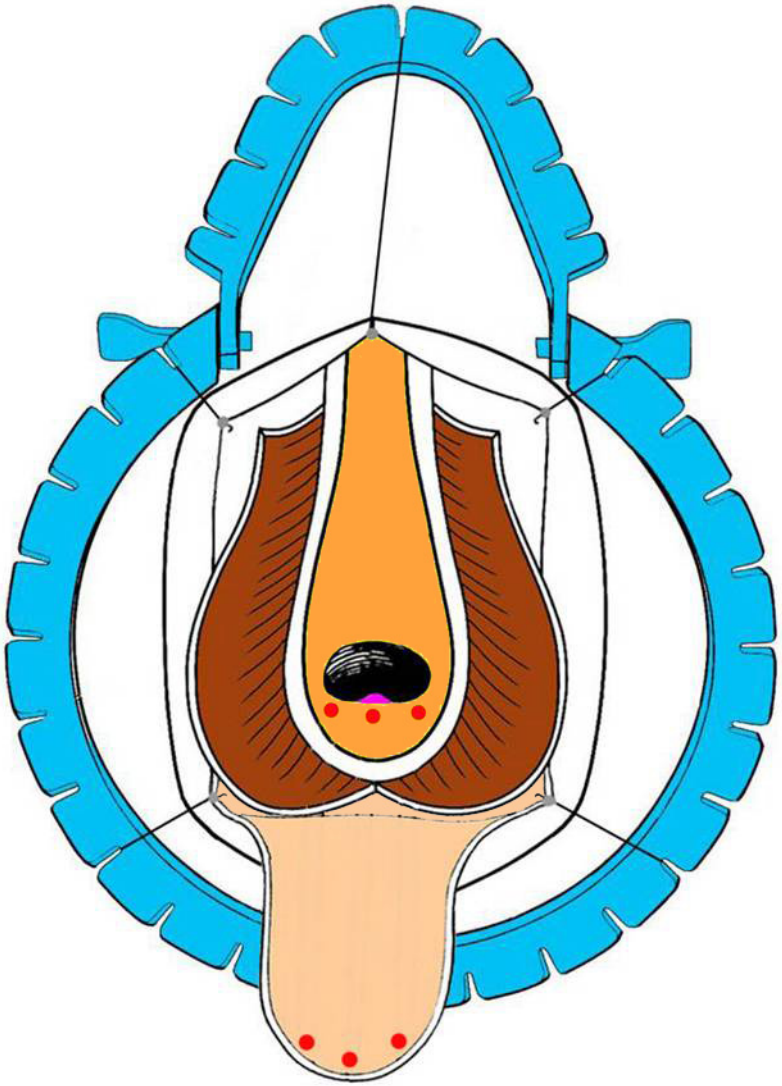
Webster's technique

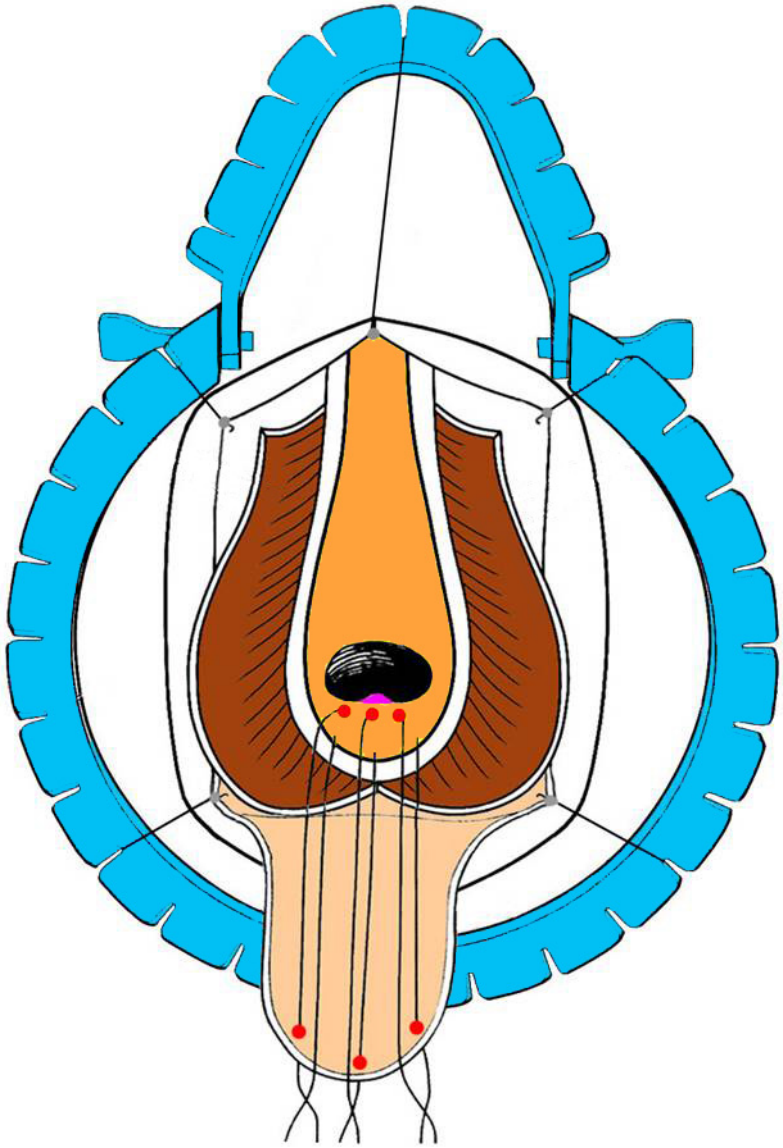


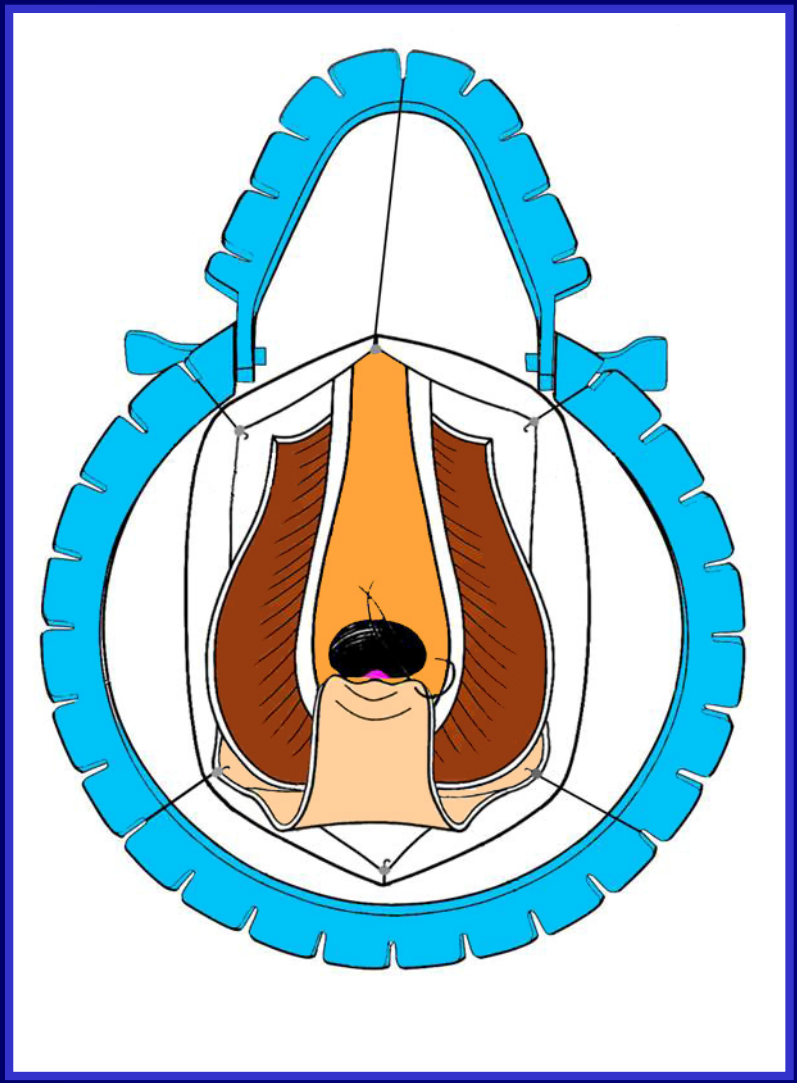


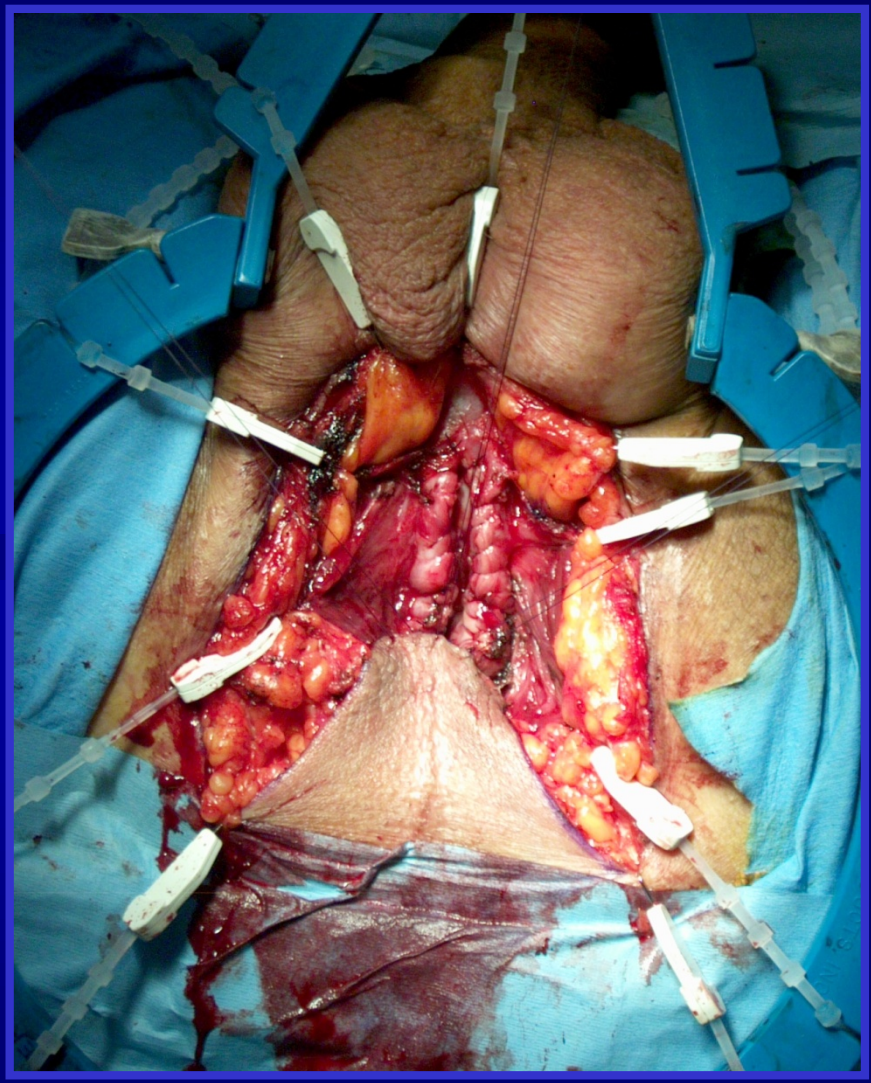


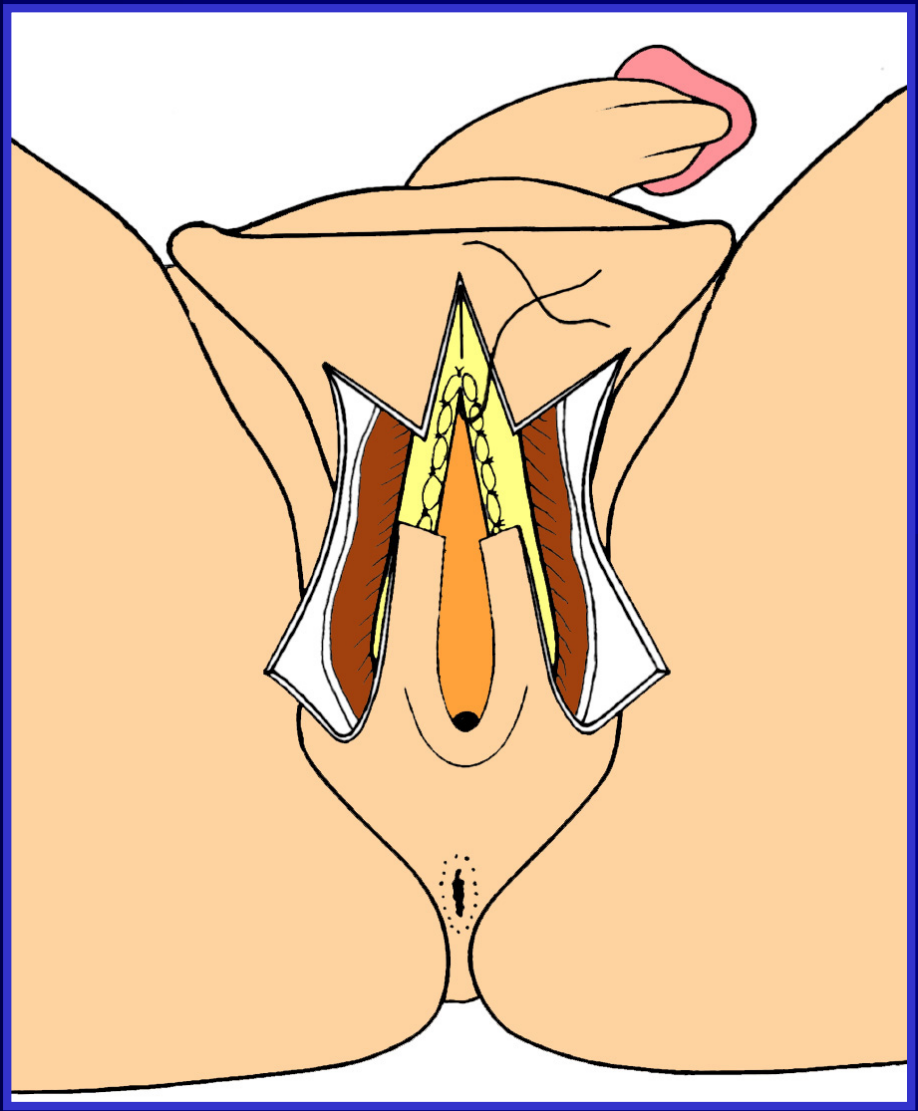


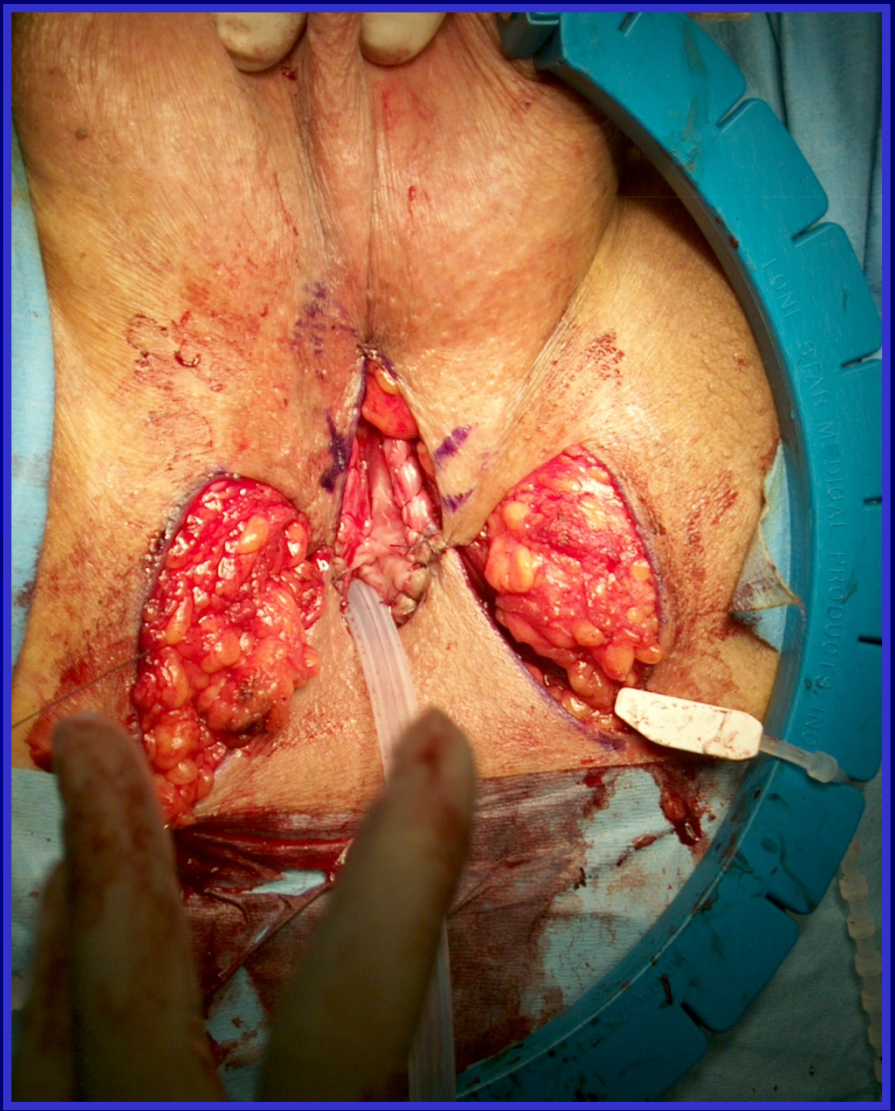


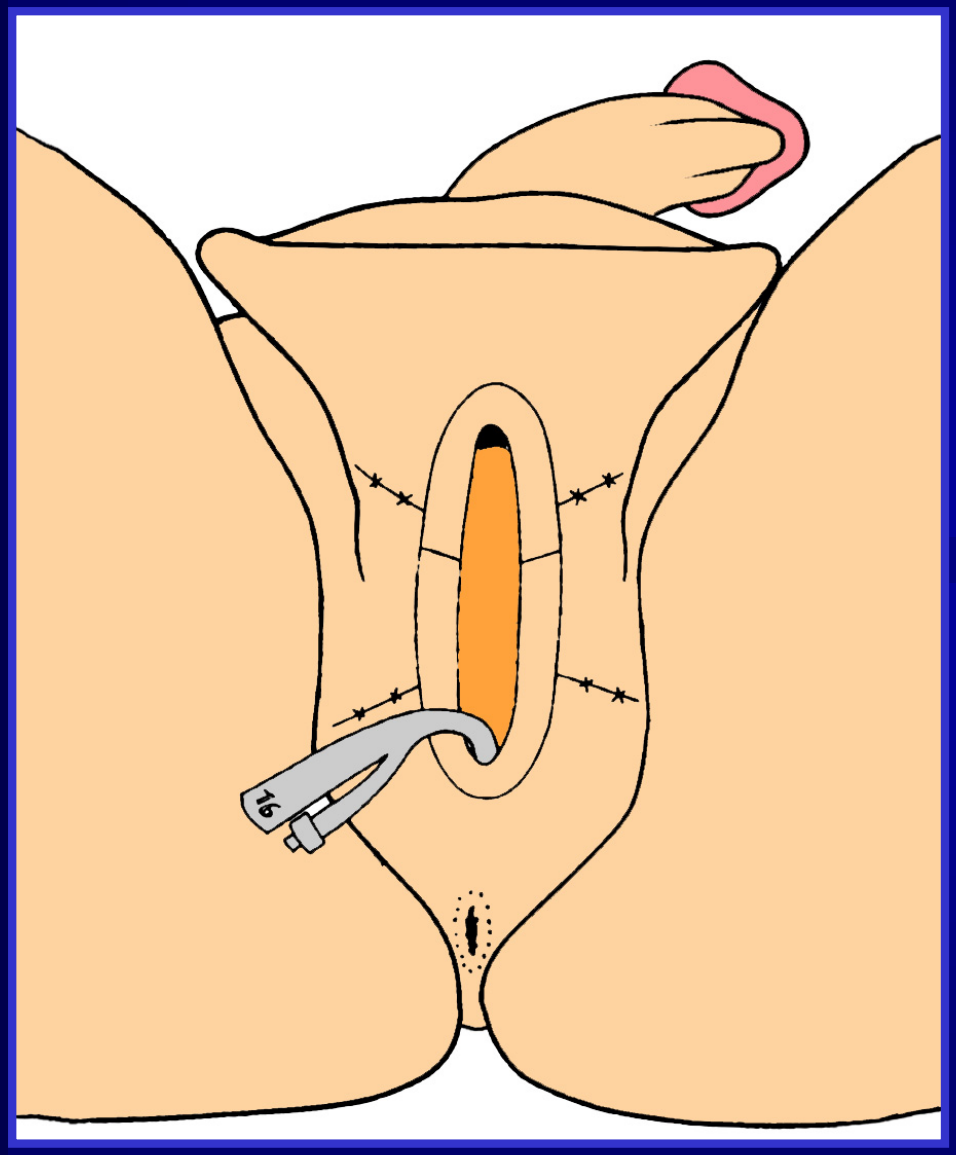








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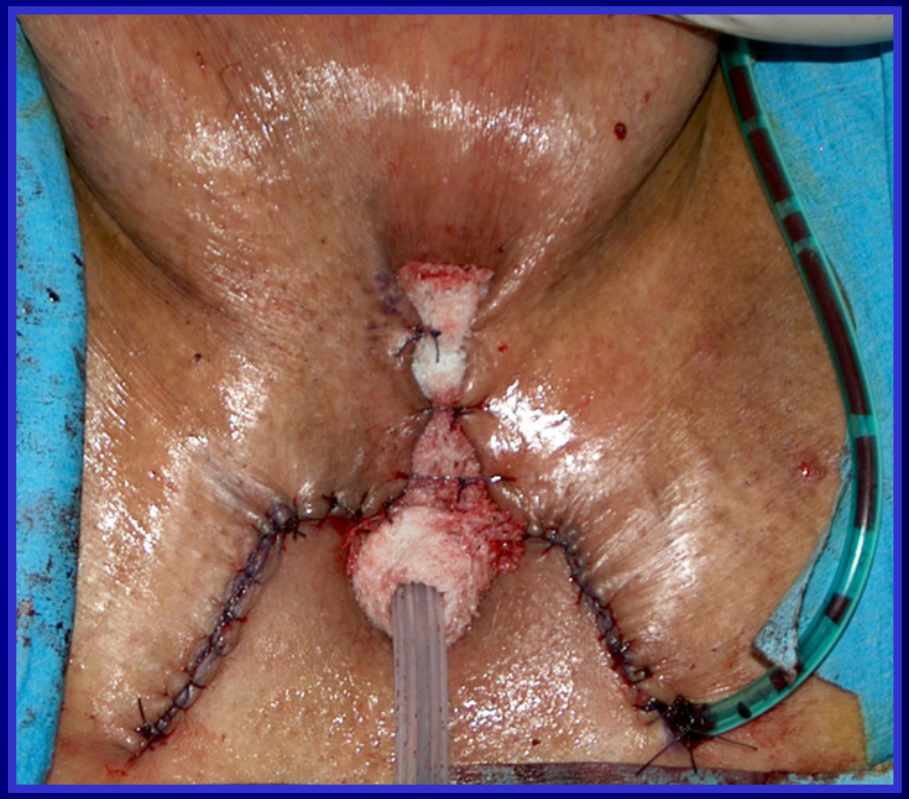
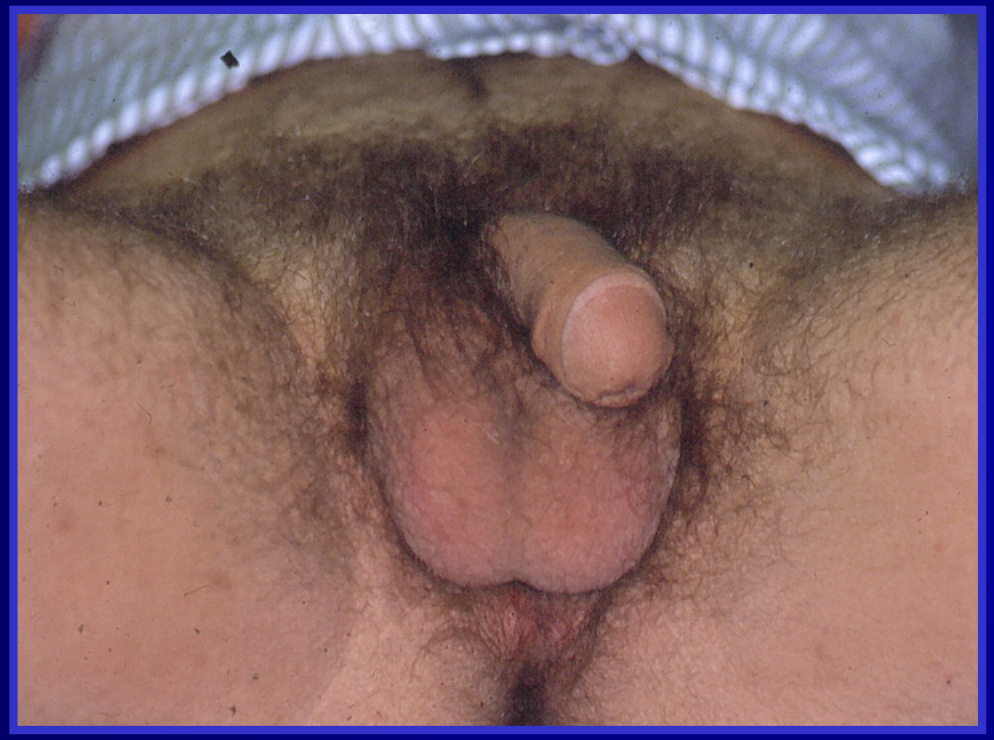
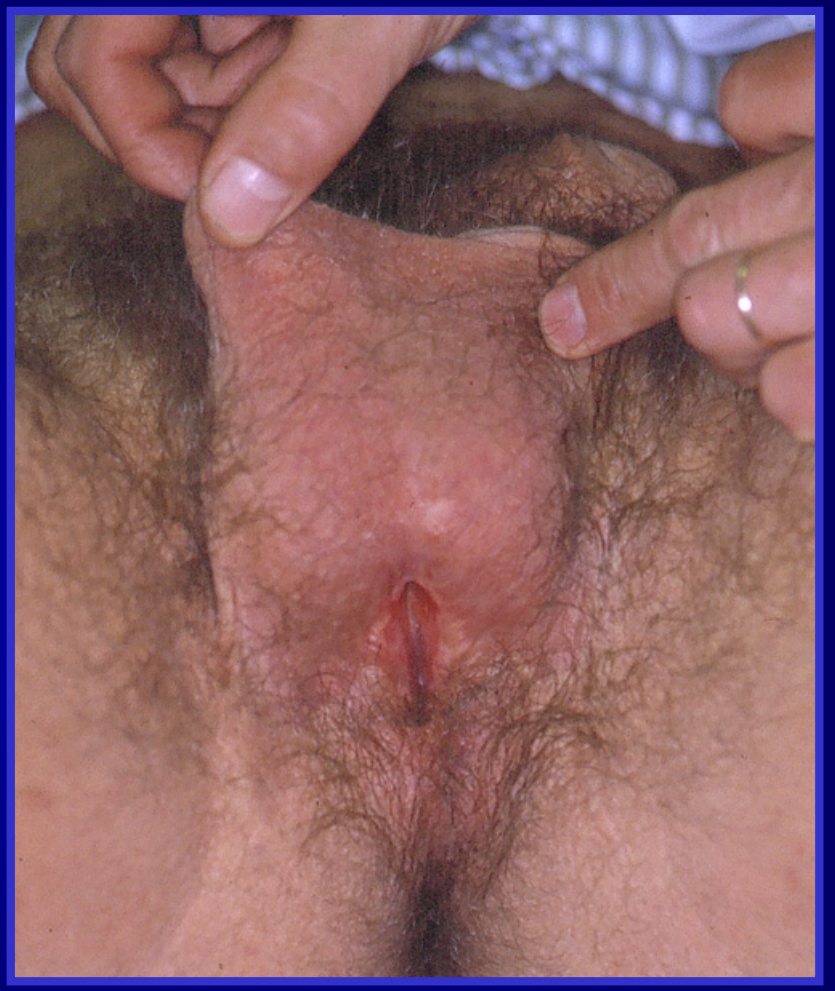
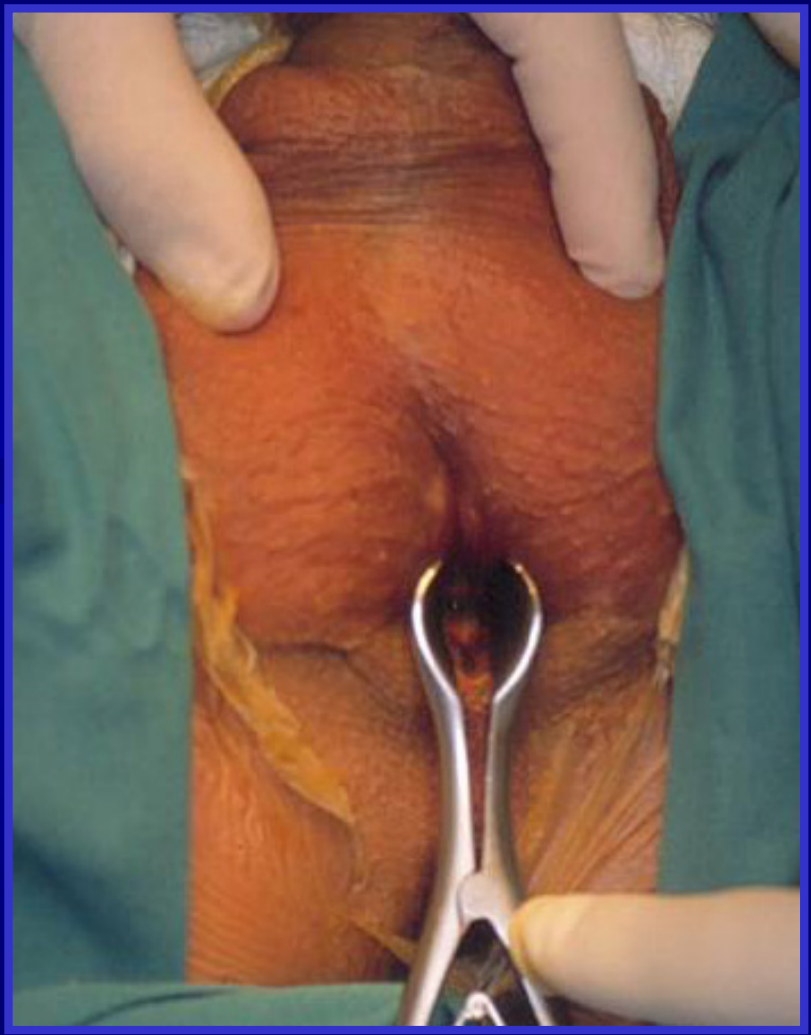
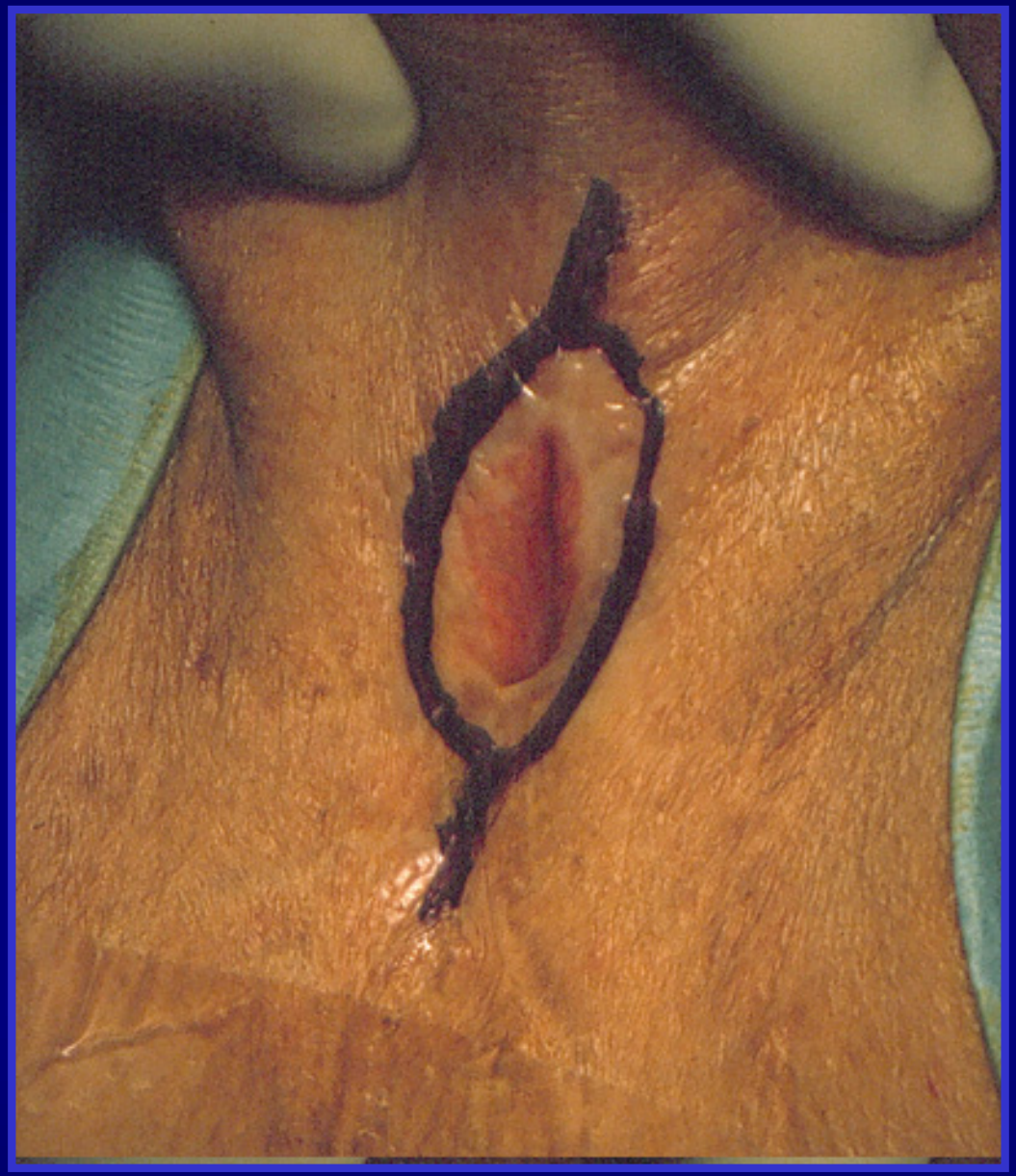


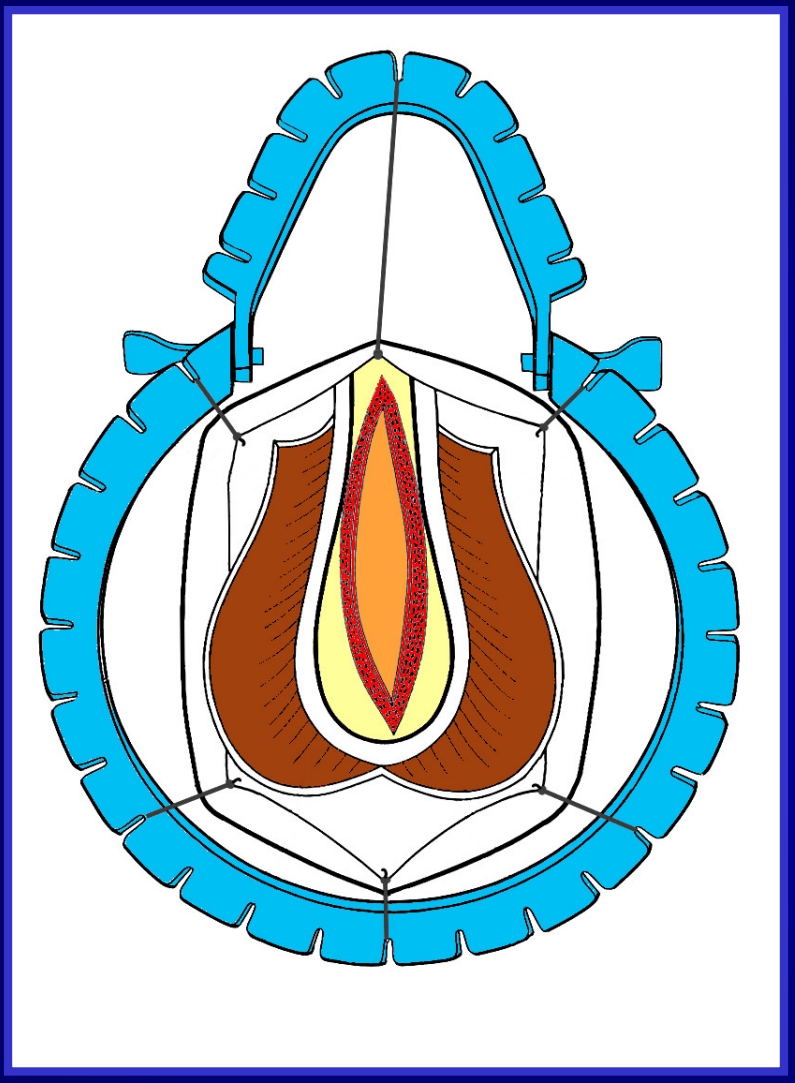


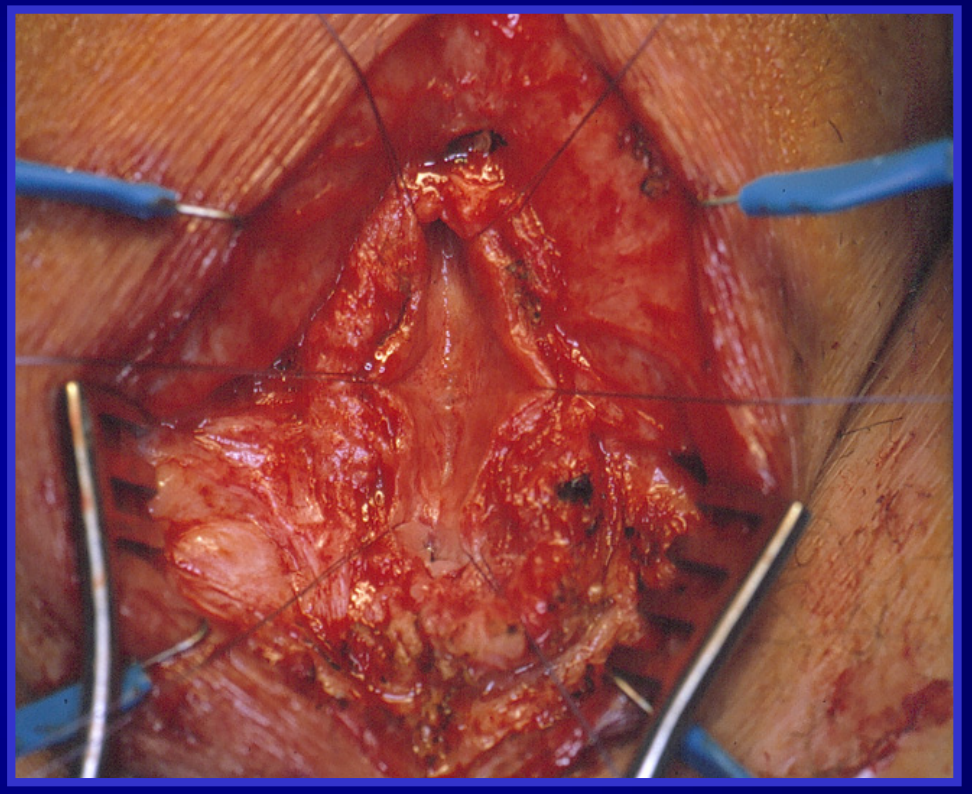


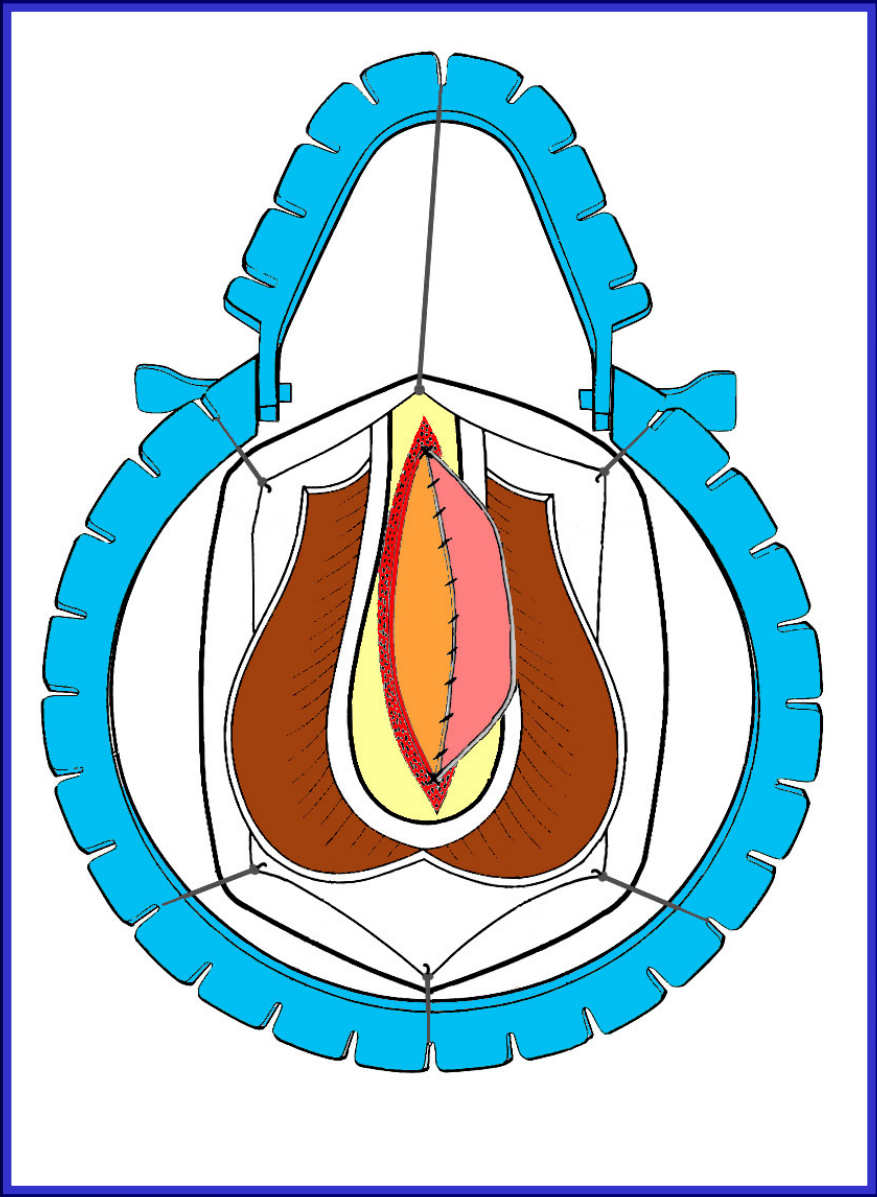
Second stage

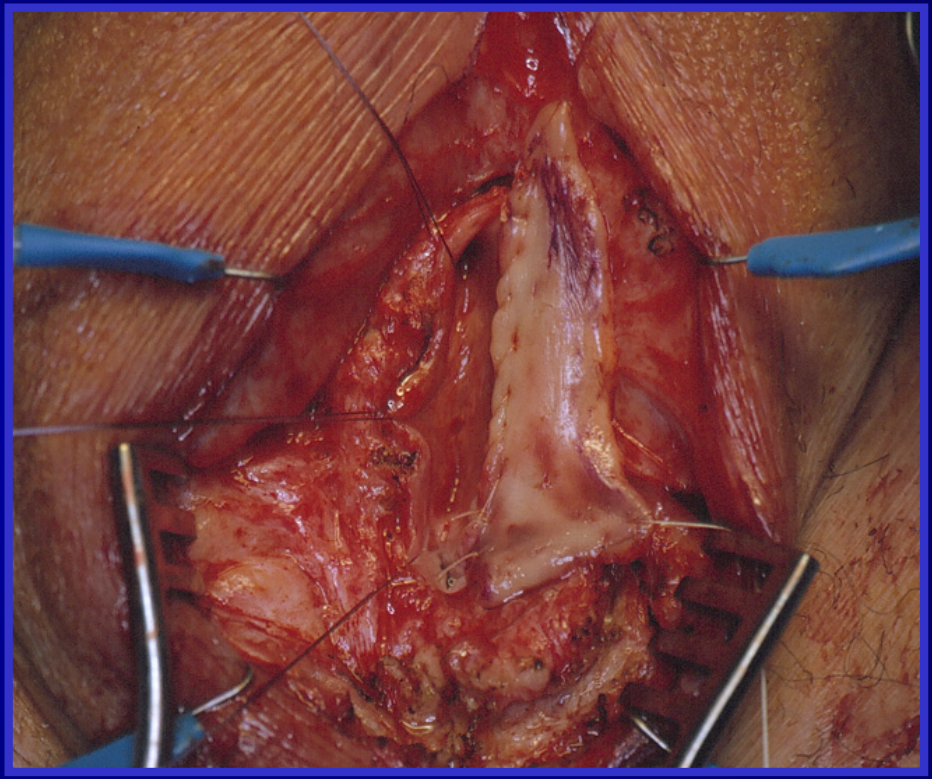


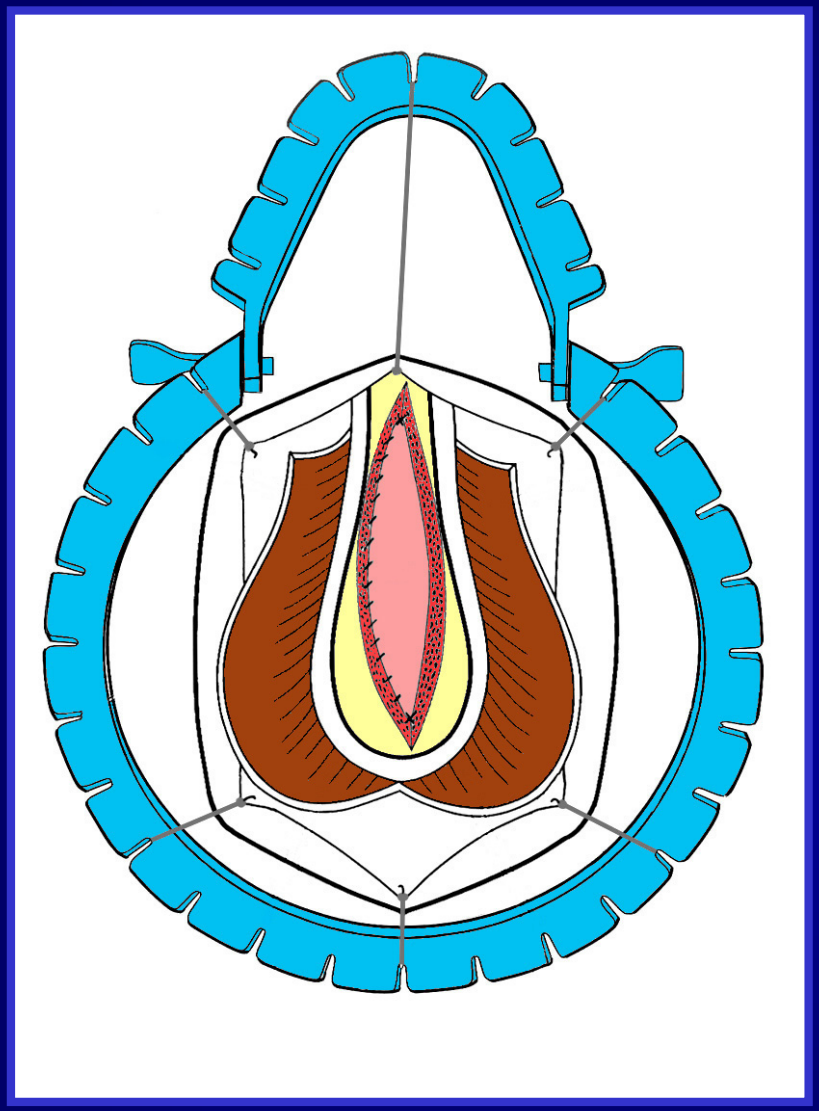


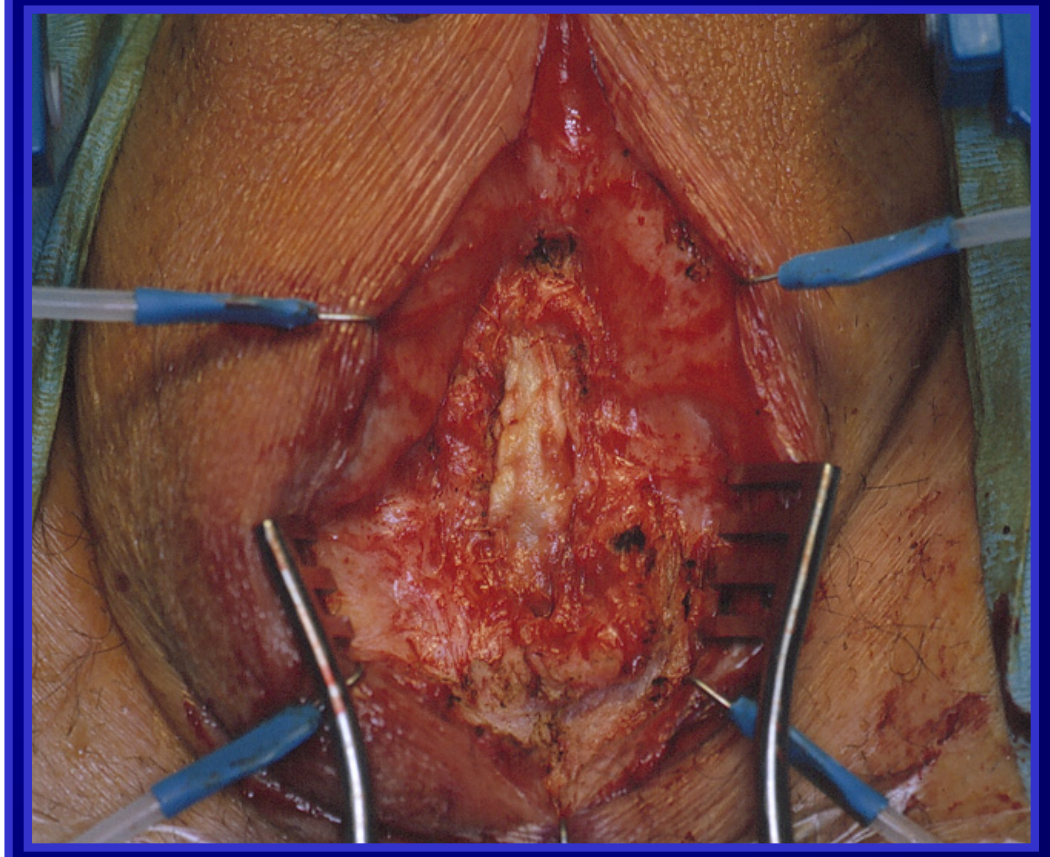


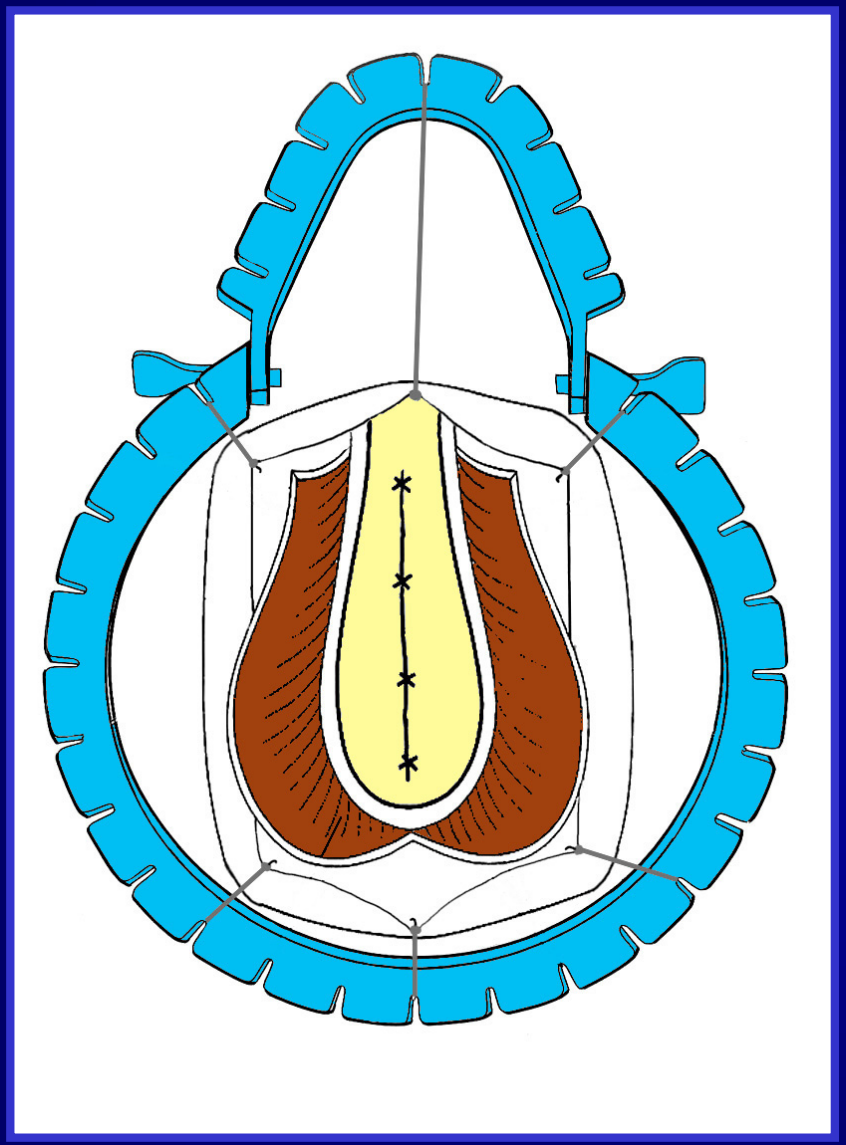


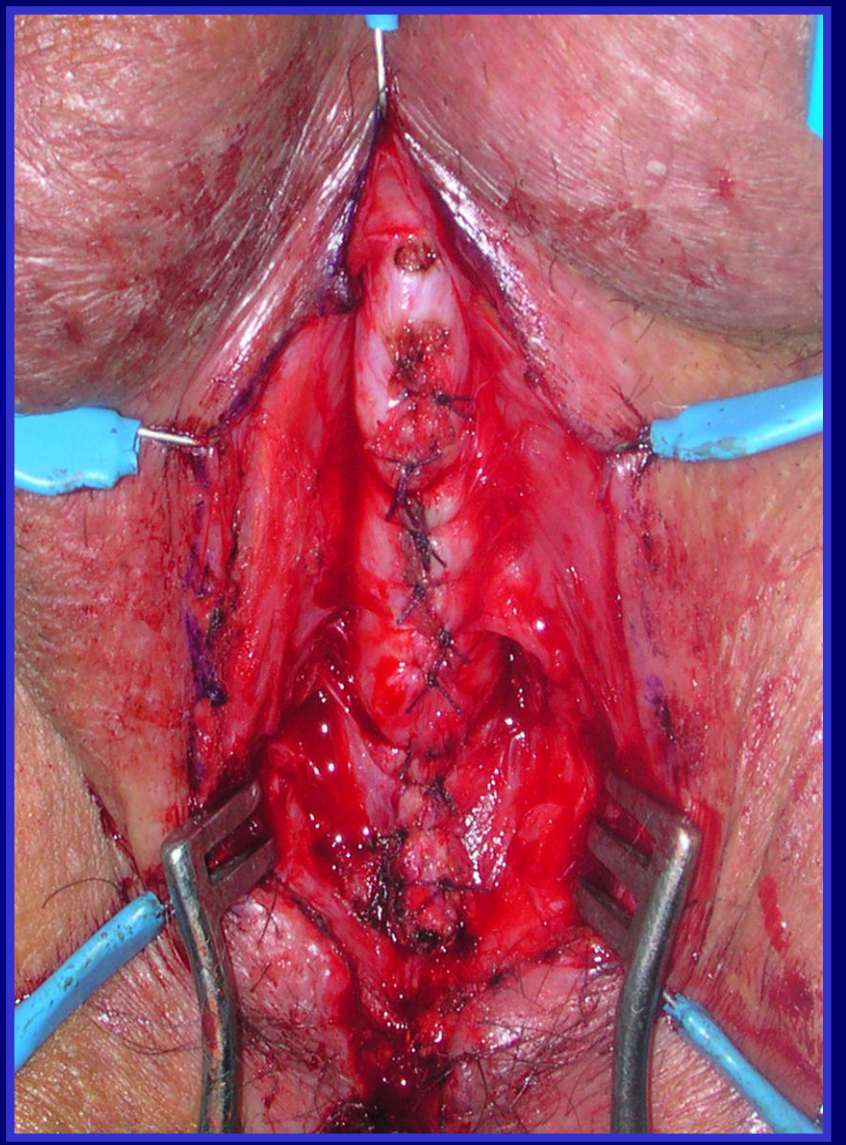






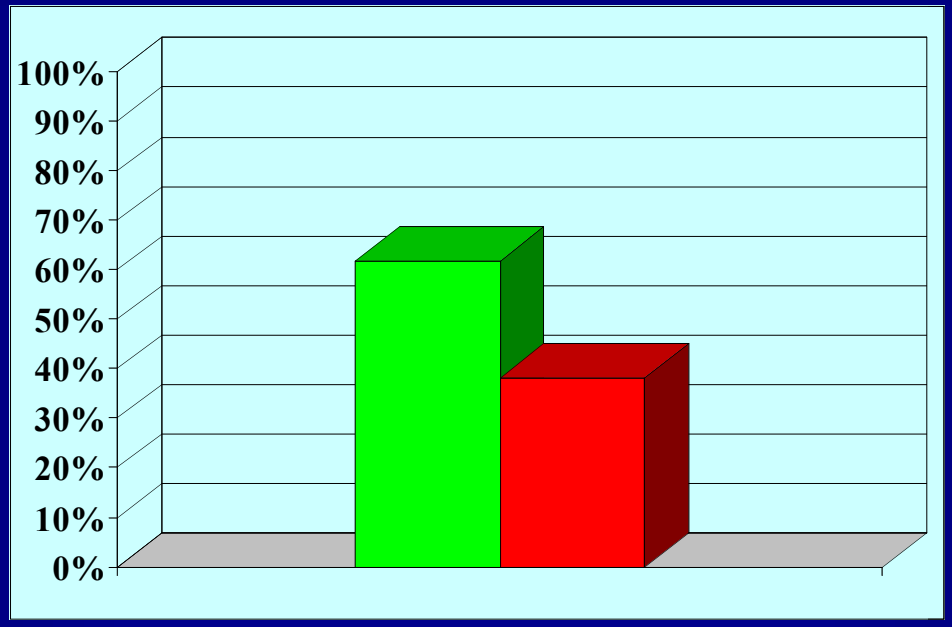






Results on 55 patients who underwent two-stage urethroplasty

Mean follow-up 66 months (12-198 months)



success	34 (61.8%)
failure	21 (38.2%)

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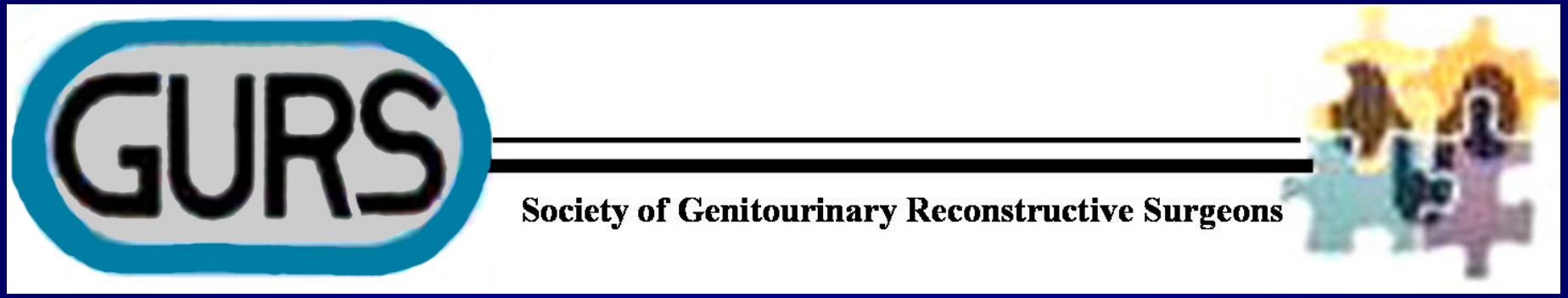
Conclusions

- 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



Scientific Session at the 2009 American Urological Association

(AUA) Annual Convention

Chicago, Illinois, USA

April 25-30, 2009

GURS

Society of Genitourinary Reconstructive Surgeons

Topics to be presented and discussed

Failed Hypospadias Repair Presenting in Adults: A New Outbreak?

Point-Counterpoint. Bulbar Urethroplasty: Transect or Not Transect the Urethra?

Does Penile Length Affect Surgical Steps and Outcome of Posterior Urethroplasty?

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

Thank you !