



# Guido Barbagli

Center for Reconstructive Urethral Surgery

Arezzo - Italy

E-mail: [info@urethralcenter.it](mailto:info@urethralcenter.it)

Website: [www.urethralcenter.it](http://www.urethralcenter.it)

**Stefano De Stefani**

**Department of Urology**

**University of Modena and Reggio Emilia**

**Modena - Italy**



**Center for Reconstructive Urethral Surgery**



# **4<sup>th</sup> International Meeting on Reconstructive Urology – IMORU IV**

**March 9-11, 2006**

**Hamburg - Germany**



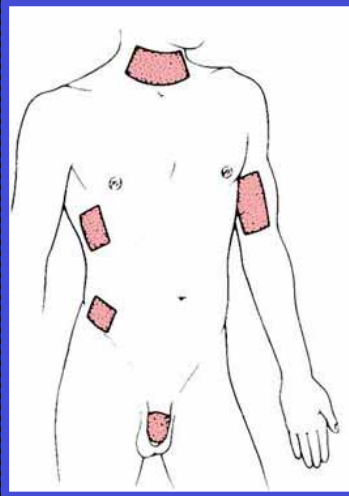
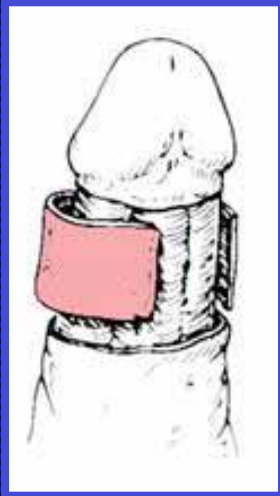
# **The anastomotic fibrous rings after bulbar onlay graft urethroplasty**



**The substitution onlay graft urethroplasty is the most widespread technique used for the repair of strictures, ranging from 2 to 6 cm in length, in the bulbar urethra where the spongiosum tissue is thick and highly vascularized.**



# The urethral substitution may be accomplished using different substitute materials:



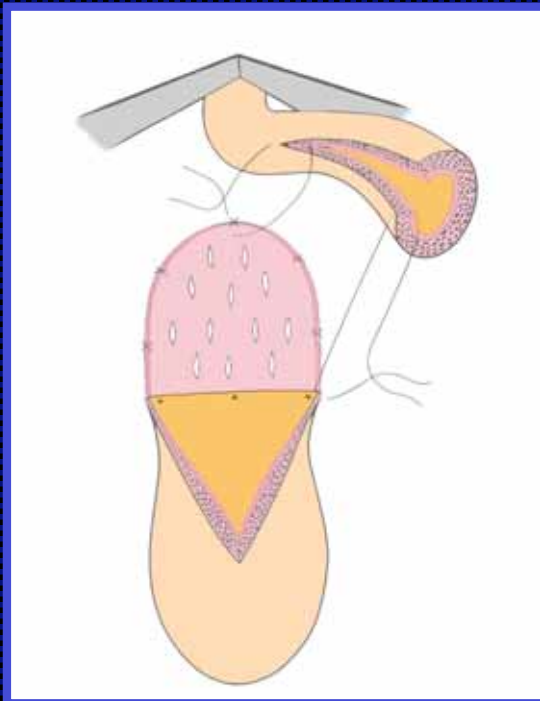
**Genital or extra-genital skin**



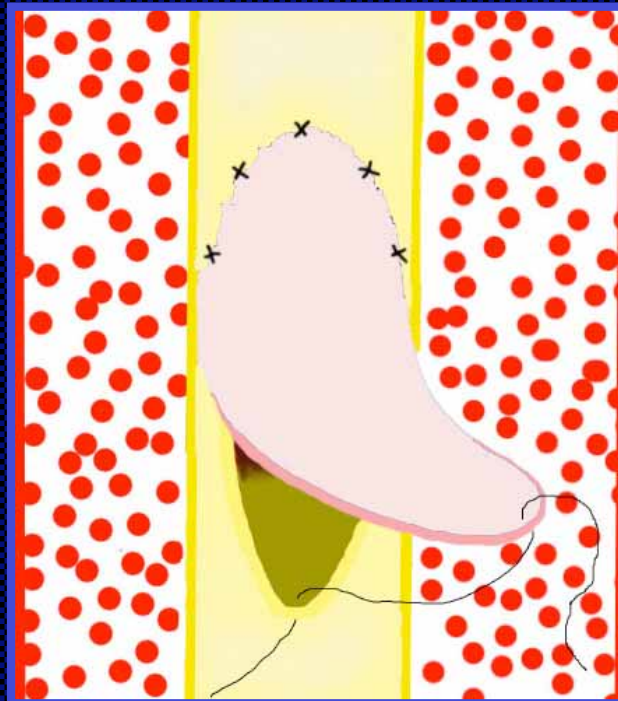
**Buccal mucosa**



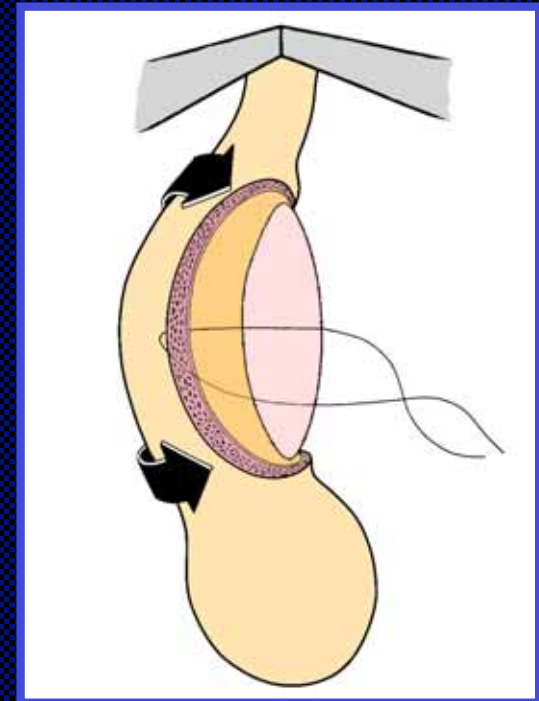
# The urethral substitution may be accomplished using different surgical techniques:



**Augmented anastomotic urethroplasty**

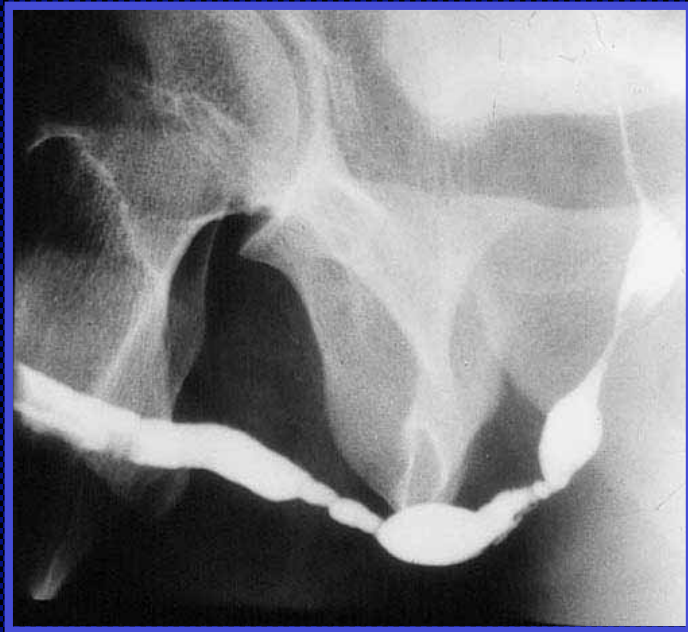


**Ventral onlay graft urethroplasty**



**Dorsal onlay graft urethroplasty**

**In our experience, the success rate of these 3 different substitution onlay bulbar urethroplasties, using penile skin or buccal mucosa grafts, ranged from 73% to 84%.**



**Mean follow-up was 74 months**

G. Barbagli et al., J. Urol, August 2006, in press





## **In our experience, the stricture recurrence showed two different features:**

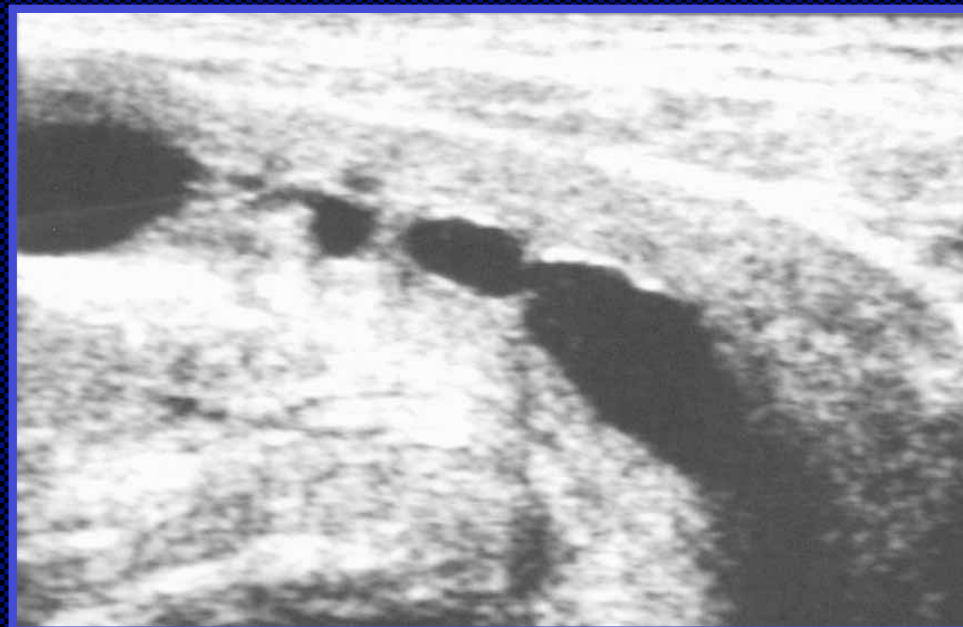
- an extensive fibrous tissue involving the entire grafted area**

- a short ( < 1 cm) fibrous ring at the distal or proximal anastomotic site between the graft and the urethral plate, while the majority of the grafted area is patent in all cases.**

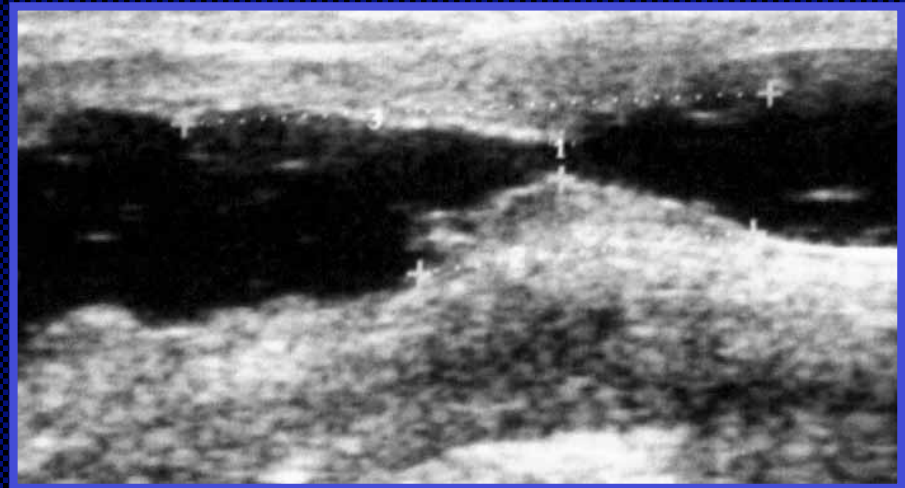
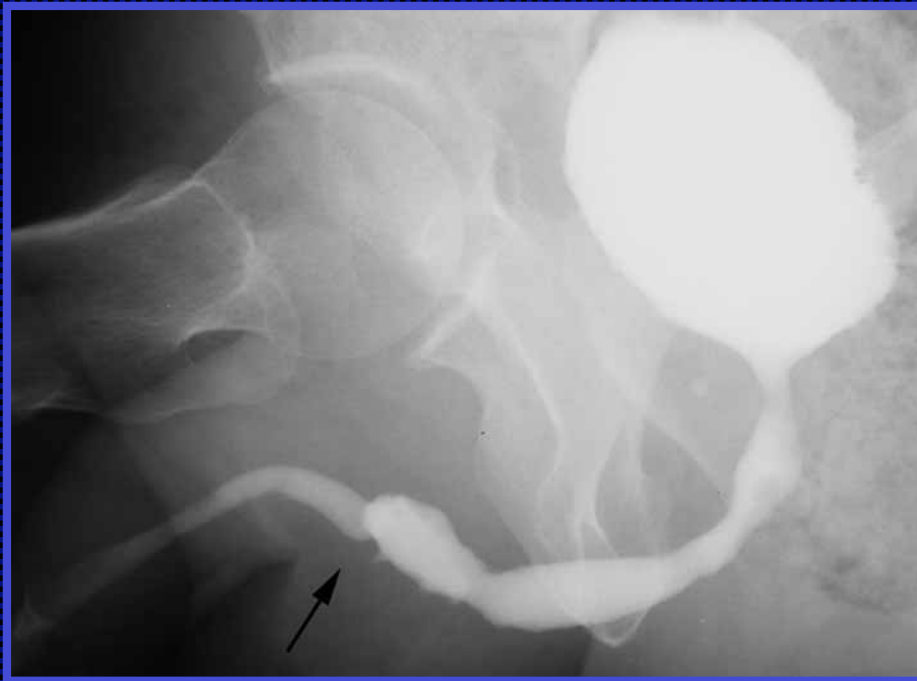
G. Barbagli et al., J. Urol, August 2006, in press



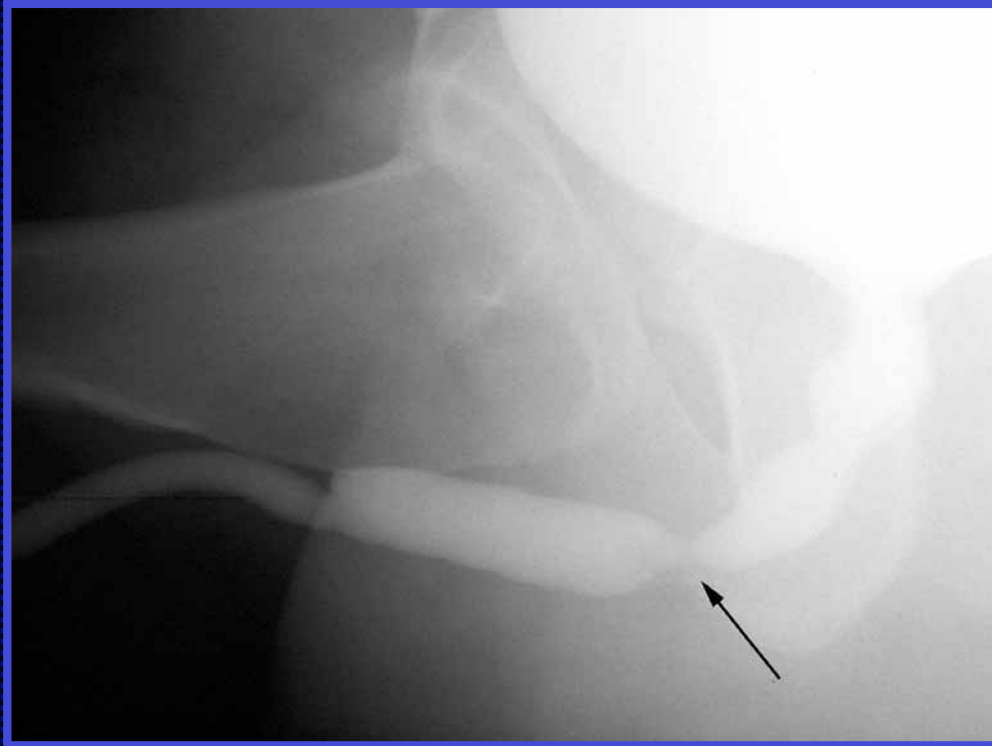
# Stricture recurrence involving the entire grafted area



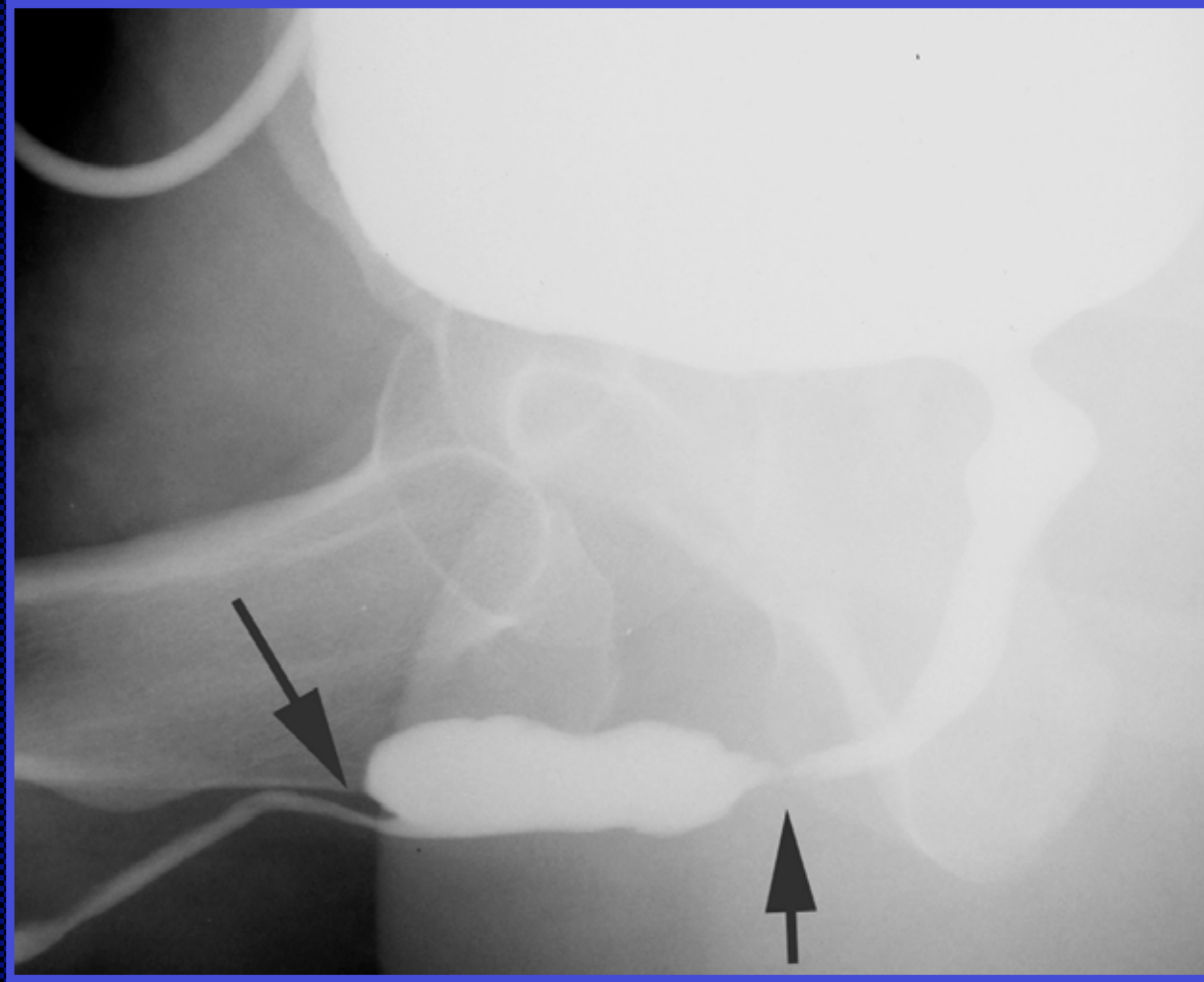
# Distal anastomotic ring



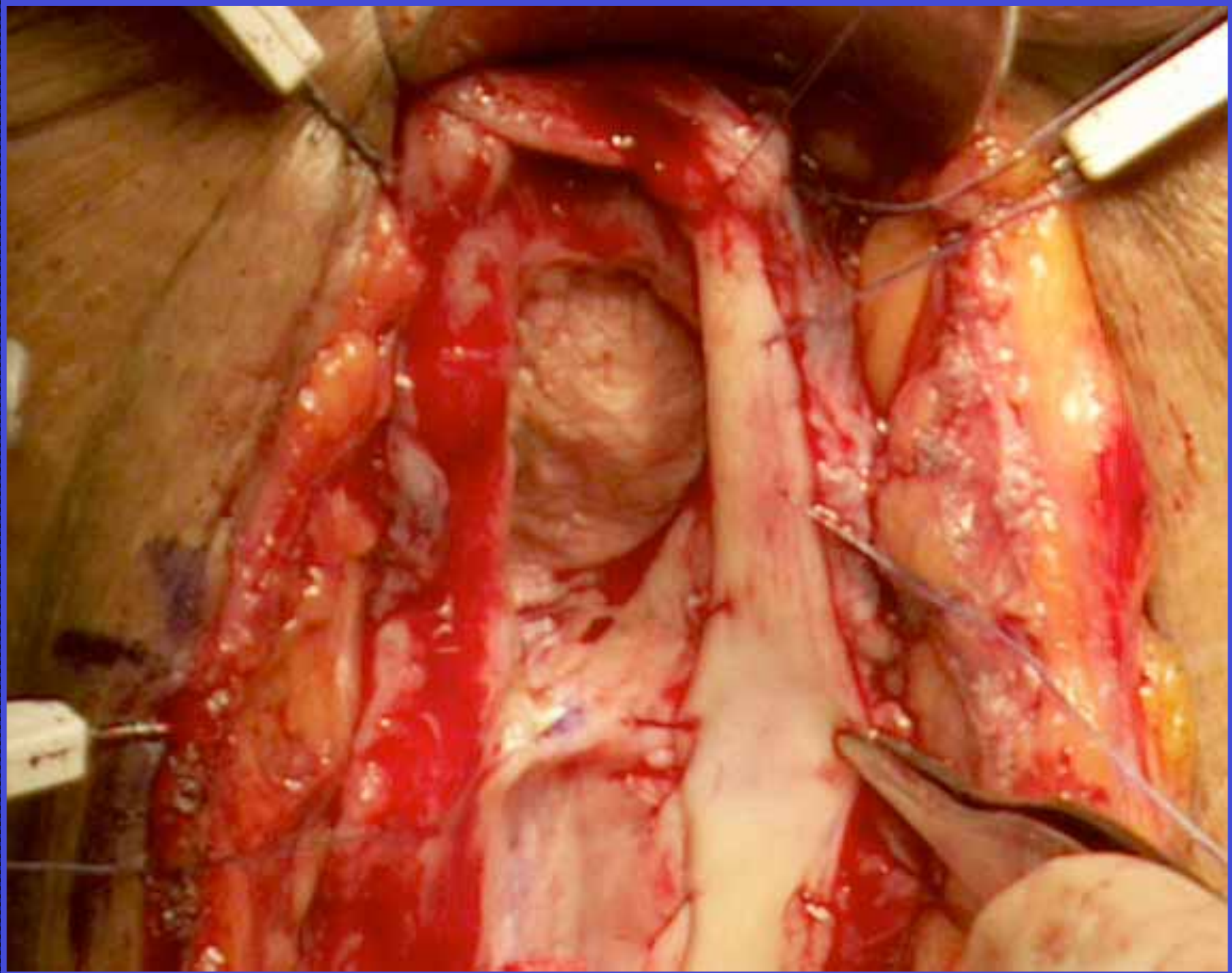
# Proximal anastomotic ring



# Distal and proximal anastomotic rings







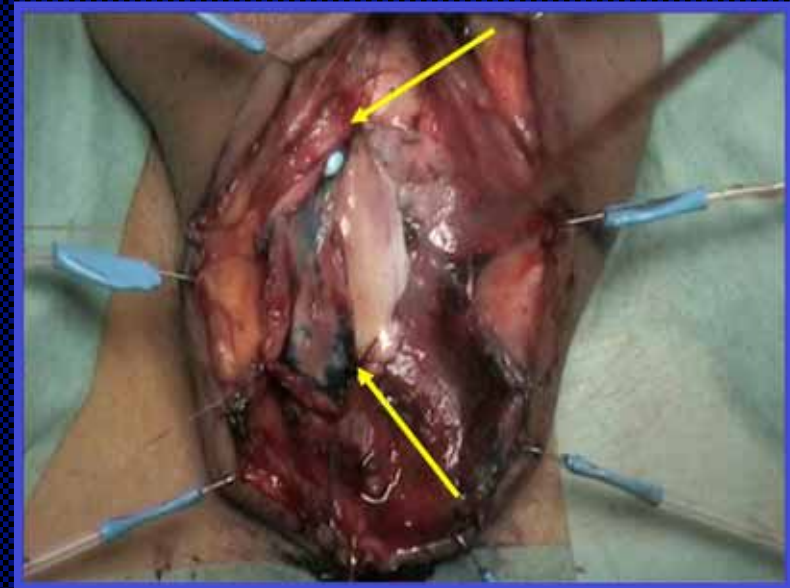
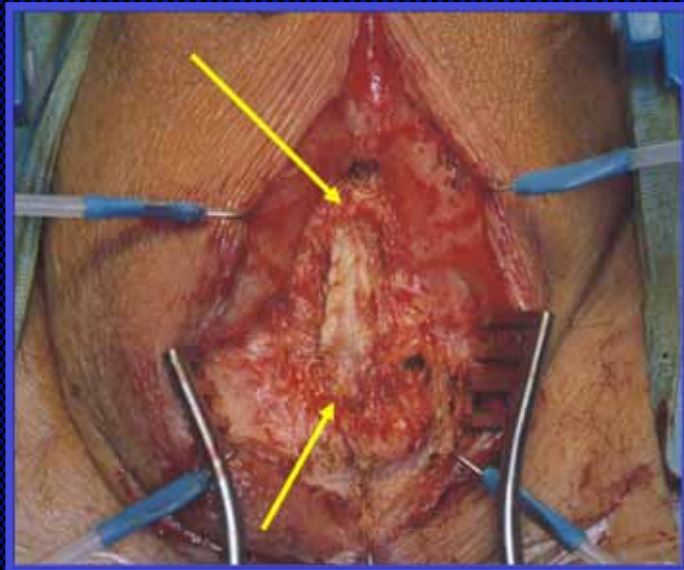
**Center for Reconstructive Urethral Surgery**



# Aim of this study

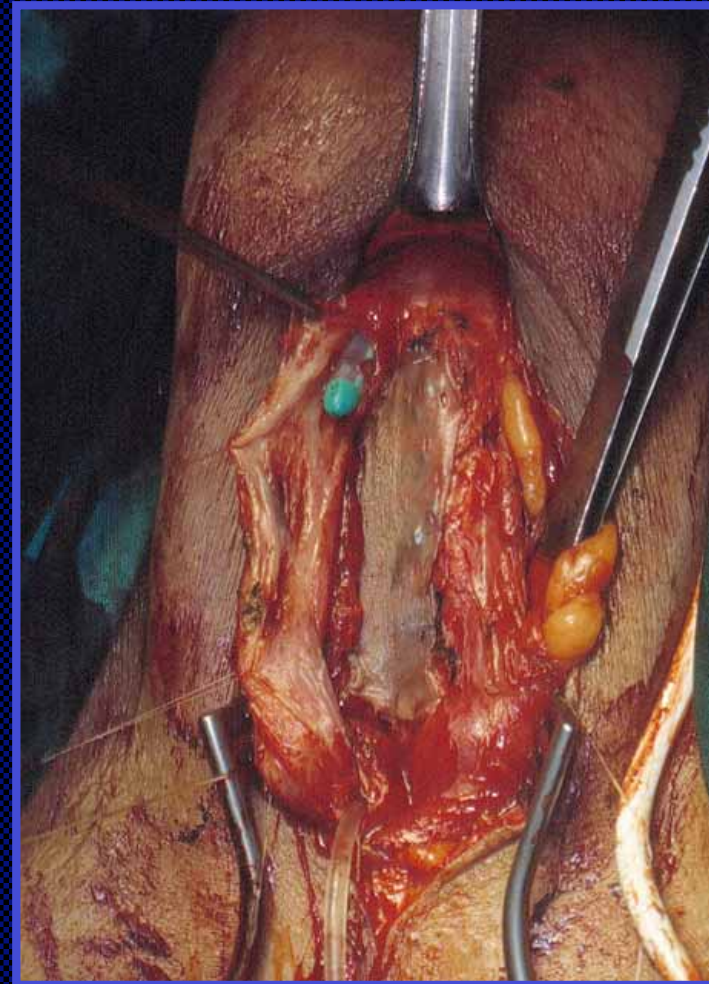
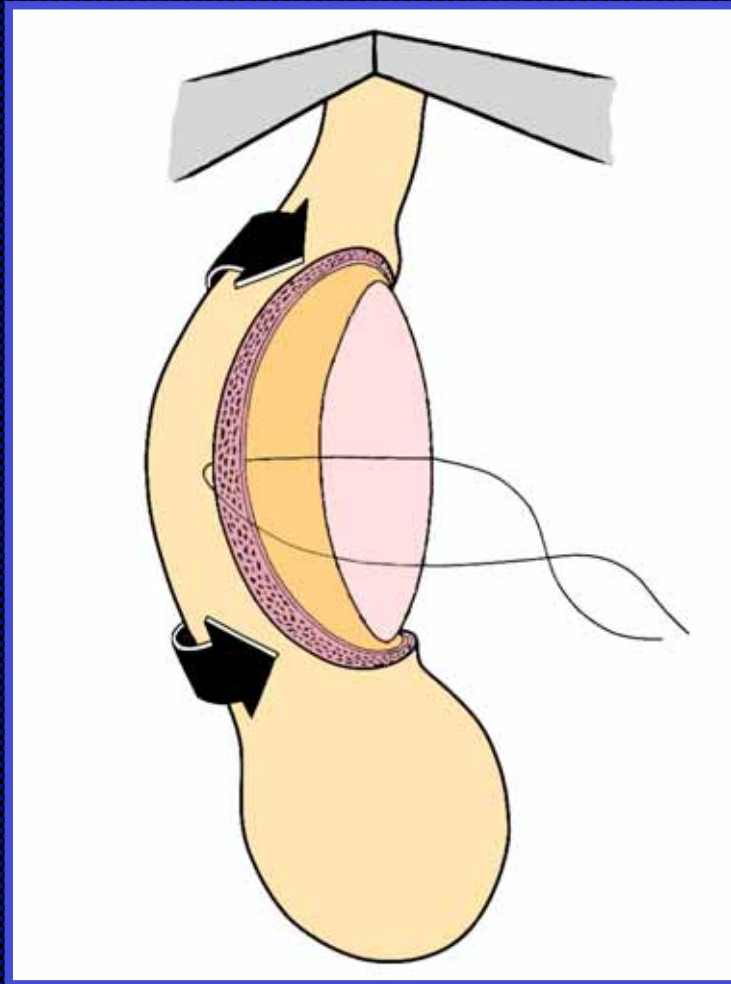
We retrospectively reviewed the patterns of failures following 107 different bulbar onlay graft urethroplasties.

We investigated the prevalence and location of anastomotic fibrous ring strictures, occurring at the apical anastomosis between the graft and the urethral plate.





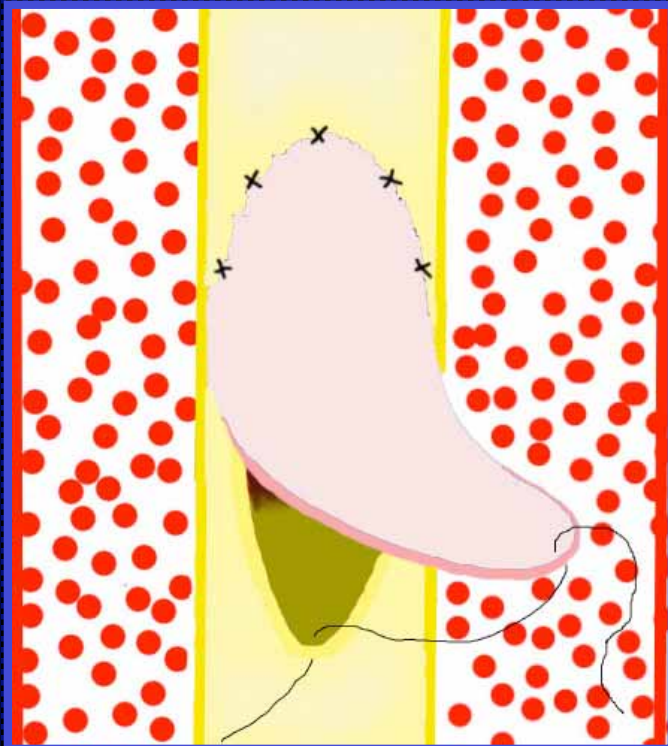
45 patients



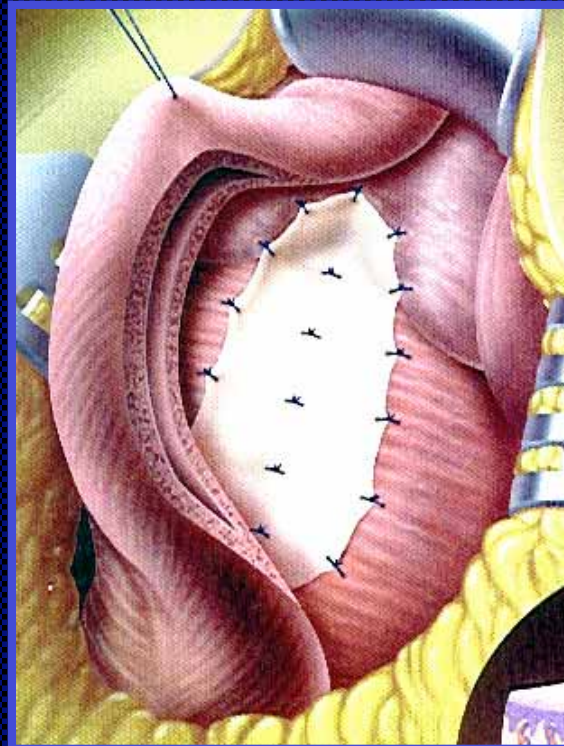
Dorsal onlay **skin** graft urethroplasty



**50 patients**



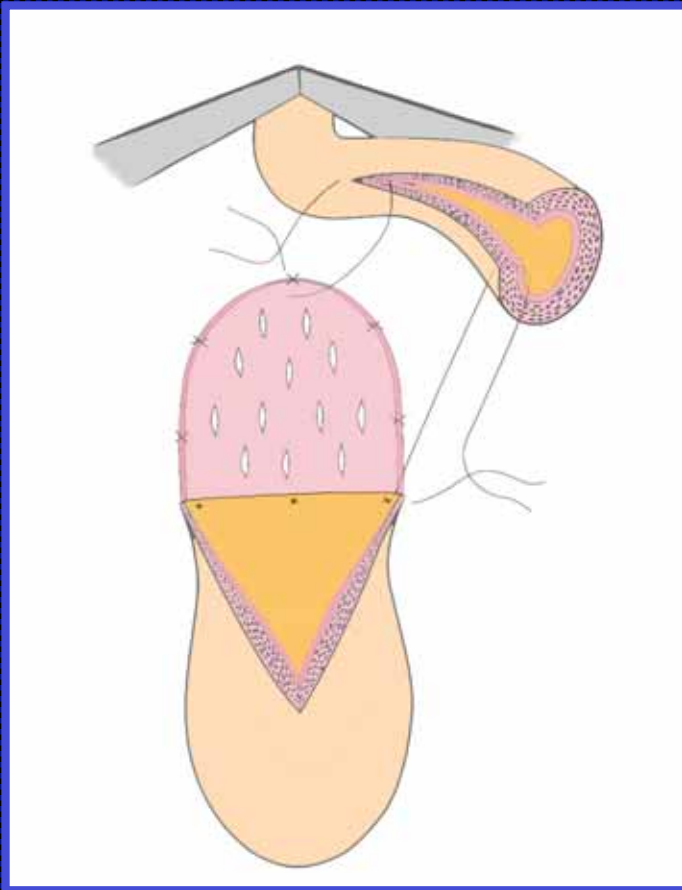
**Ventral**



**Dorsal**

**Buccal mucosa onlay graft urethroplasties**

# 12 patients



**Buccal mucosa** augmented anastomotic urethroplasty





# Prevalence of anastomotic fibrous rings in 107 bulbar urethroplasties

Surgical techniques	N°. patients	Failures		Site
		Entire graft	Anastomotic rings	
Dorsal onlay <b>skin</b> graft urethroplasty	45	8 (17%)	4 (8%)	2 distal 2 proximal
<b>Buccal mucosa</b> onlay graft urethroplasty	50	3 (6%)	5 (10%)	2 distal 3 proximal
<b>Buccal mucosa</b> augmented anastomotic urethroplasty	12	1 (8%)	1 (8%)	1 proximal
<b>Total</b>	<b>107</b>	<b>12 (11%)</b>	<b>10 (9%)</b>	<b>4 distal 6 proximal</b>

G. Barbagli et al., J. Urol, August 2006, in press



# Prevalence of anastomotic fibrous rings in 381 bulbar urethroplasties

Authors-Journal	N°. patients	Failures		Site
		Entire graft	Anastomotic rings	
Iselin et al. J Urol 1999	29	/	1	proximal
Guralnik et al. J Urol 2001	29	/	2	1 distal 1 proximal
Chapple et al, J Urol 2002	122	14	12	not reported
Elliot et al, J Urol 2003	60	2	4	4 distal
Kellner et al, J Urol 2004	23	/	3	3 distal
Berglund et al, J Urol 2004	18	/	1	not reported
Abouassaly et al, J Urol 2005	100	/	8	not reported
<b>Total</b>	<b>381</b>	<b>16 (4%)</b>	<b>31 (8%)</b>	<b>8 distal 2 proximal</b>

# Surgical treatment of 22 failures

Failures	N. patients	Surgical repair
Entire grafted area	12	6 Staged urethroplasty 6 Definitive perineal urethrostomy
Anastomotic rings	10	2 One-stage skin graft urethroplasty 1 End-to-end anastomosis 7 Internal urethrotomy

G. Barbagli et al., J. Urol, August 2006, in press



# Surgical treatment of 47 failures

Failures	N. patients	Surgical repair
Entire grafted area	16	Not reported
Anastomotic rings	31	Internal urethrotomy Dilation



J. Urol, from 1999 to 2005

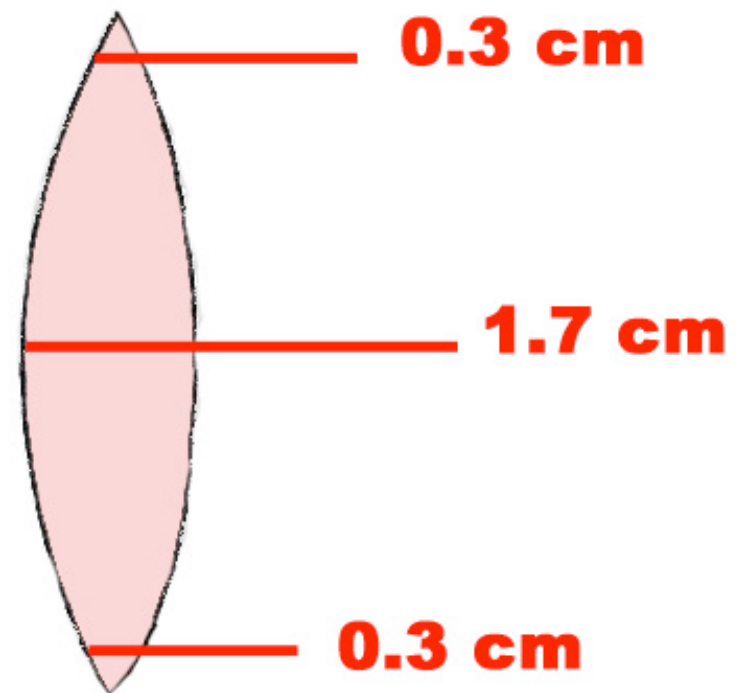
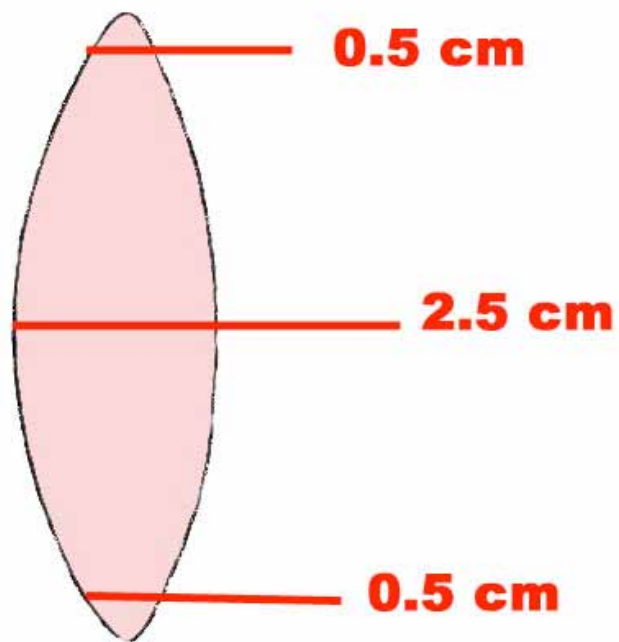
# Causes of anastomotic fibrous rings after bulbar onlay graft urethroplasty

- recurrence of the disease
- graft retraction
- suture lines
- suture material
- ischemia and poor vascularized graf bed

G. Barbagli et al., J. Urol, August 2006, in press

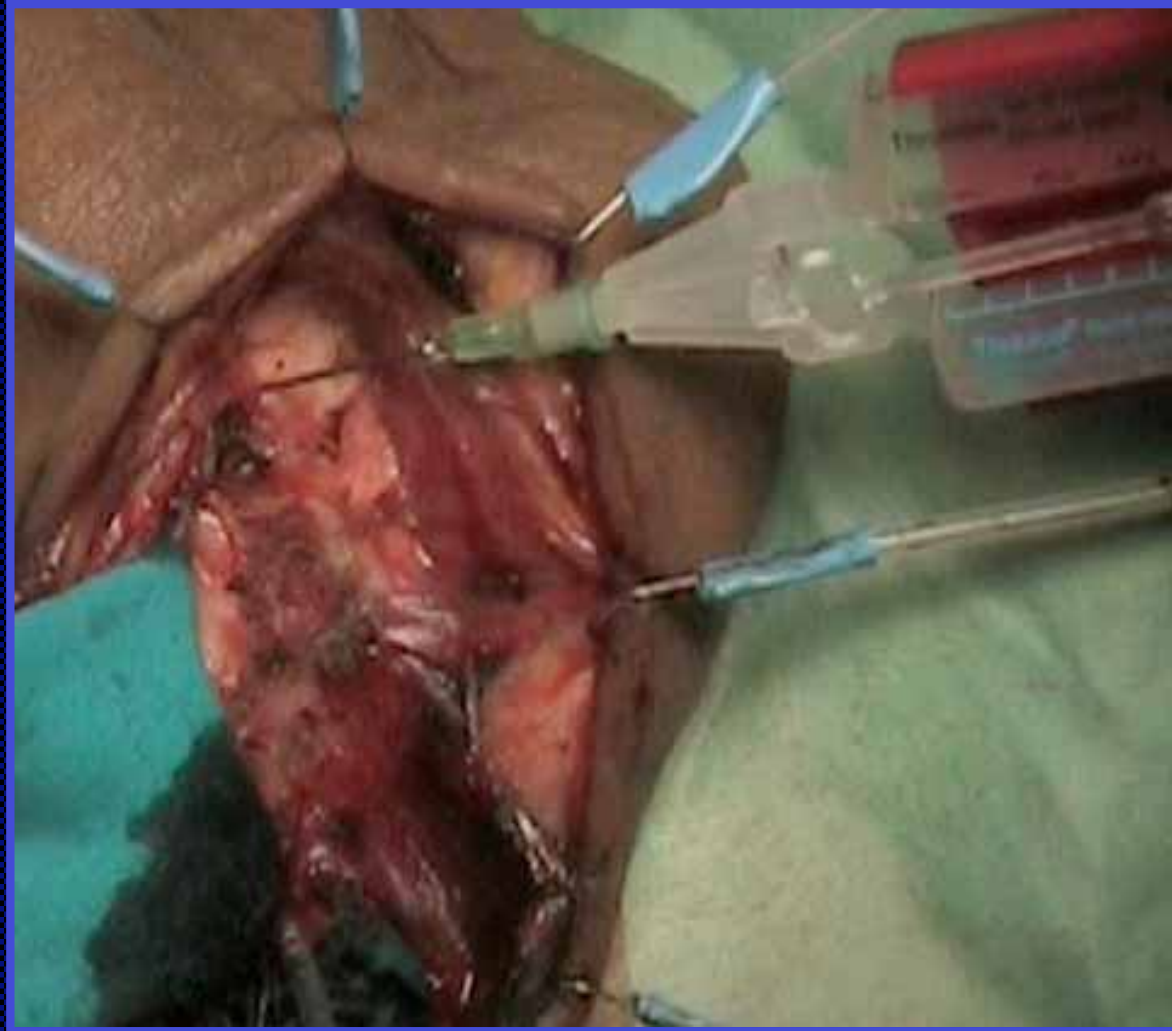


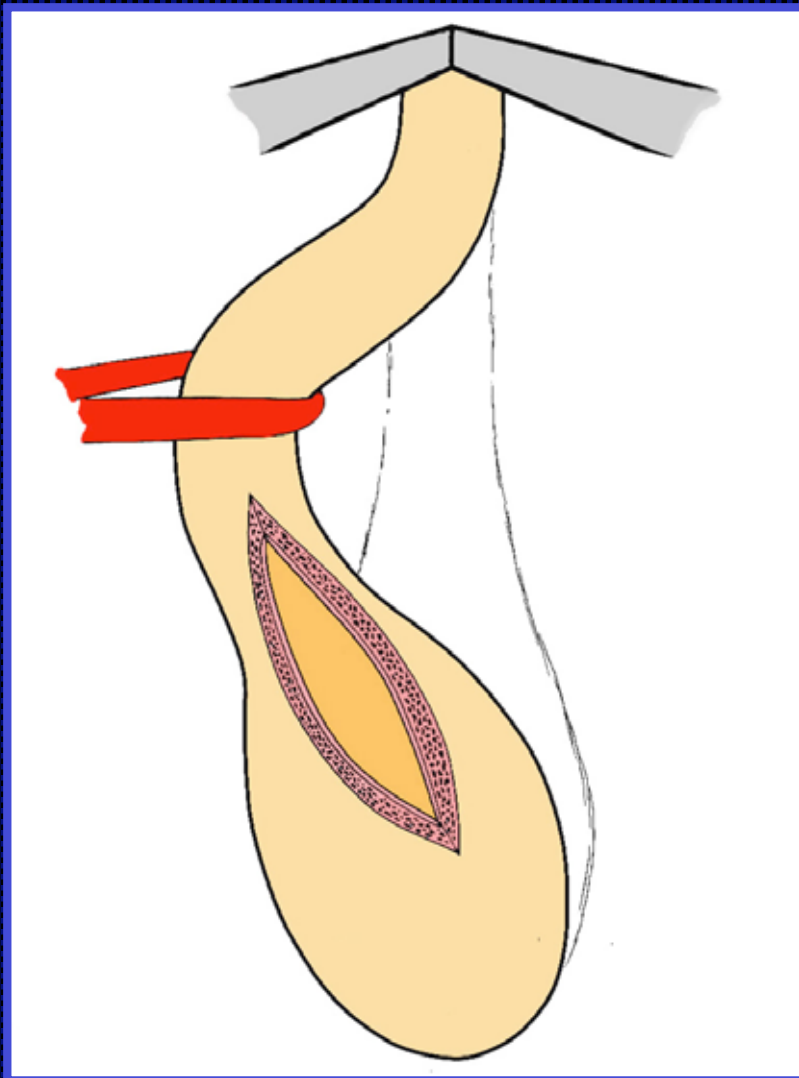


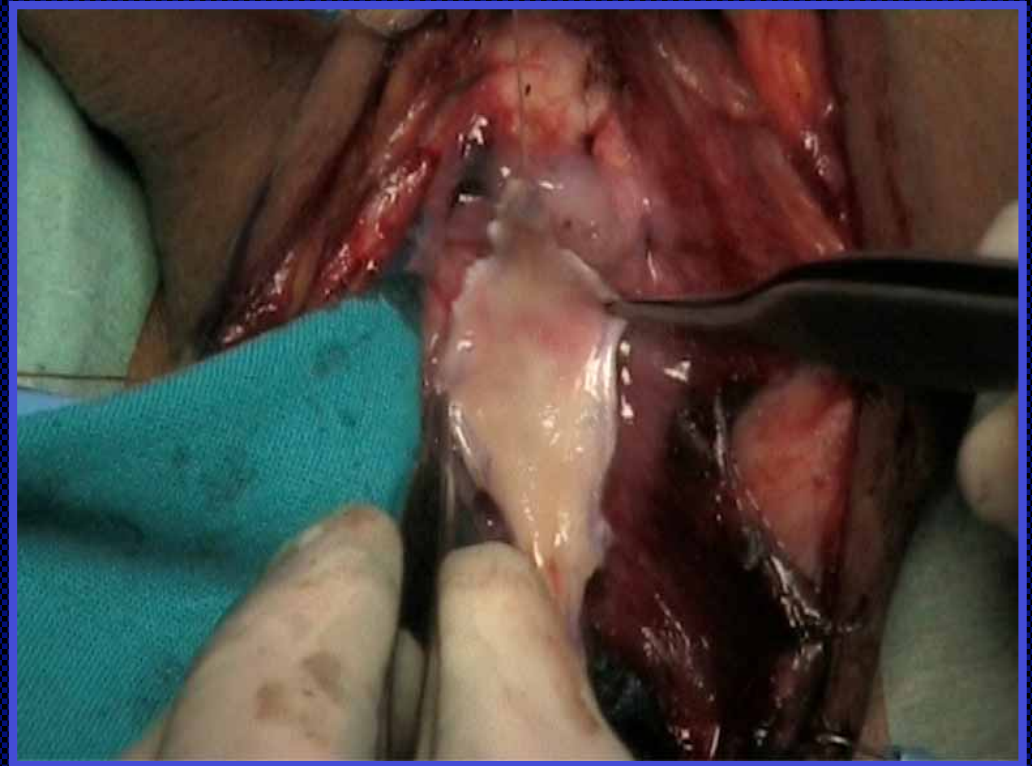
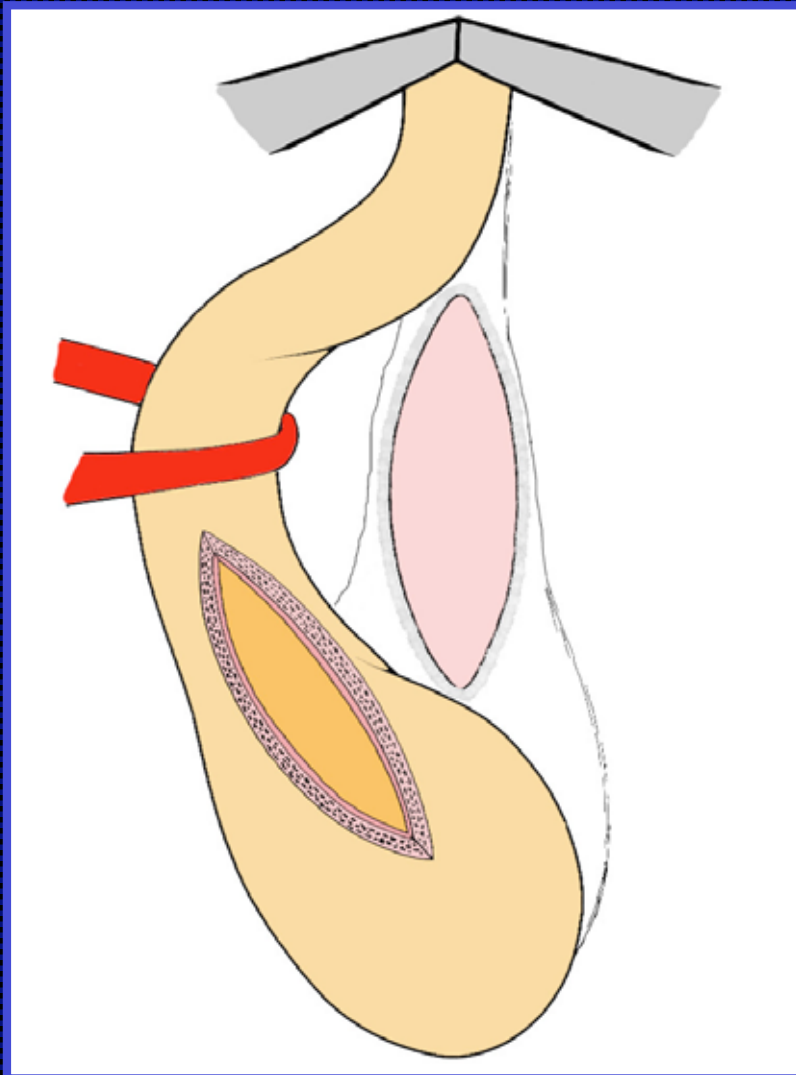


## Graft retraction

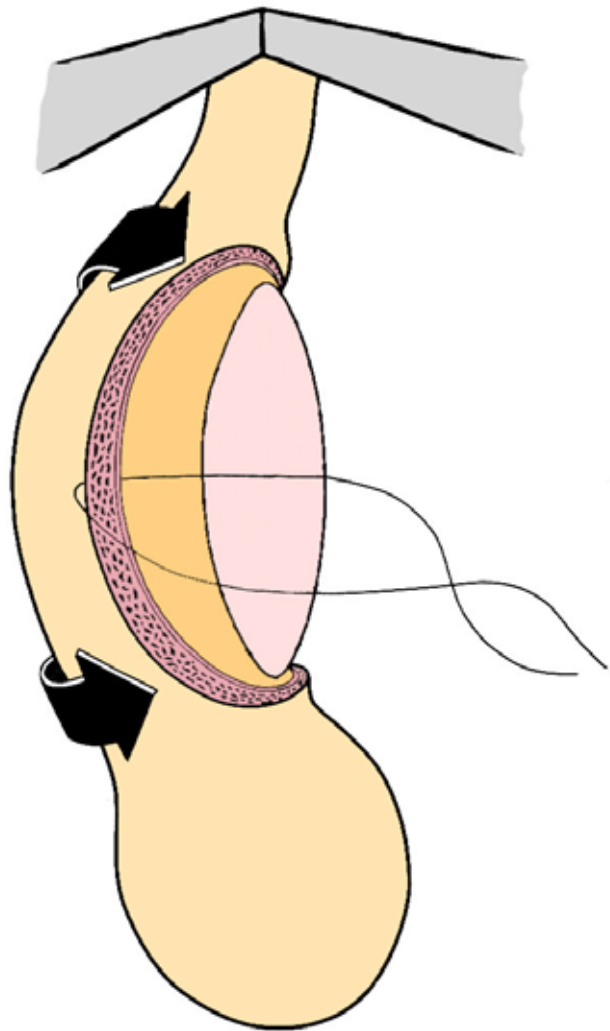
# Dorsal onlay graft urethroplasty using fibrin glue



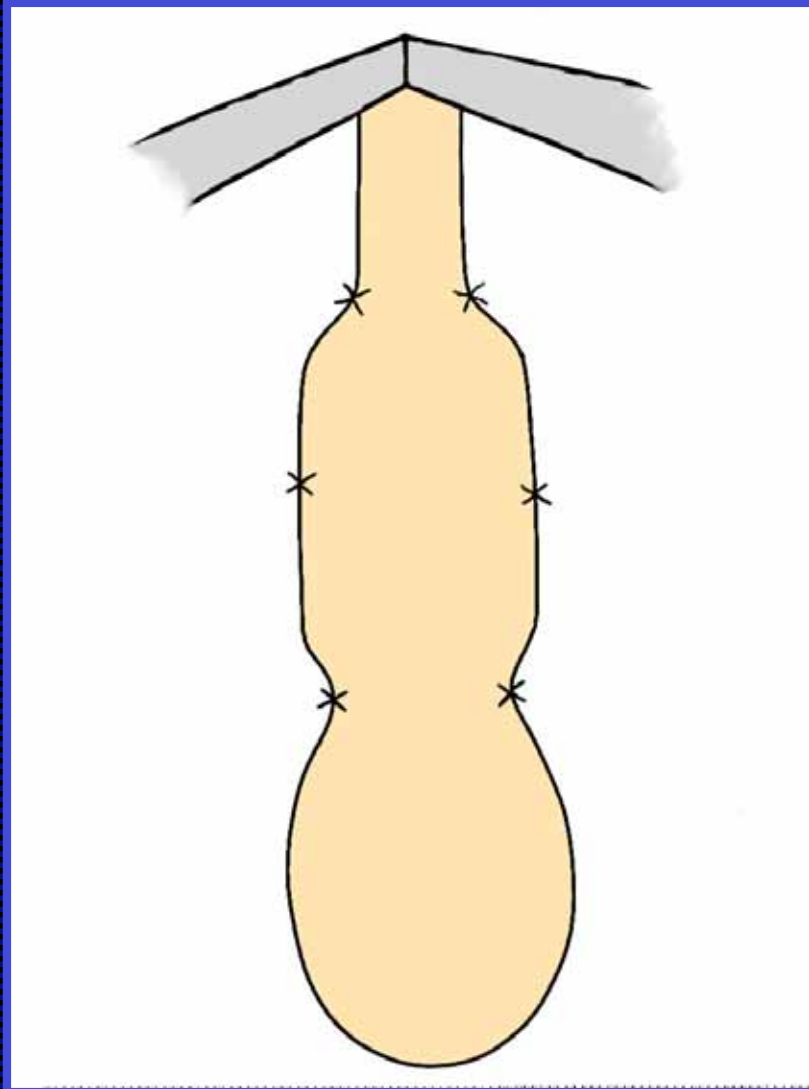


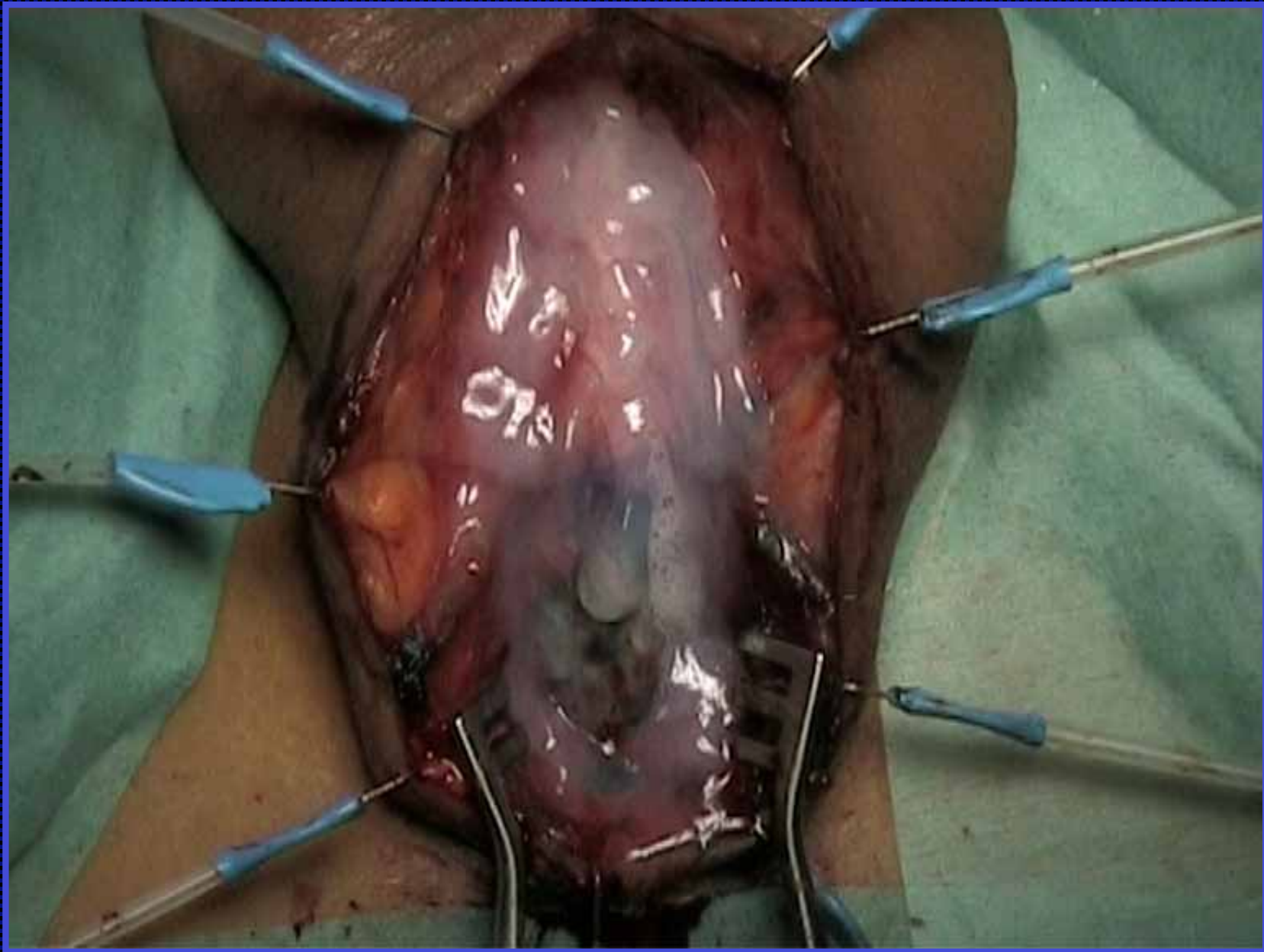












**Center for Reconstructive Urethral Surgery**



# Conclusion

**Anastomotic fibrous ring stricture continue to be a relatively rare but unpreventable complication after bulbar onlay graft urethroplasty, using different surgical techniques and different substitute materials.**



# Conclusion

**The graft failure at the anastomotic sites significantly contributes to deteriorate the long-term success of bulbar substitution urethroplasties using penile skin or buccal mucosa as substitute materials.**



# Difference on the success-rate in 107 bulbar urethroplasties

Success-rate <b>excluding</b> the failures due to anastomotic rings	Success-rate <b>including</b> the failures due to anastomotic rings
85%	89%

G. Barbagli et al., J. Urol, August 2006, in press





# Difference on the success-rate in 381 bulbar urethroplasties

Success-rate <b>excluding</b> the failures due to anastomotic rings	Success-rate <b>including</b> the failures due to anastomotic rings
92%	96%

J. Urol, from 1999 to 2005



# Conclusion

**Further studies into the basic mechanism of urethral wound healing and spongiofibrosis are strongly suggested to clarify the etiology of this particular restrictive disease.**





## **Madonna del Parto - Piero della Francesca**

**Monterchi - Arezzo**

