



# Guido Barbagli

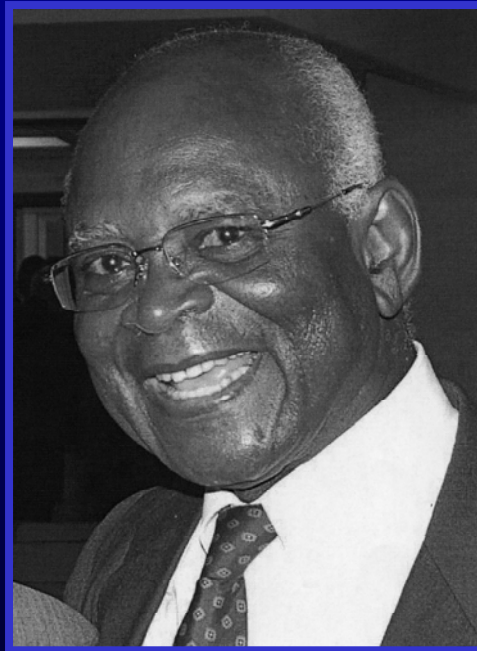
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Website: [www.urethralcenter.org](http://www.urethralcenter.org)

**Dedicated to John Quartey, respected colleague and friend. His passing is a great personal as well as professional loss**



**Professor John Quartey, FRCS**



# Reconstruction of urethral strictures due to lichen sclerosis



The discussion I have prepared for today is on a difficult topic as it is not easy to provide definitive guidelines of treatment for urethral stricture due to **lichen sclerosis**

In any case, I sincerely hope to provide you with useful information on the problems involved in the treatment of this complex type of stricture and disease



# **Lichen sclerosis and urethral stricture**

**Terminology**

**Epidemiology**

**Pathogenesis**

**Treatment**

# Lichen sclerosus and urethral stricture

## Terminology



- **Balanitis xerotica obliterans**
- **Lichen sclerosus**
- **Lichen sclerosus et atrophicus**
- **Kraurosis vulvae**

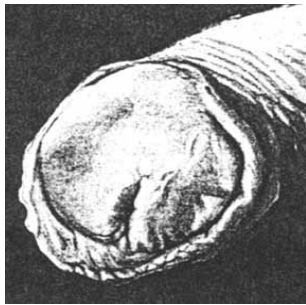


**Balanitis xerotica obliterans (post operationem) und ihre  
Beziehungen zur „Kraurosis glandis et praeputii penis“.**

Von  
**A. Stühmer.**

Mit 4 Textabbildungen.

*(Eingegangen am 14. Mai 1928.)*







Journal of the  
American Academy of

# DERMATOLOGY

VOLUME 32 NUMBER 3 MARCH 1995

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## CONTINUING MEDICAL EDUCATION

### Lichen sclerosis

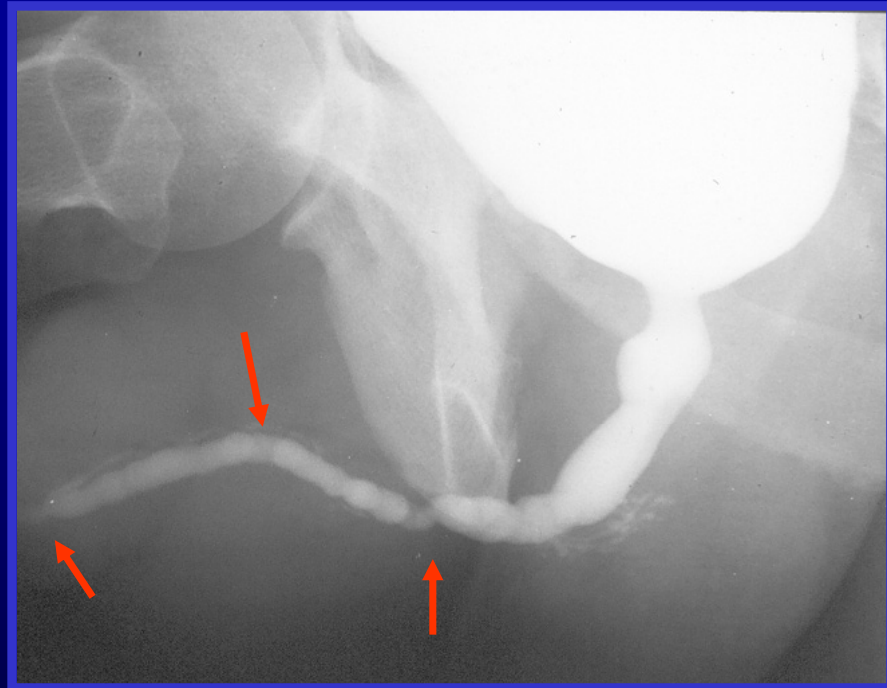
LTC Jeffrey J. Meffert, MC, USAF, COL Brian M. Davis, MC, USAF, and  
COL Ronald E. Grimwood, MC, USAF *Lackland AFB, Texas*

In 1995, the **American Academy of Dermatology** recommended that the terme **lichen sclerosis** be used in future reports to define the true incidence and the malignant potential of **lichen sclerosis**

# **Lichen sclerosus is a complex immunological disorder of the genitalia involving:**



**glans, meatus, coronal  
sulcus and penile skin**



**navicularis, penile and bulbar  
urethra**

# Lichen sclerosis is a chronic, evolving disease



→  
2 years after



↓  
5 years after



# Lichen sclerosus

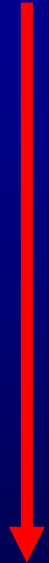
Sexual activity

Urinary function

Aesthetic appearance of the genitalia

Association with penile cancer

**Poor quality of life**



# Lichen Sclerosus in 68 Patients With Squamous Cell Carcinoma of the Penis

*Frequent Atypias and Correlation With Special Carcinoma Variants Suggests a Precancerous Role*

*Elsa F. Velazquez, MD, and Antonio L. Cubilla, MD*

**Lichen sclerosus** is a **pre-cancerous condition** for at least some types of penile cancers, especially those not related to HPV

**Am J Surg Pathol, 2003**

## Penile Carcinoma in Patients With Genital Lichen Sclerosus: A Multicenter Survey

G. Barbagli, E. Palminteri, F. Mirri, G. Guazzoni, D. Turini and M. Lazzeri\*

*From the Center for Urethral and Genitalia Reconstructive Surgery (GB, EP), Arezzo, Sezione di Anatomia Patologica, Ospedale S. Maria alla Gruccia (FM), Montevarchi, San Raffaele-Vita Salute Hospital and University (GG), Milano and Department of Urology, Santa Chiara Firenze (DT, ML), Florence, Italy*

The incidence of neoplastic changes in patients with  
**lichen sclerosis** ranges from 2.3% to 8.4%

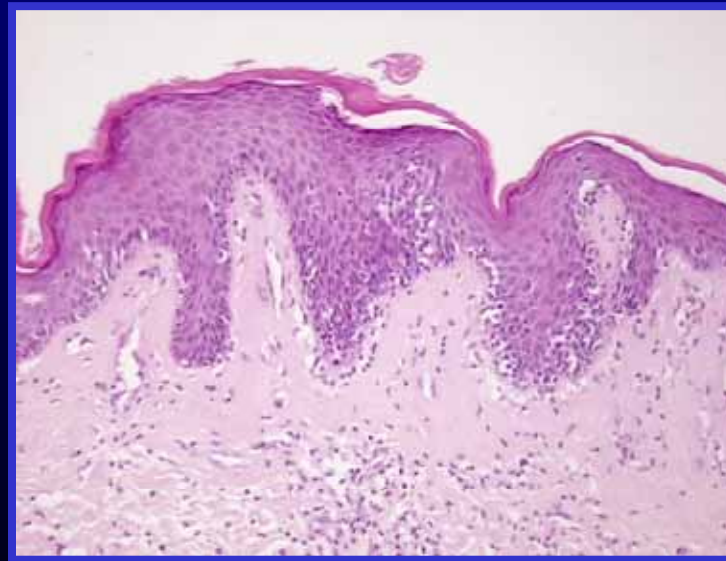
J Urol, 2006





# Histopathological findings for diagnosis of lichen sclerosis

- Hyperkeratosis and vacuolar degeneration of the basal layer
- Edema and homogenisation of collagen in the upper dermis
- Band-like inflammatory infiltrate



- Slight
- Moderate
- Severe



The name “**Balanitis xerotica obliterans**” given this disease by Stühmer in 1928 is no longer adequate to describe this very serious immunological disorder



# Lichen sclerosus and urethral stricture

## Epidemiology



# Lichen sclerosis and urethral stricture

authors	journal, year	patients
Venn et al.	Br J Urol, 1998	28
Barbagli et al.	Lancet, 1999	31
Depasquale et al.	Br J Urol, 2000	128
Andrich et al.	J Urol, 2001	33
Barbagli et al.	Urol Int, 2004	102

# Lichen sclerosis and urethral stricture

- **Lichen sclerosis** is increasing in all Centres specialized in treatment of urethral and genitalia diseases

A.U.A. Annual Meeting 2001, Anaheim - USA

- Involvement of the urethra in genital **lichen sclerosis** appears to be much more common than previously reported
- Prior to diagnosis, many patients had symptoms for years, thus encouraging the disease's progression over time
- In our experience, when the urethra is involved in the disease, 41% of patients showed panurethral stricture

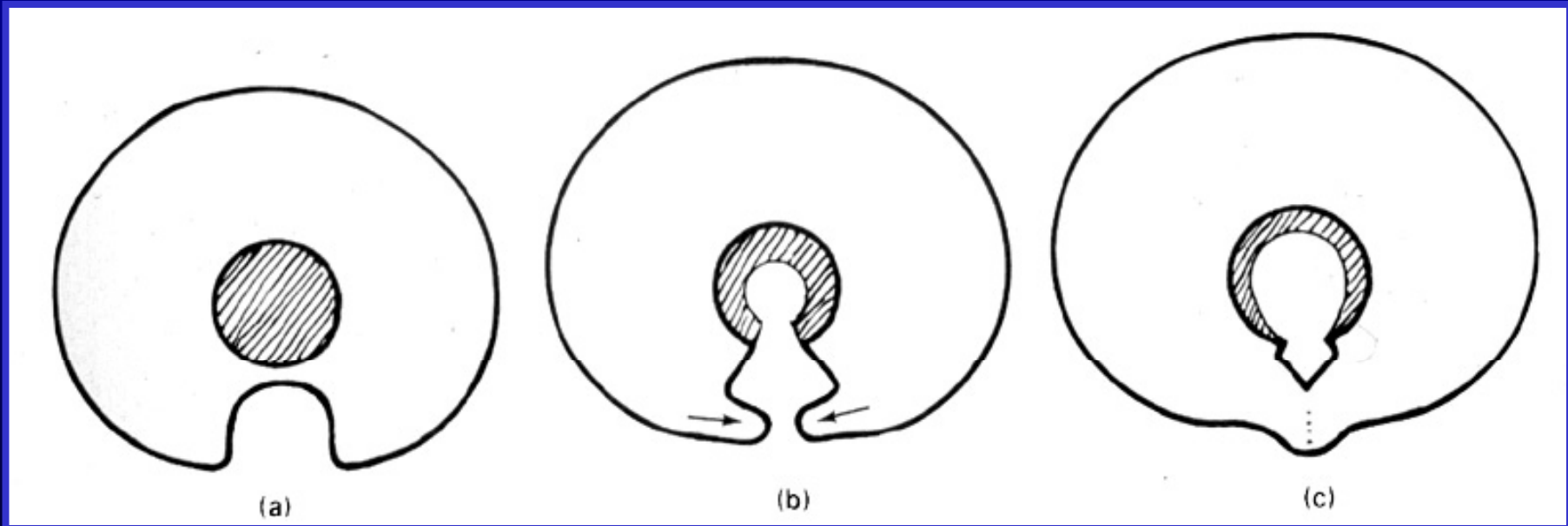
Barbagli et al., Urol Int, 2004

# Lichen sclerosus and urethral stricture

## Pathogenesis



The embryology of the glans may explain the involvement of the external urinary meatus and navicularis tract in **lichen sclerosus**



The developing glanural urethra involves the preputial folds that fuse to genital folds

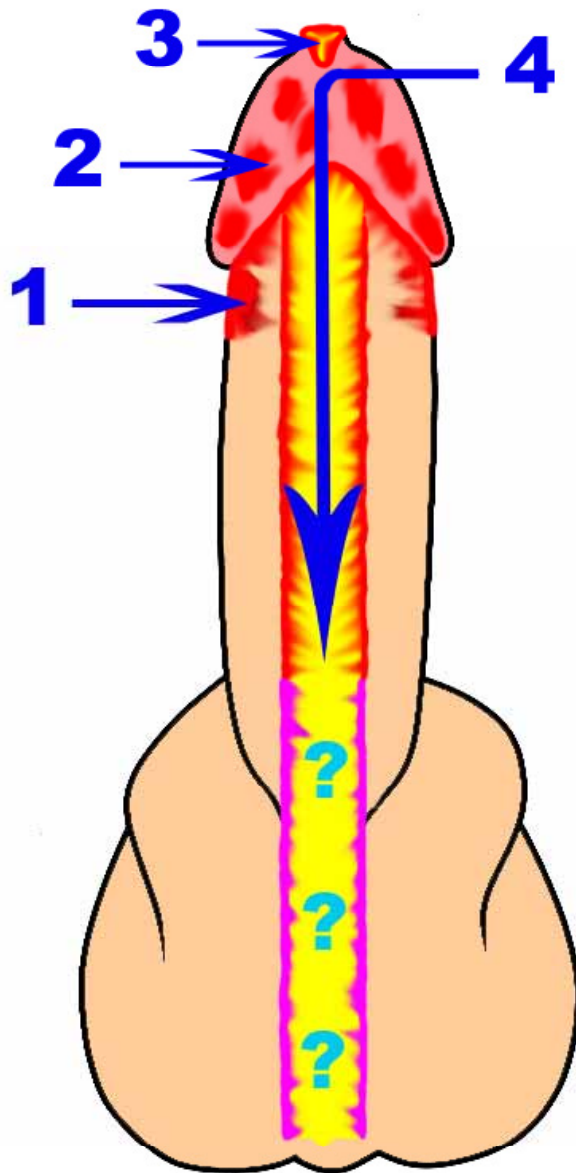
# Lichen sclerosis and urethral stricture

- **Venn and Mundy** suggested that panurethral stricture in patients with **lichen sclerosis** may be caused by the trauma of repeated dilation or instrumentation

Br J Urol, 1998

- **Barbagli et al.** showed that **lichen sclerosis** caused urinary retention or difficulties in 60% of patients who had not undergone previous urethral dilation, instrumentation or surgery

Urol Int, 2004



**1 foreskin**

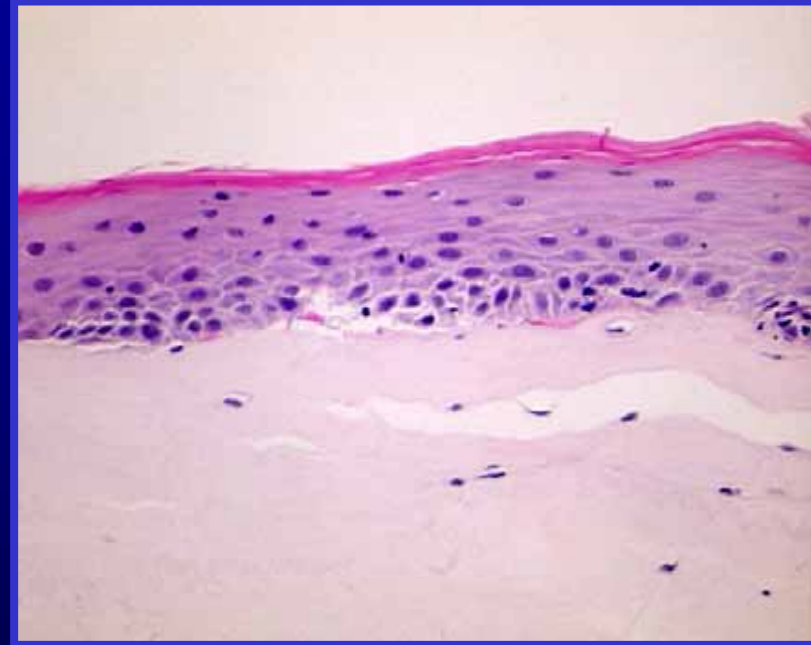
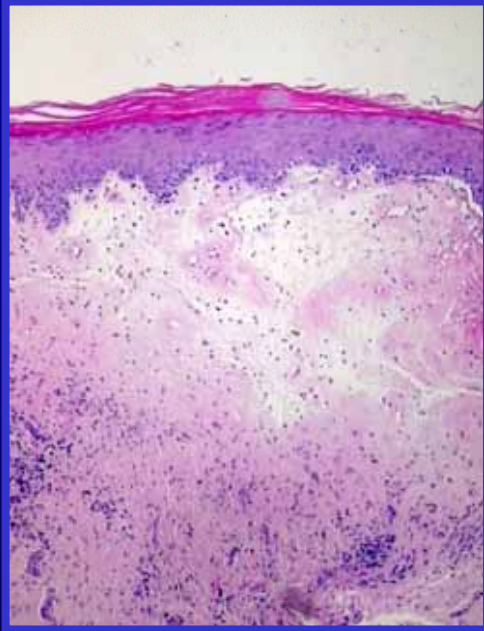
**2 glans**

**3 meatus**

**4 penile urethra**

**? bulbar urethra**

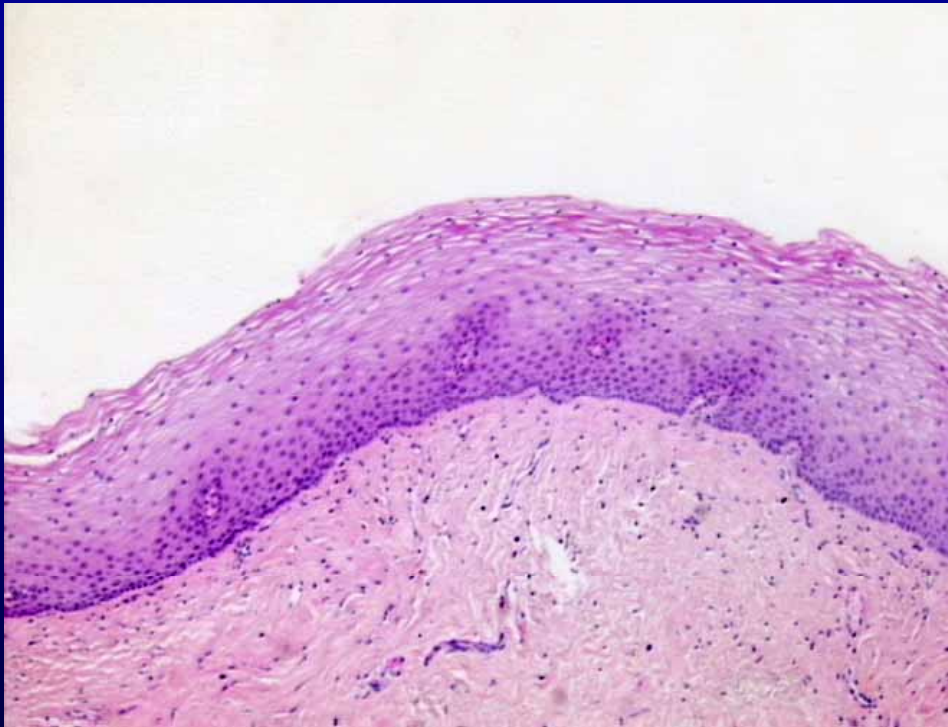
# Lichen sclerosus and urethral stricture



The penile urethra shows the typical histological features of **lichen sclerosus** disease



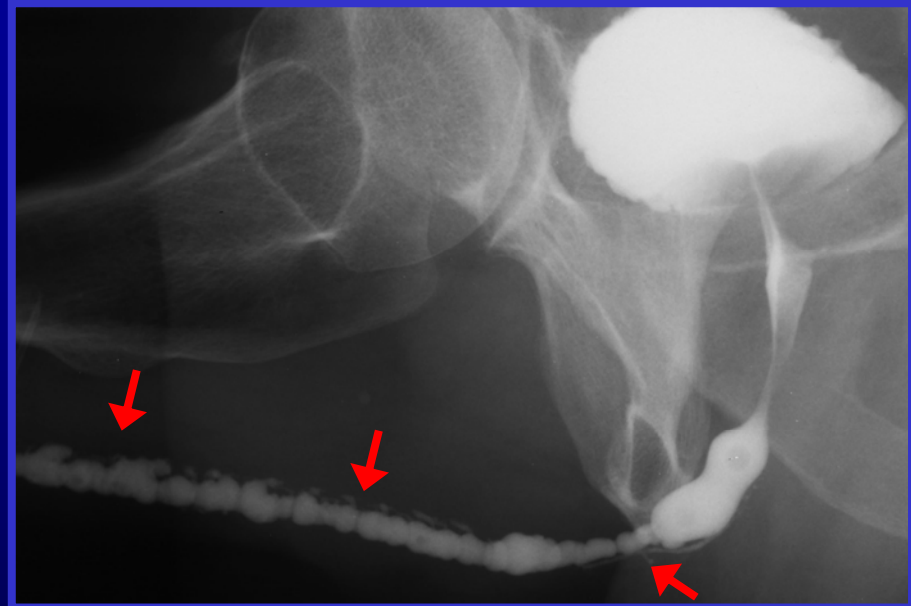
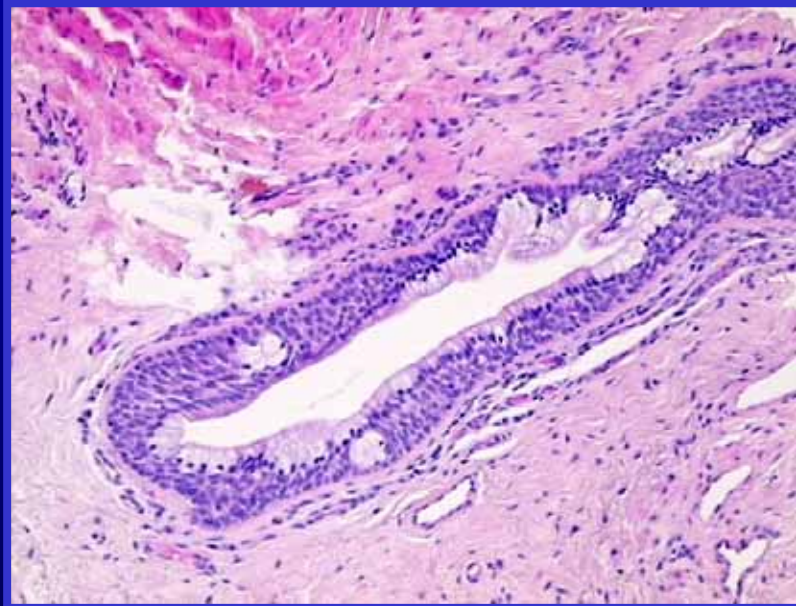
# Lichen sclerosus and urethral stricture



**Squamous  
metaplasia**

The bulbar urethra shows no histological features of  
**lichen sclerosus** disease

# Lichen sclerosus and urethral stricture



**Squamous metaplasia** involves the ductus of the periurethral glands, which becomes rigid and wide open. Thus the retrograde urethrography is able to depict the periurethral glands

# Questions to resolve

- Is squamous metaplasia in the bulbar urethra caused by distal obstruction or is it related to histological changes caused by **lichen sclerosus**?
- What is the role of squamous metaplasia in causing urethral obstruction over time?
- Is squamous metaplasia in the bulbar urethra a typical lesion in patients with **lichen sclerosus** or is it a typical lesion in any patient with bulbar urethral stricture?

**My pathologist and I are currently working on resolving these questions, involving a large series of patients in our study**



**Doctor Francesco Mirri**



# Lichen sclerosus and urethral stricture

## Treatment



# Evaluation of the surgical outcome

- Patients with urethral stricture disease due to **lichen sclerosis** are treated with so many various surgical approaches that it is really impossible to evaluate and standardize the long-term outcome of all these techniques

- The literature dealing with this argument is still terribly confused and does not furnish a reliable interpretation of the available data

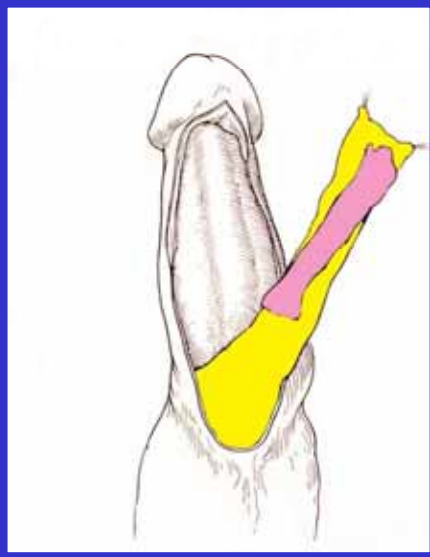


# One-stage repair

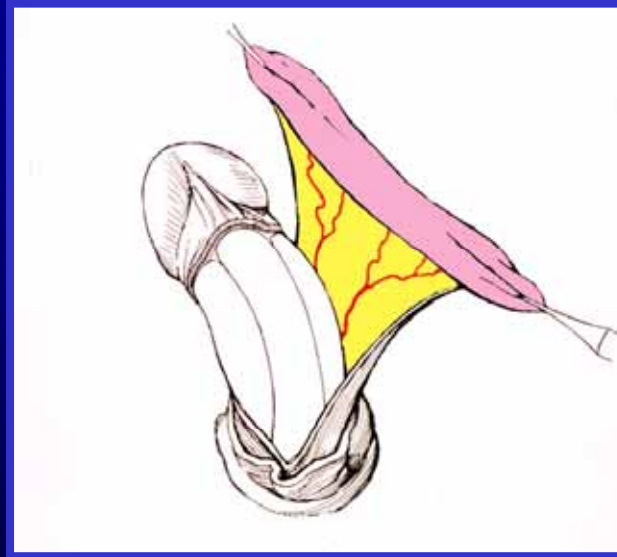
- Penile dartos fascial flap with skin island techniques
- Dorsal inlay buccal mucosal graft urethroplasty
- S. Kulkarni urethroplasty



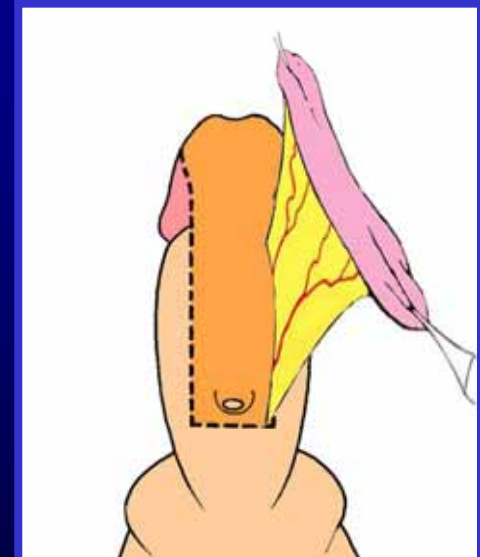
# Penile dartos fascial flap with skin island techniques



**Jordan**



**McAninch**



**Graft + flap**



## Penile skin flaps: results

authors	patients	follow-up	success	failure
Venn et al. 2000	12	36	0%	100%
De Pasquale et al. 2000	42		10%	90%
Alsikafi et al. 2004	20	89	55%	45%
Virasoro et al. 2006	12	48		6%
Garcia et al. 2006	22	19	70%	30%

## Graft + flap: results

authors	patients	follow-up	success	failure
Brady et al. 1999	10	27	87%	13%
Berglund et al. 2004	18		95%	5%

Caution must be exercised in recommending fasciocutaneous penile skin flaps for long-term treatment of **lichen sclerosis** strictures

Alsikafi et al., J Urol, 2004

Better understanding of the physiopathology of **lichen sclerosis** has changed our way of treating fossa navicularis strictures

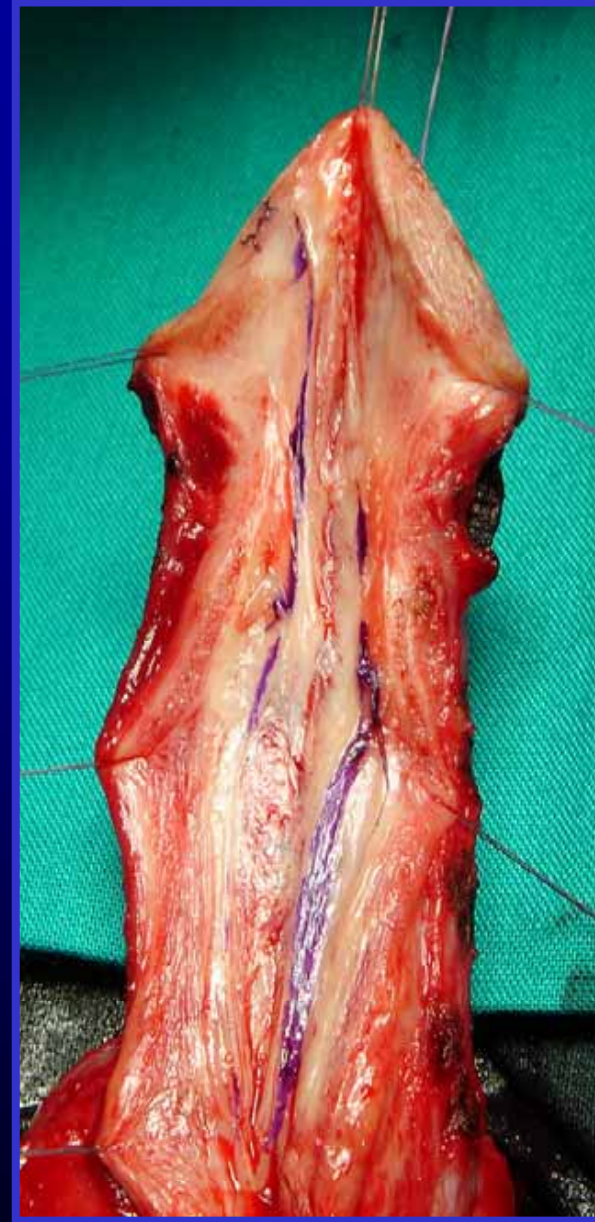
Virasoro et al., J Urol, 2006

There is a relatively low success rate even when the skin used for the flap appears to be free of **lichen sclerosis**

Garcia et al., J Urol, 2006

# Dorsal inlay buccal mucosal graft urethroplasty





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# Results

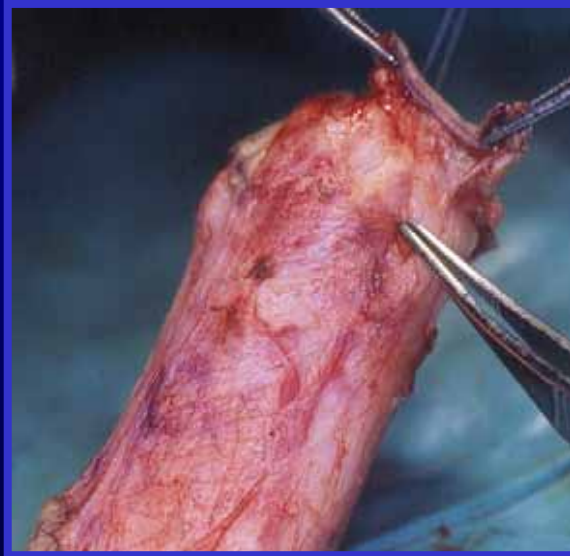
- Small number of patients
- Satisfactory short-term results
- Long-term follow-up not available
- Meatal stenosis is a frequent complication



Barbagli 2006, unpublished data



# The glans is always deeply involved in the disease





# S. Kulkarni urethroplasty

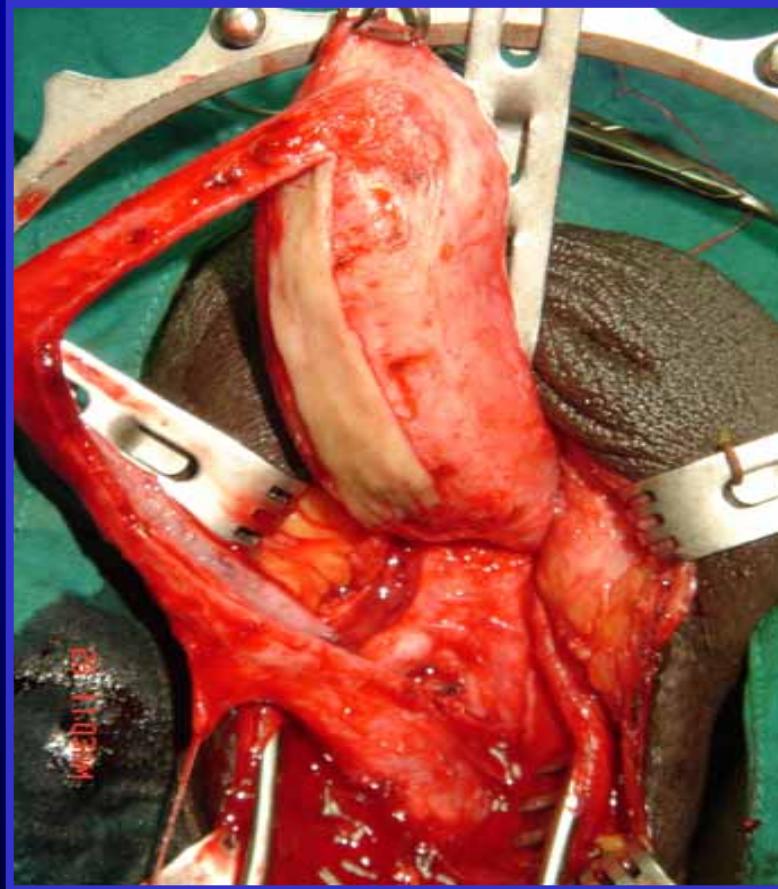


**Pune - India**

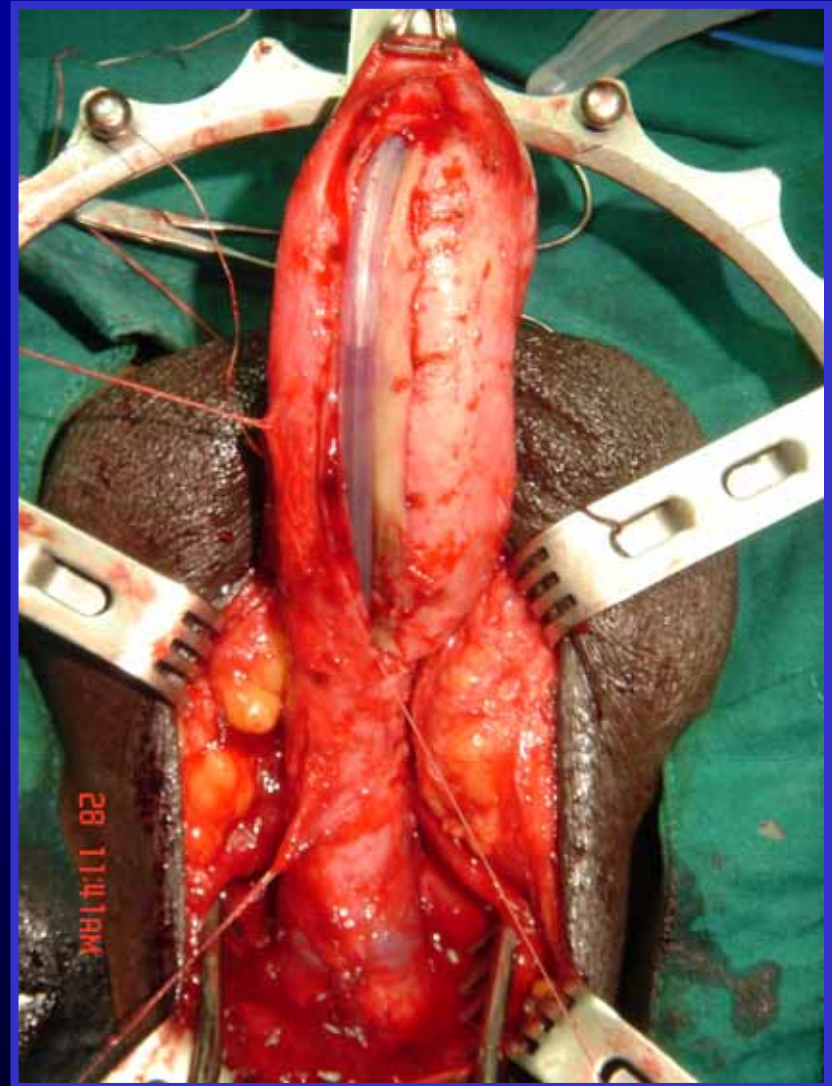
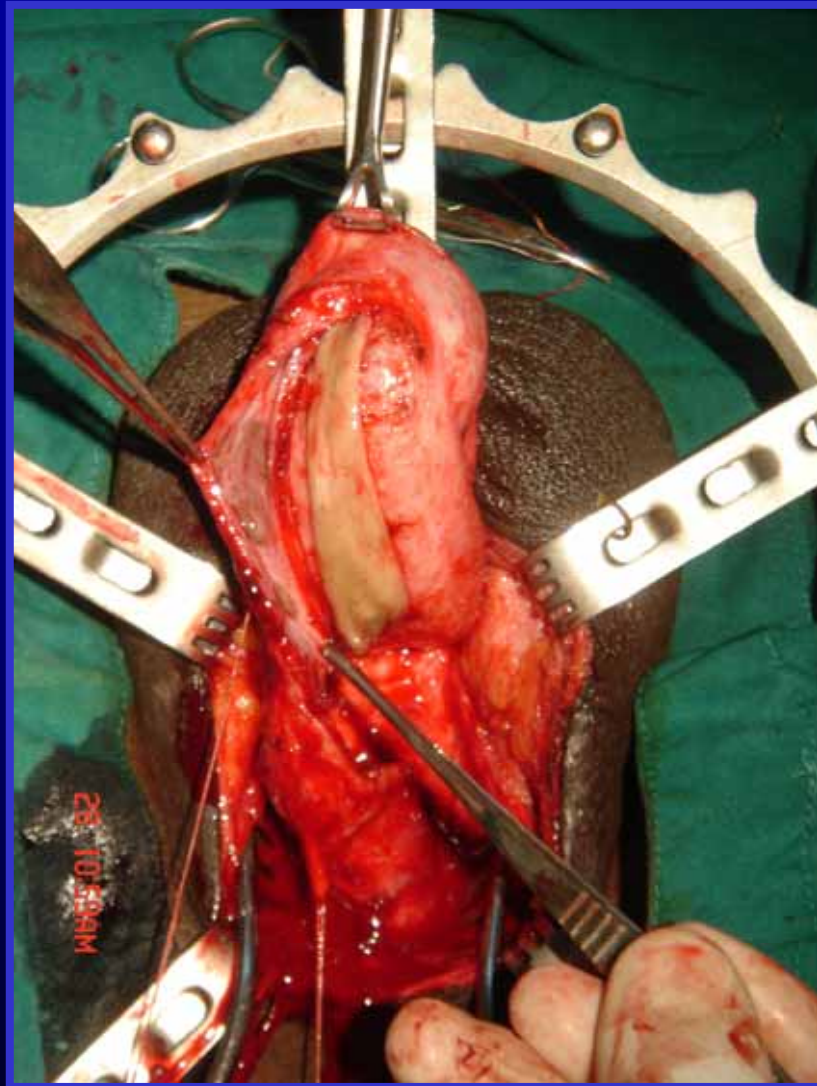
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# Kulkarni urethroplasty



**Full length dorsal buccal mucosal onlay graft urethroplasty**



# Results

authors	patients	follow-up	success	failure
<b>Kulkarni et al. 2000</b>	36	12	89%	11%
<b>Dubey et al. 2006</b>	25	33	88%	12%

# Multi-stage repair

- Wide meatotomy
- First stage - Johanson procedure
- A. Bracka combined technique
- Multi-stage buccal mucosal graft urethroplasty
- Perineal urethrostomy



# Wide meatotomy



# First stage - Johanson procedure









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**Wide meatotomy or first stage - Johanson procedure are selected particularly for patients in which the disease has caused urinary retention due to edema and acute inflammatory changes in the involved tissues**



# A. Bracka combined urethroplasty



**Stourbridge, United Kingdom**

**Center for Urethral and Genitalia Reconstructive Surgery**



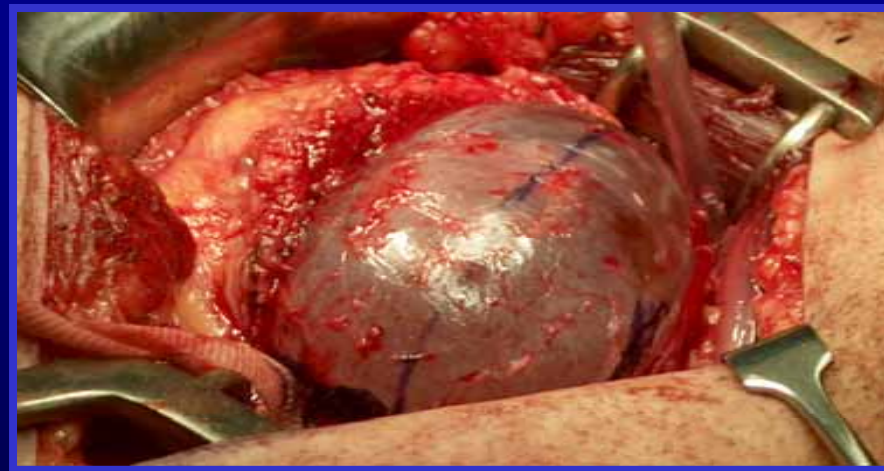
# Bracka combined urethroplasty

**First stage**



**buccal mucosa graft**

**Second stage**

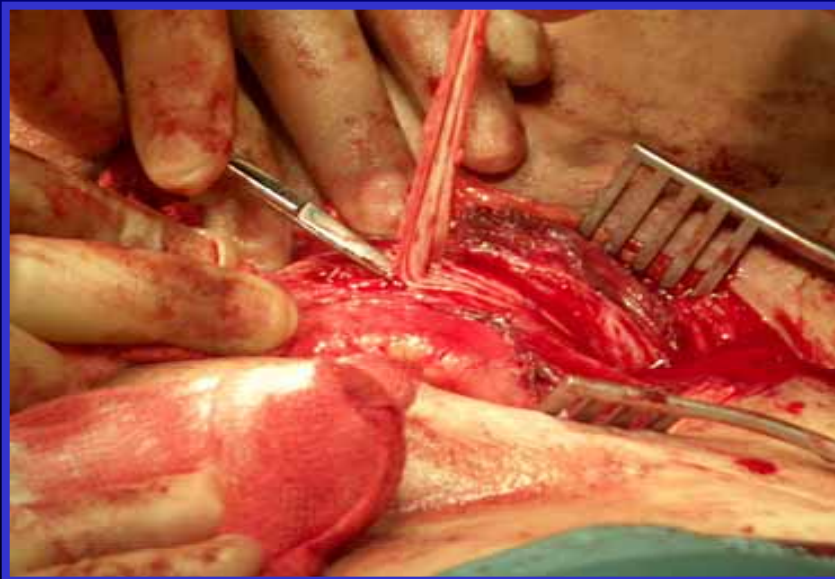
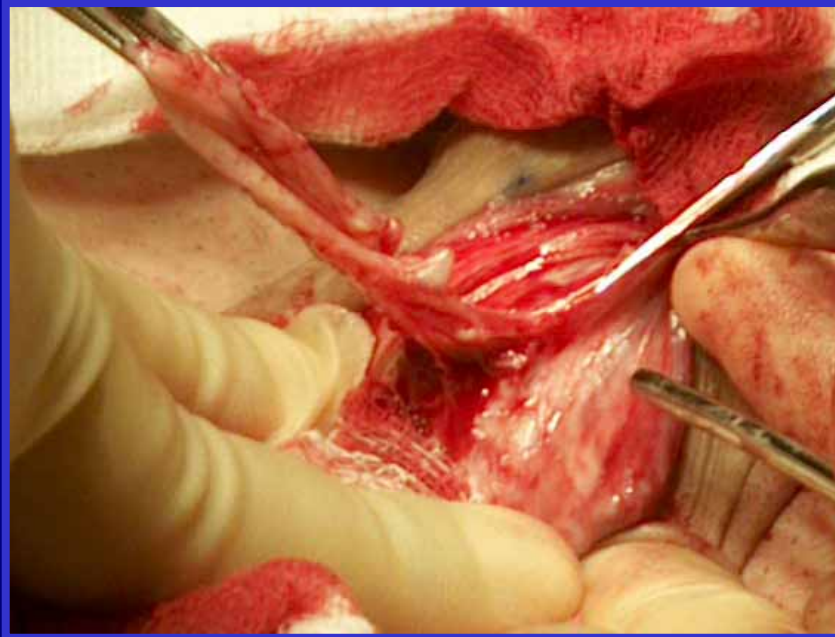


**bladder mucosa tube**

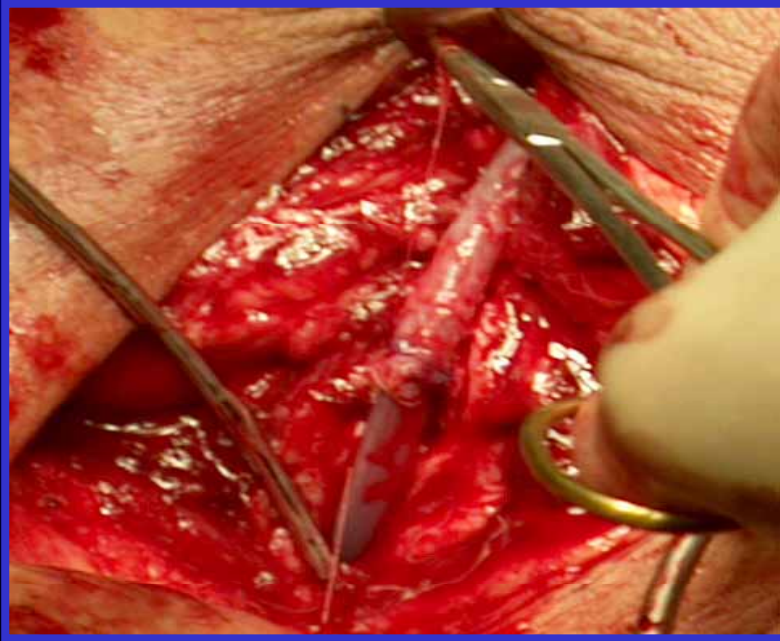




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# Results

- Patient requires periodic dilation over a long period
- Unpublished results
- A. Bracka reported a satisfactory final outcome (personal communication)



# Multi-stage buccal mucosal graft urethroplasty







# Results



**28% to 50% of patients  
require repeated surgical  
revision  
of the grafted area before  
the final urethral closure**

**Dubey et al., J Urol, 2006**



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# Results



**fistula**



**glans dehiscence**



**meatal stenosis**

**18% to 30% of patients showed complications following the second stage of urethroplasty, requiring new surgical revision**



# Definitive perineal urethroostomy



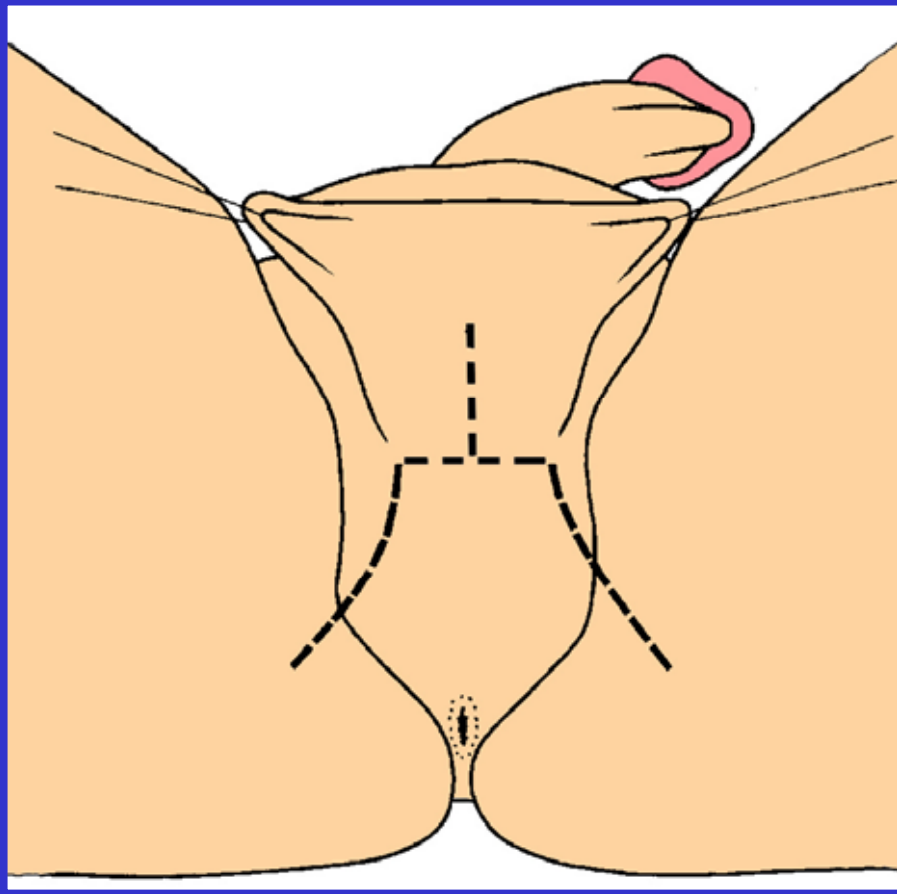
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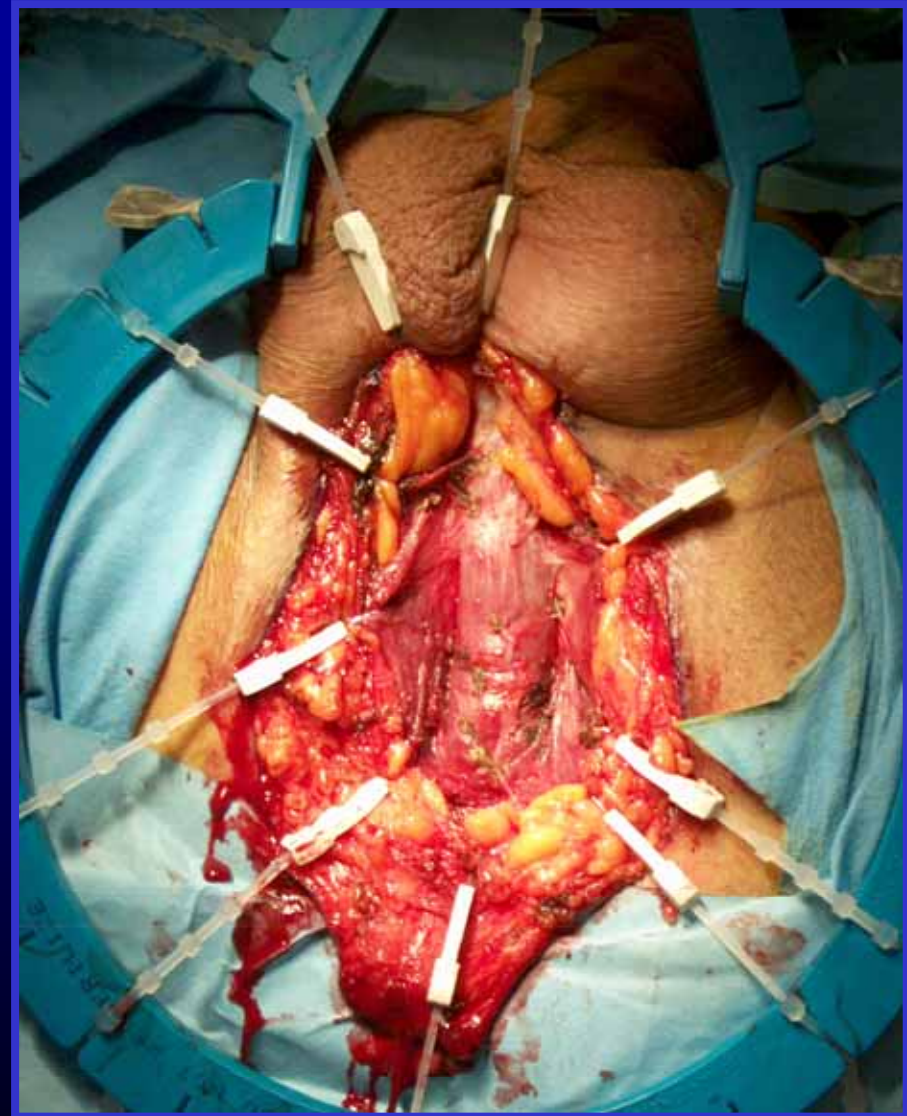
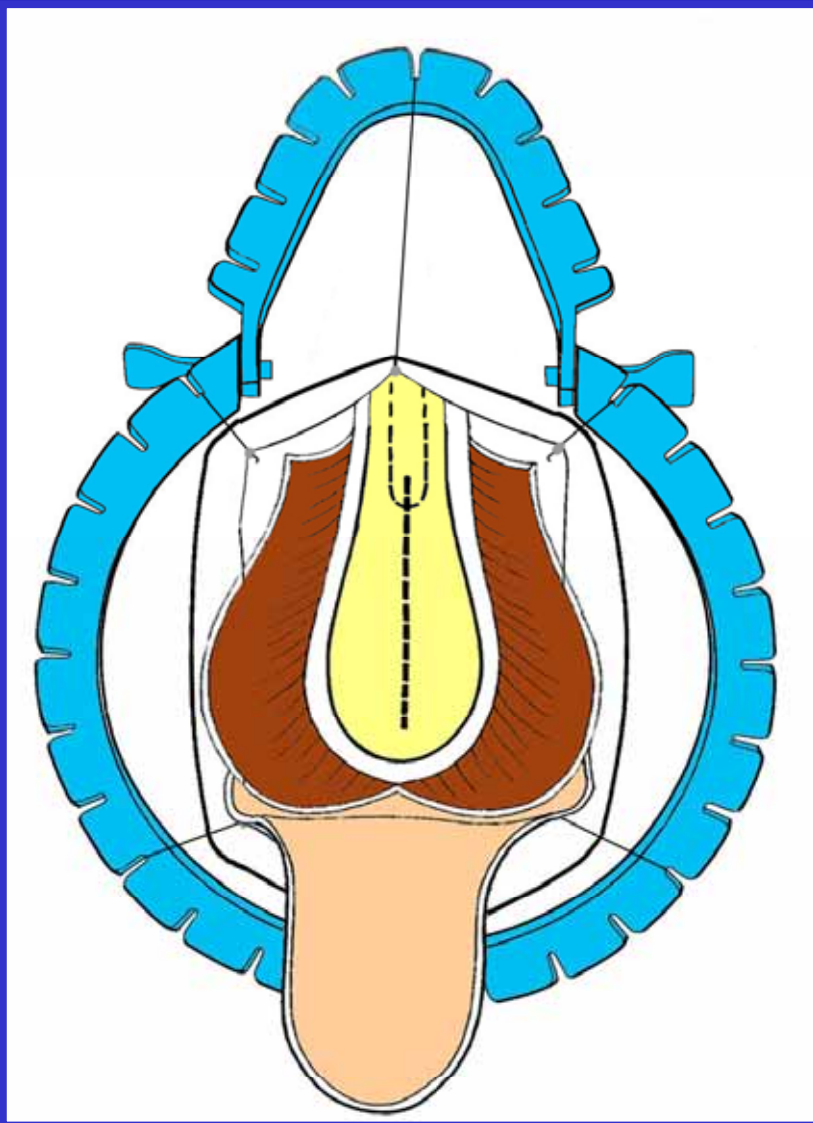


Patient, 68 years old, who underwent 12 previous urethral attempts to repair urethral stricture due to **lichen sclerosus**

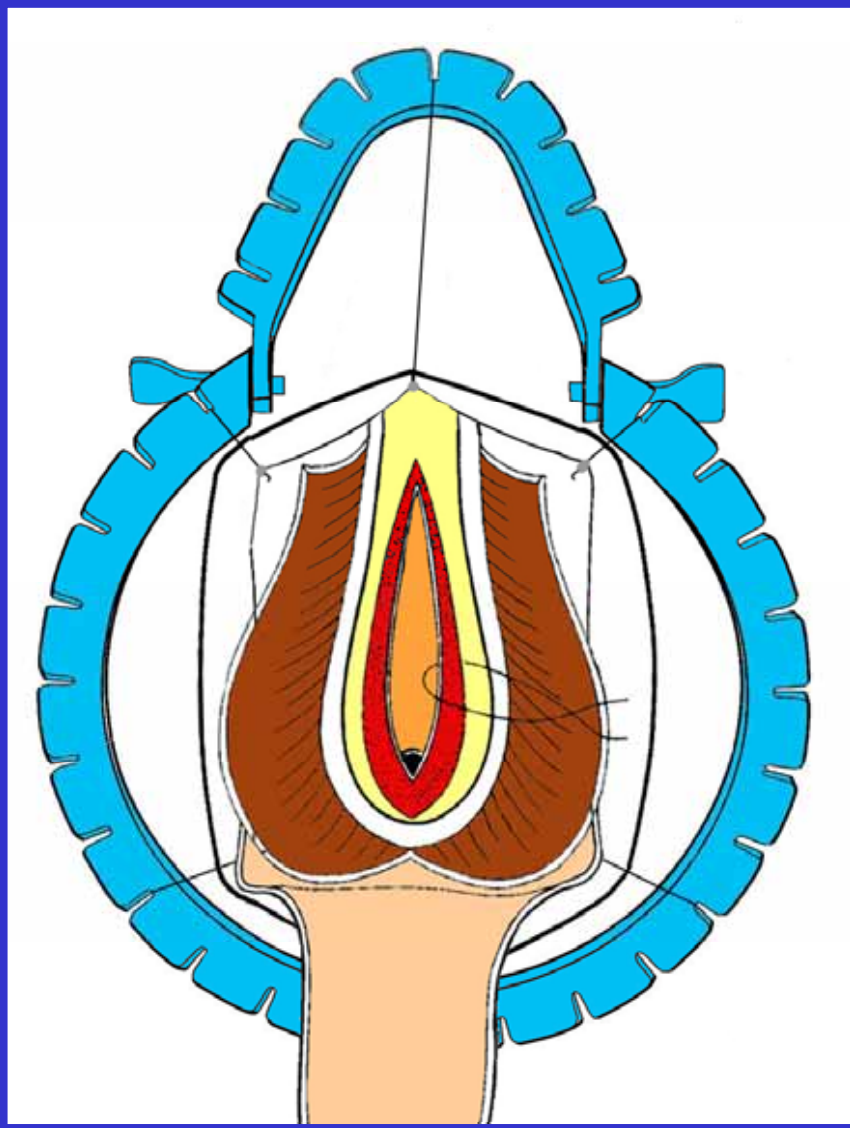


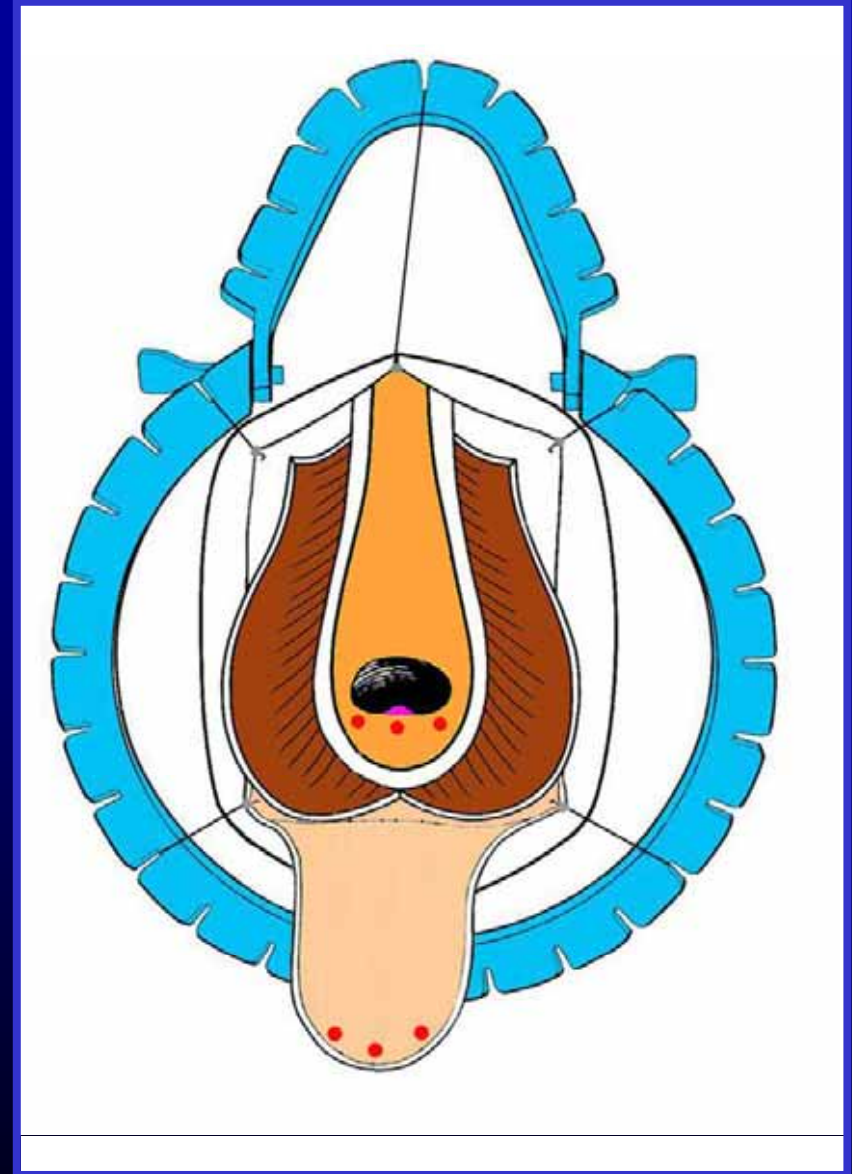
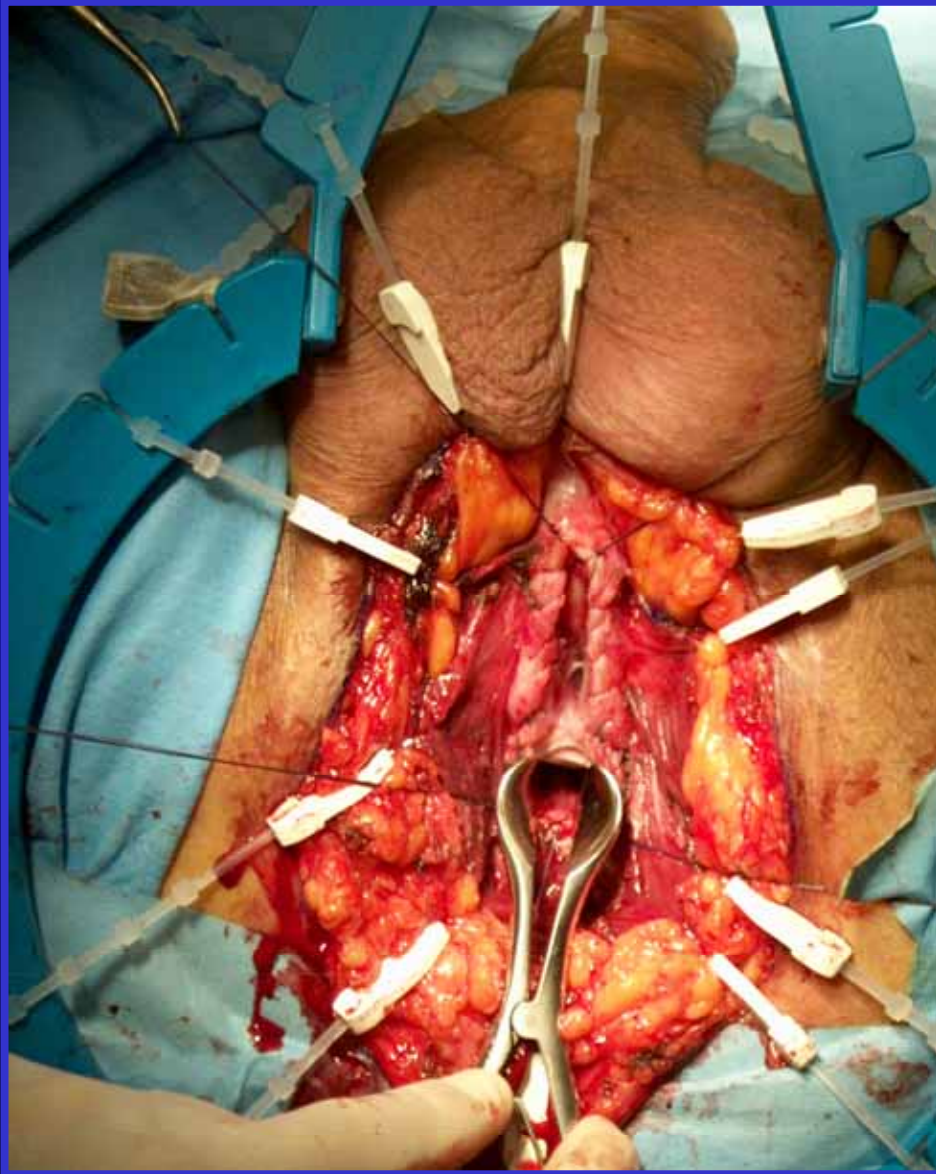
# Surgical technique









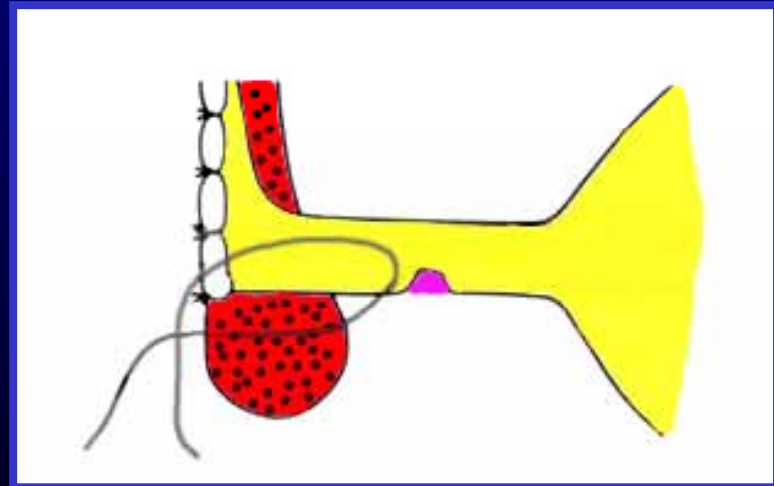
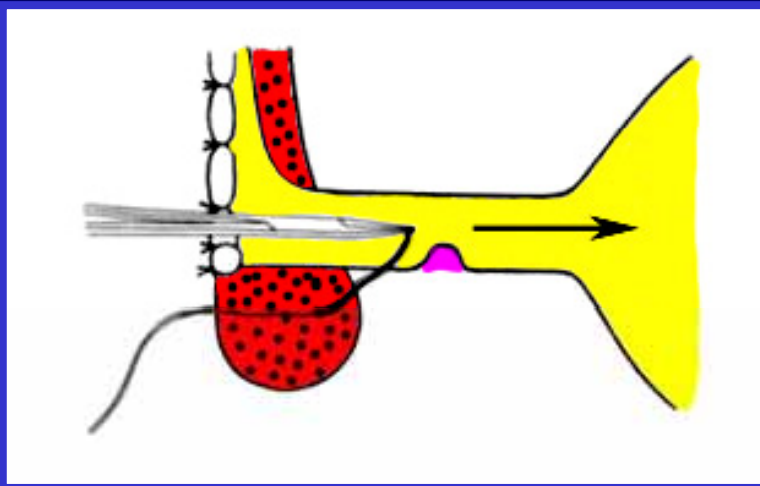
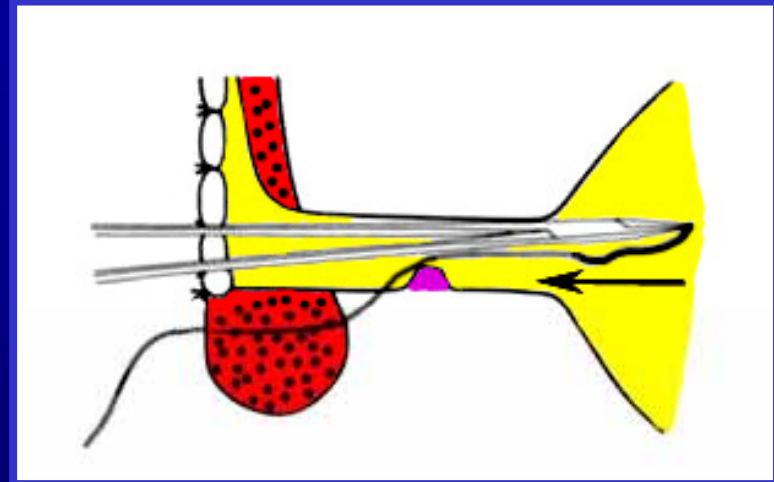
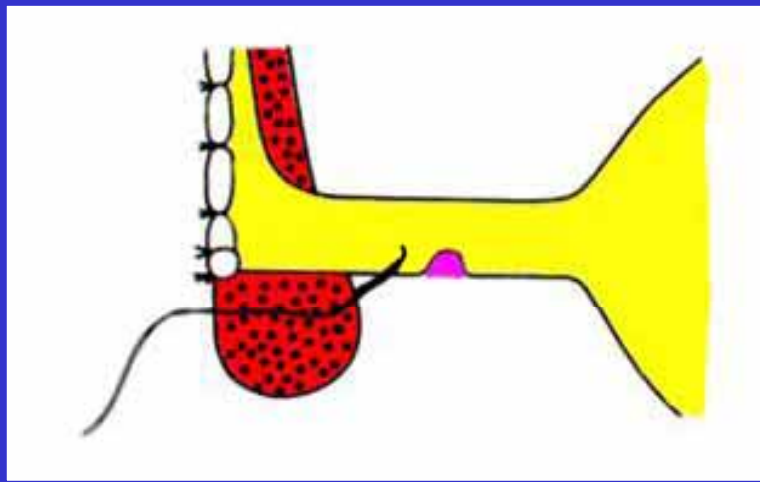




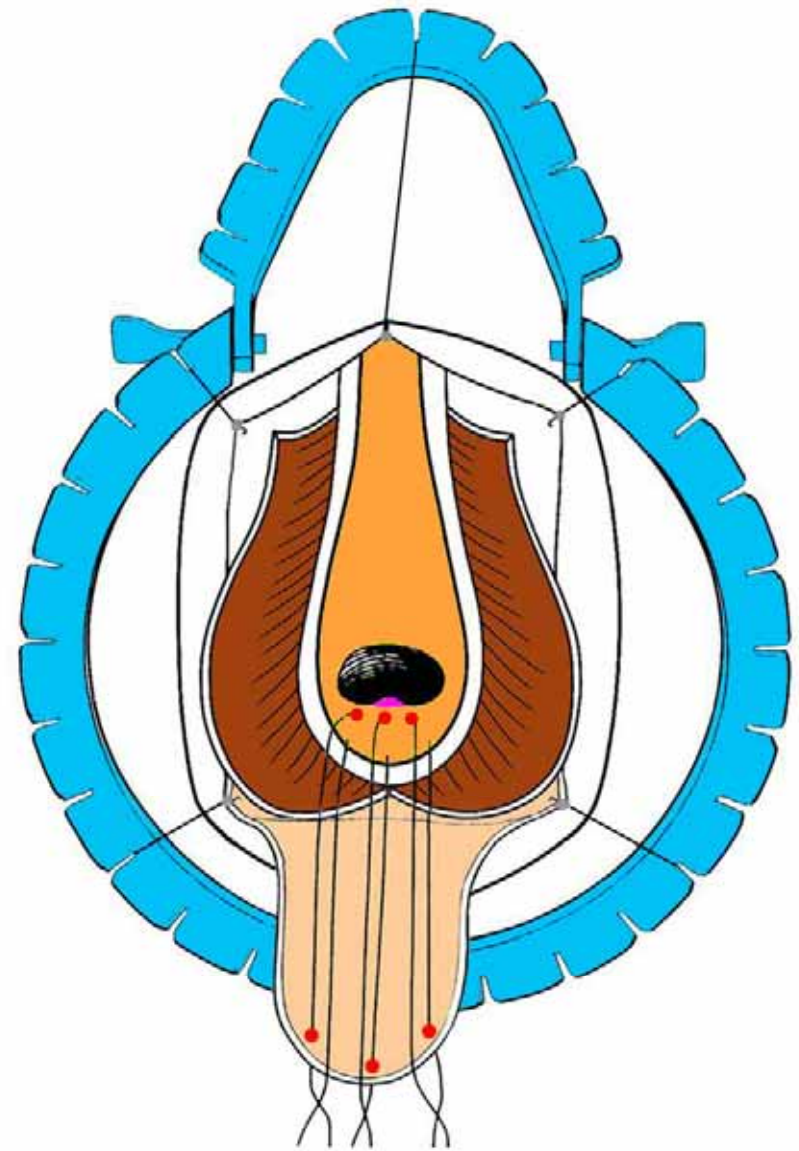
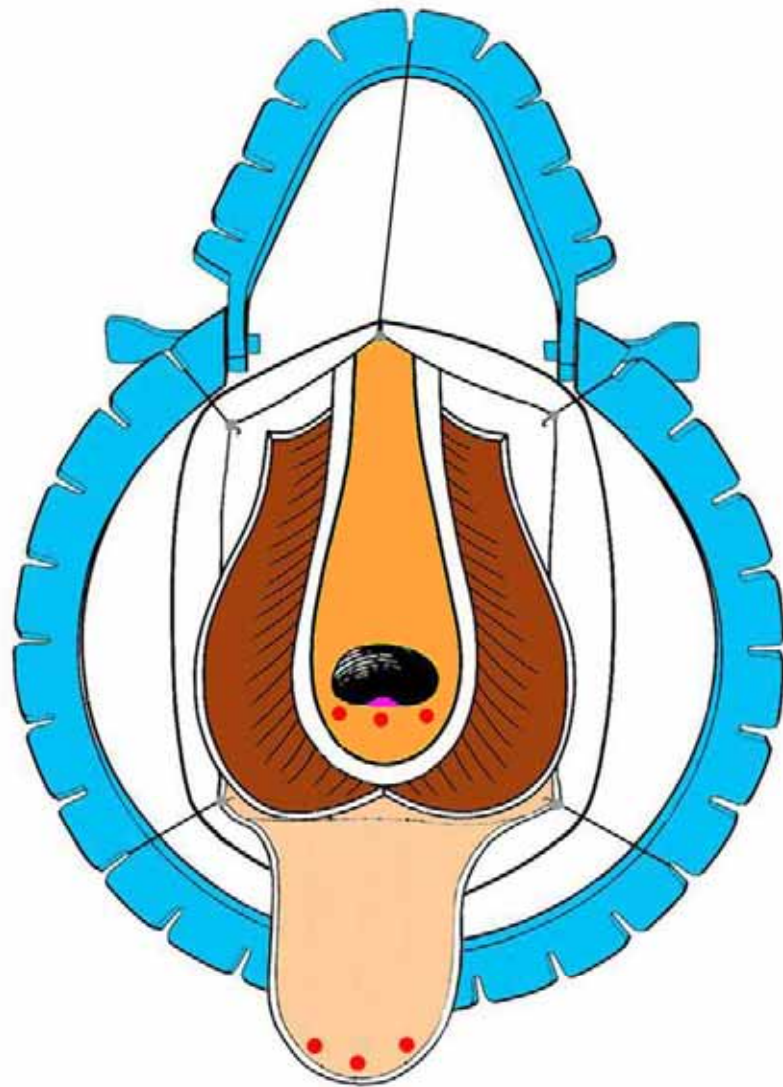
# Webster's technique

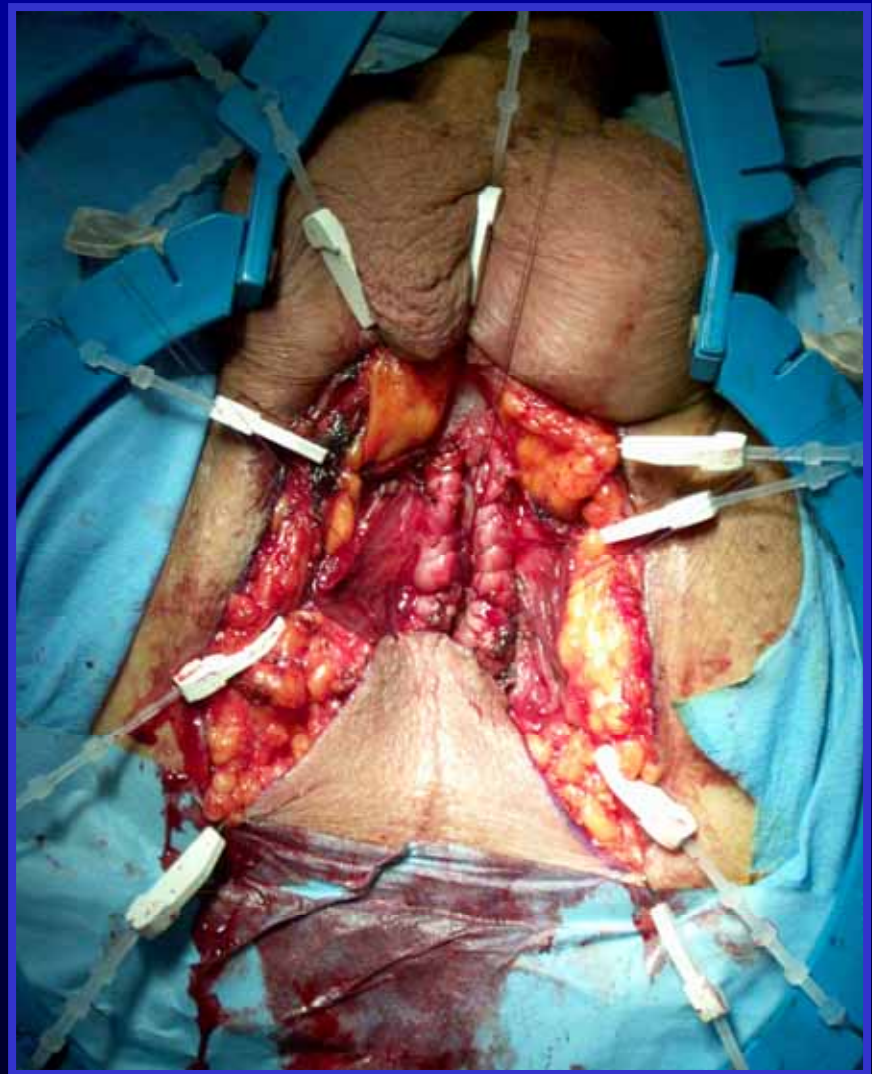
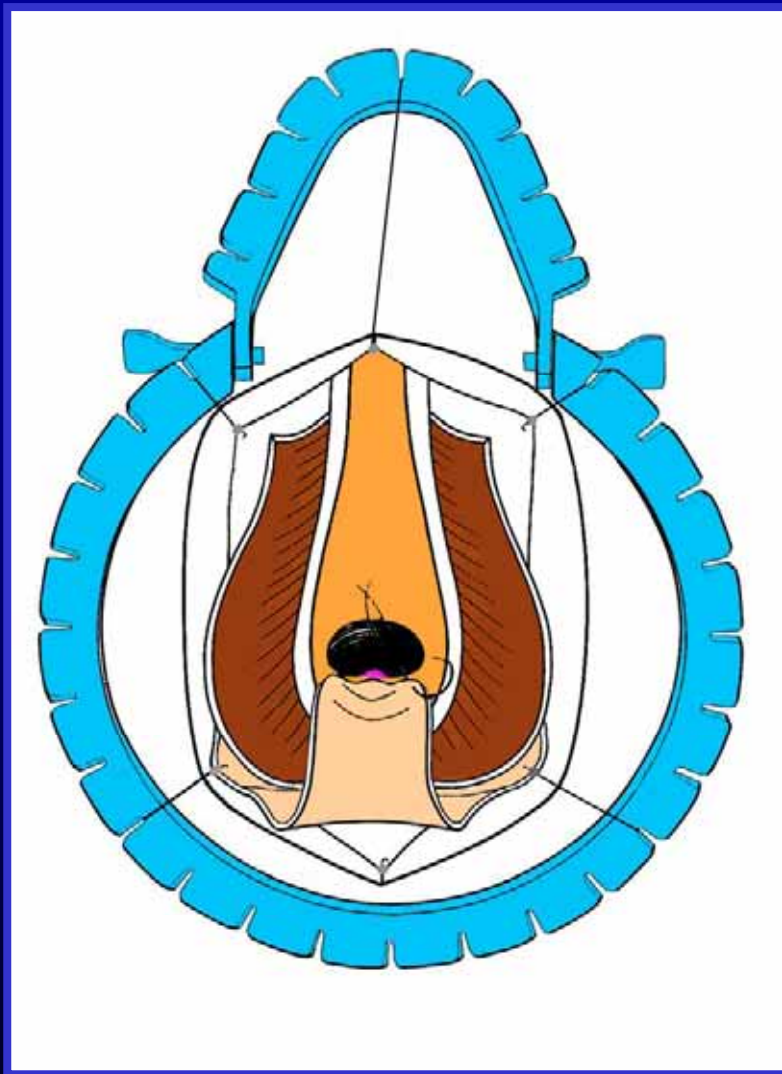


# Webster's technique

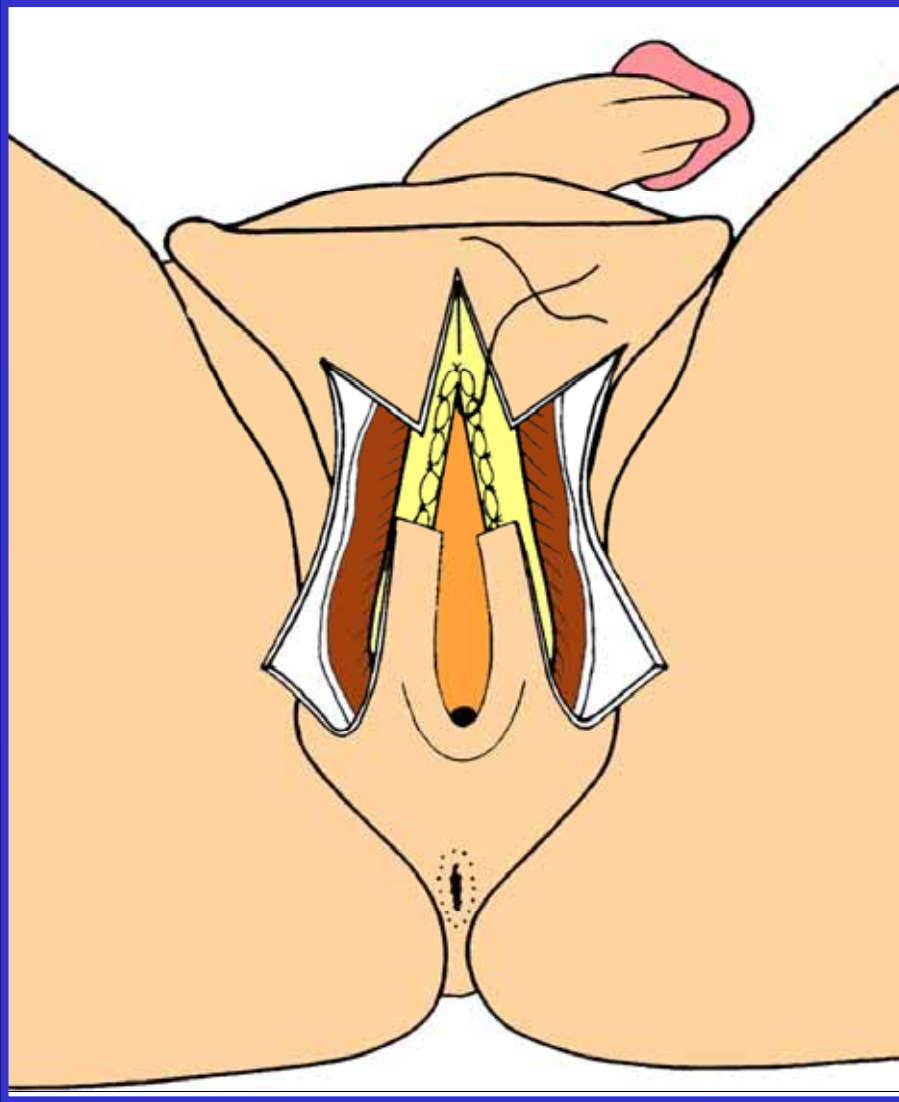


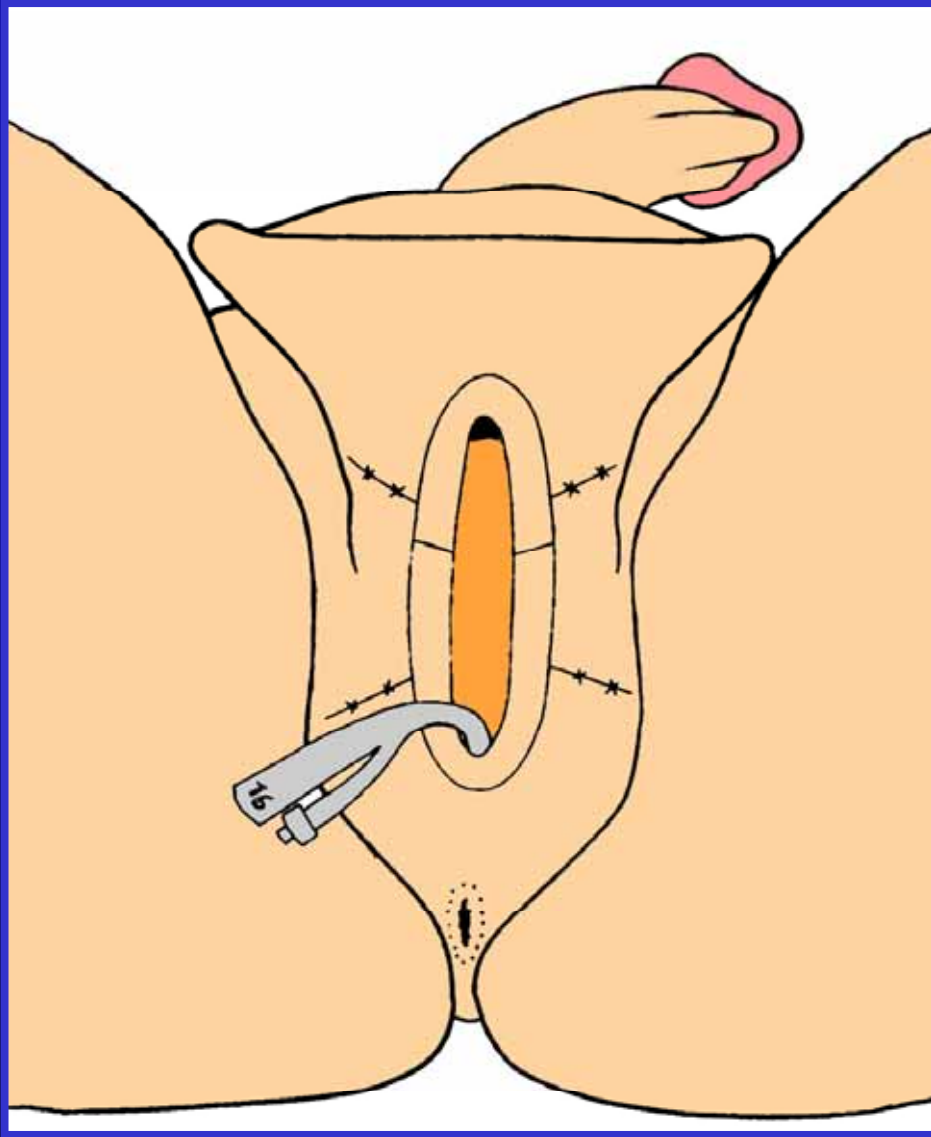














# Heroic measures may not always be justified in extensive urethral stricture due to **lichen sclerosus**

A C. Peterson, E. Palminteri, M. Lazzeri, G. Guazzoni,  
G. Barbagli and G. D. Webster

A.U.A. Annual Meeting 2003, Chicago - USA



ADULT UROLOGY

## HEROIC MEASURES MAY NOT ALWAYS BE JUSTIFIED IN EXTENSIVE URETHRAL STRICTURE DUE TO LICHEN SCLEROSUS (BALANITIS XEROTICA OBLITERANS)

ANDREW C. PETERSON, ENZO PALMINTERI, MASSIMO LAZZERI, GIORGIO GUANZONI,  
GUIDO BARBAGLI, AND GEORGE D. WEBSTER

Urology, 2004

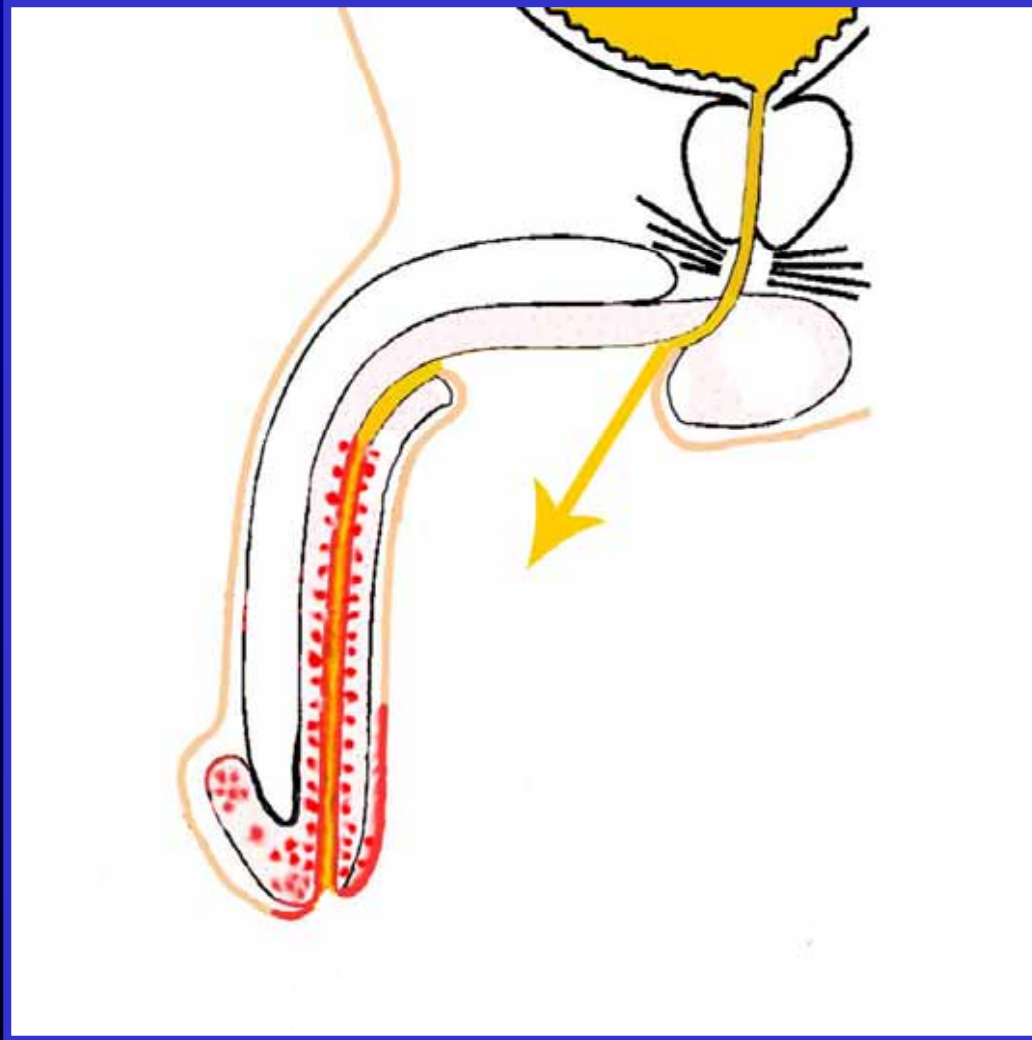


***Definitive perineal urethrostomy  
is a reasonable alternative  
in selected populations***

- low morbidity
- quick recovery
- satisfies quality of life
- acceptance of seated voiding
- diverts urine from diseased tissue

Peterson et al., A.U.A. Meeting 2003, Chicago - USA

# Perineal urethrostomy diverts urine from diseased tissues



# One-stage or multi-stage repair ?

	patients	success rate
one-stage	22	88%
multi-stage	14	72%

Dubey et al., J Urol, 2005

**One-stage or multi-stage repair ?**

**When ?**



	<b>one-stage</b>	<b>multi-stage repair</b>
<b>age</b>	young	old
<b>clinical history</b>	primary repair	previous failed repair
<b>clinical status</b>	decreased urinary flow	<ul style="list-style-type: none"> <li>• urinary retention</li> <li>• UTI</li> <li>• catheter or suprapubic tube in place</li> </ul>
<b>histology</b>	<ul style="list-style-type: none"> <li>• slight or moderate disease</li> <li>• no pre-cancerous lesions</li> </ul>	<ul style="list-style-type: none"> <li>• severe disease</li> <li>• pre-cancerous changes</li> </ul>
<b>disease extension</b>	focal involvement of the glans, meatus, penile skin	full involvement of the glans, meatus, penile skin
<b>urethral plate</b>	viable or salvageable	scarred with focally dense segment



# Conclusions

**Lichen sclerosus** is a devastating disease and the patient must be informed on the likely causes, the course of the disease and the possible association with cancer. Moreover, the patient must be informed that complex and multiple surgical procedures will be necessary to restore urinary function, sexual activity and aesthetic appearance of the genitalia

I showed you what **lichen sclerosis** is and what stenosis is in a patient affected with genital **lichen sclerosis** and the current surgical techniques suggested for repair

**What approach to take will be decided by you, your experience, your surgical background and your patient's expectation**

**There is nothing more I can tell you !**



Thank you



**Madonna del Parto - Piero della Francesca**  
**Monterchi - Arezzo**

