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**10th Mediterranean Congress of Urology
and
8th Congress of Pan African Urological
Surgeon Association**

Tripoli – Libya

17 – 20 November 2007



Center for Reconstructive Urethral Surgery



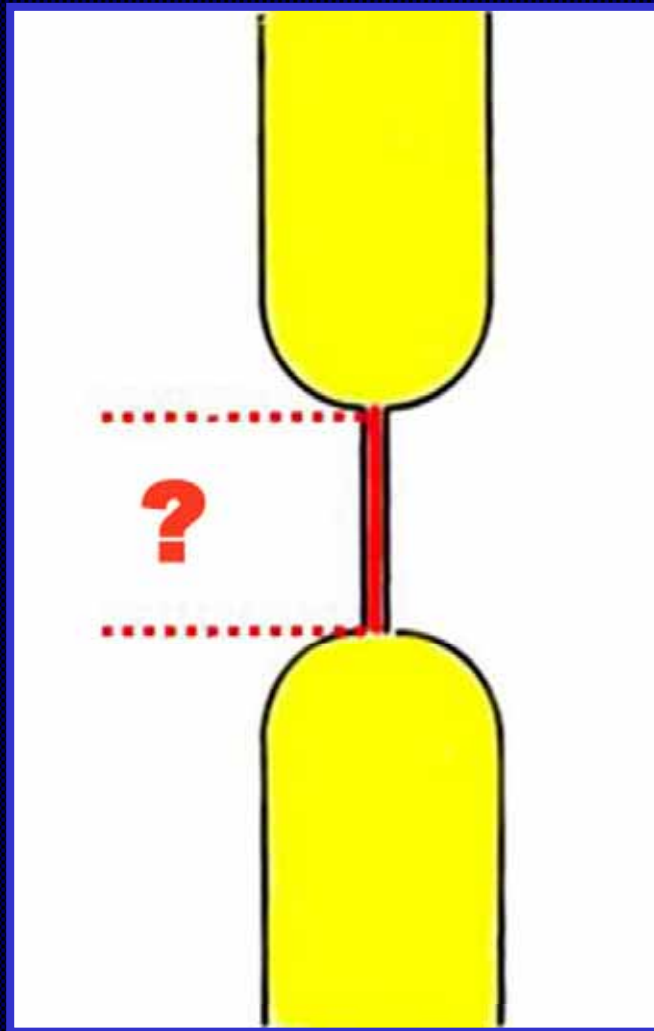
One-stage reconstruction of the bulbar urethral strictures: surgical techniques and long-term results up-to-date to 2007



www.urethralcenter.it



One-stage bulbar urethroplasties



End-to-end anastomosis

Augmented roof-strip anastomosis

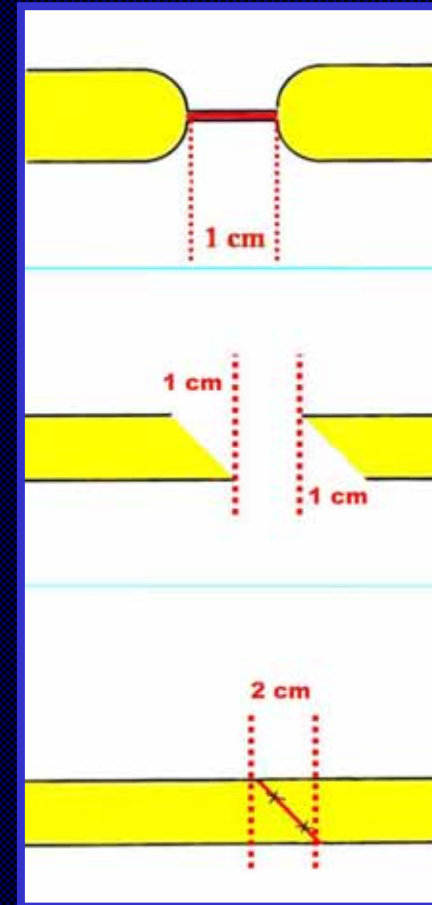
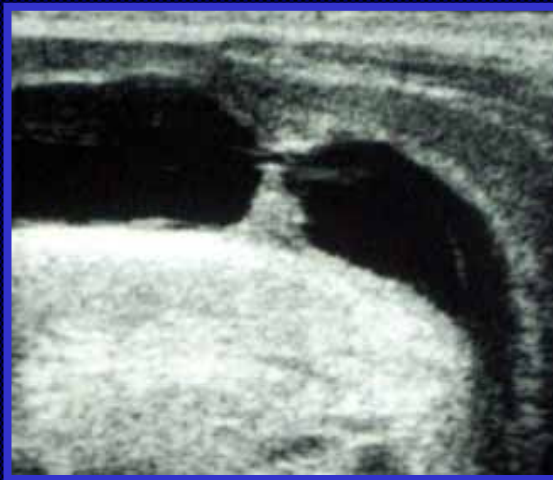
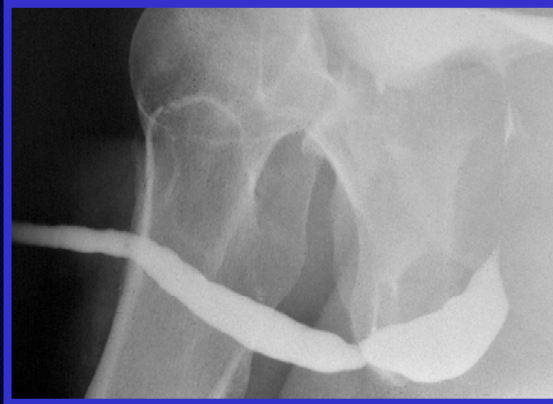
- dorsal skin graft
- dorsal buccal mucosal graft

Onlay graft urethroplasty

- ventral onlay (BM)
- dorsal onlay (BM)
- dorsal onlay (skin)



End-to-end anastomosis



Urethral stricture ranging from 1 to 2 cm



Preparation of the patient



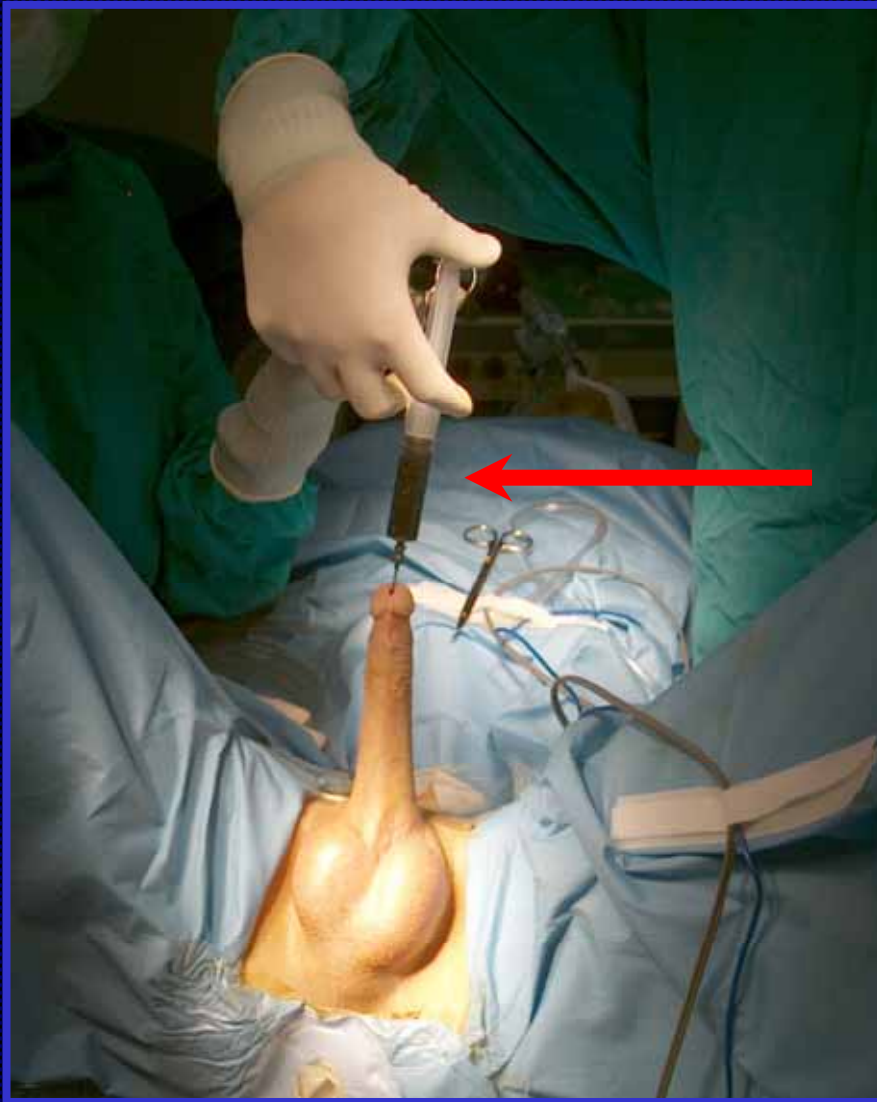
Simple lithotomy position



Preparation of the patient

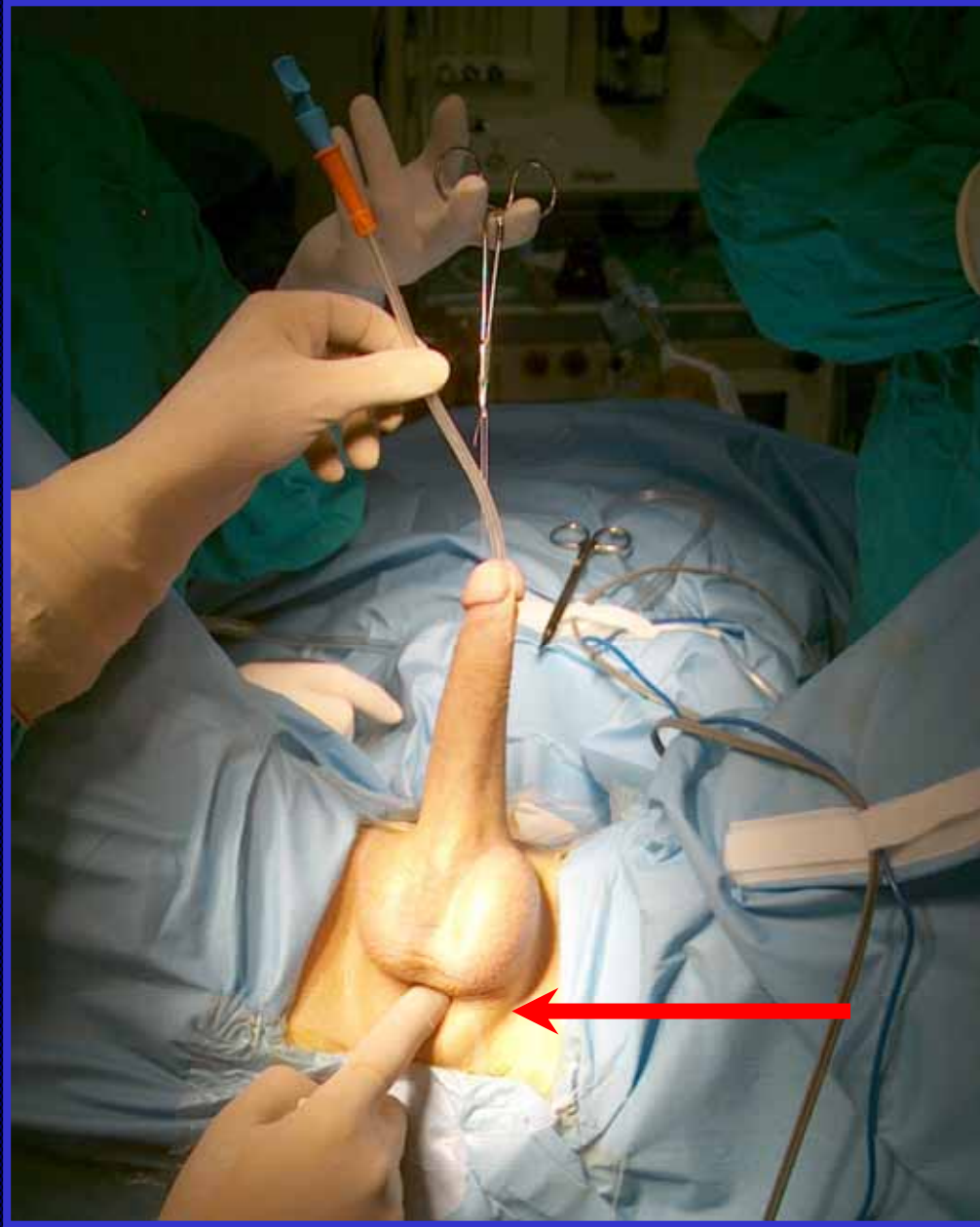


Allen stirrups with sequential inflatable compression sleeves



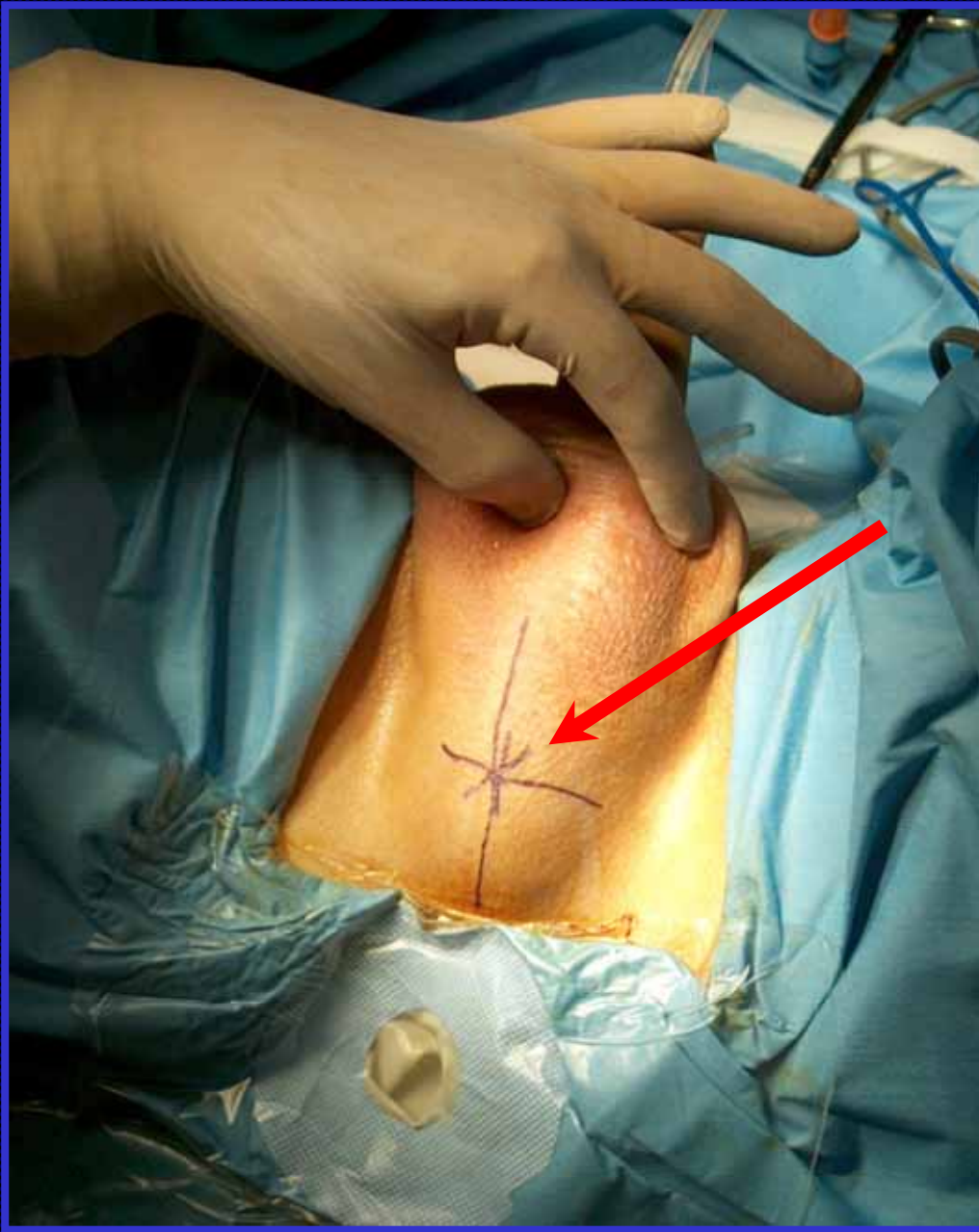
**Methylene blue is
injected into the urethra**



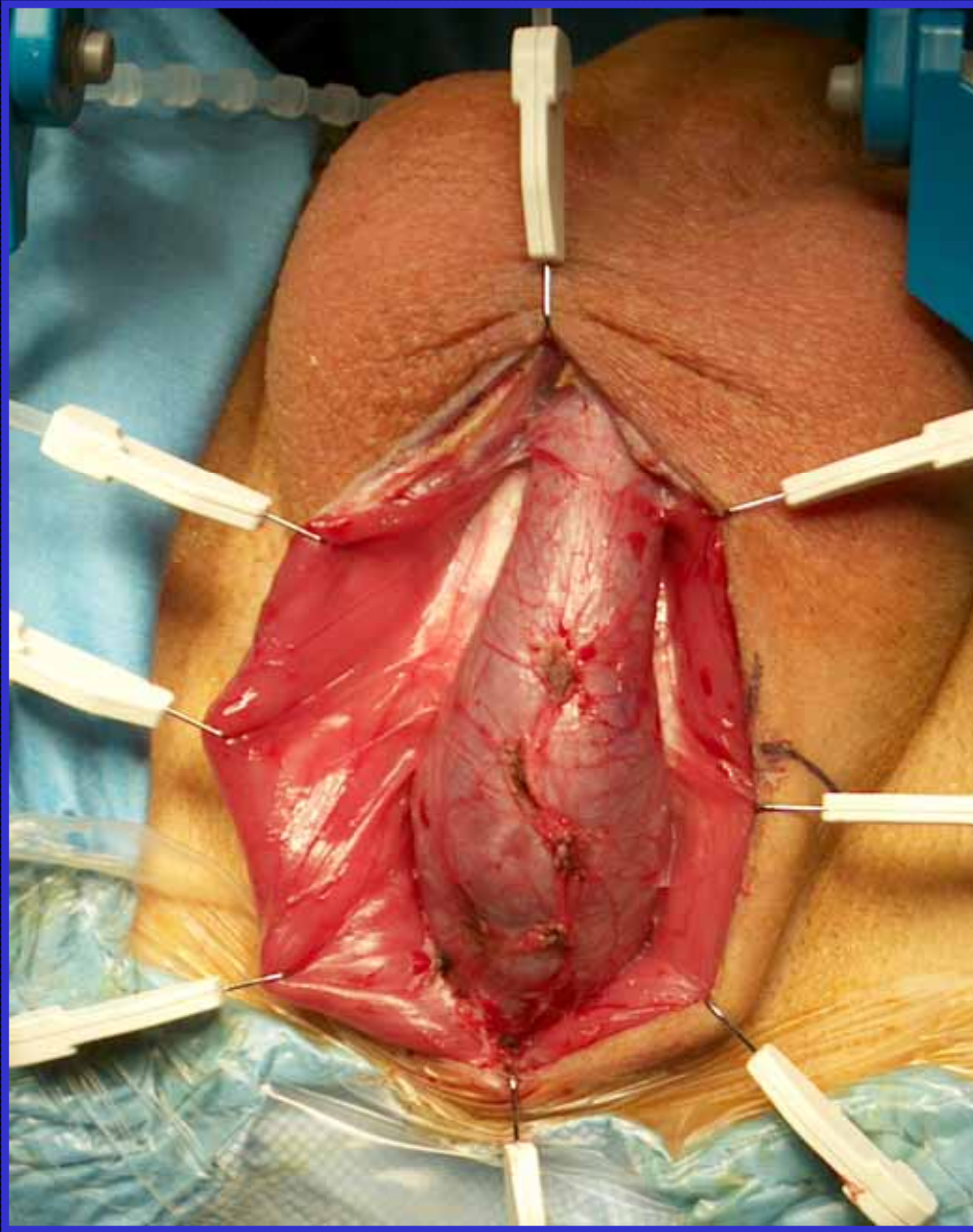


**The distal extent of
the stenosis is
identified by
inserting a 16-
French catheter
with a soft round tip**



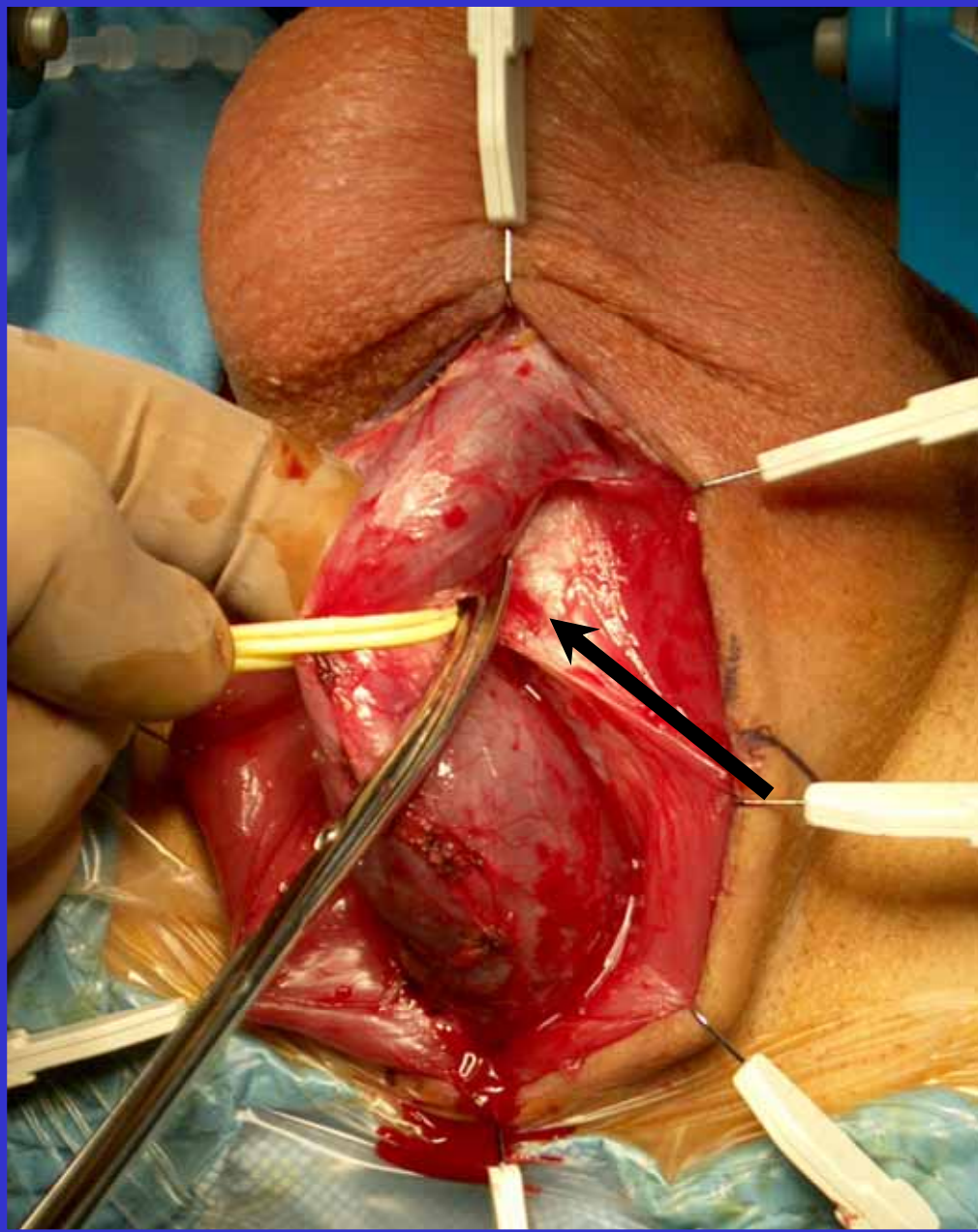


Midline perineal incision



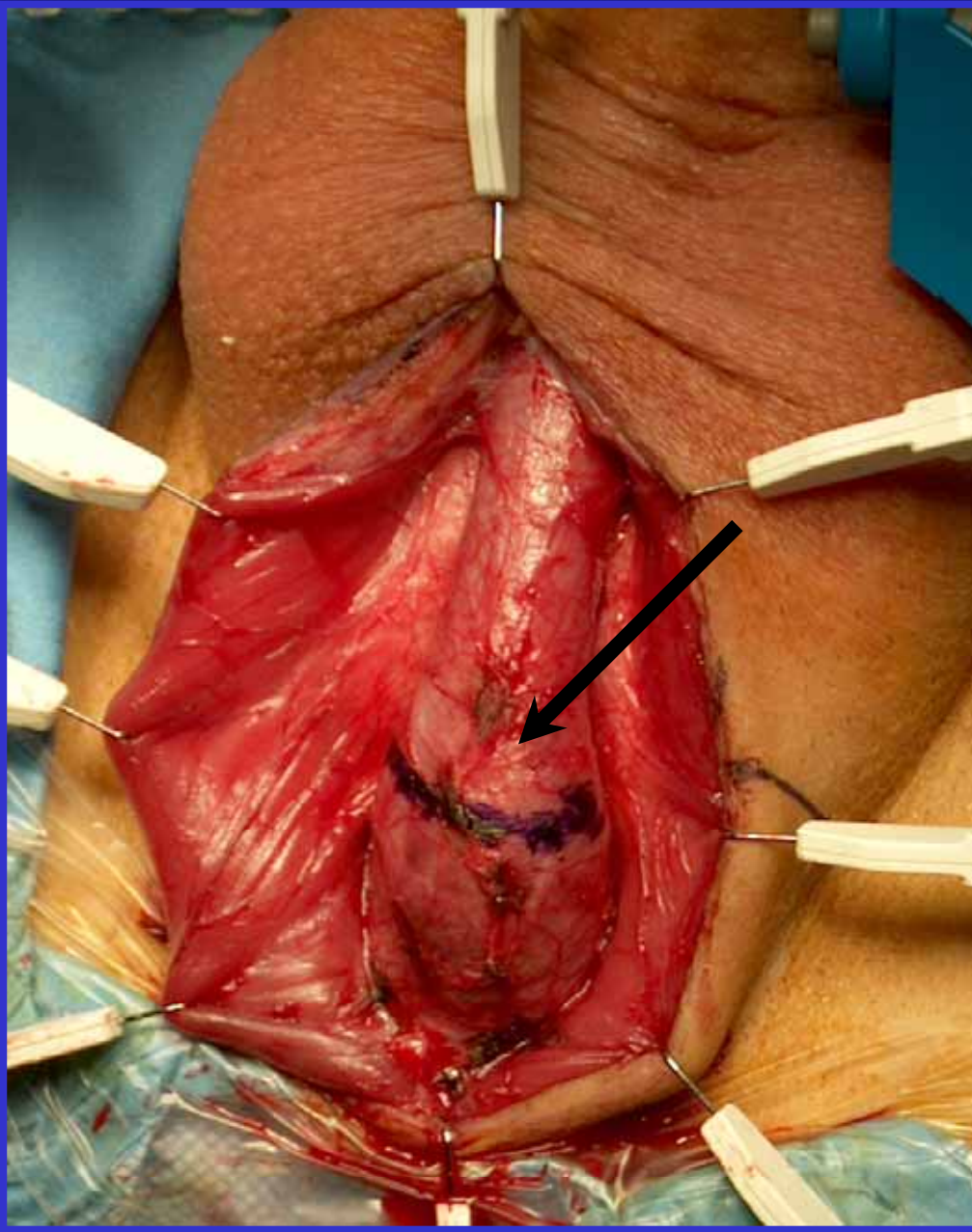
**The urethra is freed from
the bulbospongiosum
muscle**





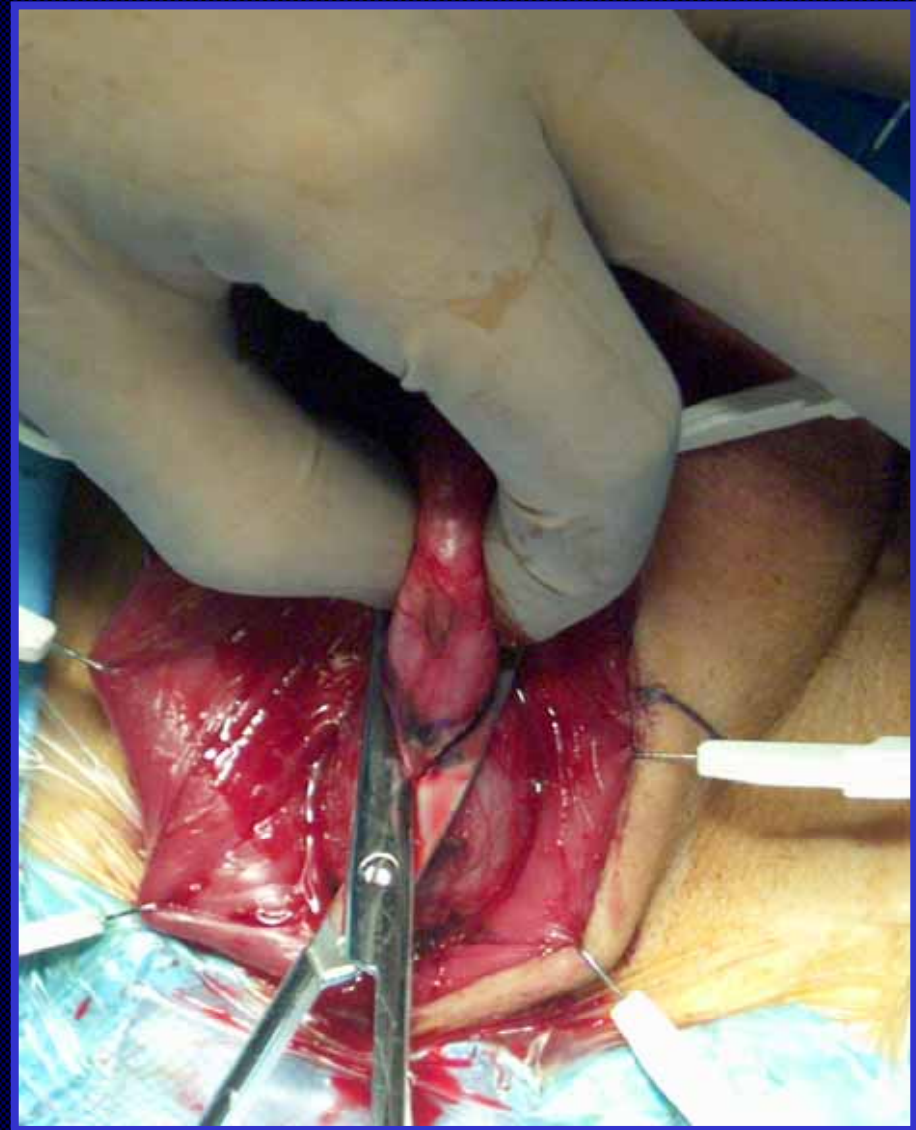
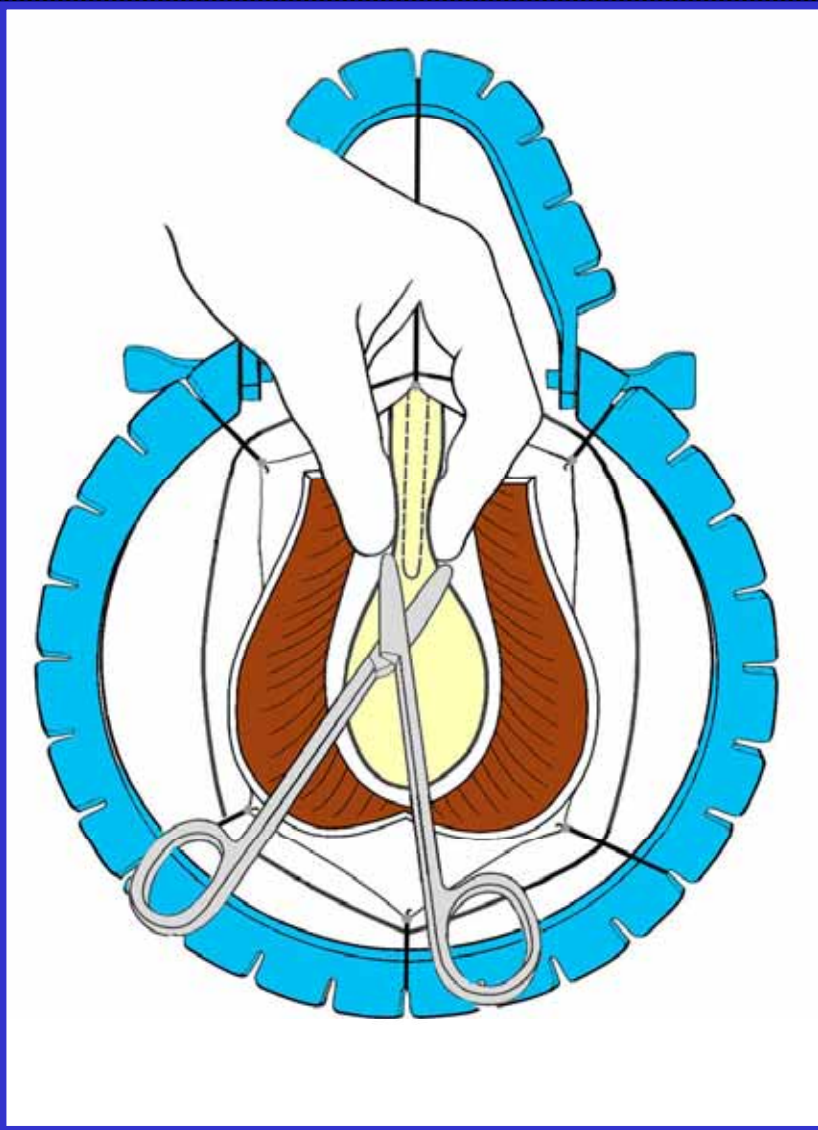
**The urethra is dissected
from the corpora
cavernosa**





**The distal extent of the
stenosis is identified
and outlined**

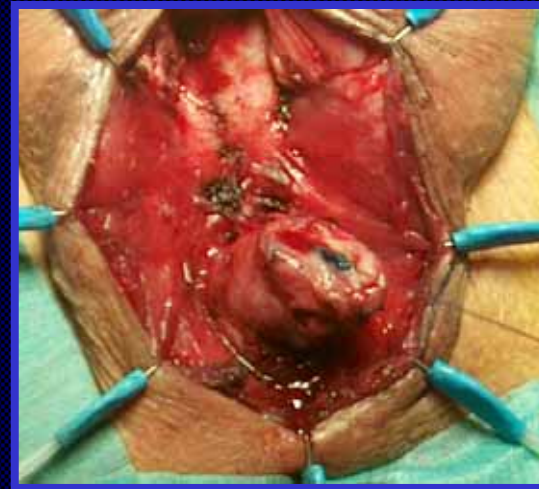




The urethra is transected at the stricture level



distal end

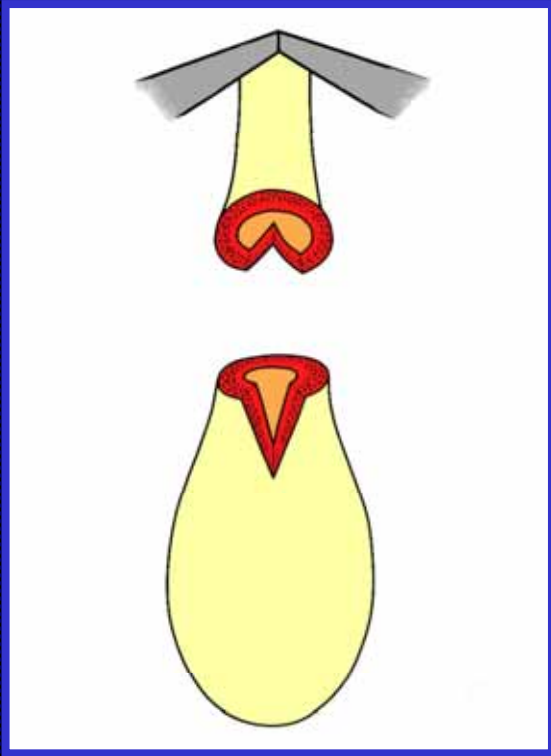


proximal end



The stricture is removed



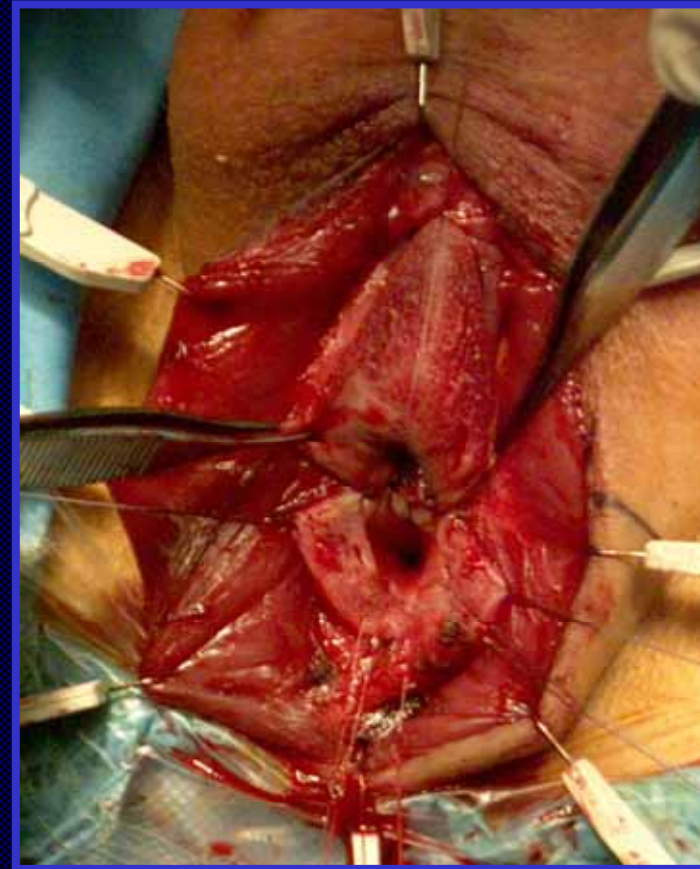
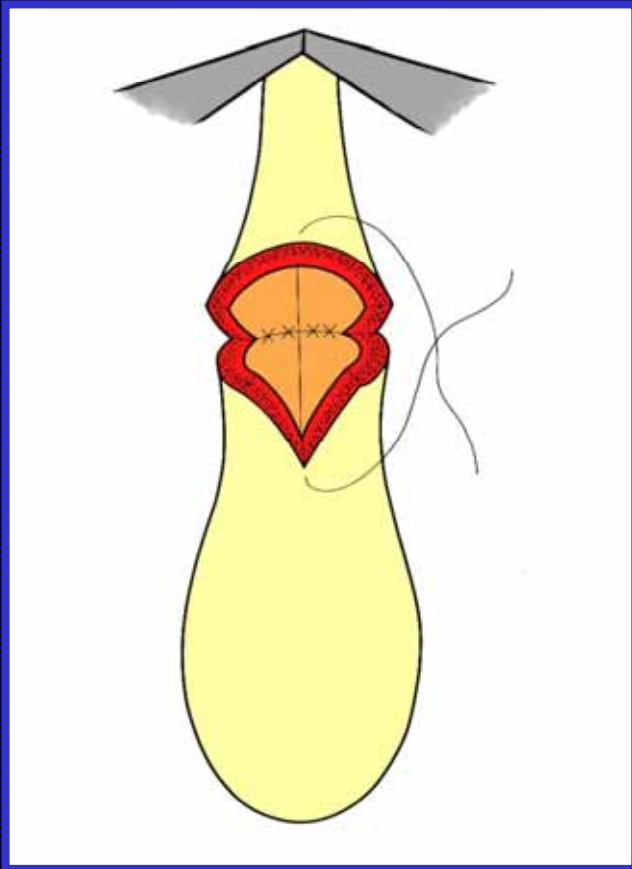


**The urethra is spatuled
for 1 cm on both ends**



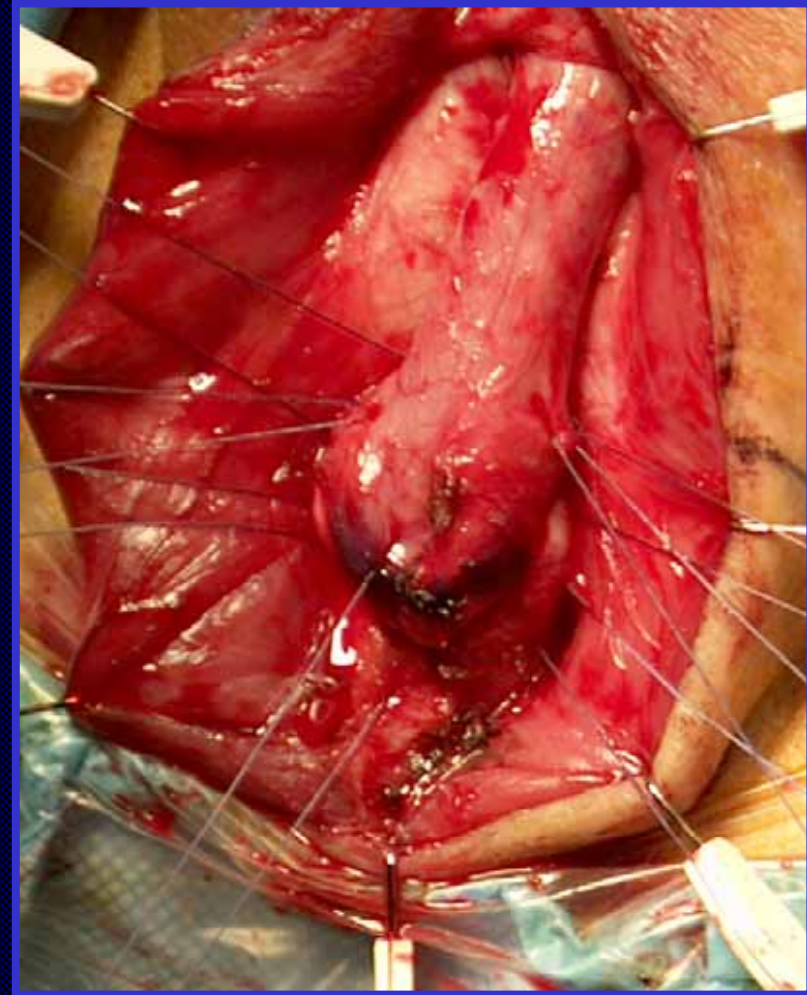
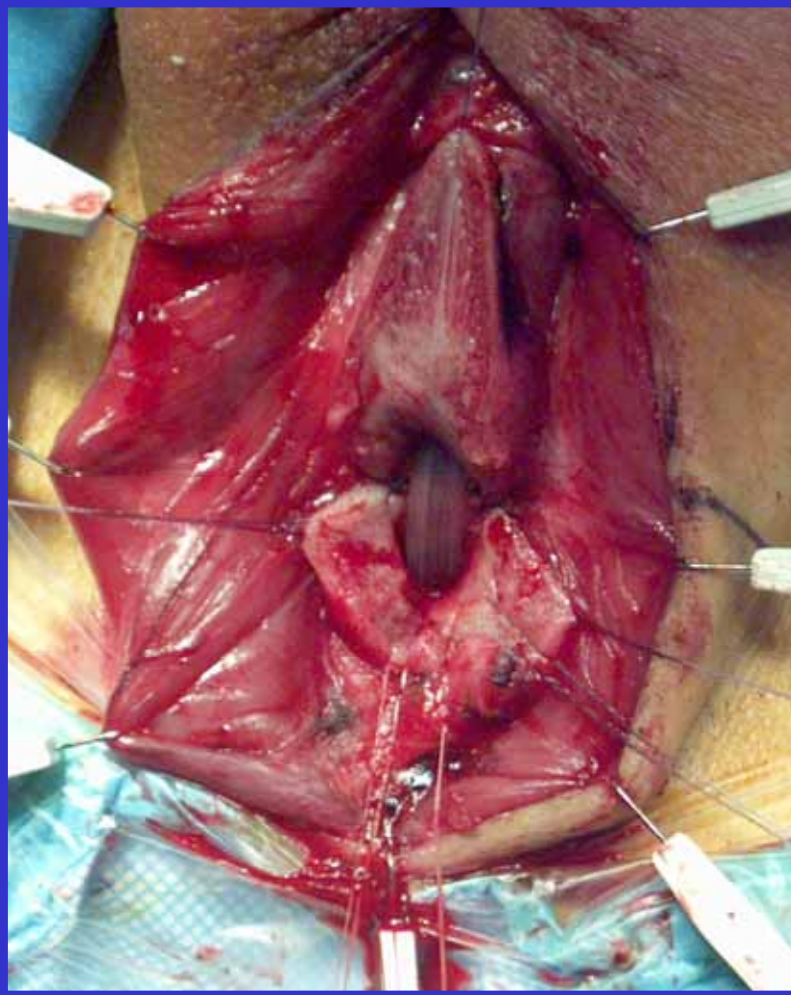
**A total of 8 interrupted 4-
zero polyglactin sutures
are put in place before
tying**



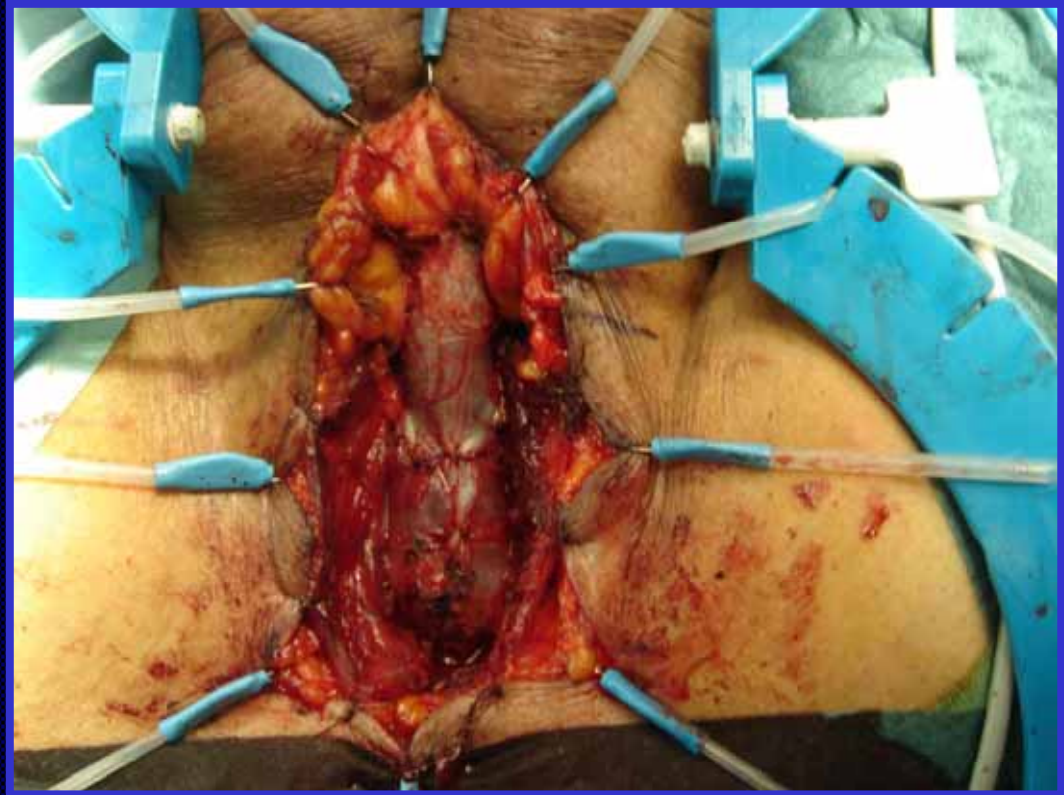
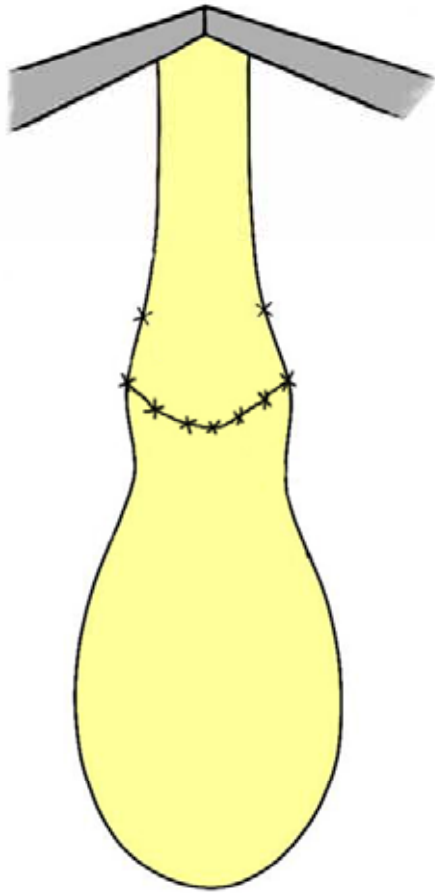


The anastomosis is completed on the roof



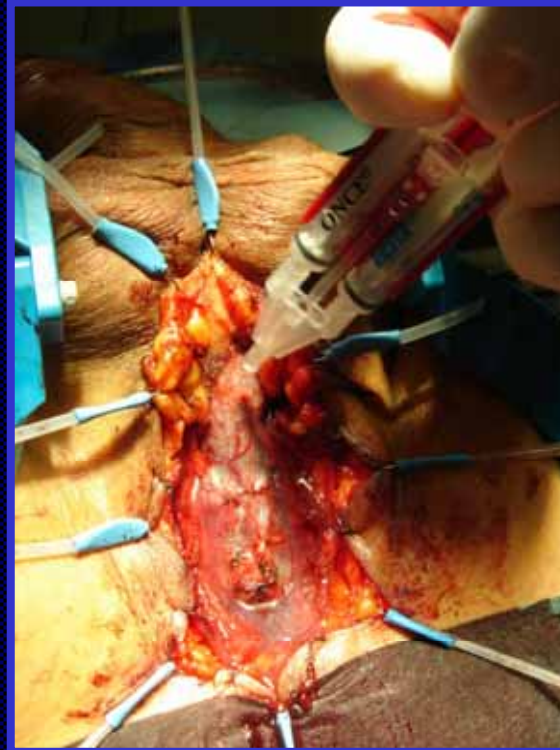
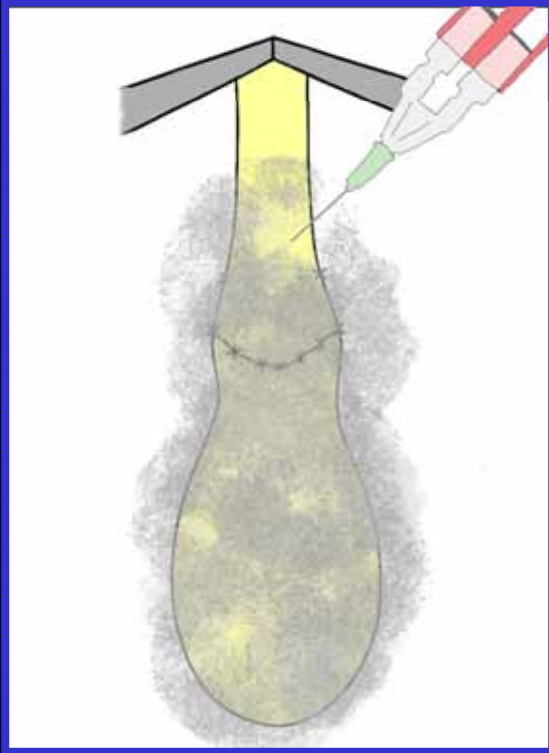


A Foley 16-French grooved silicone catheter is inserted and the urethra is closed



The anastomosis is completed



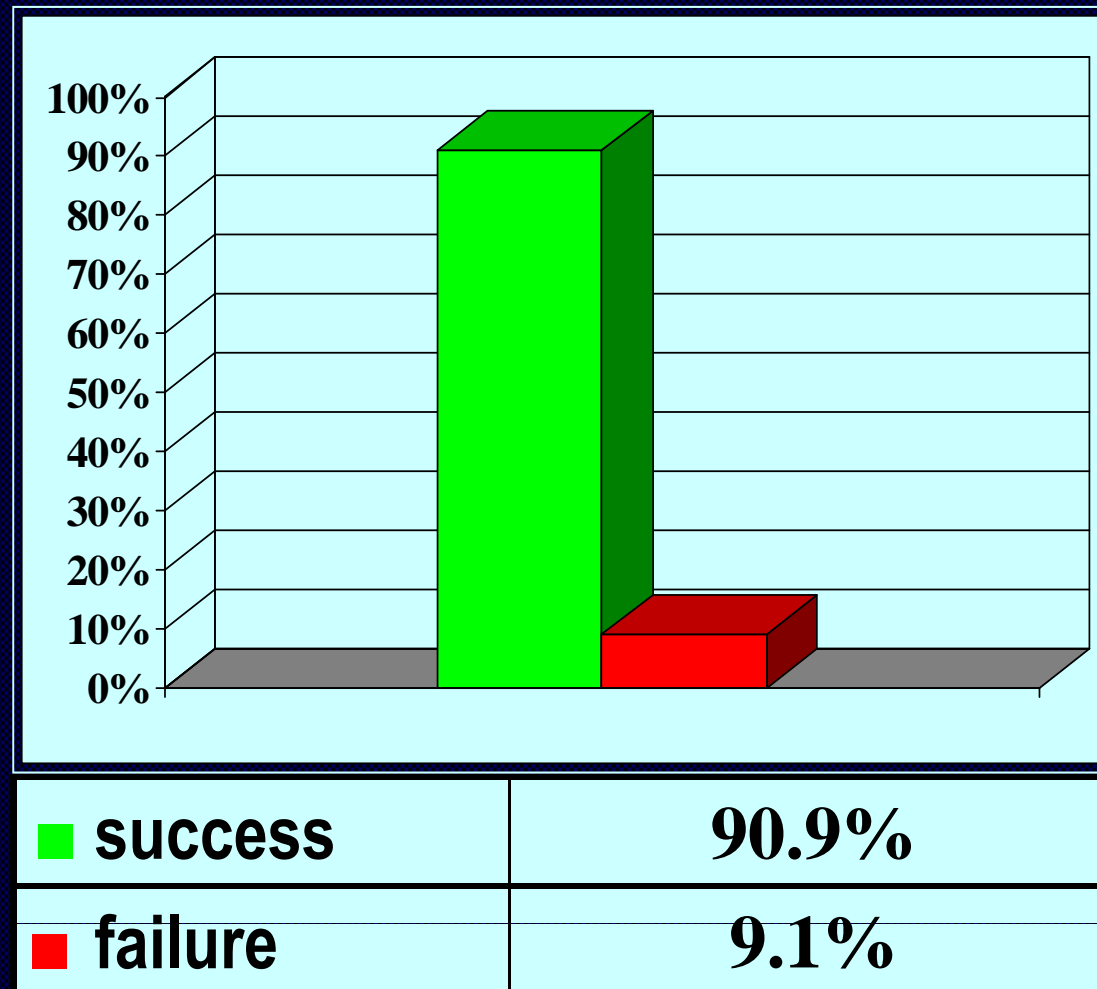


Two ml of fibrin glue are injected over the urethra to prevent urinary leakage



Results of 165 end-to-end anastomosis

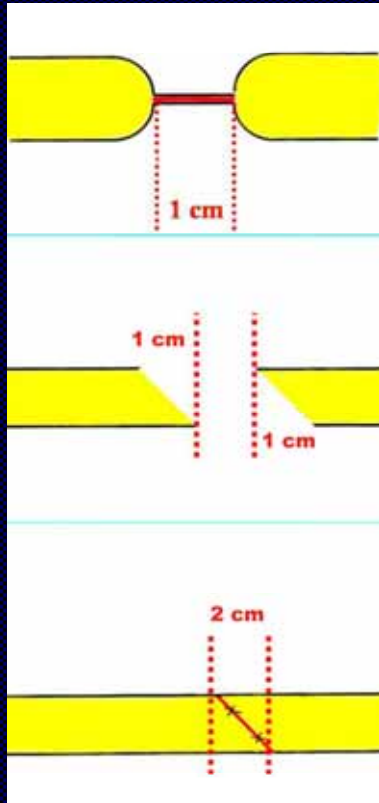
Follow-up: 12 - 218 months (mean 64)



Outcome according to the patient age



	0-49 years	50-69 years	> 70 years
■ success	91%	86.4%	100%
■ failure	9%	13.4%	



**bulbar urethral stricture
of 1 cm or less**



**penile chordee due to
excessive urethral
shortening**

Guralnick and Webster, J Urol 2001

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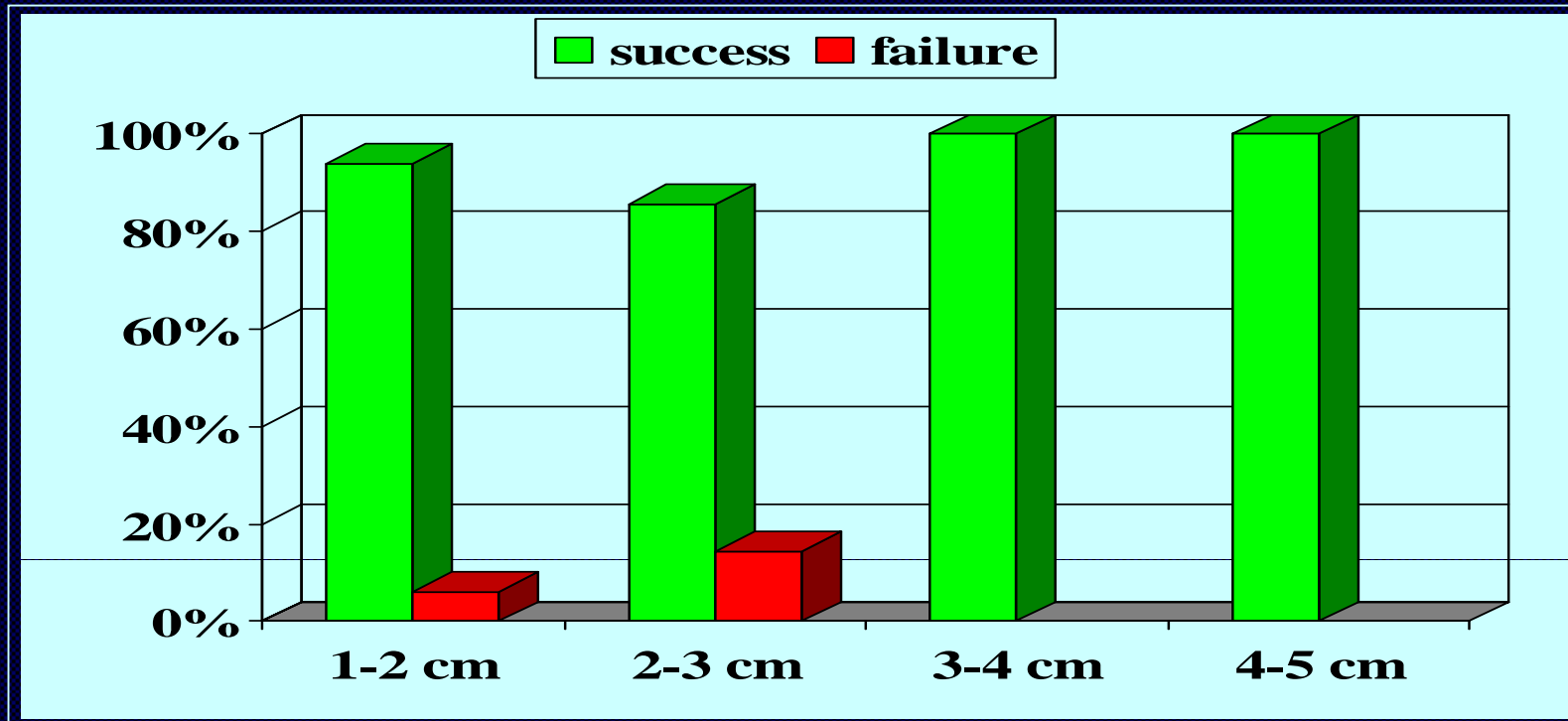


**Urethral reconstructability is proportional to the
length and elasticity of the distal urethra**

Morey et al., J Urol 2006

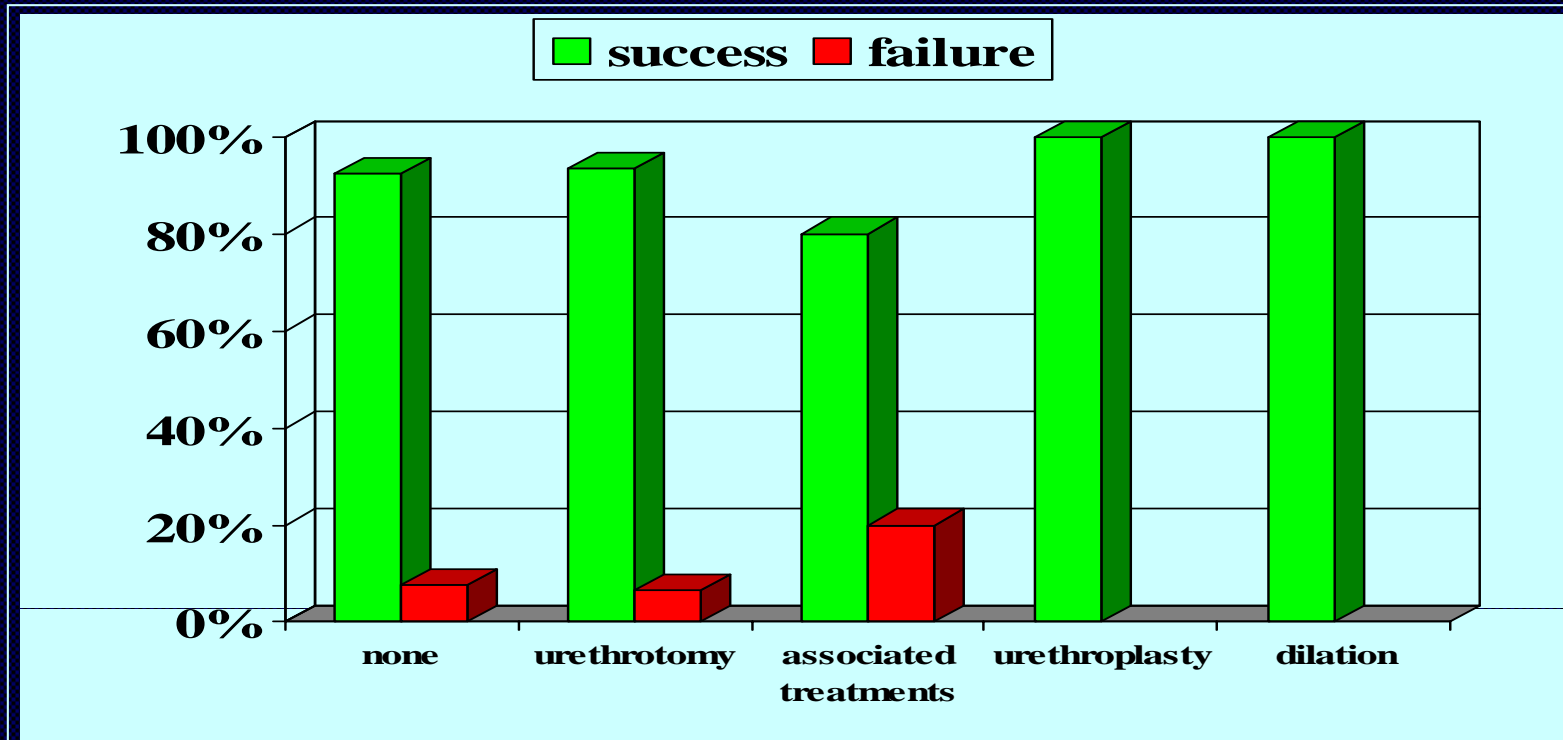
authors	patients	length	success rate
Santucci et al. 2002	168	1 to 4.5 cm	95%
Morey et al. 2006	22	2.6 to 5 cm	91%
Eltahawy et al. 2005	213	1 to 4.5 cm	98%

Outcome according to the stricture length



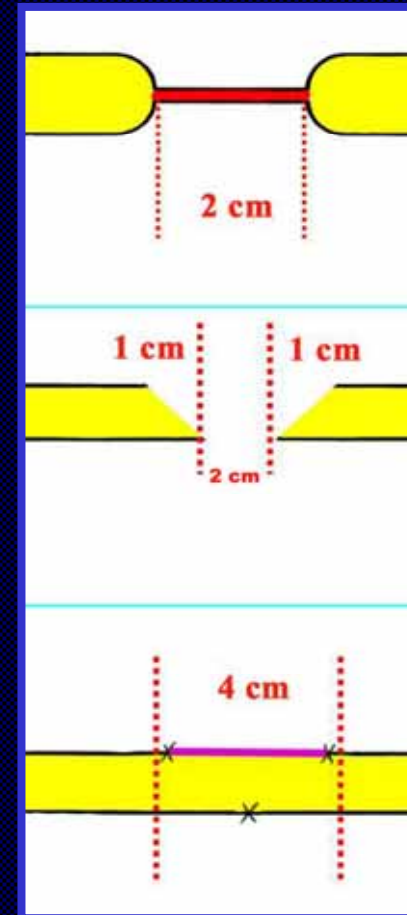
	1-2 cm	2-3 cm	3-4 cm	4-5 cm
■ success	93.8%	85.7%	100%	100%
■ failure	6.2%	14.3%		

Outcome according to the previous treatments



	none	urethrotomy	associated treatments	urethroplasty	dilation
■ success	92.4%	93.4%	80%	100%	100%
■ failure	7.6%	6.6%	20%		

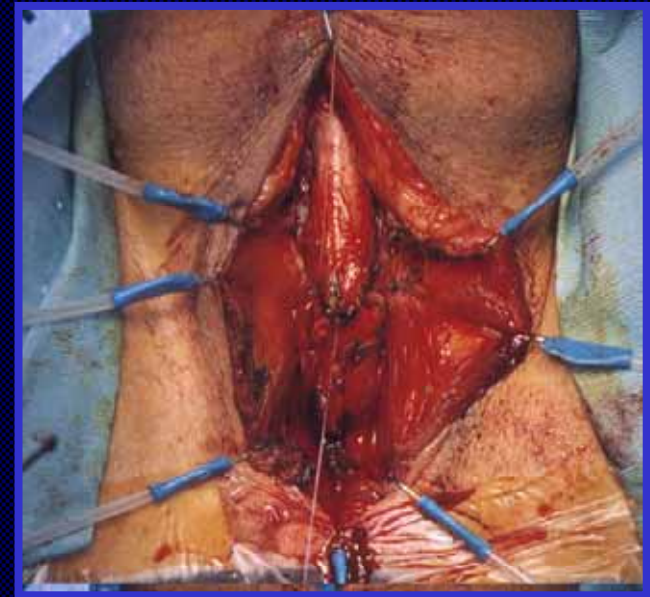
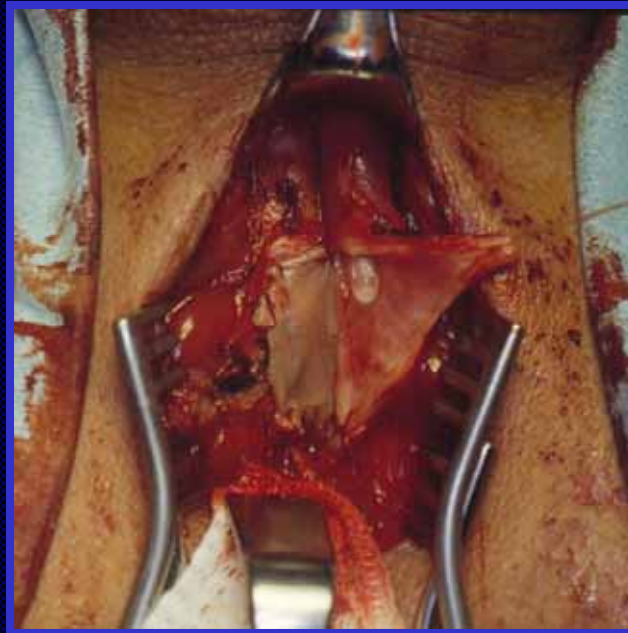
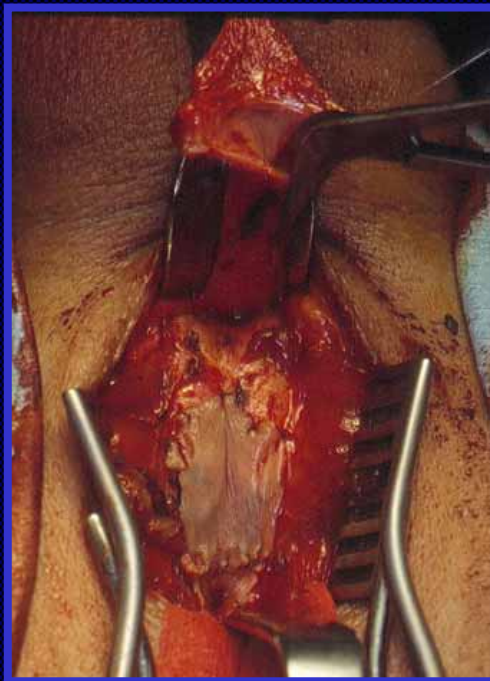
Augmented roof-strip anastomosis



Obliterative urethral stricture ranging from 2 to 3 cm



Augmented roof-strip anastomosis using dorsal skin graft

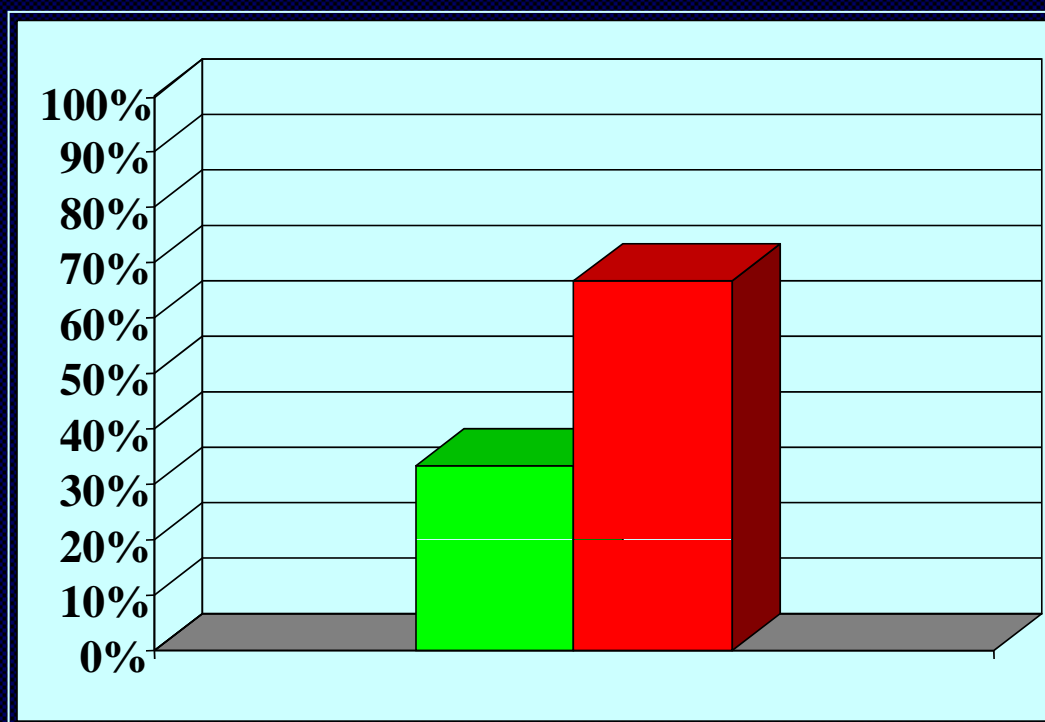


Barbagli et al., J Urol, 1996



Results of 9 augmented roof-strip anastomosis using dorsal skin graft

Follow-up: 51 - 147 months (mean 102)



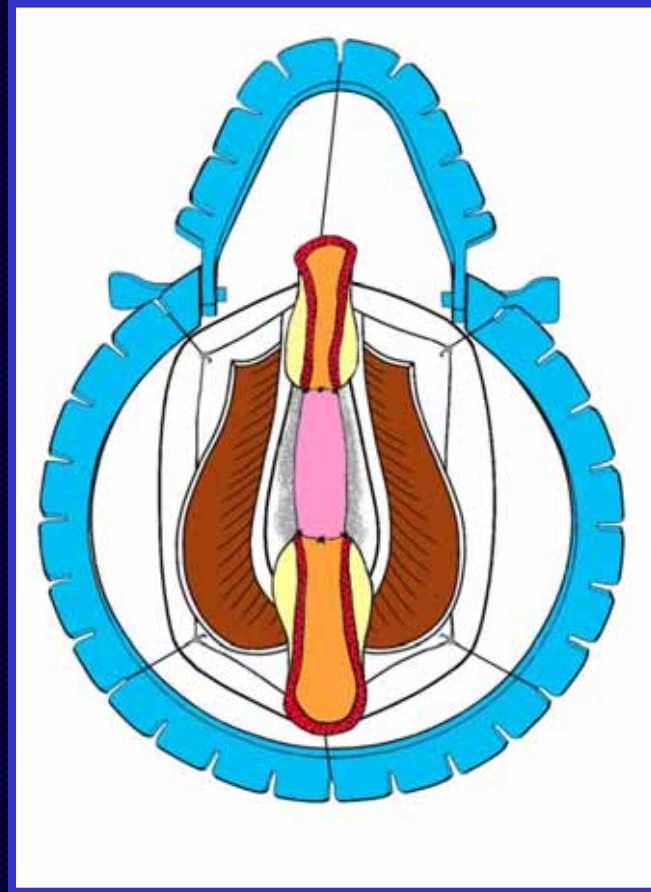
■ success

33.3%

■ failure

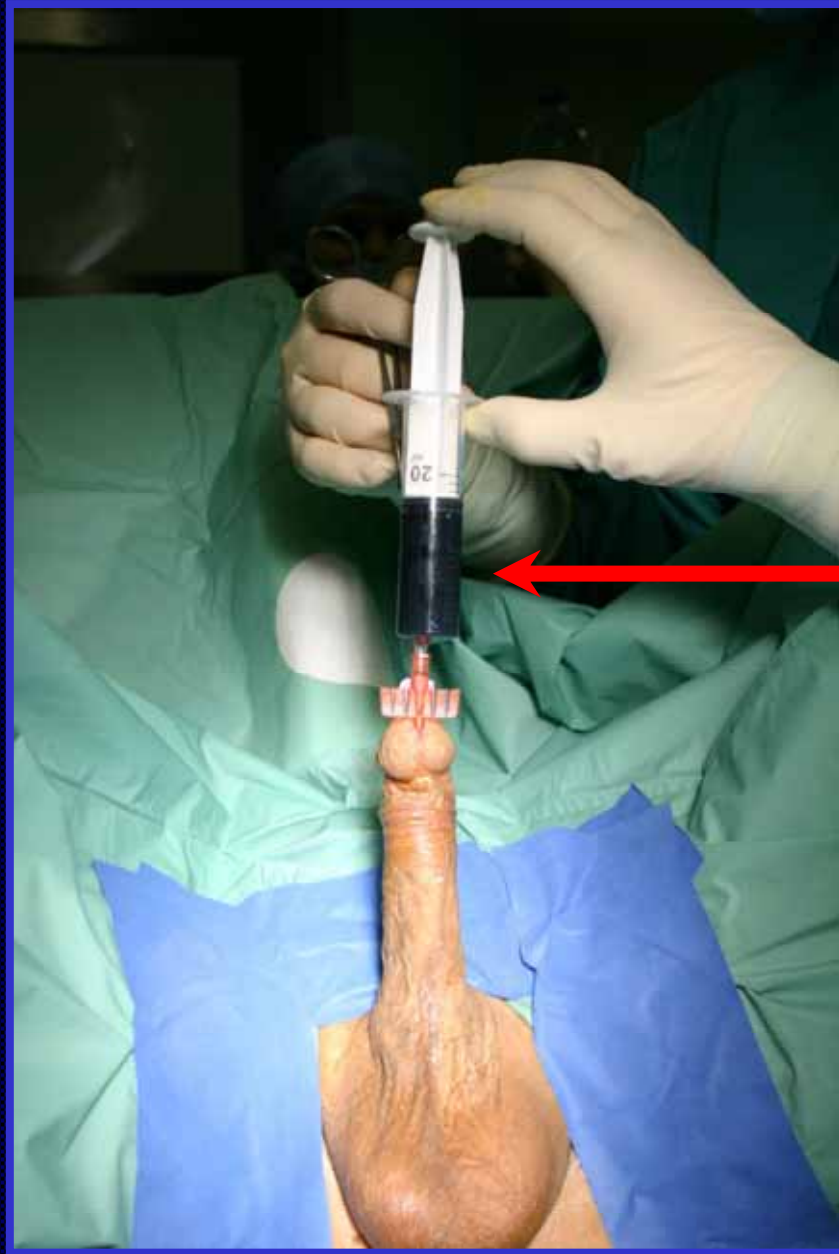
66.7%

Augmented roof-strip anastomosis using dorsal buccal mucosal graft



Two surgical teams work simultaneously

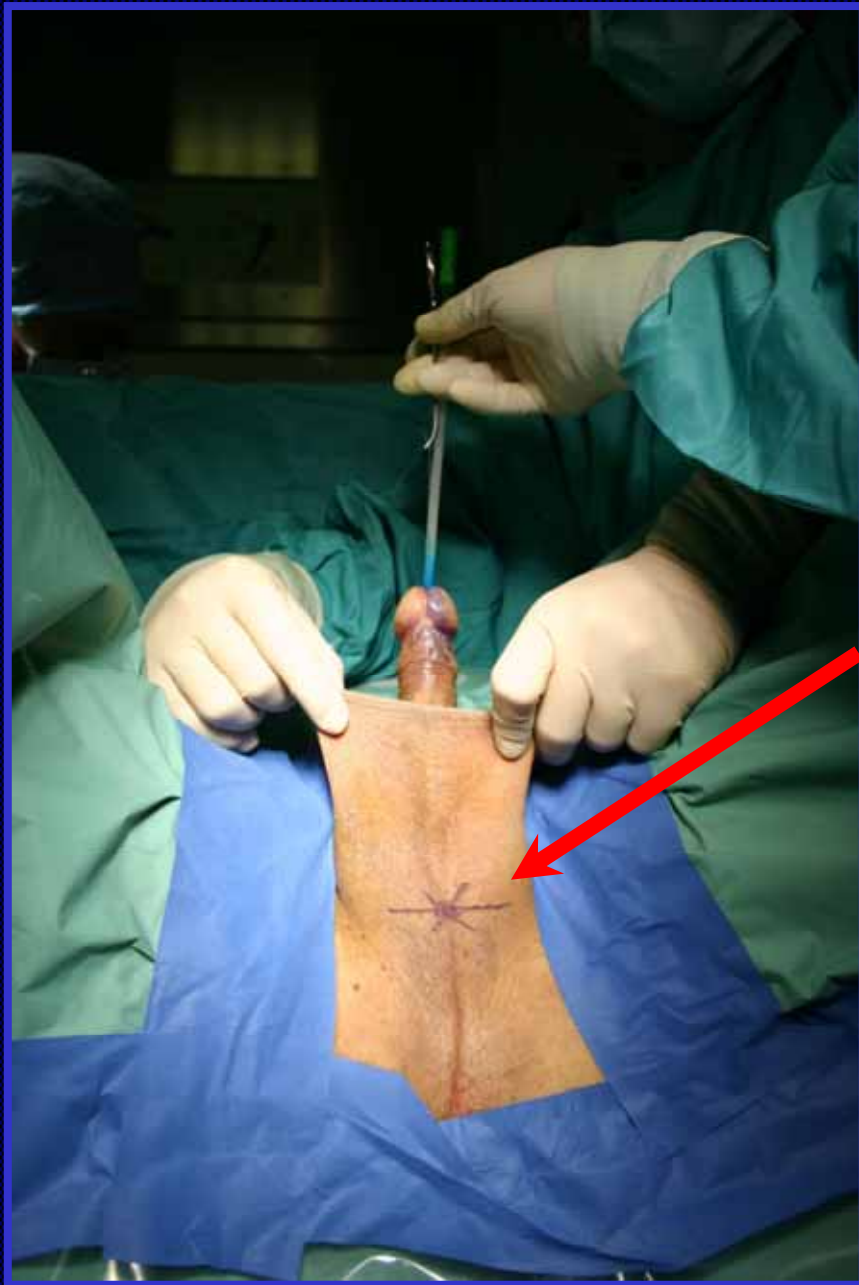




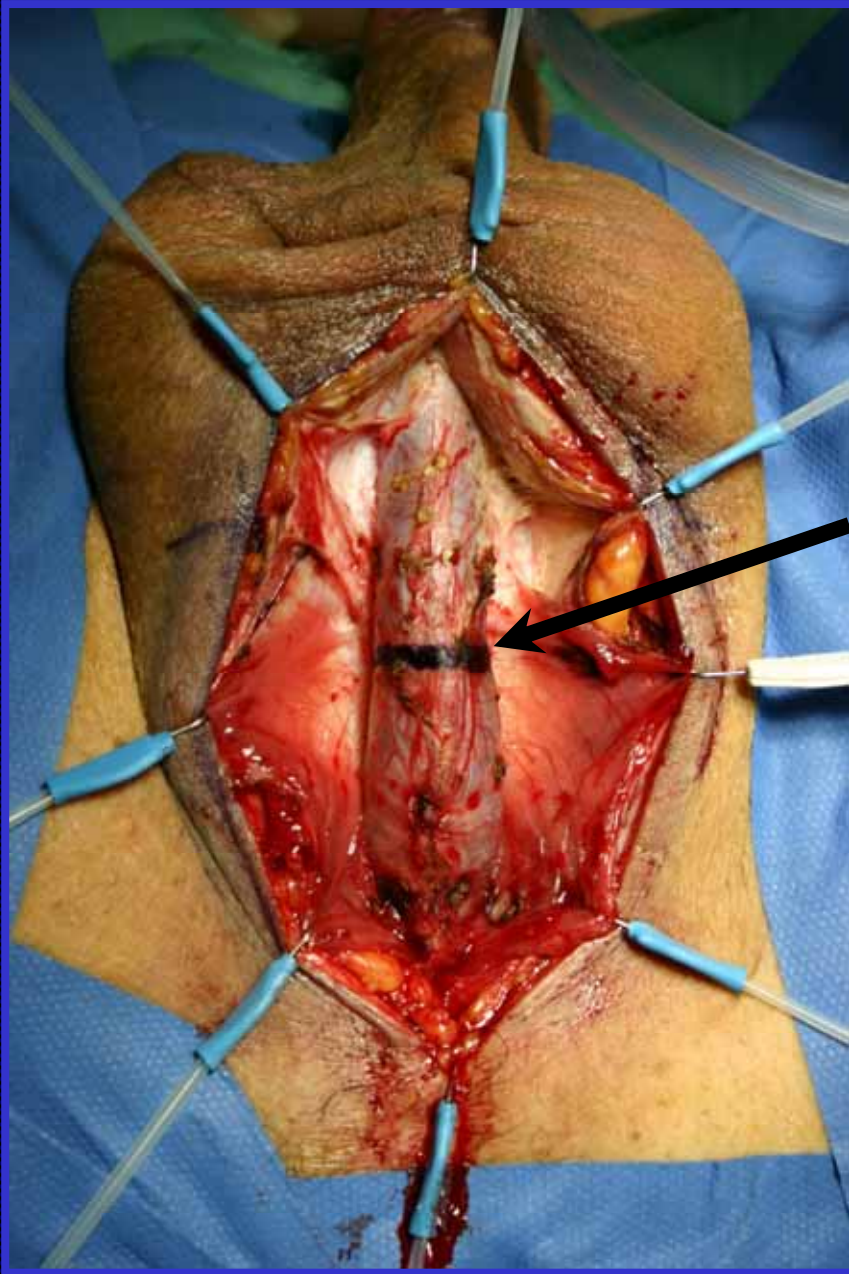
**Methylene blue is injected
into the urethra**



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

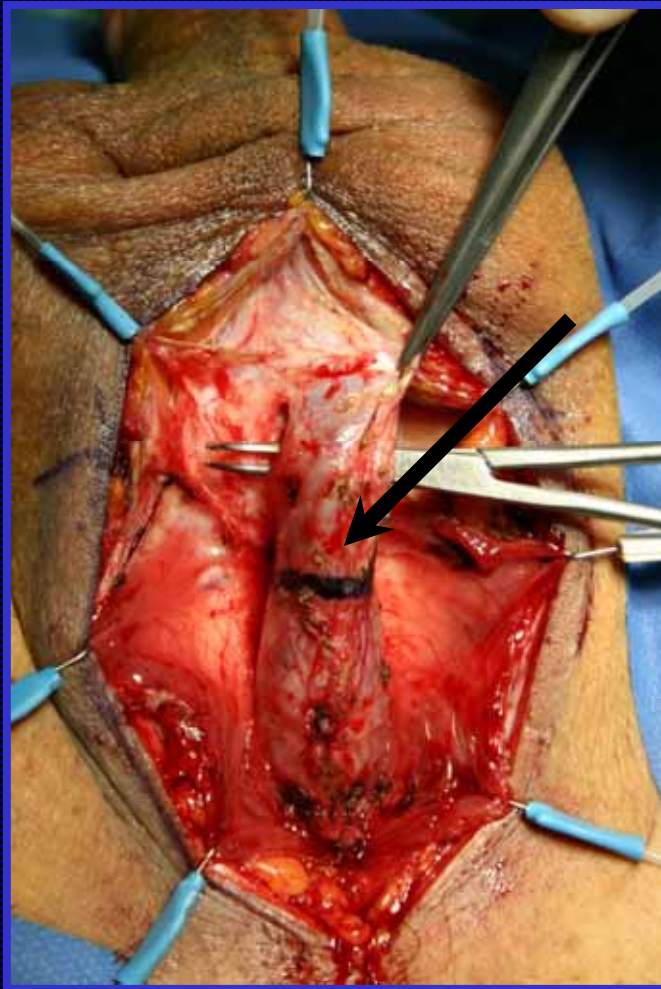


Midline perineal incision

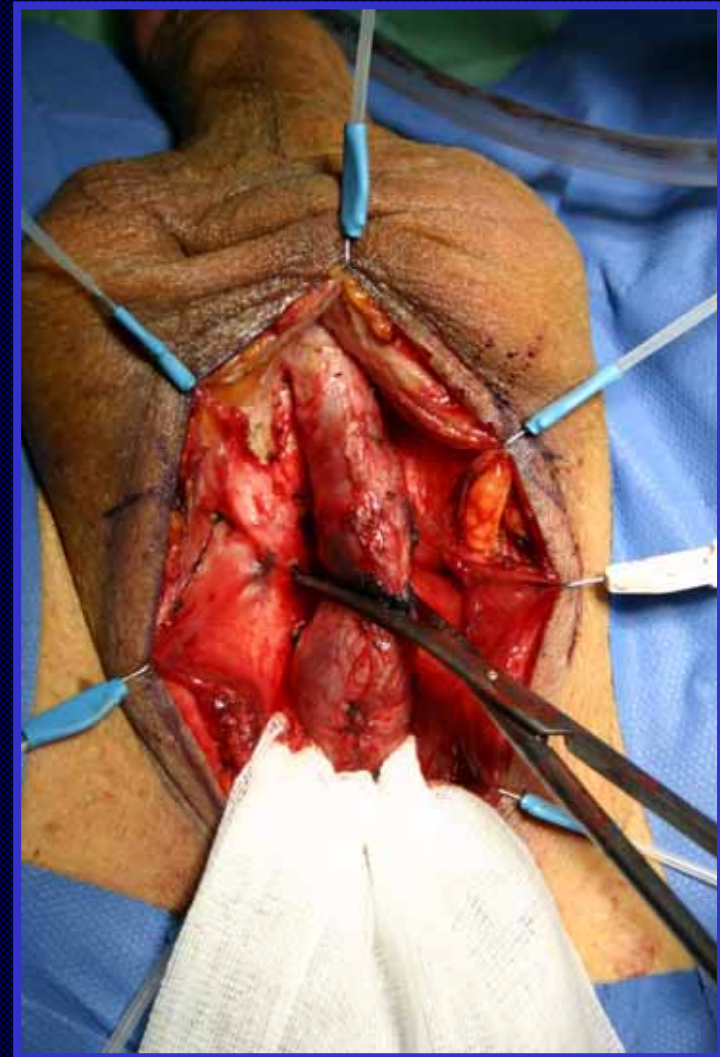
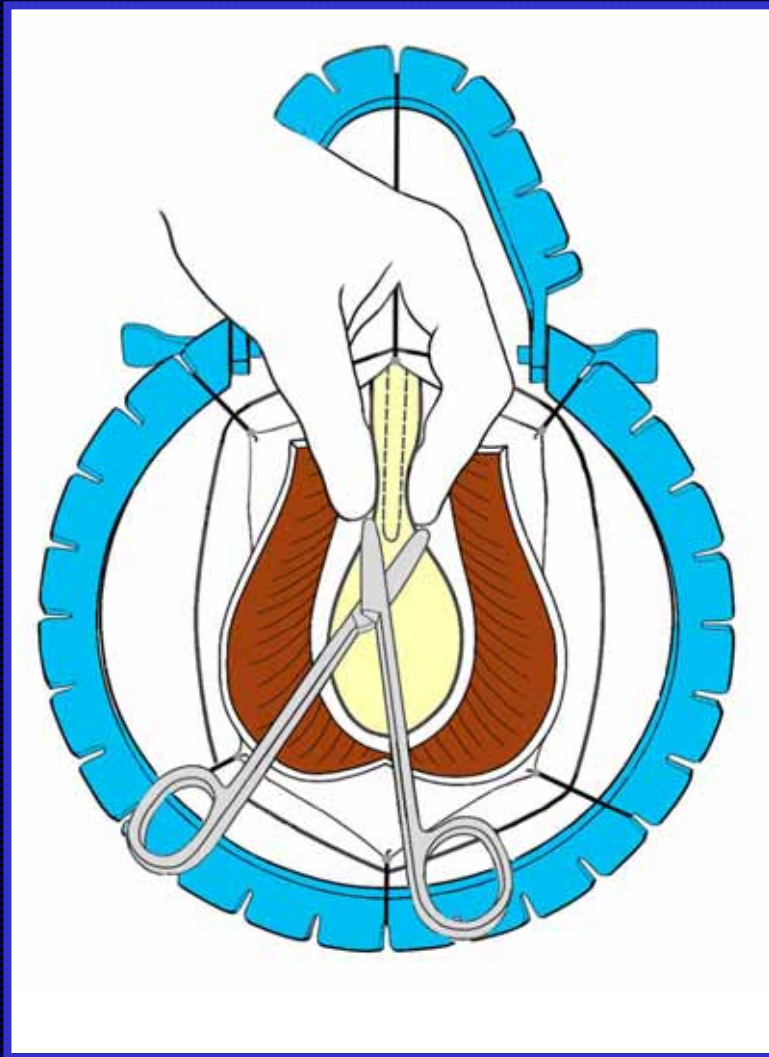


The distal extent of the stenosis is identified and outlined

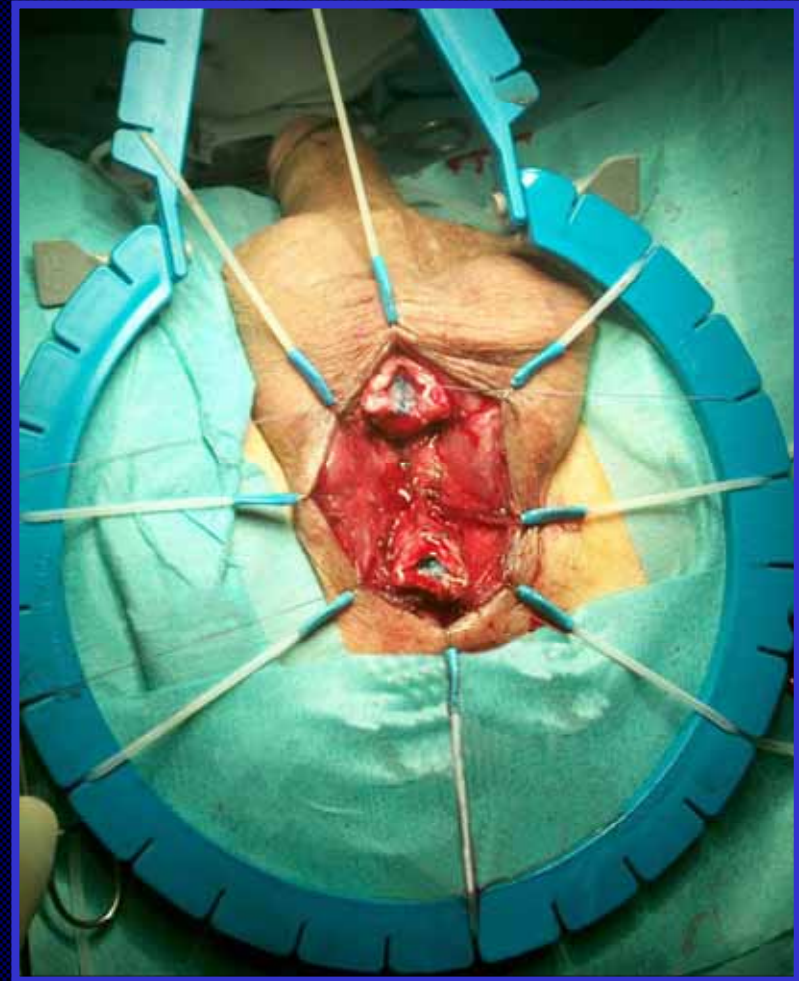
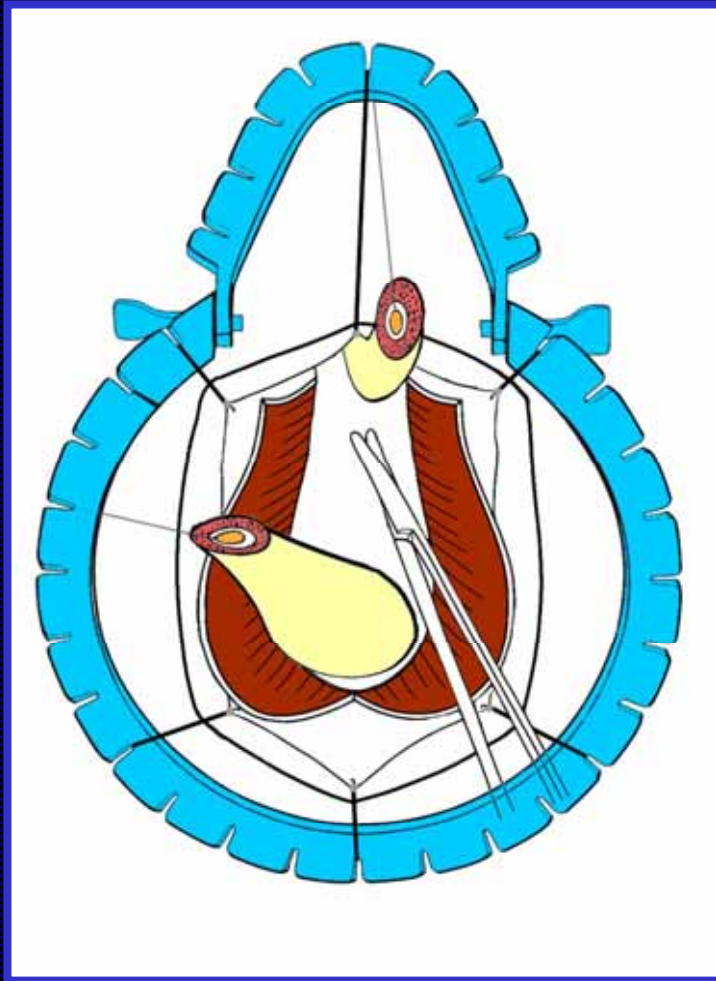




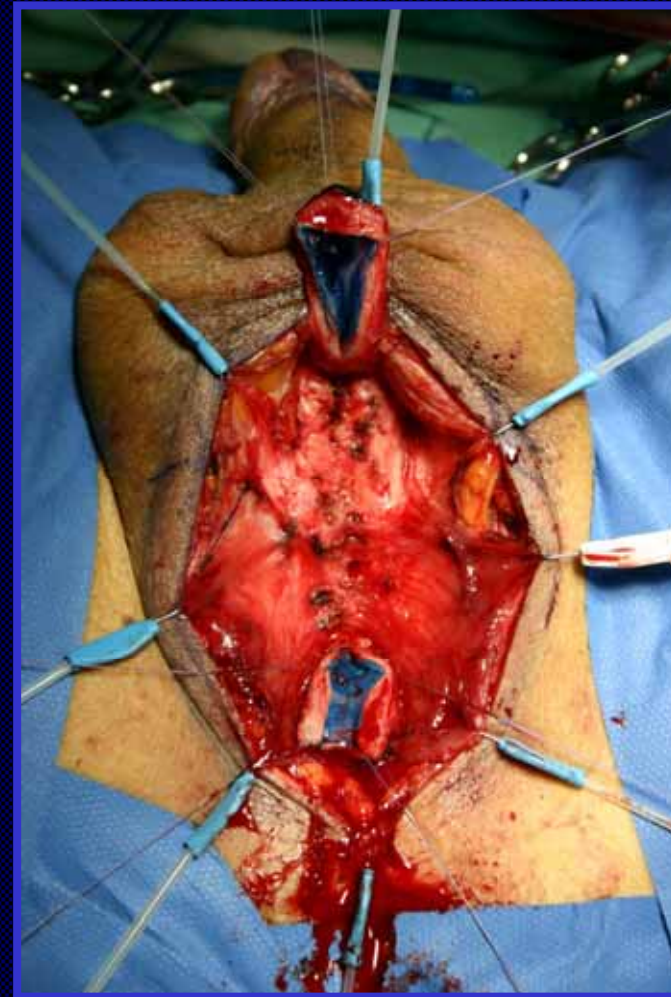
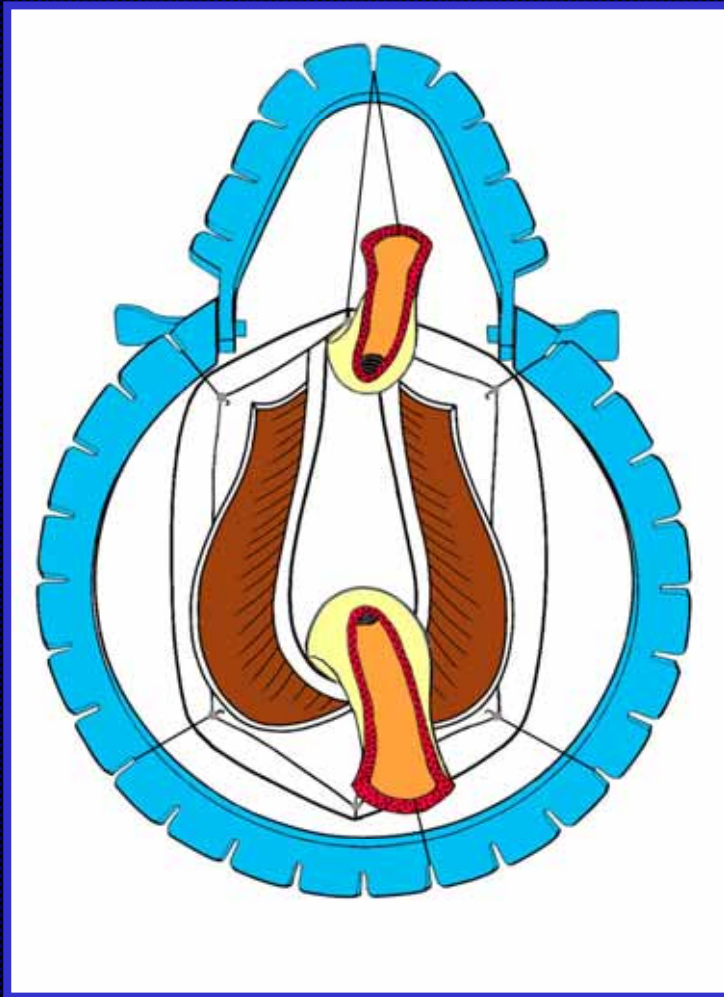
The urethra is dissected from the corpora cavernosa



The urethra is transected at the stricture level

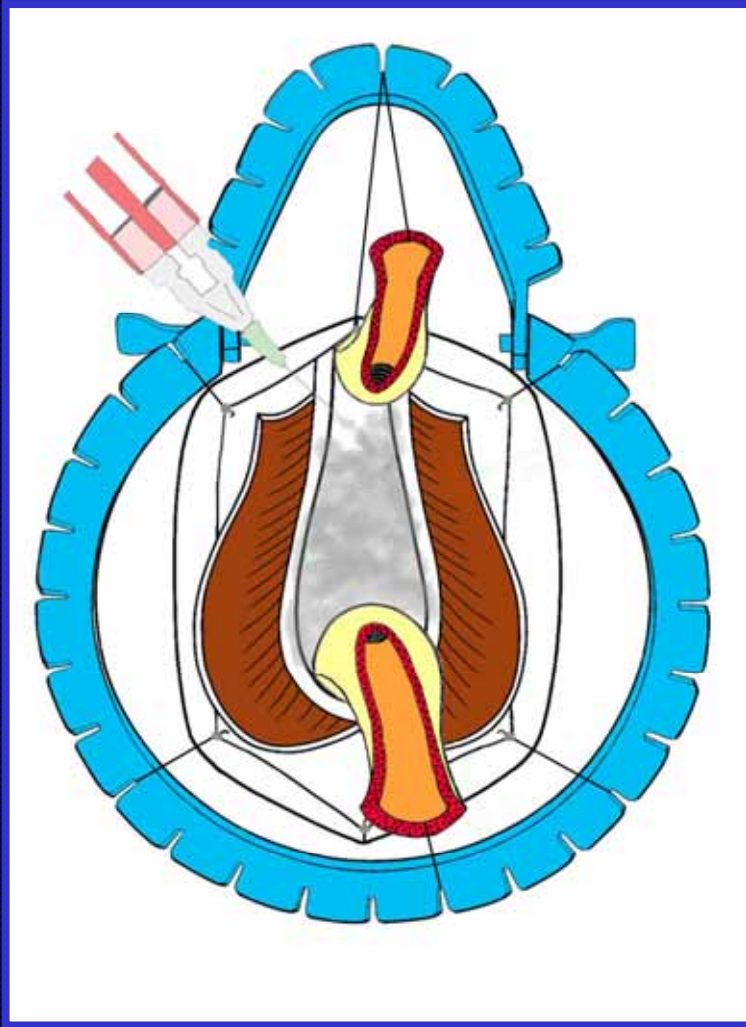


The distal and proximal urethral ends are mobilized from the corpora cavernosa

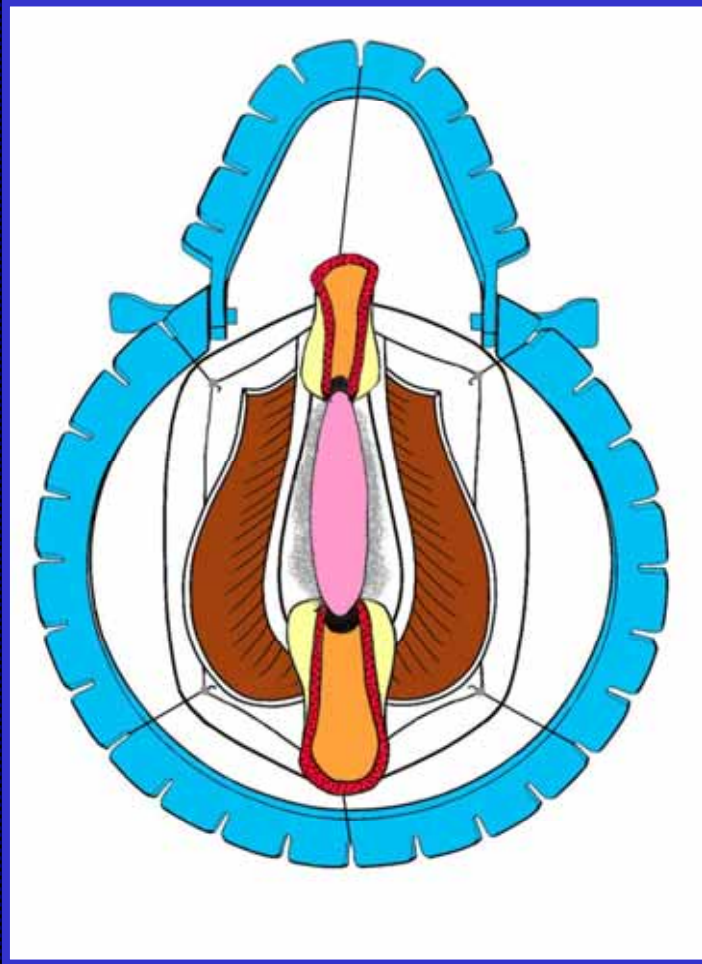


The distal and proximal urethral ends are fully spatuled along the dorsal surface

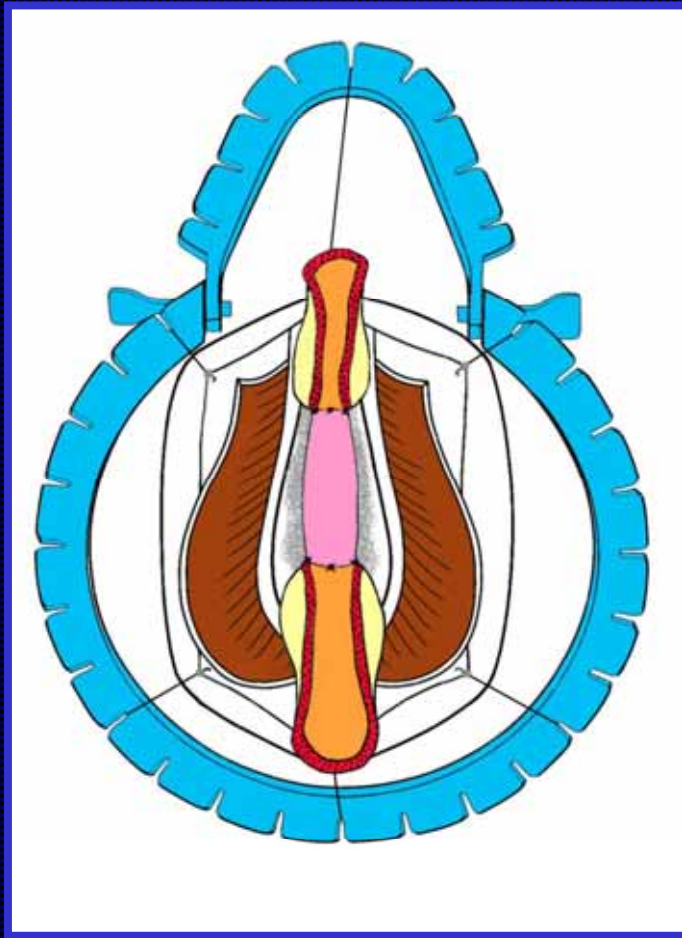




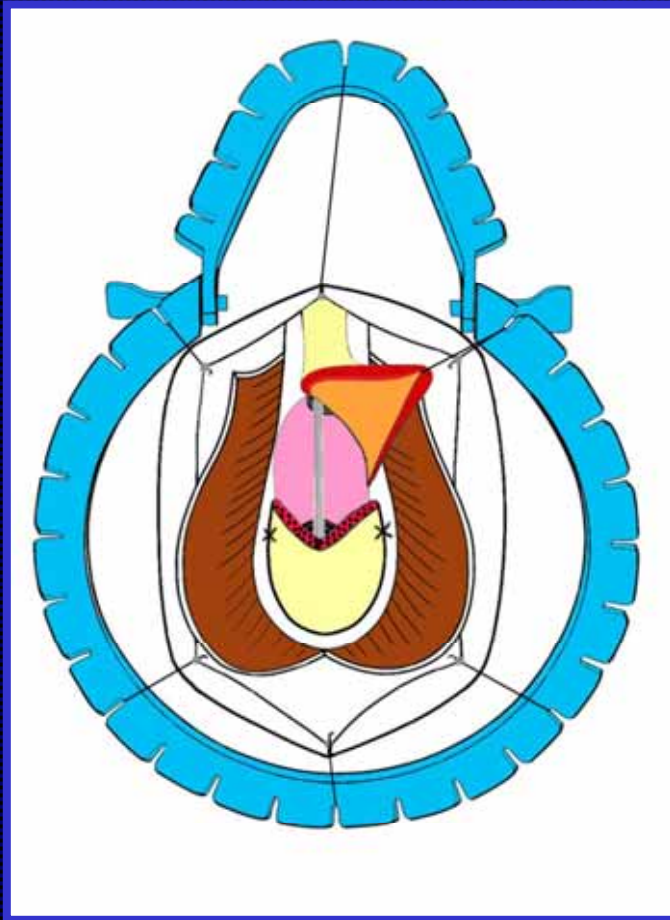
Two ml of fibrin glue are injected over the urethra



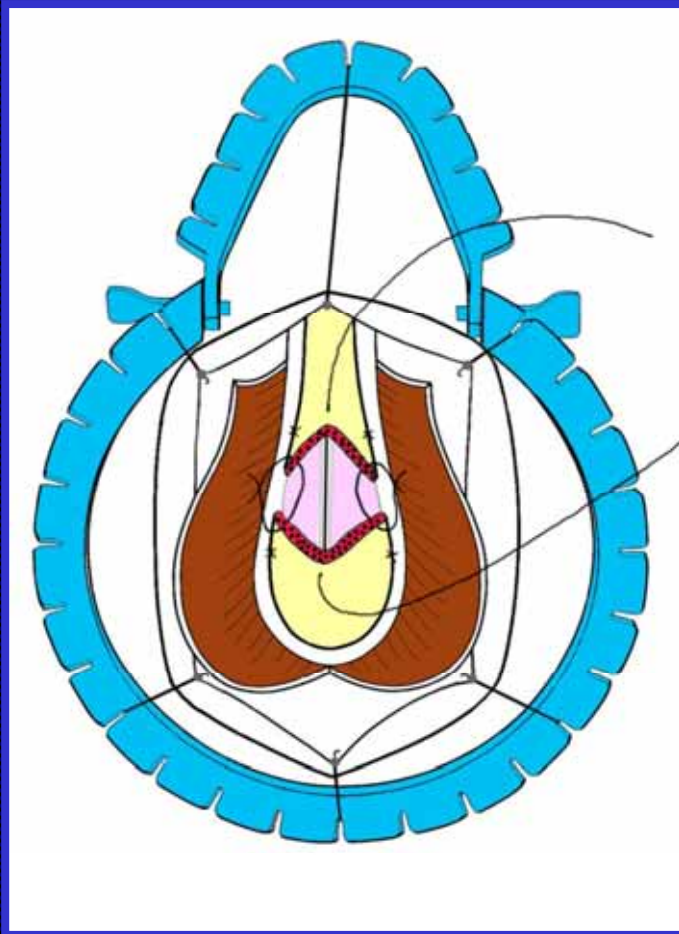
The buccal mucosal graft is applied over the fibrin glue



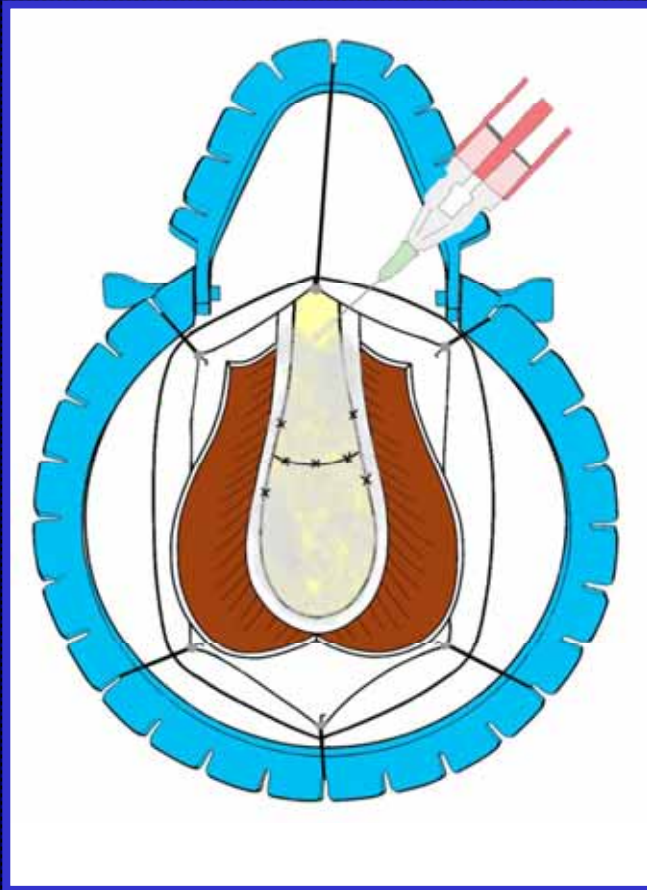
The distal and proximal urethral edges are sutured to the apices of the graft



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



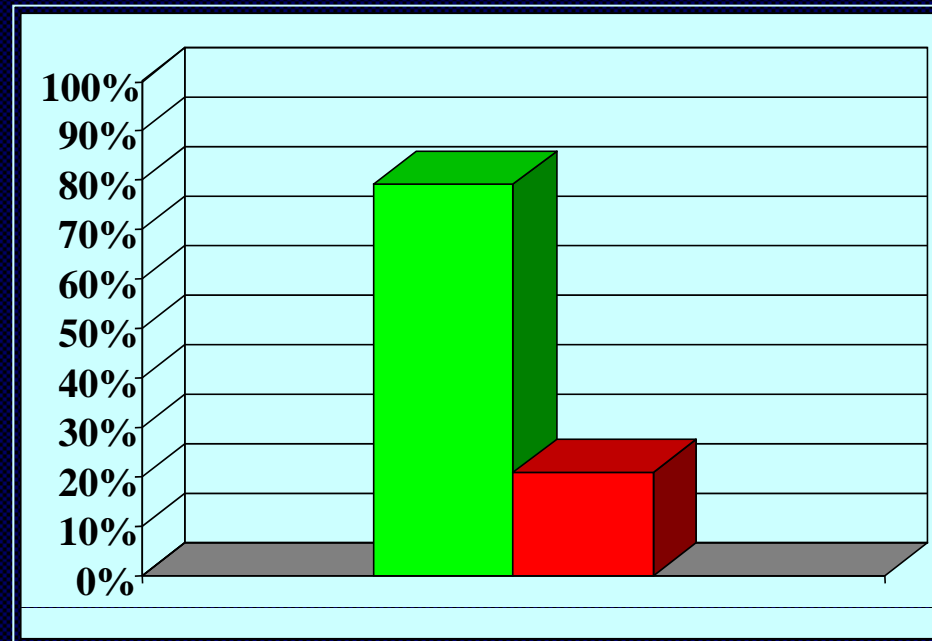
The distal and proximal urethral edges are sutured together along the midline as an end-to-end anastomosis



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

Results of 24 augmented roof-strip anastomosis using dorsal buccal mucosal graft

Follow-up: 12 - 59 months (mean 31)



■ success

79.2%

■ failure

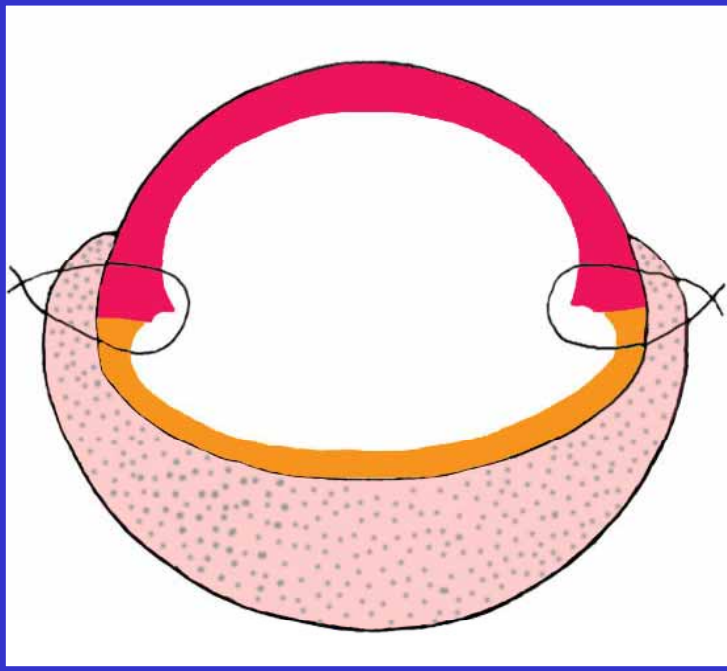
20.8%

Onlay graft urethroplasty

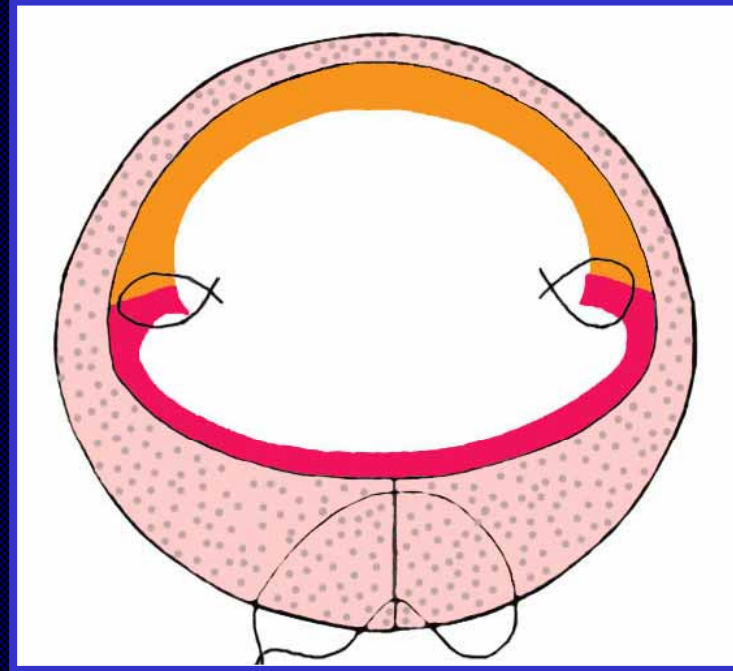


Urethral stricture more than 3 cm in length



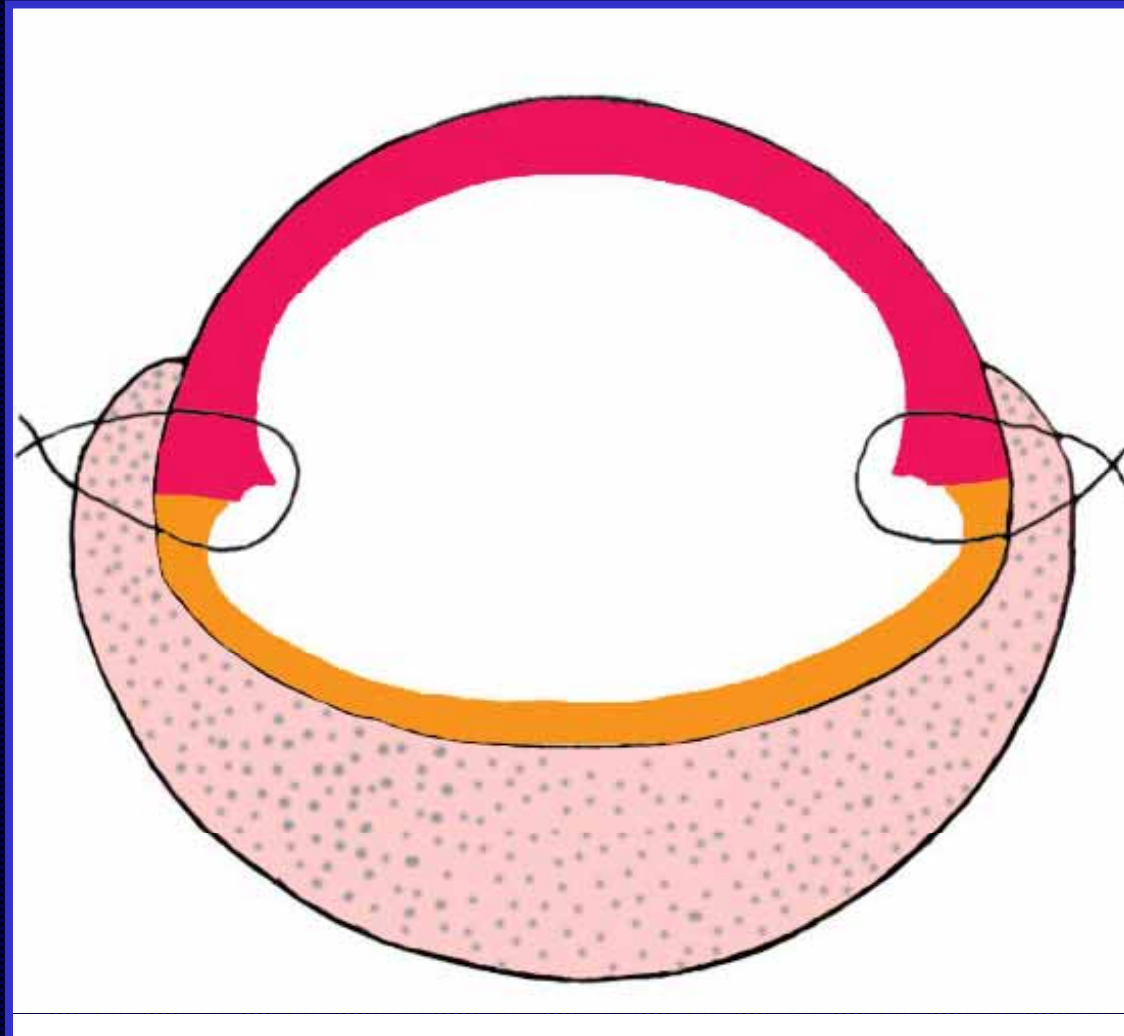


Dorsal onlay graft

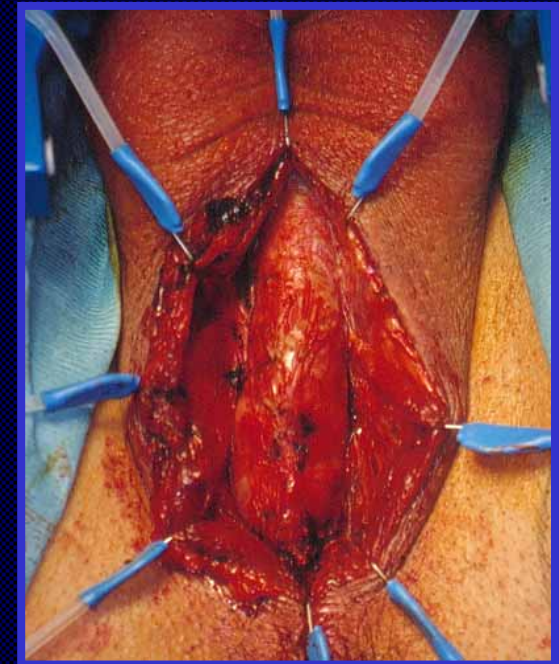
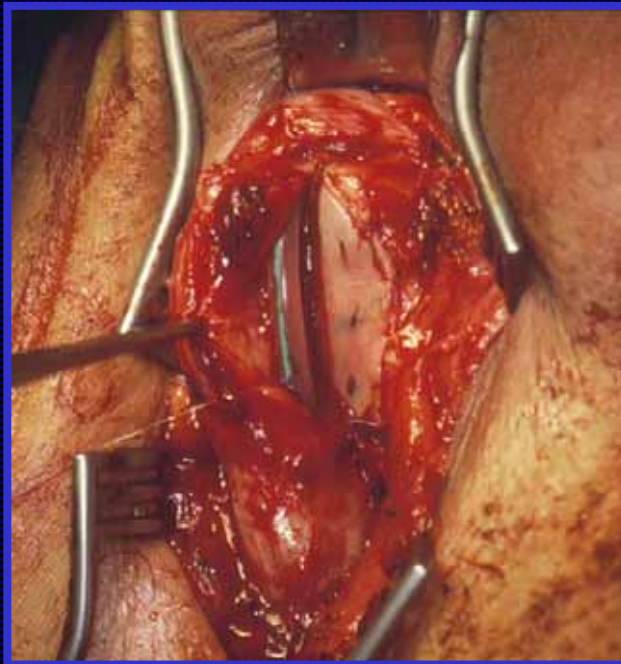


Ventral onlay graft

Dorsal onlay graft urethroplasty



Dorsal onlay skin graft urethroplasty

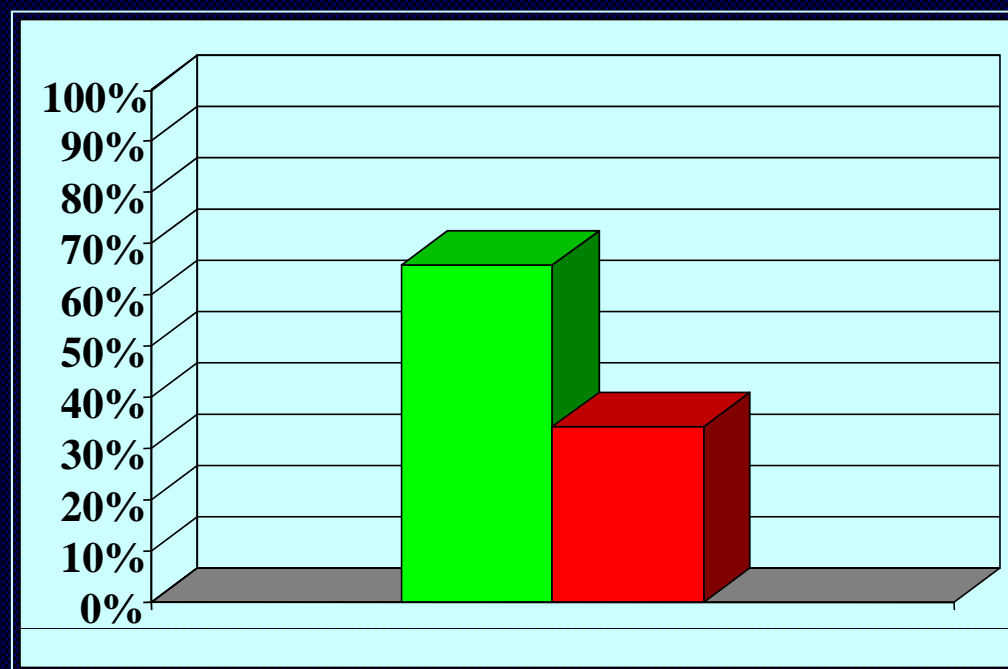


Barbagli et al., J Urol, 1996



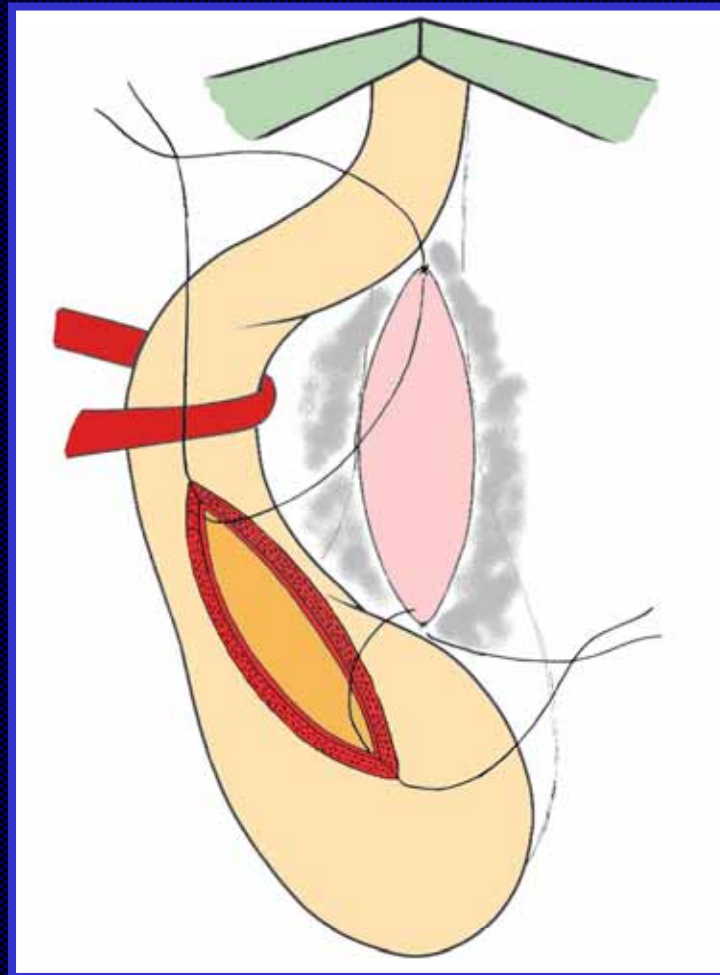
Results of 38 dorsal onlay skin graft urethroplasty

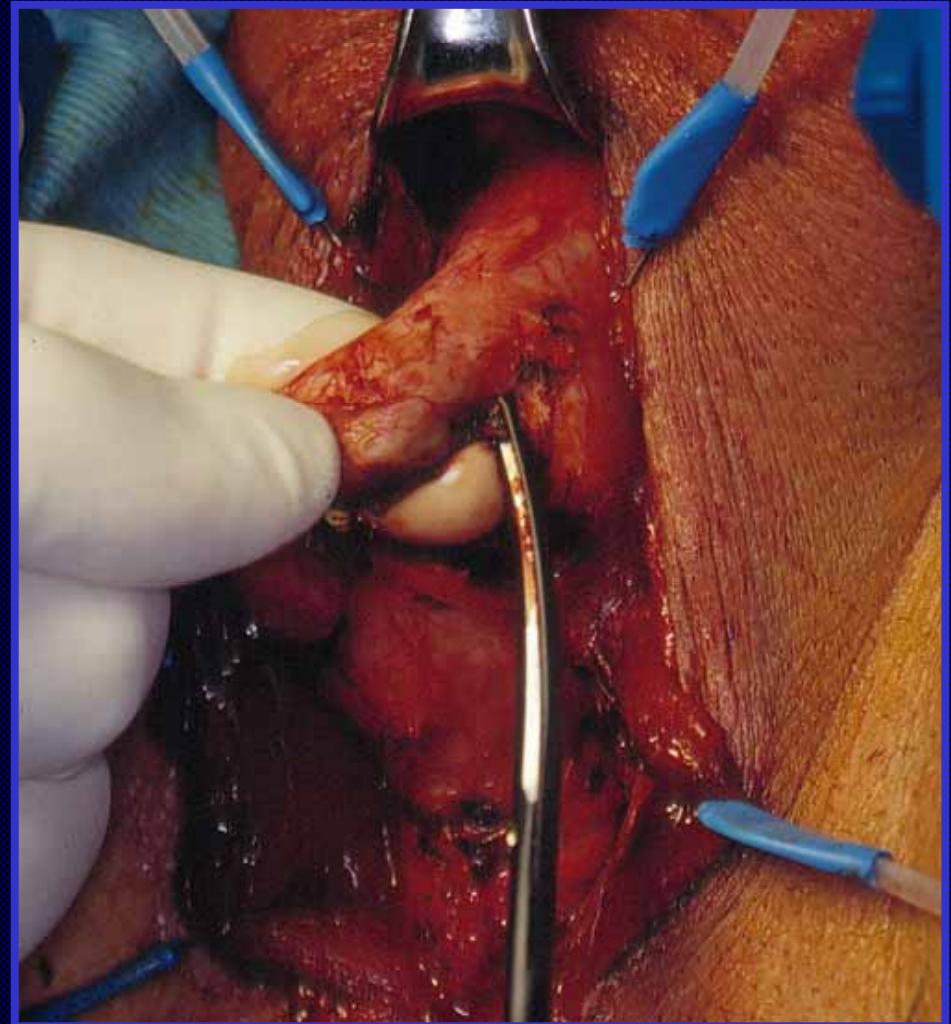
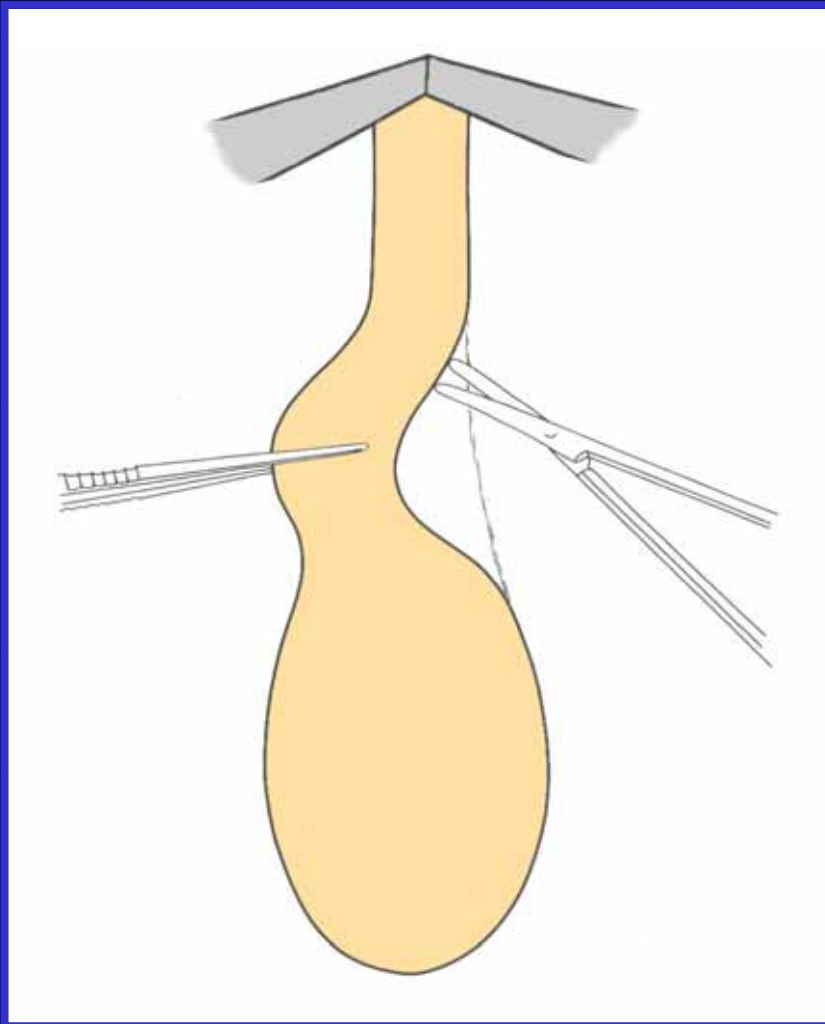
Follow-up: 80 - 149 months (mean 111)

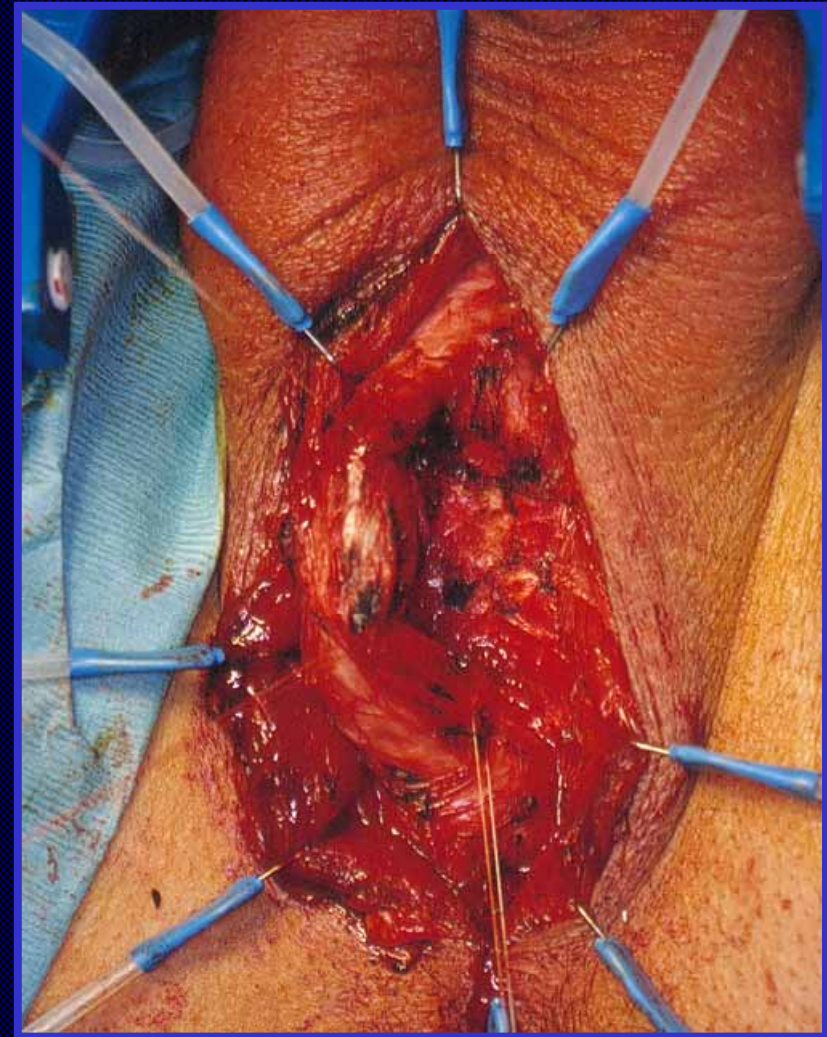
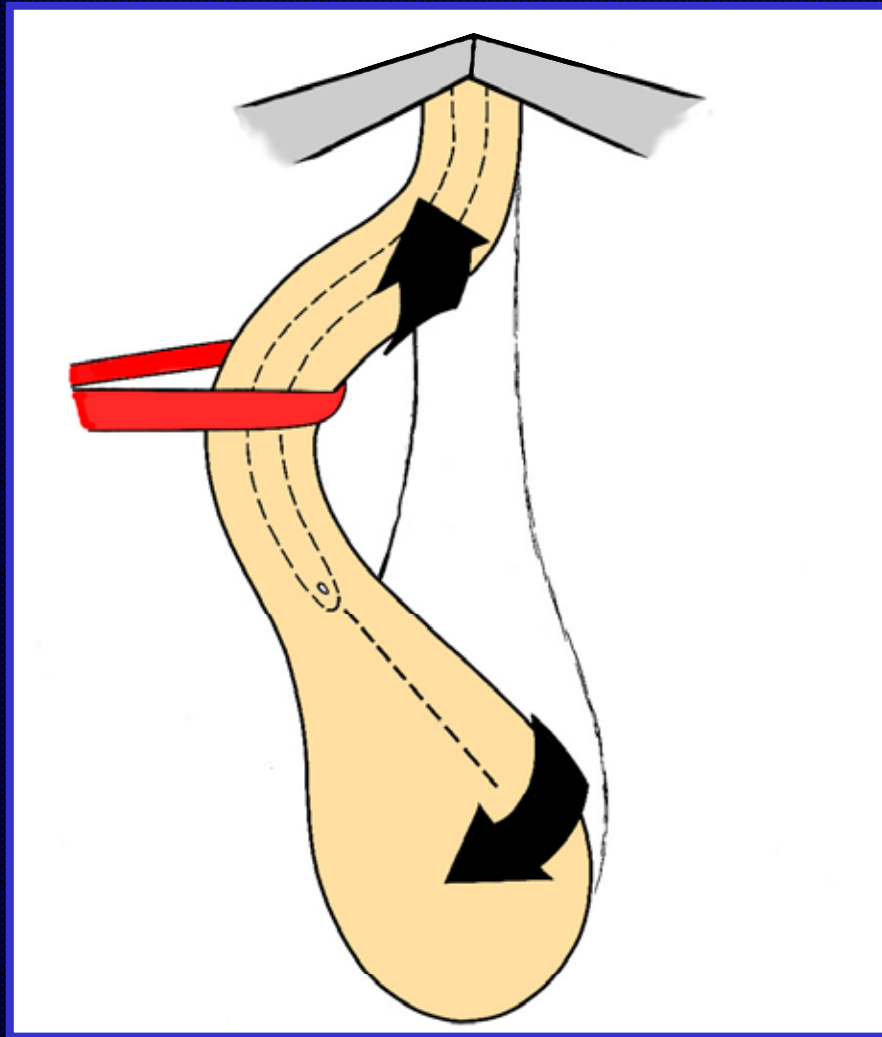


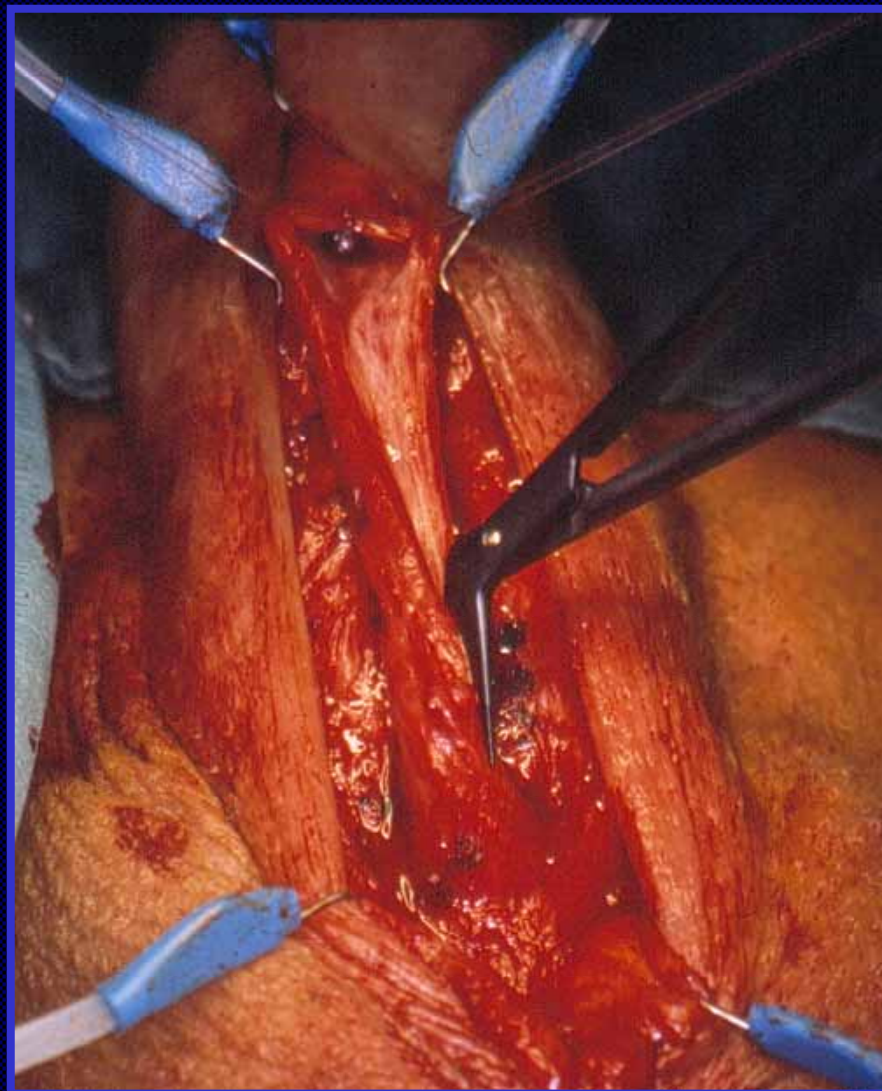
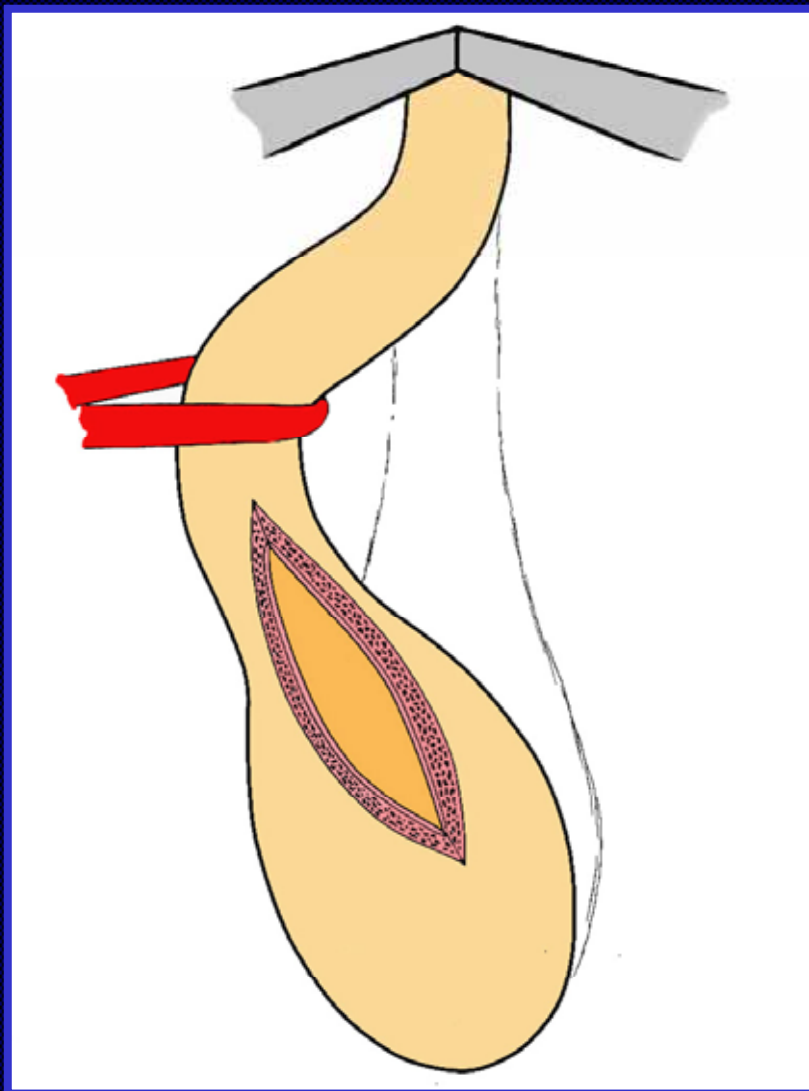
■ success	65.8%
■ failure	34.2%

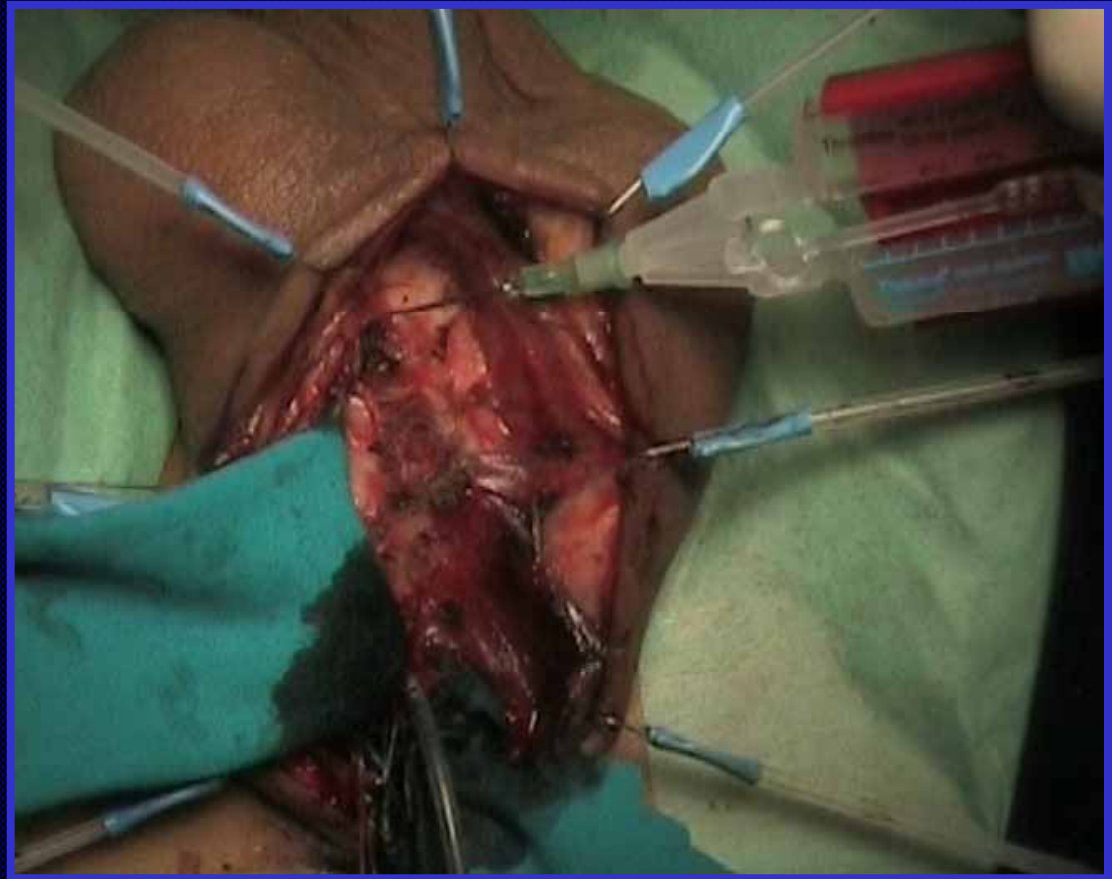
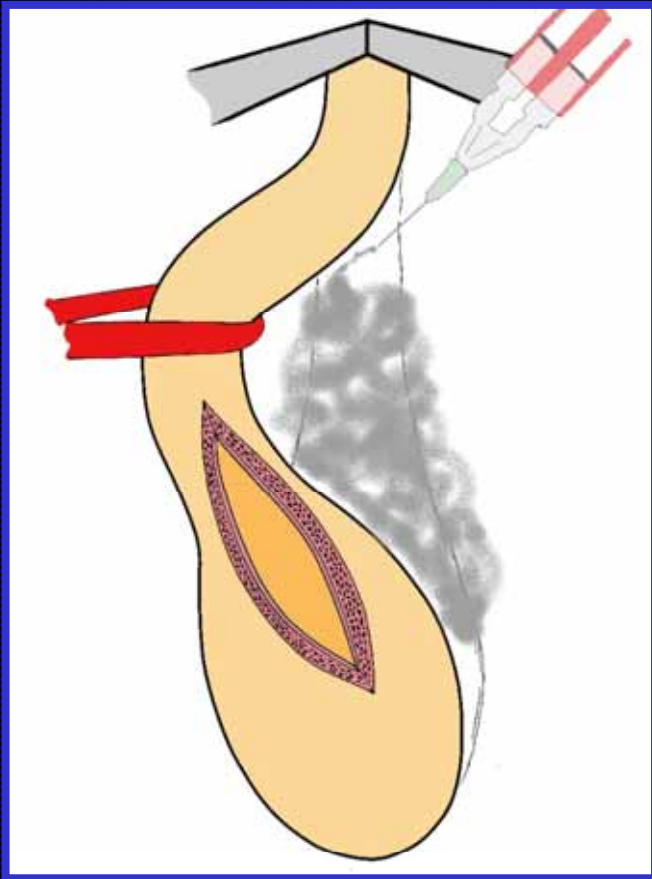
Dorsal onlay buccal mucosal graft urethroplasty

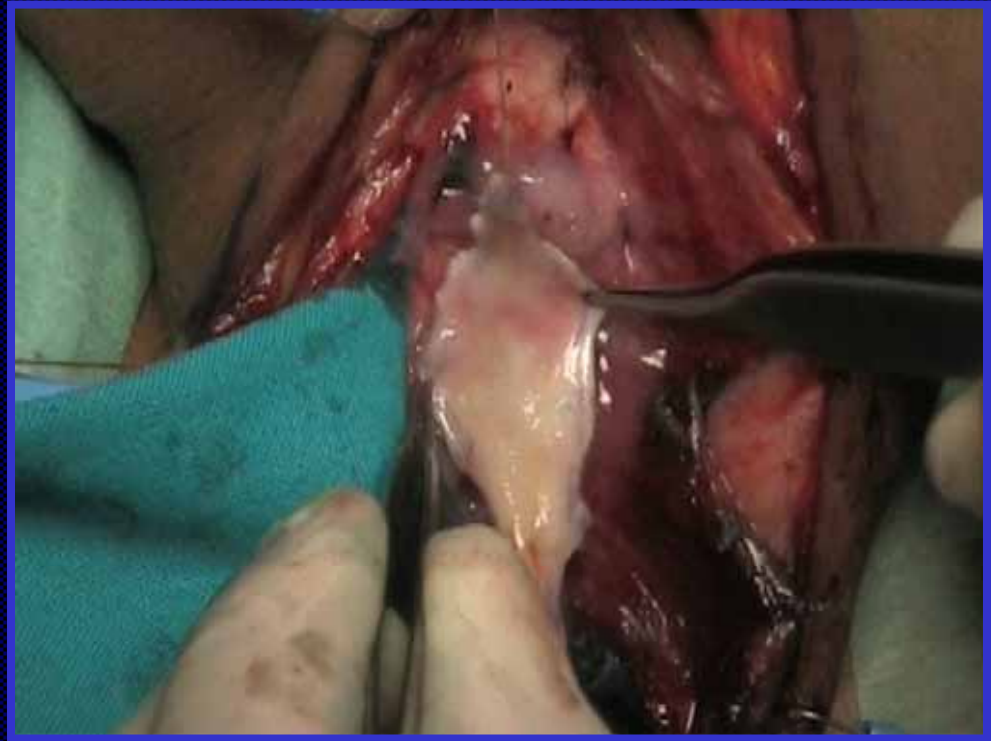
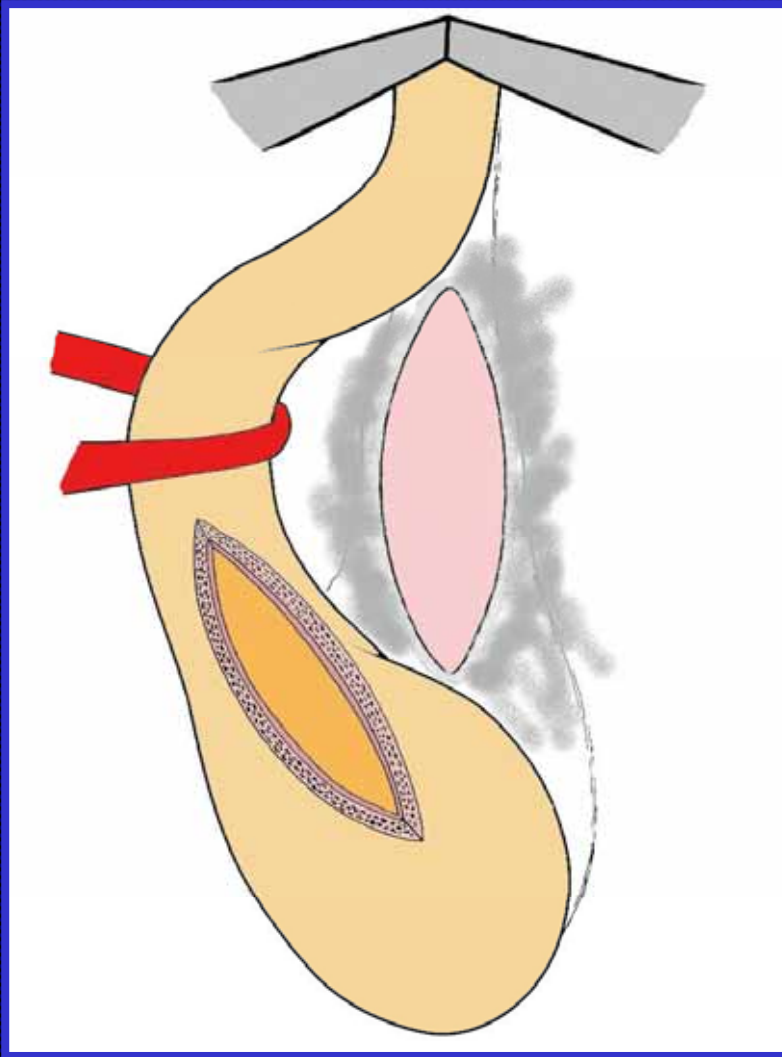


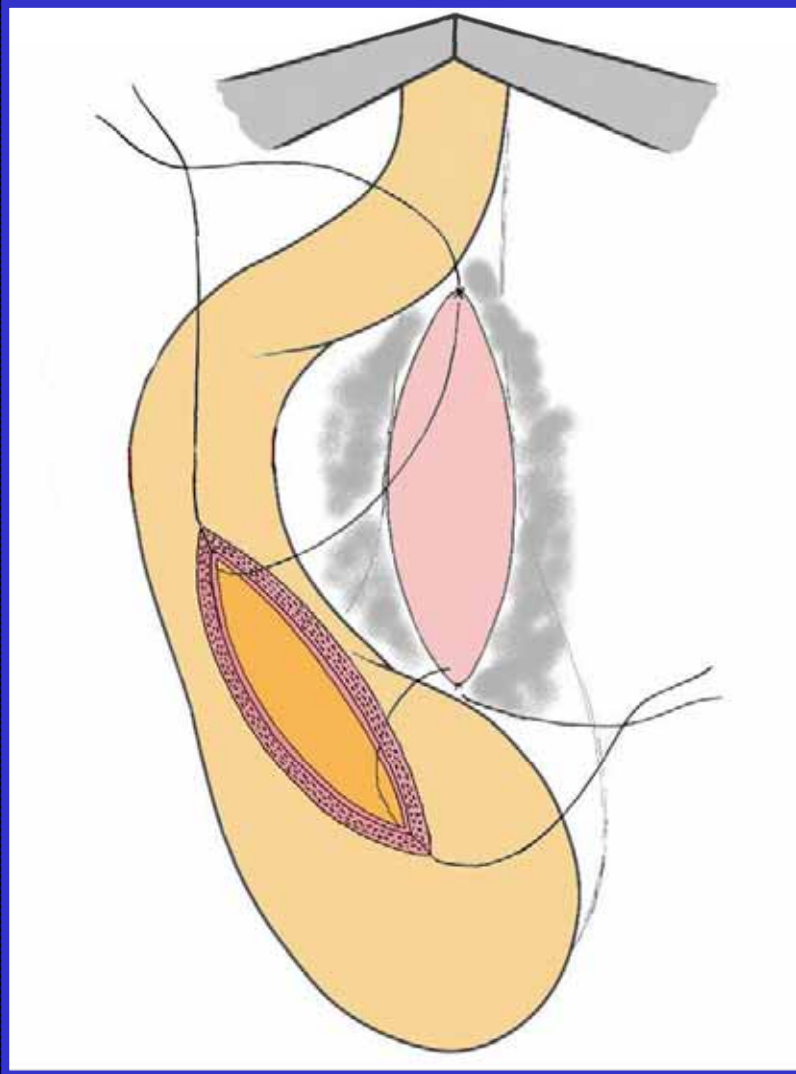


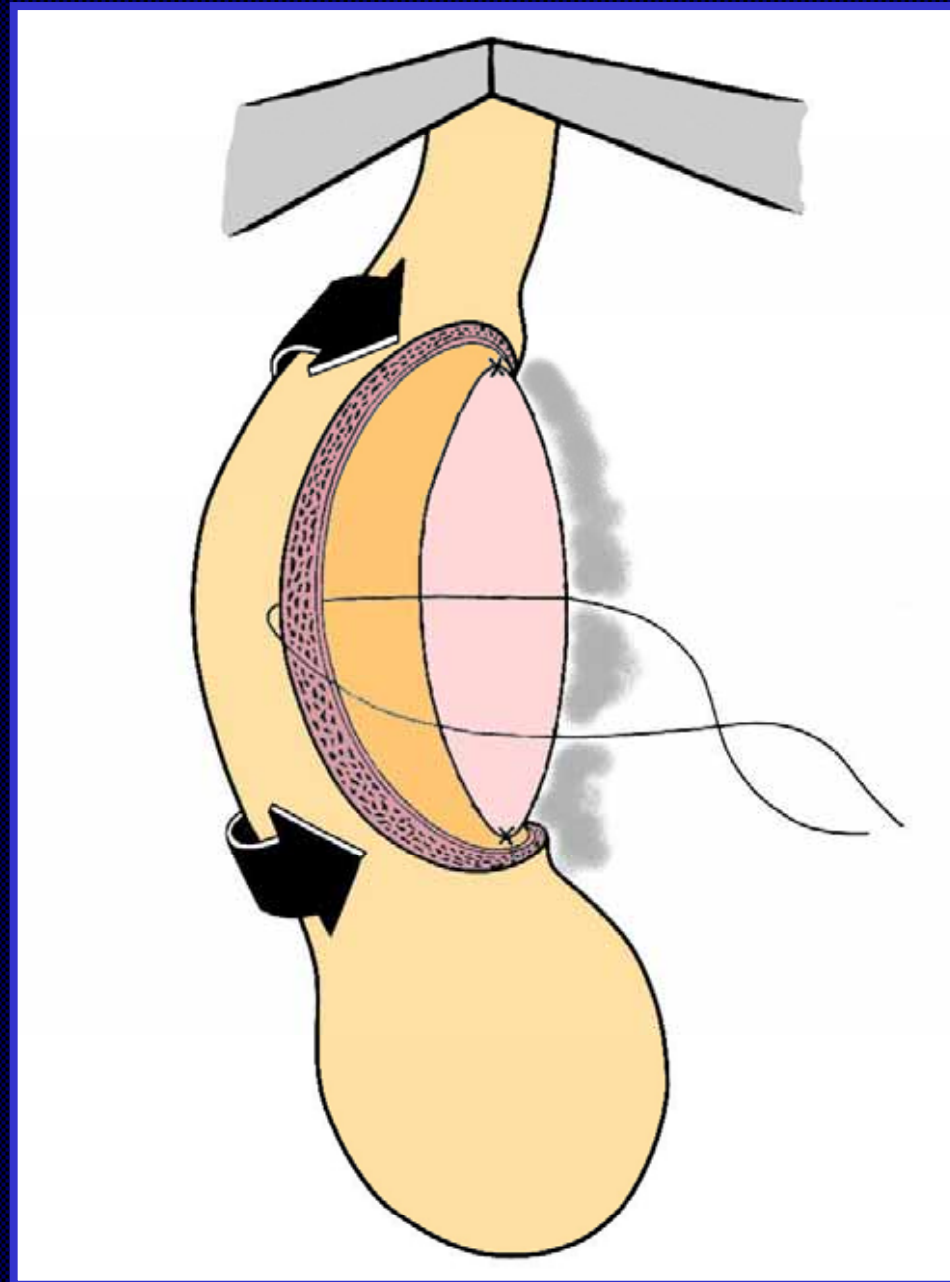


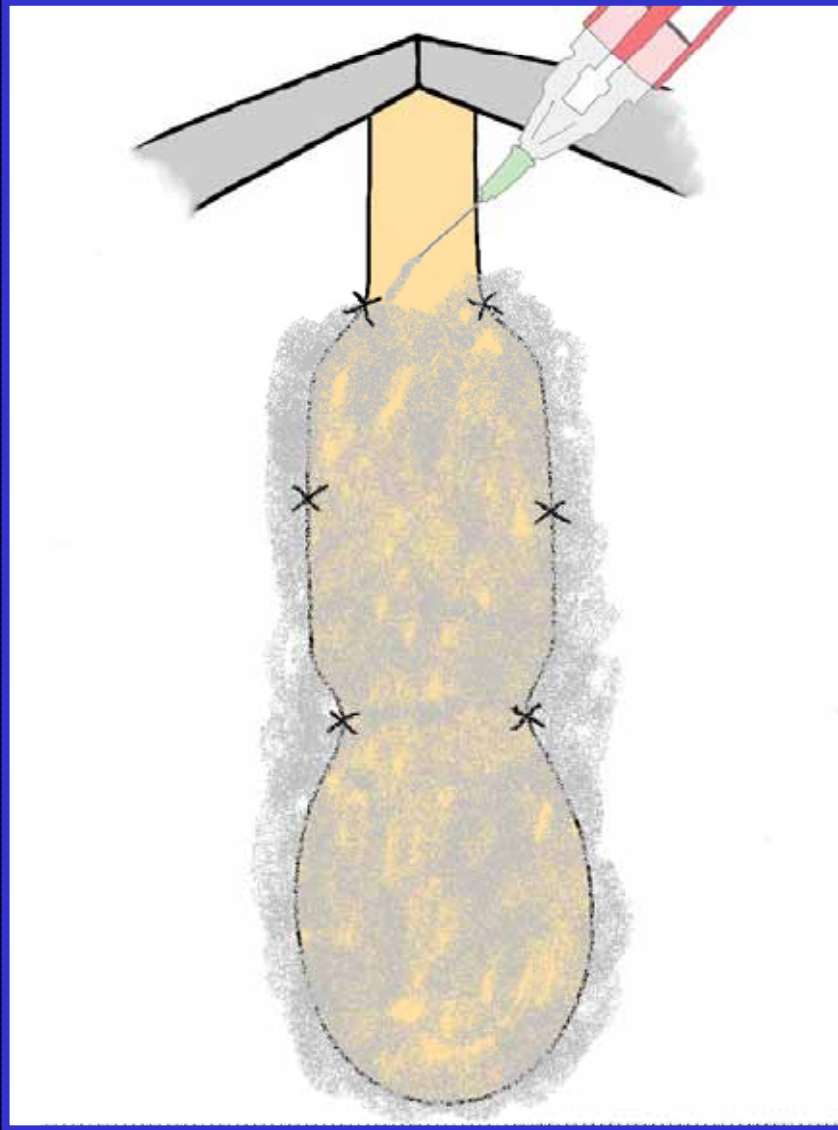






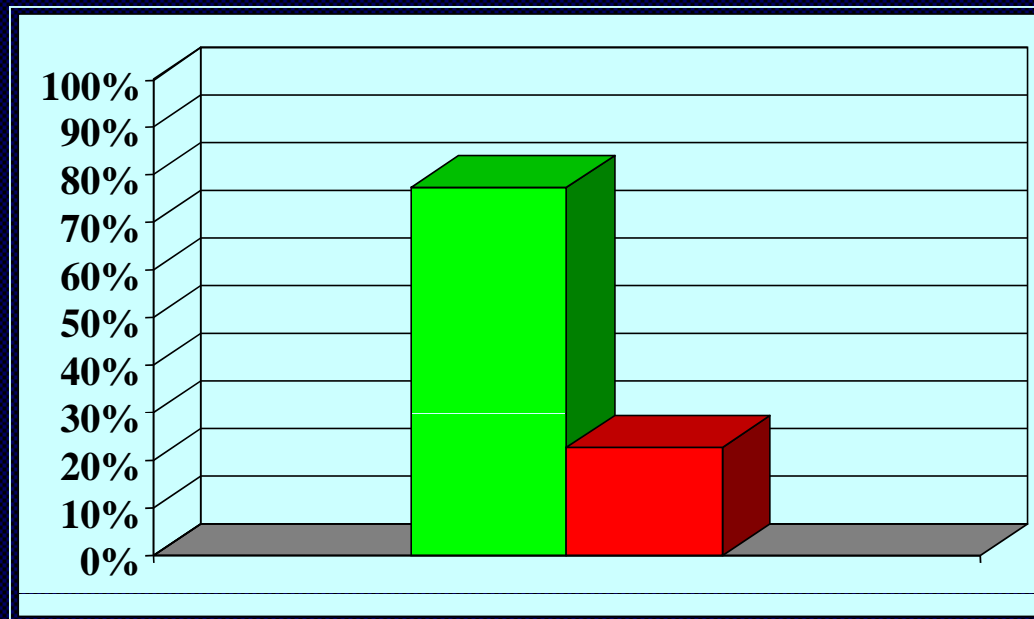






Results of 22 dorsal onlay buccal mucosal graft urethroplasty

Follow-up: 12 - 105 months (mean 41)



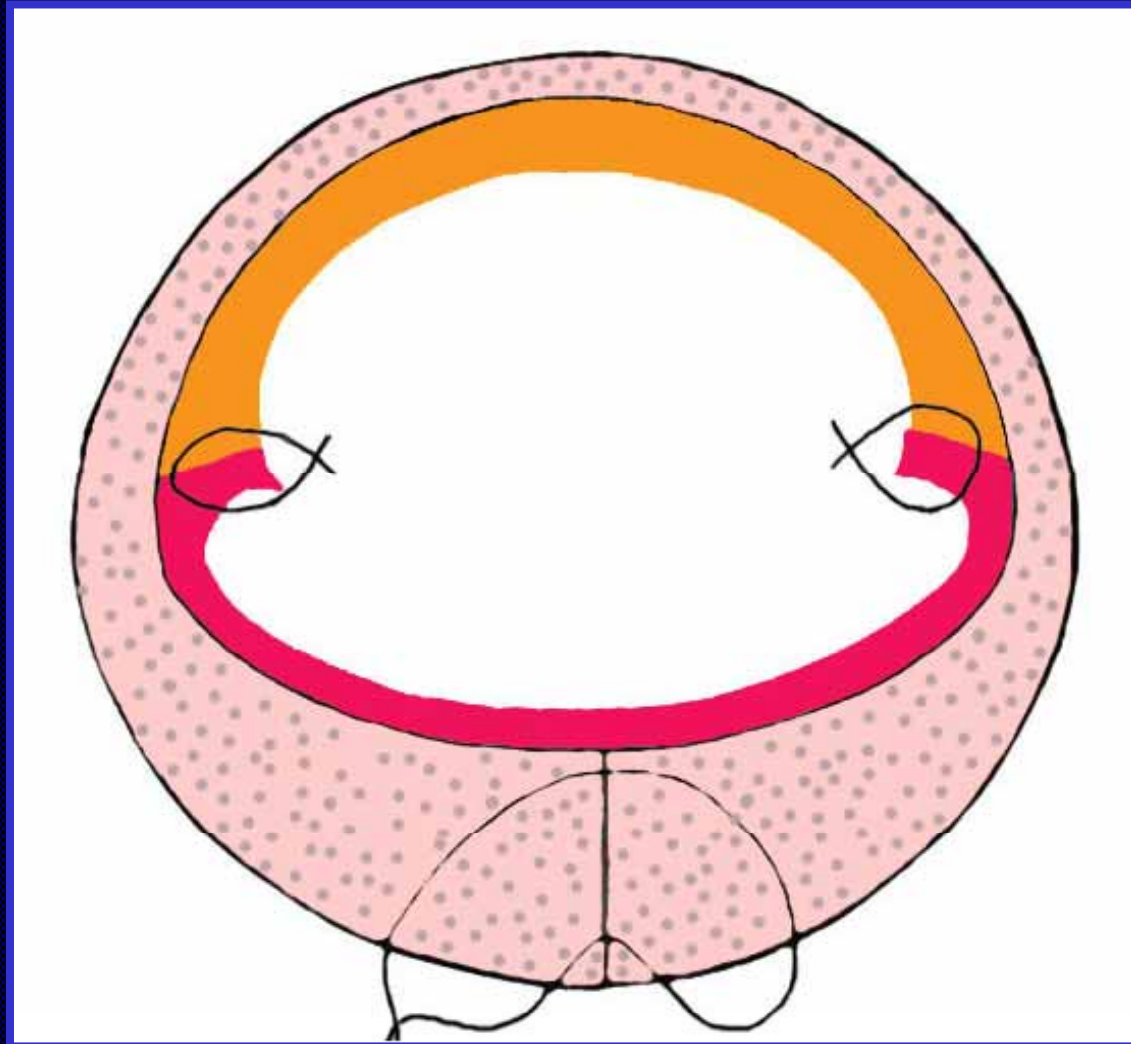
■ success

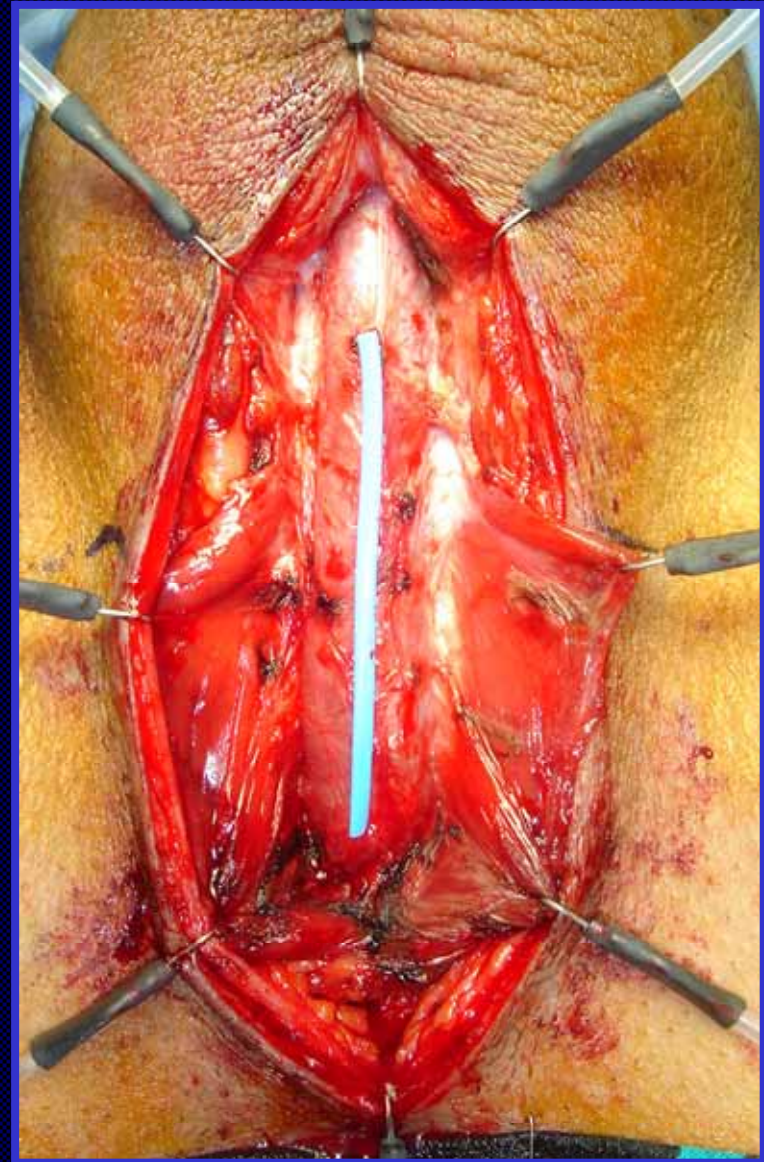
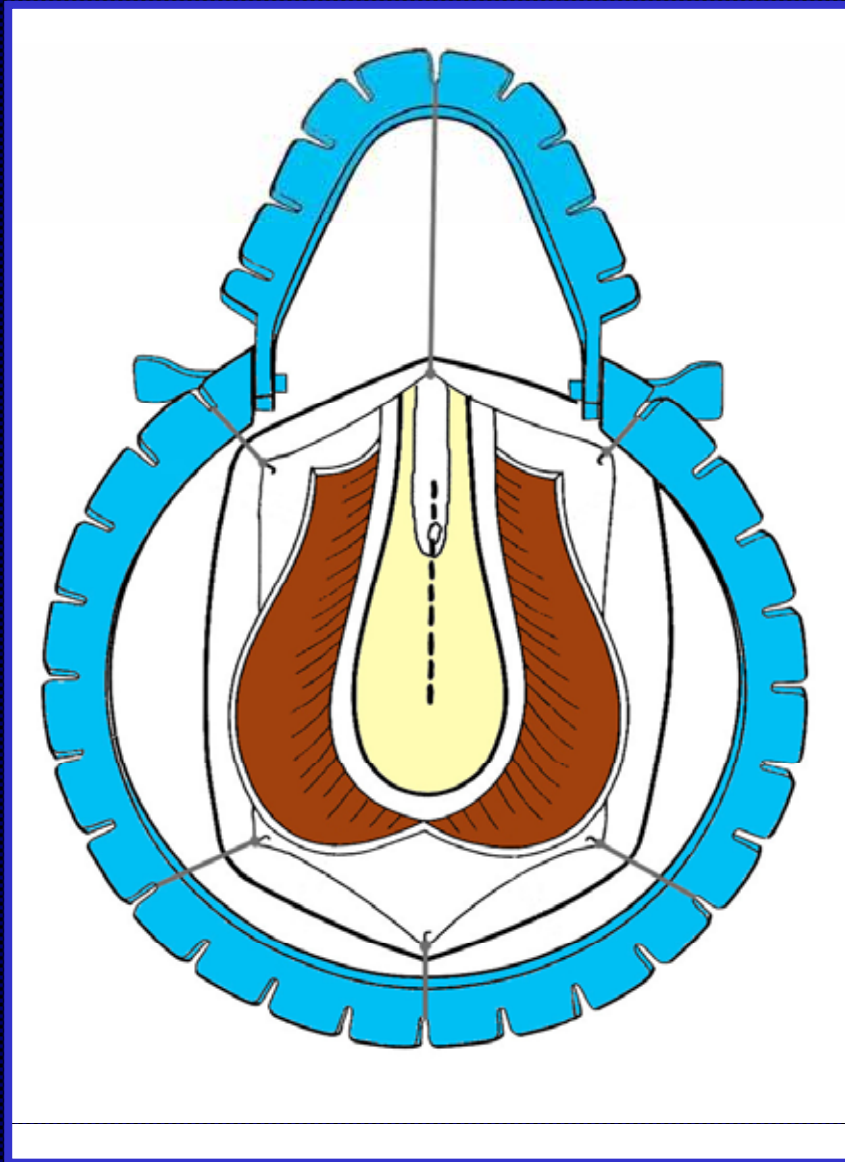
77.3%

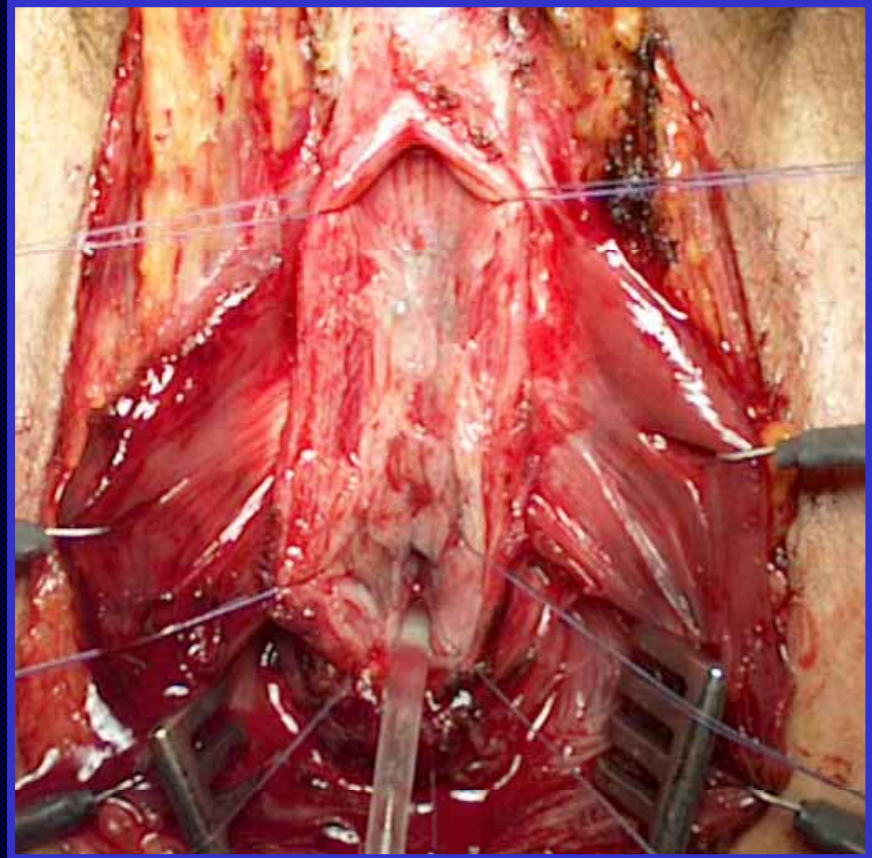
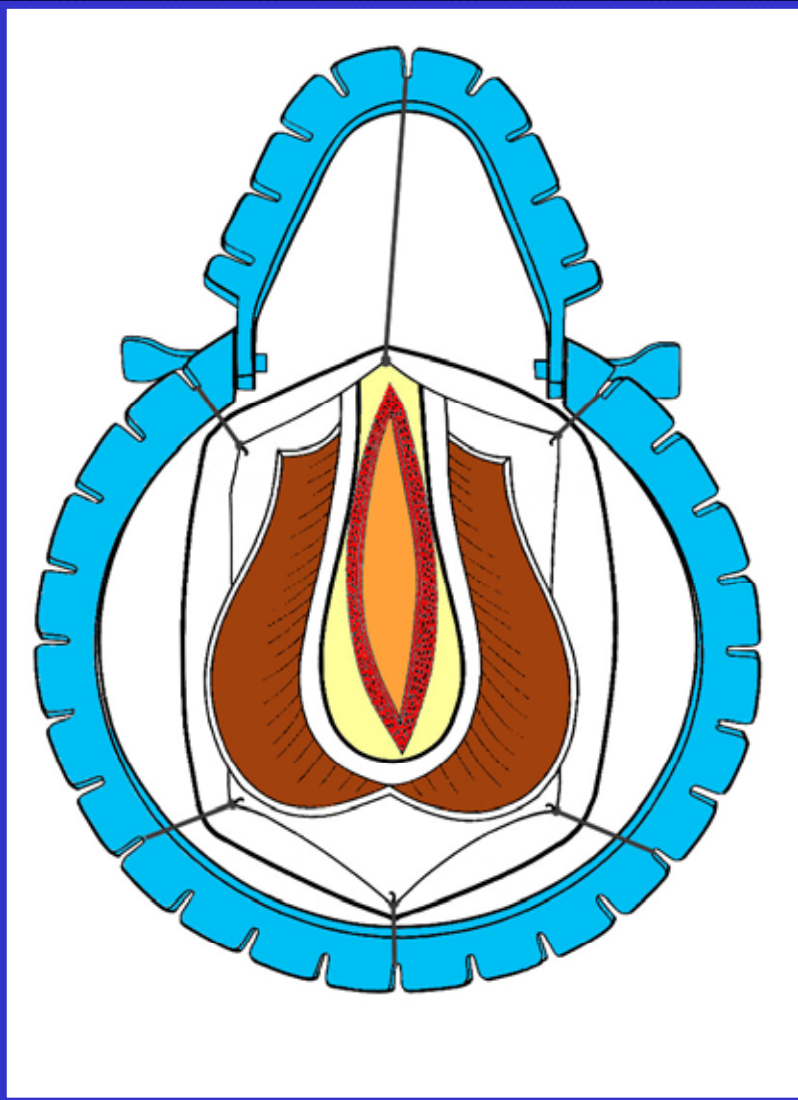
■ failure

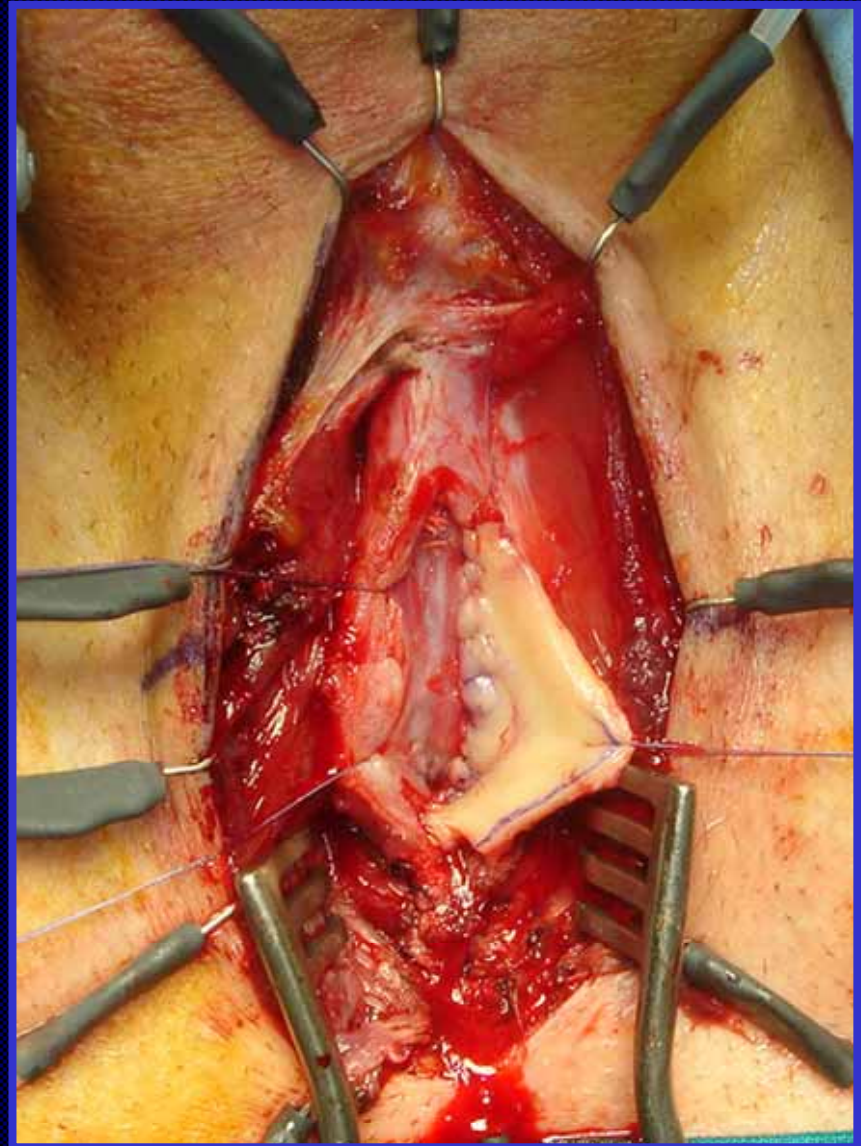
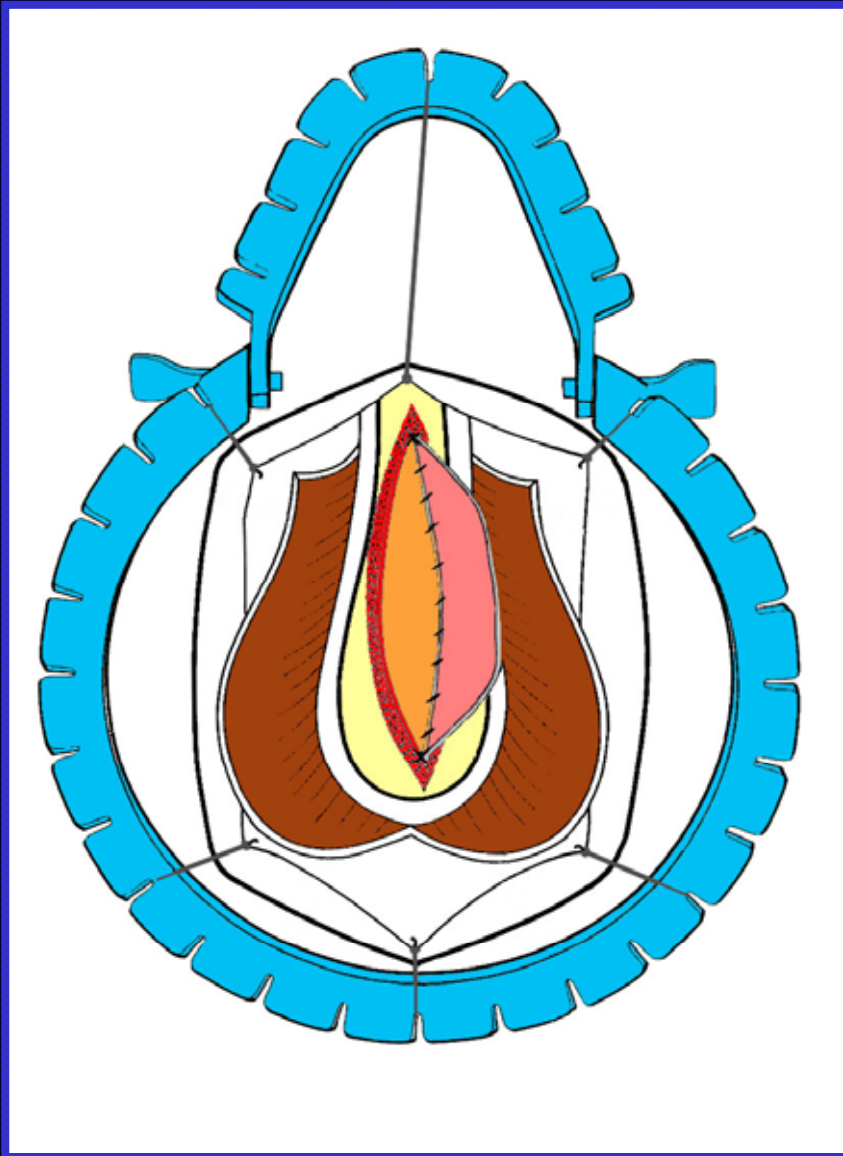
22.7%

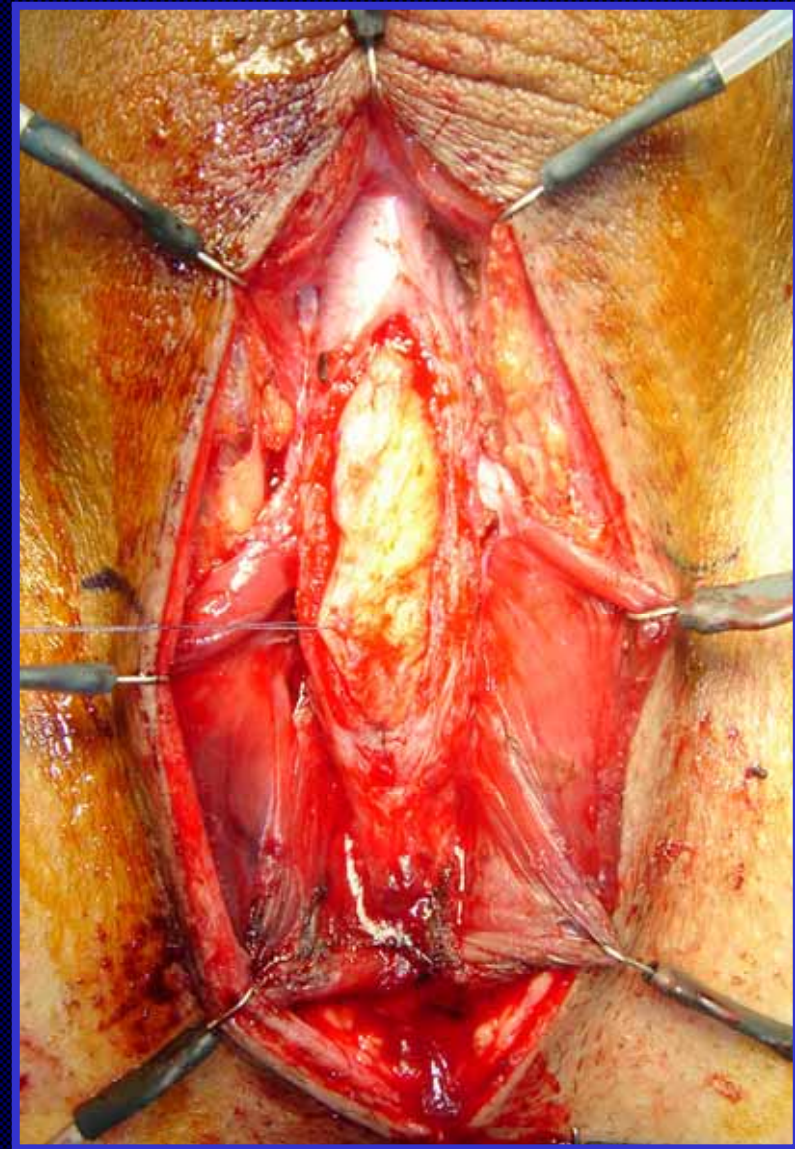
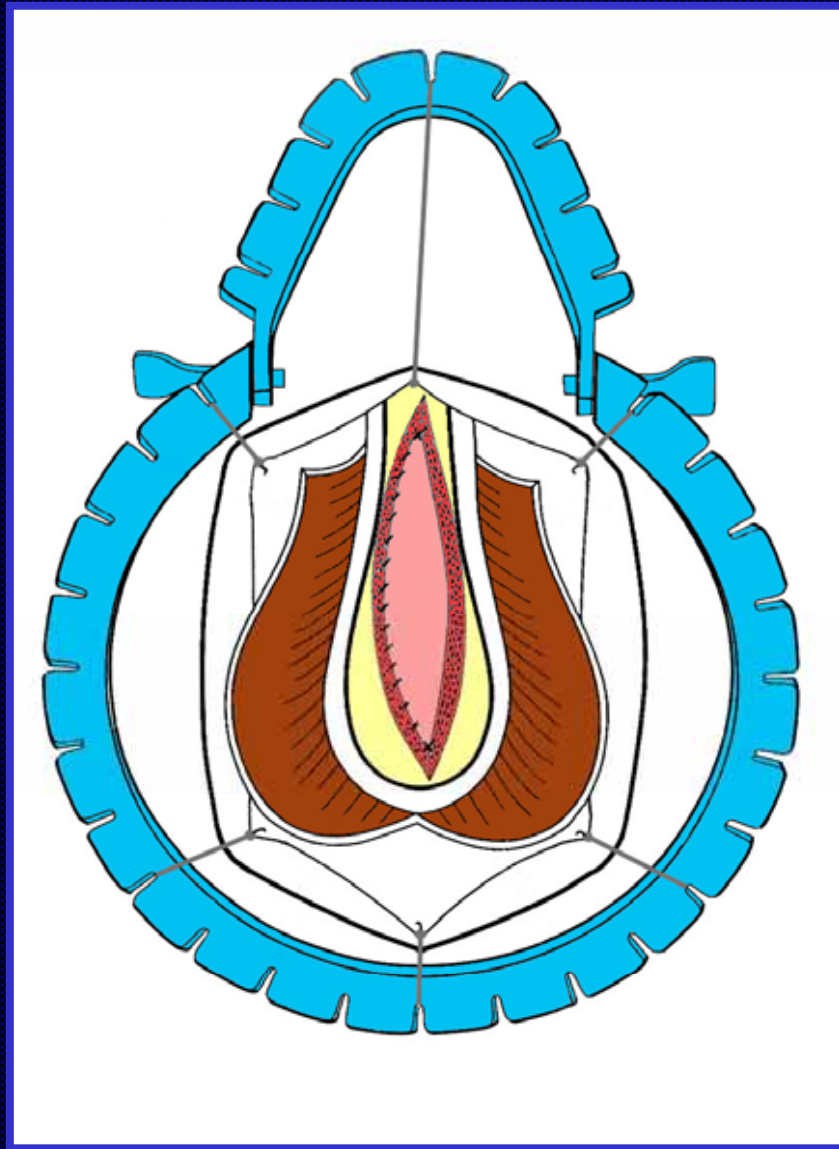
Ventral onlay graft urethroplasty

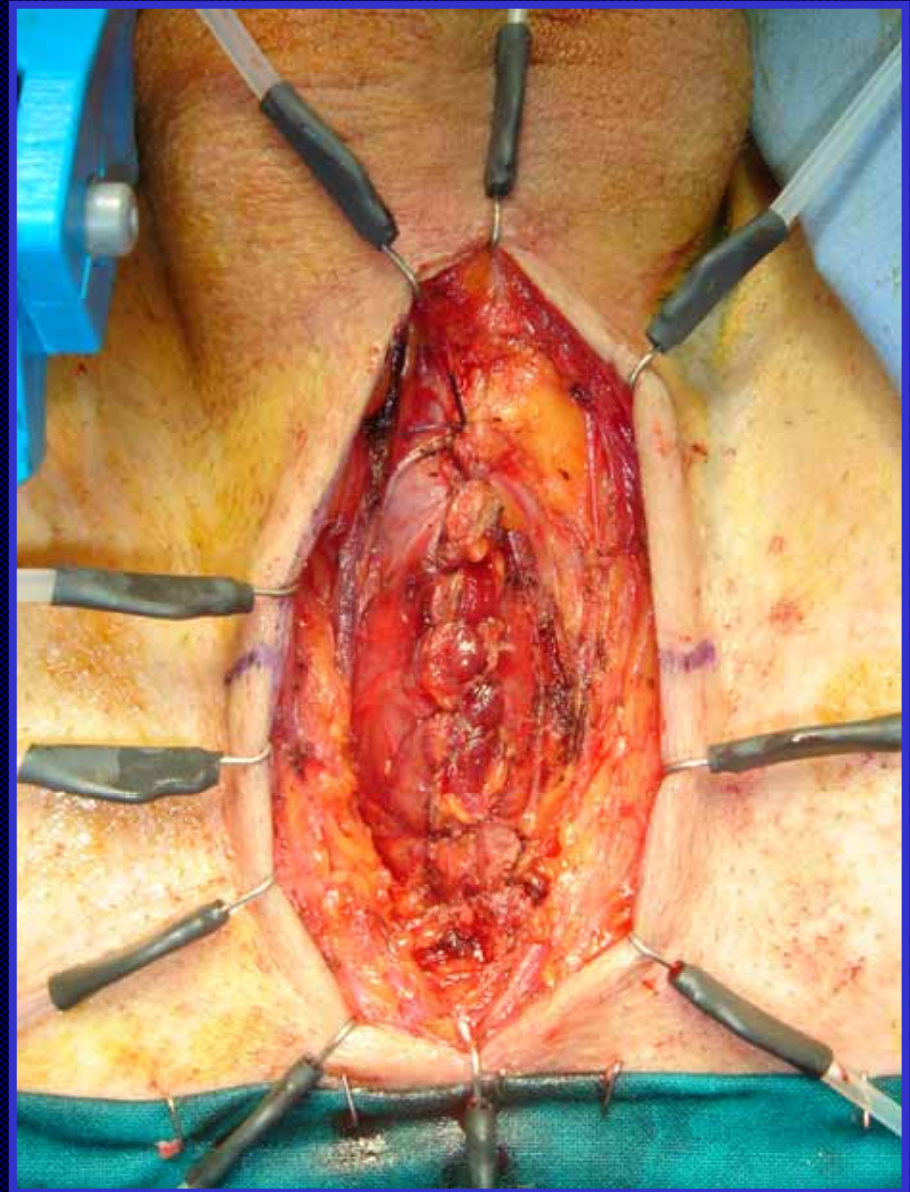
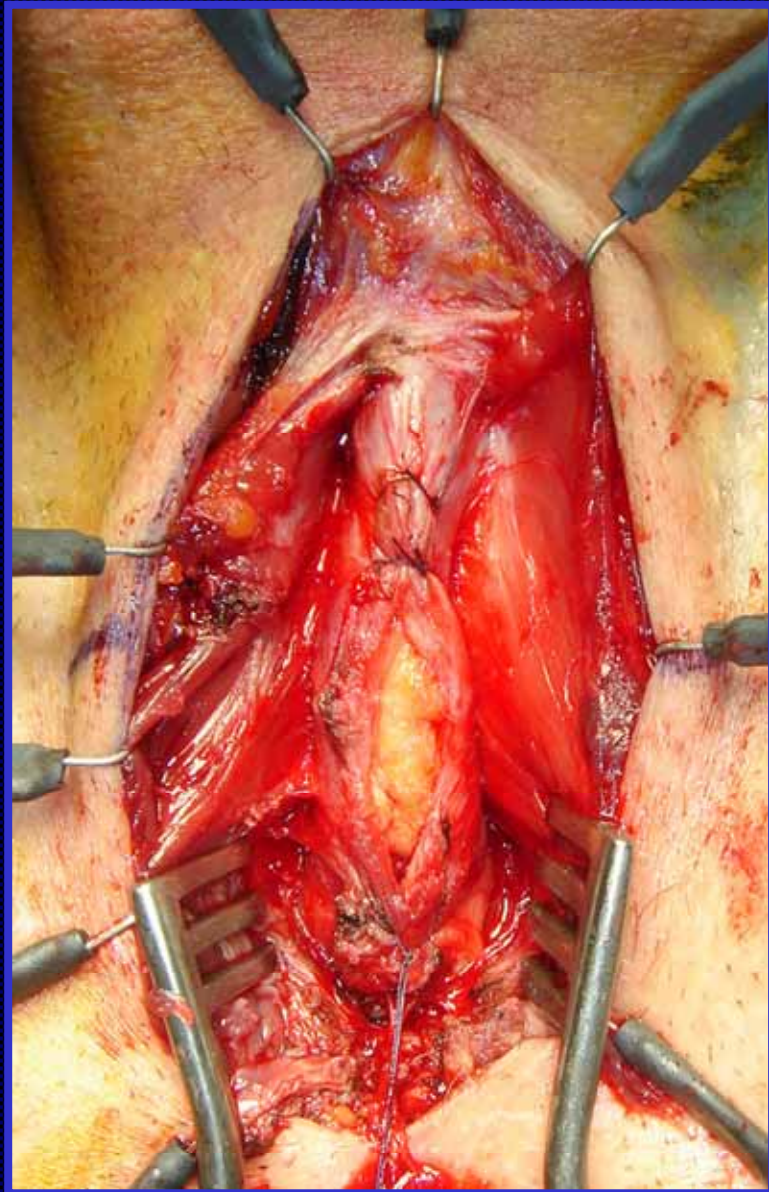






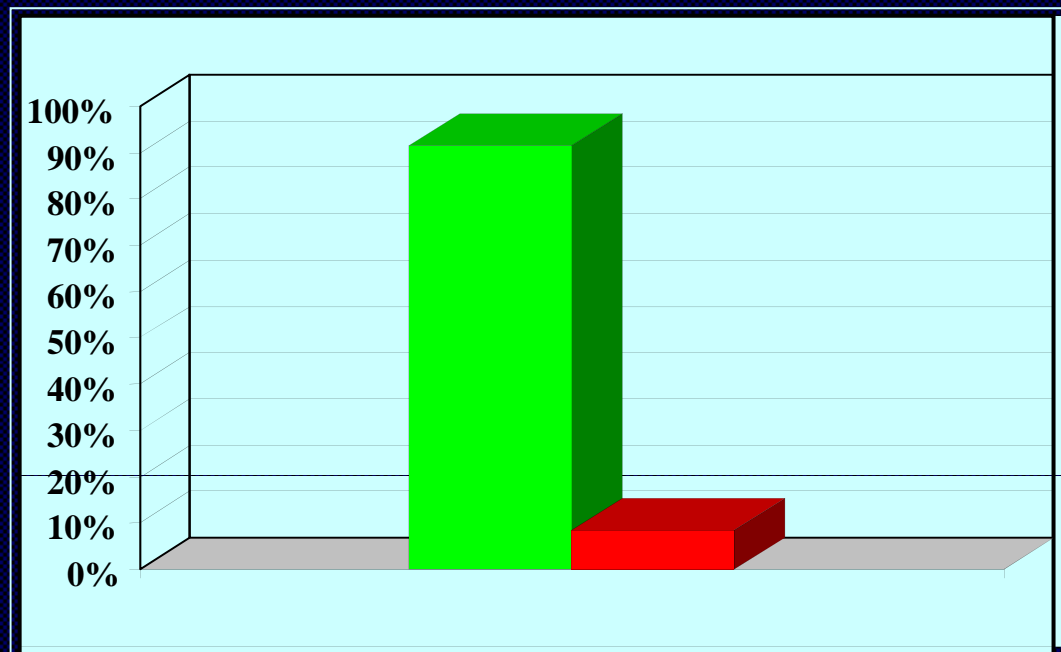






Results of 93 ventral onlay buccal mucosal graft urethroplasties

Follow-up: 12 - 93 months (mean 36)



■ success

91.4%

■ failure

8.6%

Success rate of 351 one-stage bulbar urethroplasties

success	failure
85%	15%

Follow-up: minimum 12 months
maximum 218 months

Comparative success rate of 351 one-stage bulbar urethroplasties

surgical technique	success
end-to-end anastomosis 165 cases	91%
onlay graft urethroplasty: 153 cases	83%
augmented roof-strip anastomosis: 33 cases	66%



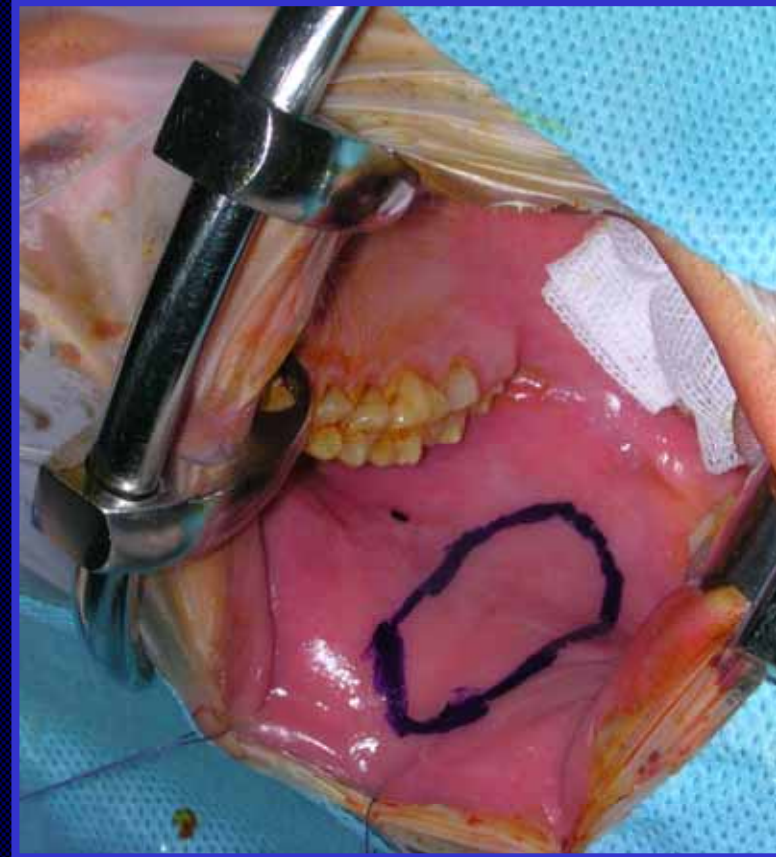
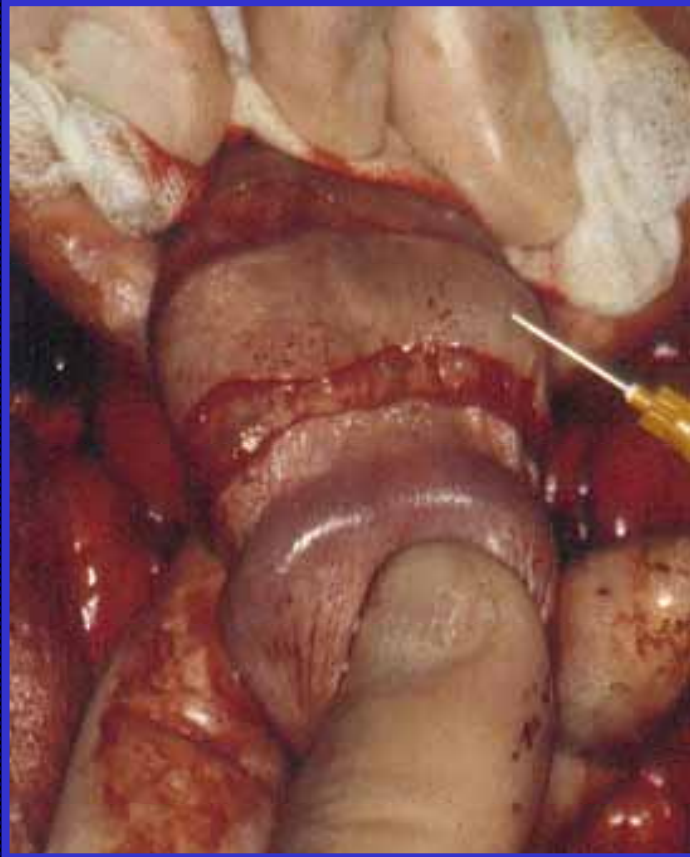
Onlay graft urethroplasty

type of urethroplasty	success rate	mean follow-up
ventral onlay (BM)	91.4%	36 months
dorsal onlay (BM)	77.3%	41 months
dorsal onlay (skin)	65.8%	111 months

Augmented roof-strip anastomosis

type of urethroplasty	success rate	mean follow-up
dorsal skin graft	33.3%	102 months
dorsal buccal mucosal graft	79.2%	31 months

Substitute material



Penile skin or buccal mucosa ?

Success rate based on the substitute material

substitute material	success rate
buccal mucosa 139 cases	82.8%
penile skin 47 cases	59.6%

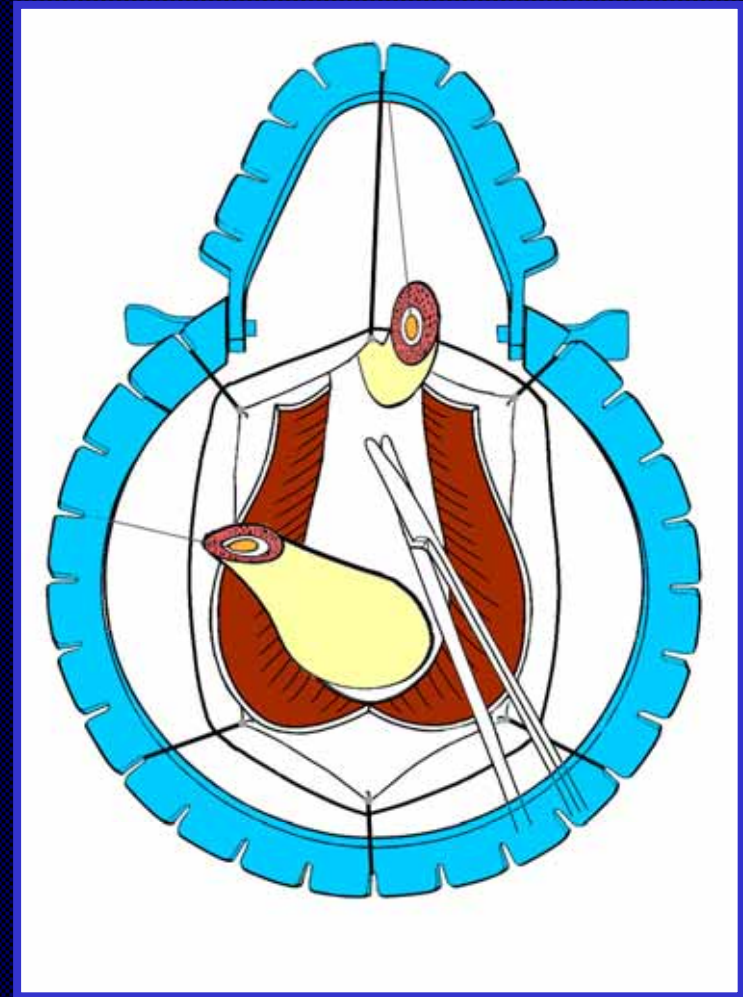
Question

Based on these results, is time to change the approach to the surgical treatment of bulbar urethral stricture disease ?



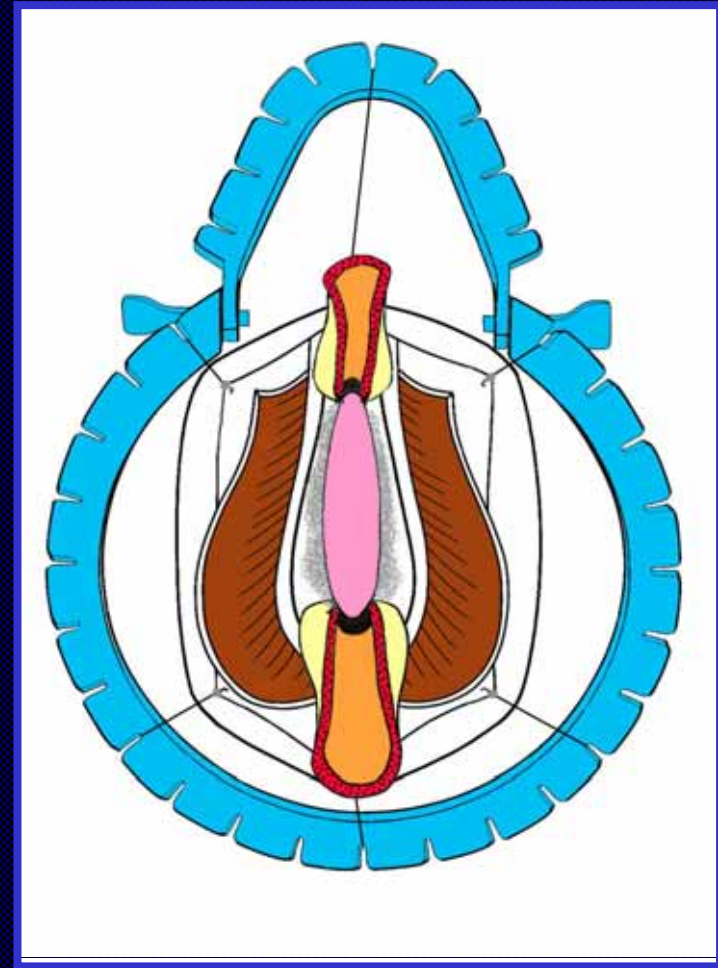
End-to-end anastomosis

End-to-end anastomosis still represents the best technique for repair of bulbar urethra stricture of various etiologies, various length and in patient of various ages



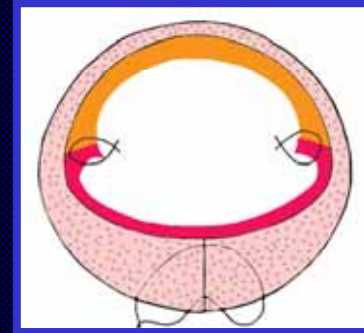
Augmented anastomotic repair

**Augmented roof-strip anastomosis
should be reserved only for complex
cases, when end-to-end anastomosis
or onlay graft procedure are not
suggested**

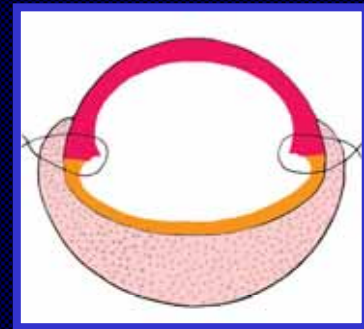


Onlay graft urethroplasty

- The use of onlay graft procedures still represents the only valid alternative to an end-to-end anastomosis
- Buccal mucosa still represents the best substitute material for onlay graft repair



ventral graft



dorsal graft

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 on our website

Thank you !



Center for Reconstructive Urethral Surgery

