

CENTER FOR RECONSTRUCTIVE URETHRAL SURGERY



GUIDO BARBAGLI, M.D.
Arezzo - Italy

e-mail: info@urethralcenter.it

Websites: www.uretra.it
www.urethralcenter.it

9th Conference of the Arab Association of Urology

7th International Conference of Jordanian Association of Urological Surgeons



Amman – Jordan

22 – 24 November 2011

e-mail: info@urethralcenter.it

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The Team



Salvatore Sansalone



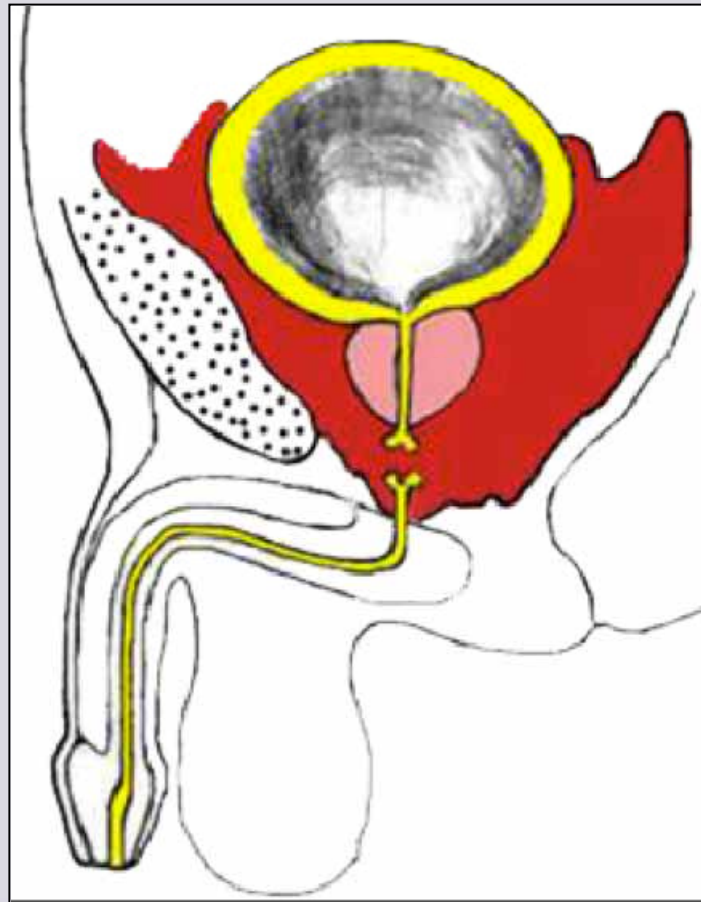
Sofia Balò



Giuseppe Romano

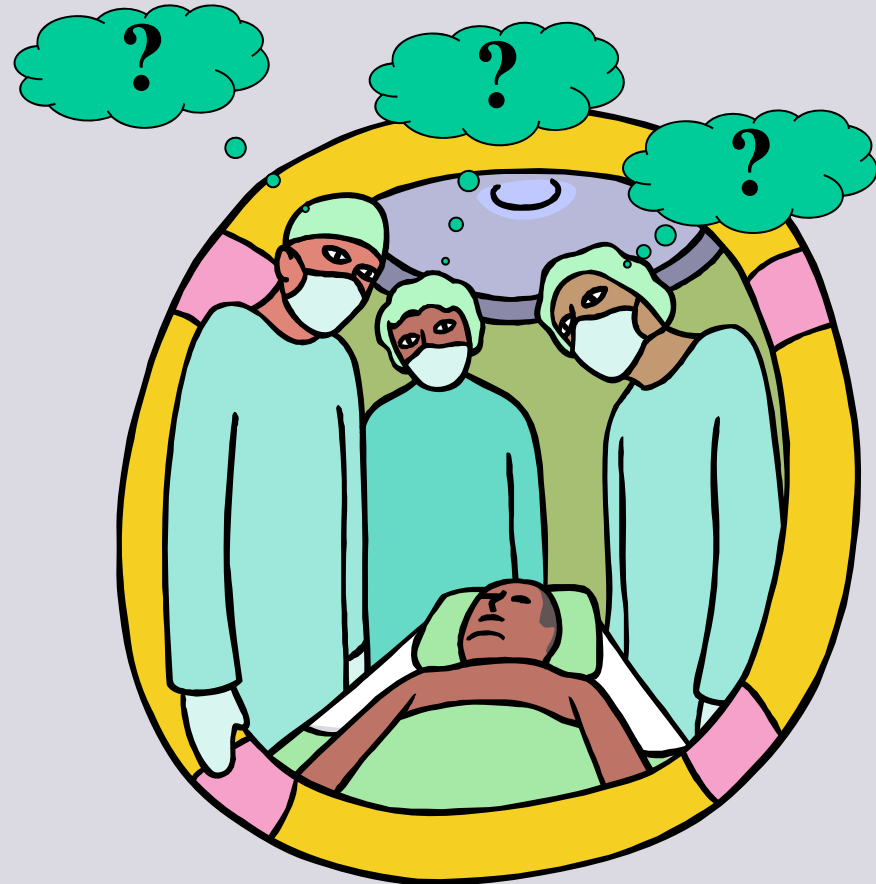
Emergency and delayed treatment of patients with pelvic fracture urethral distraction defects

Emergency treatment of patients with pelvic fracture urethral distraction defects



Pelvic fracture urethral distraction defects PFUDD

- orthopedic surgeon
- general surgeon
- vascular surgeon
- thoracic surgeon
- urologic surgeon



Mr. Richard Turner-Warwick

**“... It is the urologist who will have to share, with the patient,
the burden of any residual urological disability
when the thoracic, the abdominal, and even the
orthopaedic aspects are probably long forgotten ”**

Urol Clin North Am 1989, 16: 335-358

Emergency treatment of posterior urethral trauma

suprapubic urinary diversion
immediate

endoscopic urethral realignment
7 – 15 days following trauma

delayed urethroplasty
4 months following trauma

Goal of the initial evaluation and management of the patient with PFUDD

The immediate concern, in the patient with PFUDD, is resuscitation of the patient to preserve life

Divert urine away from the site of injury

Preserve the residual sphincter mechanism at the bladder neck

Avoid jeopardizing sexual function residual to the trauma

Pelvic fracture urethral distraction defects



PFUDD



Diagnosis of posterior urethral disruption requires a high index of suspicion and should be excluded before the urethral catheter is inserted !

Pelvic fracture urethral distraction defects

PFUDD



- **Blood at the external urethral meatus**
- **Inability to pass urine**
- **Palpable distended bladder**
- **Scrotal and/or perineal butterfly hematoma**
- **High-riding prostate on DRE**

Pelvic fracture urethral distraction defects PFUDD

**Absence of these signs or symptoms does not exclude the
diagnosis of PFUDD !**

**Rectal examination helps to exclude a dislocated prostate,
but is more important as a tool to screen for rectal injuries**

Pelvic fracture urethral distraction defects PFUDD

**Whilst clinical history and examination are important in
the initial assessment of patients, imaging techniques
should confirm the diagnosis**

Imaging techniques

- Anteroposterior pelvic X-ray
- Abdominal and pelvic ultrasonography
- Retrograde urethrography

- Abdominal and pelvic CT scan

- Pelvic MRI

Radiological investigation in the patient with PFUDD should be arranged according to the patient clinical status

Imaging techniques



92% of male subjects with pelvic fracture and urethral injury had specific inferomedial pubic bone fractures or pubic symphysis diastasis

Basta AM. et al. J Urol 2007; 177: 571-575

Imaging techniques

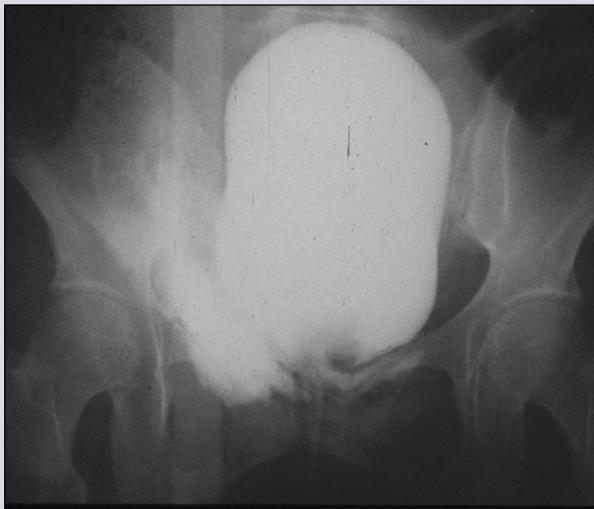
Associated lesions

Site of lesions

Type of lesions

Imaging techniques

Associated lesions



bladder

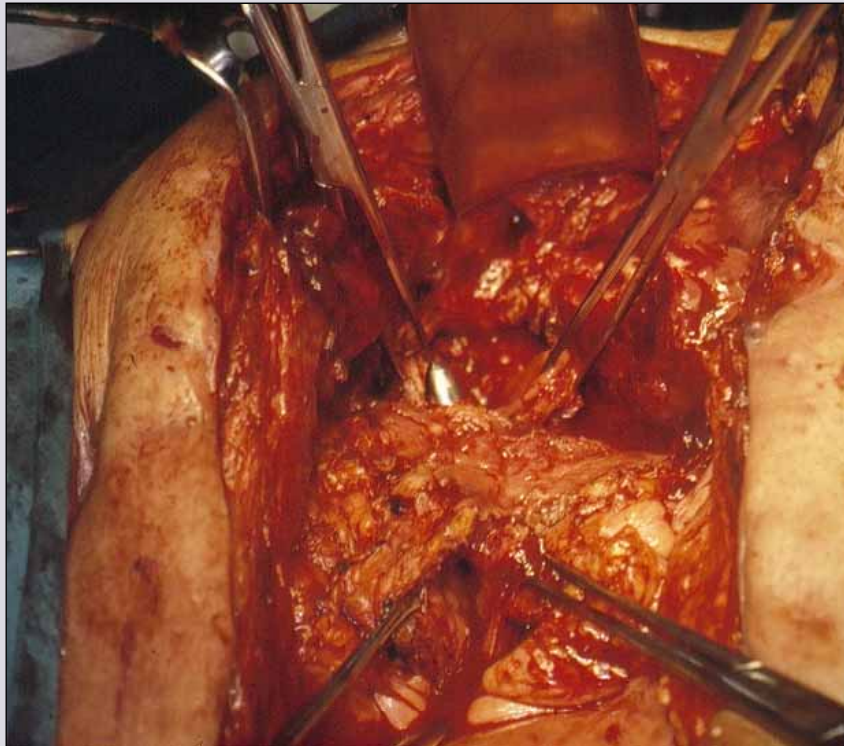


bladder neck



rectum

Immediate management of urethral trauma with associated lesions



- bladder rupture
- bladder neck lesions
- rectal tear



Immediate surgical exploration

Imaging techniques

Site of lesion

membranous



adult

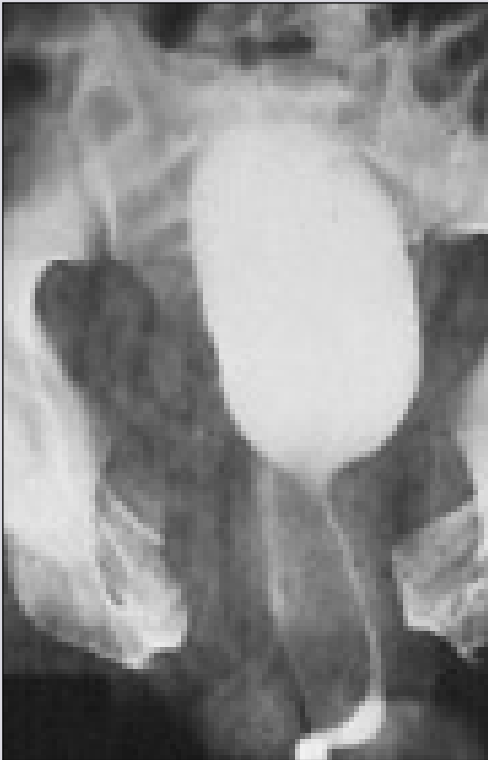
prostatic



children

Imaging techniques

Type of urethral lesion



stretched

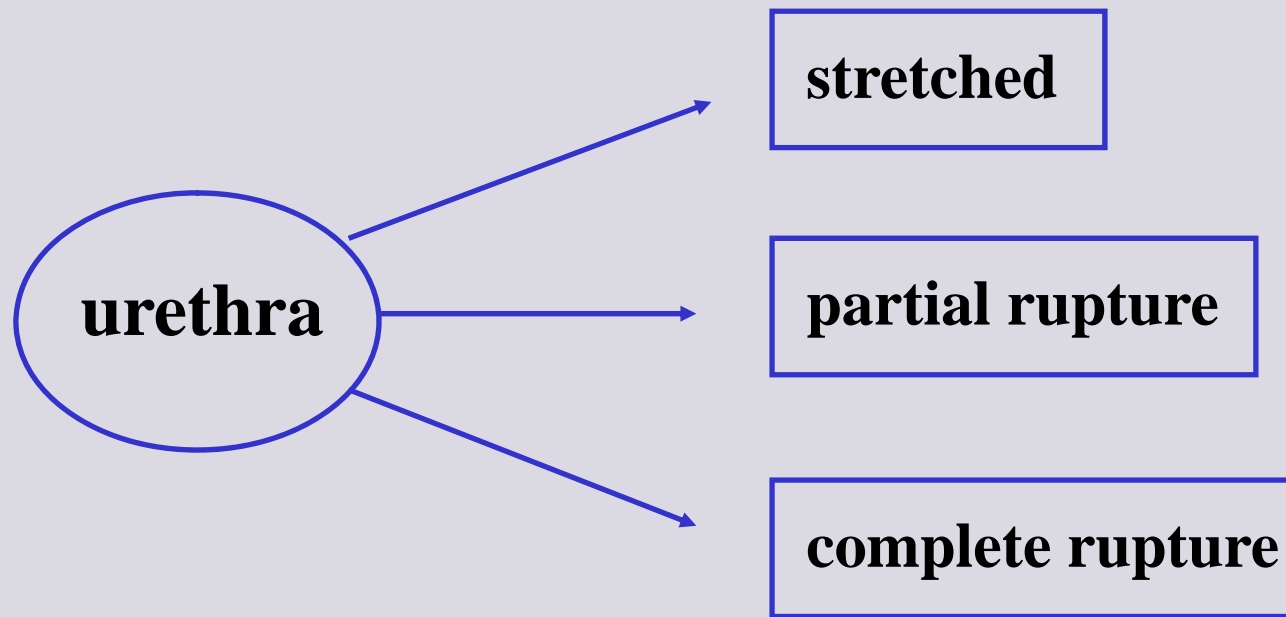


partial rupture



complete rupture

Immediate management of posterior urethral trauma without associated lesions



**Percutaneous suprapubic cystostomy
under ultrasonographic guidance**

Why ?

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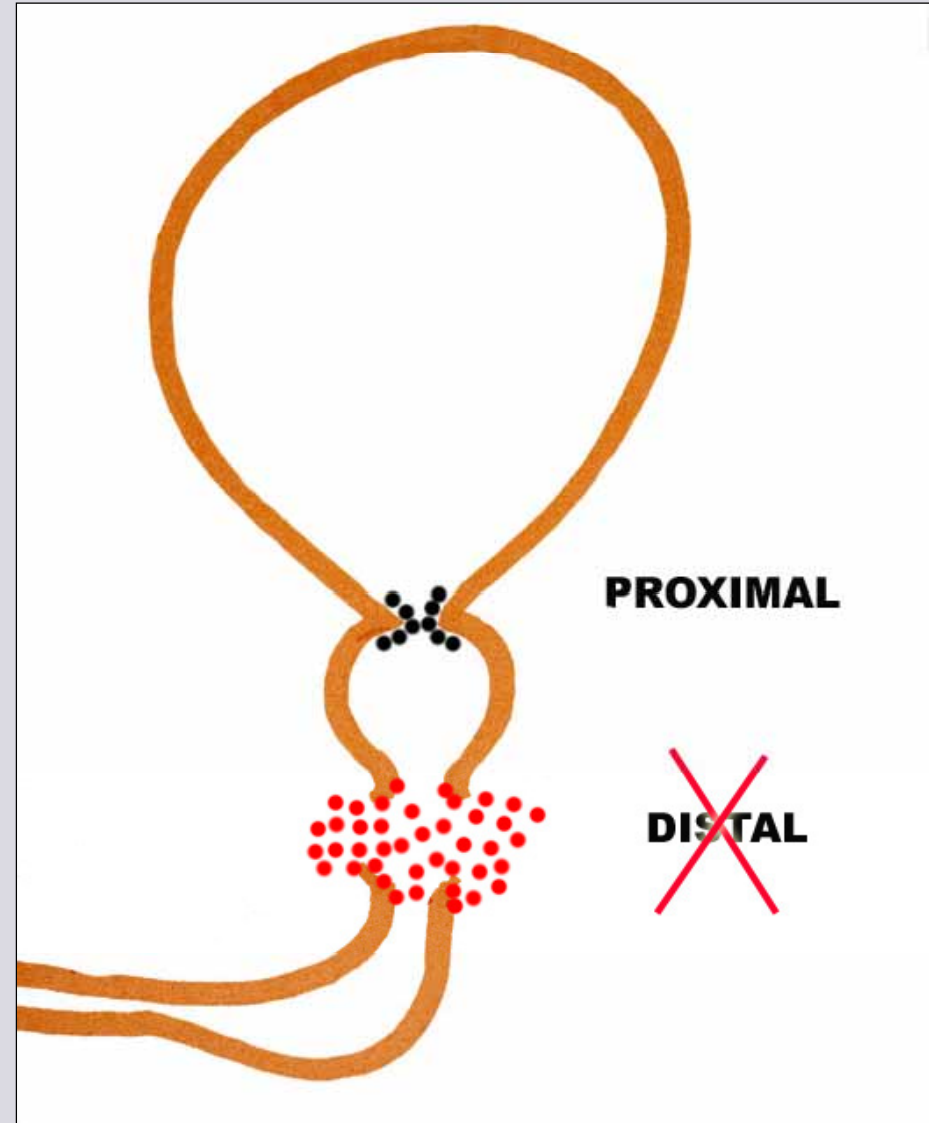
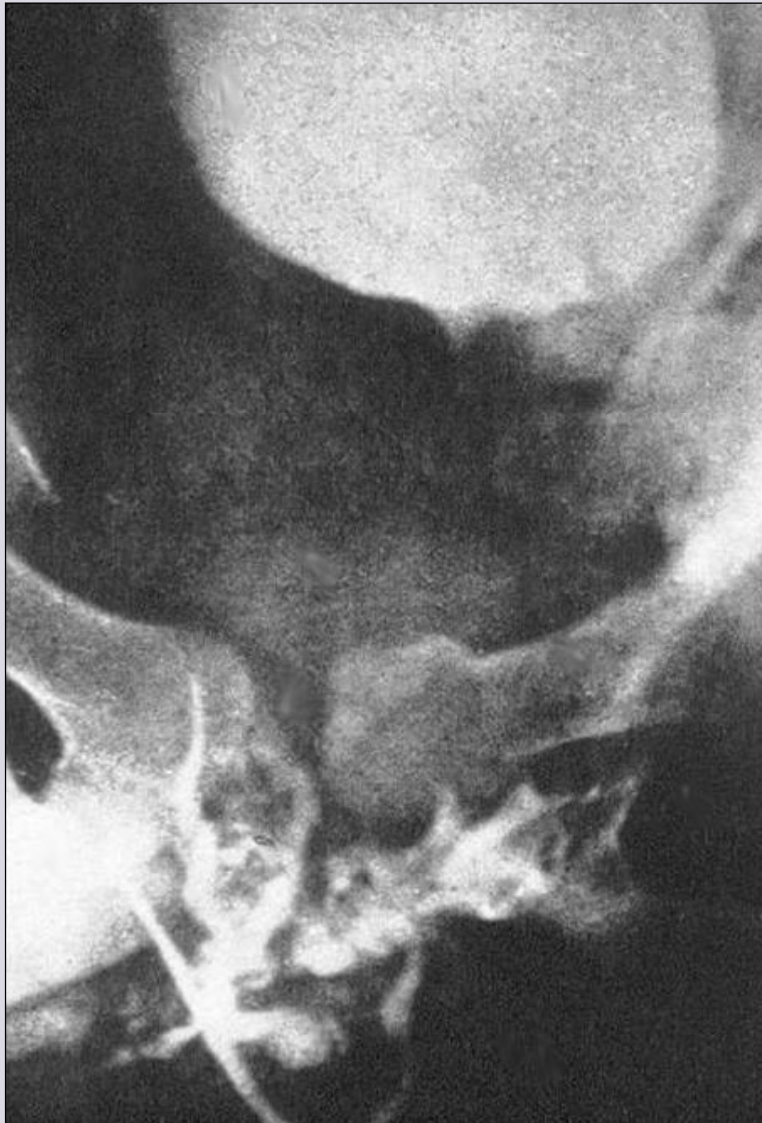
Goal of the initial evaluation and management of the patient with PFUDD

The immediate concern, in the patient with PFUDD, is resuscitation of the patient to preserve life

Divert urine away from the site of injury

Preserve the residual sphincter mechanism at the bladder neck

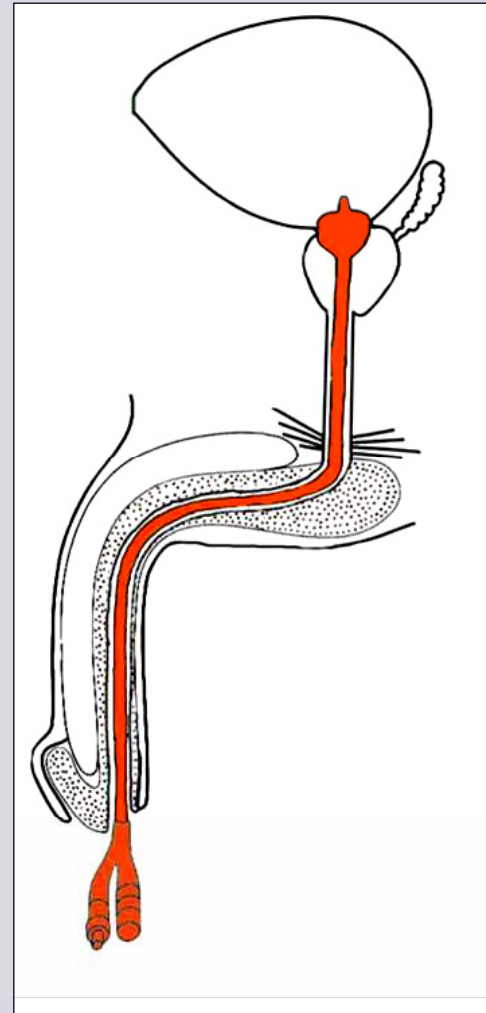
Avoid jeopardizing sexual function residual to the trauma



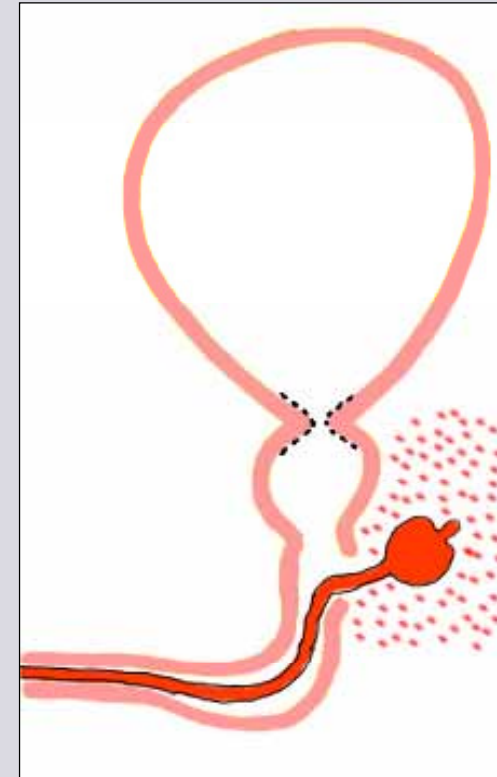
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Urethra: stretched



Urethra: partial rupture

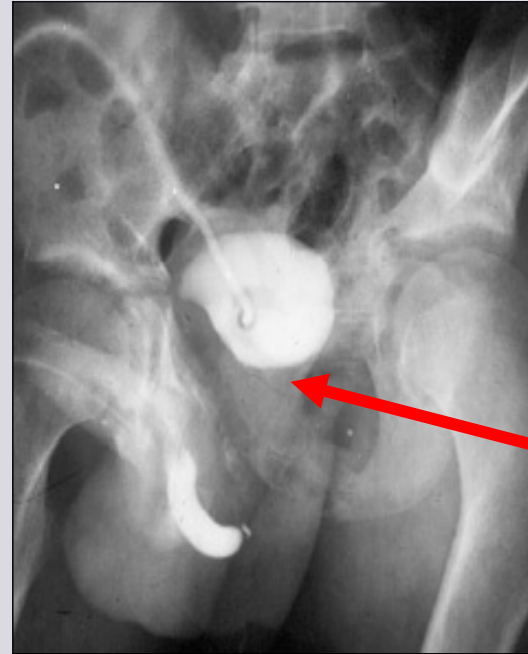


Urethra: complete rupture



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In patients with PFUDD, urinary diversion by suprapubic cystostomy is the only method than can surely avoid damage to the bladder neck, thus fully preserving urinary continence !

Emergency treatment of posterior urethral trauma

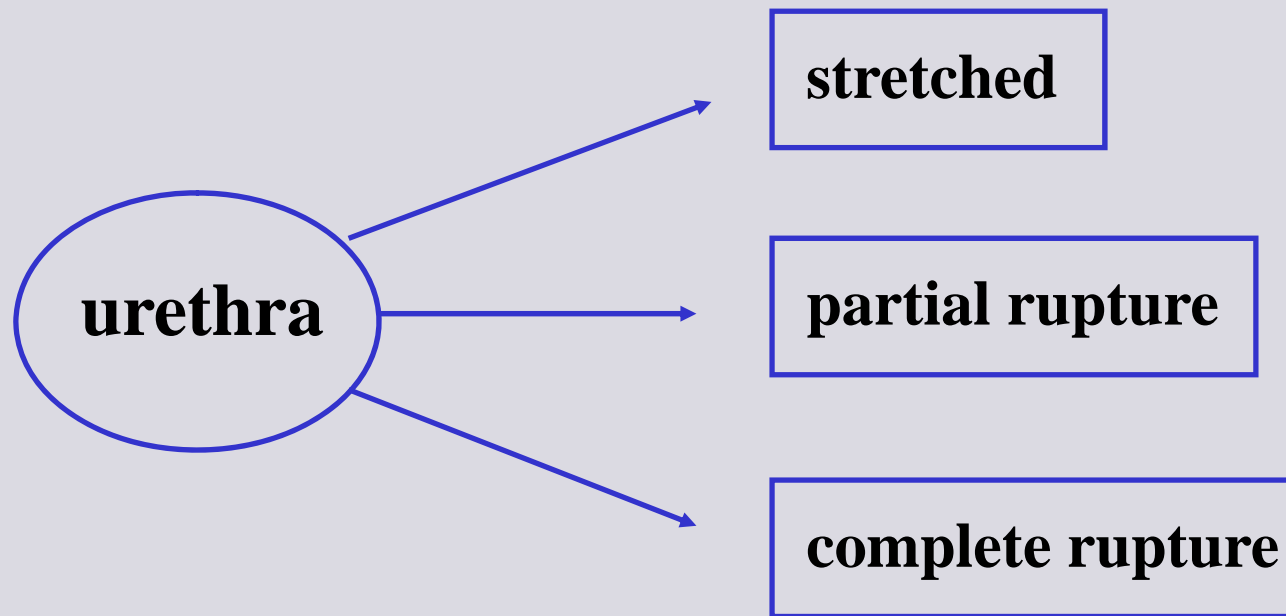
immediate suprapubic urinary diversion

→ empty the bladder and release pain due to the over distended bladder

→ divert urine away from the site of injury

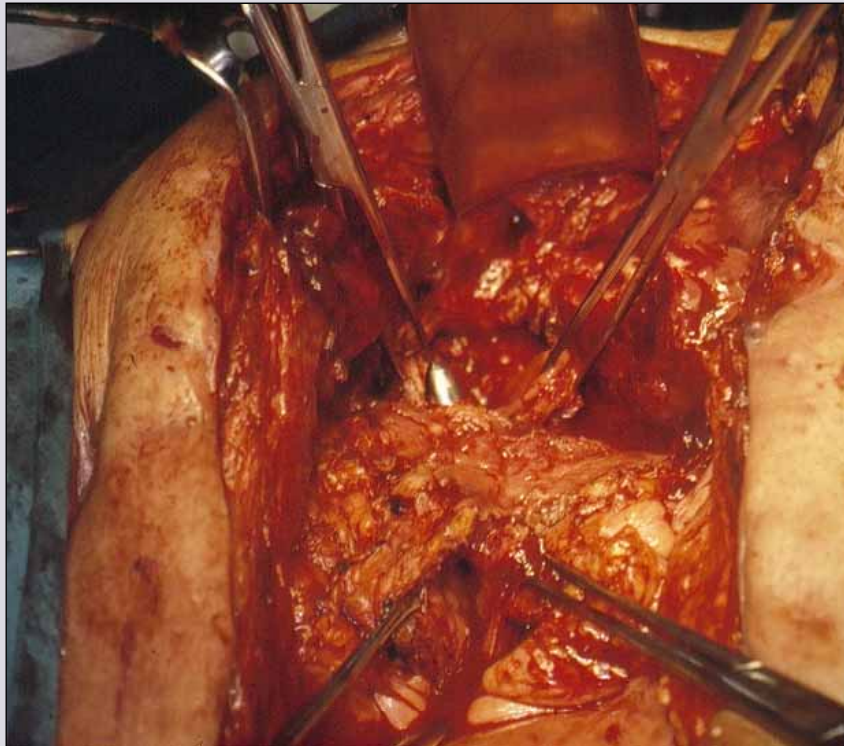
→ perform a cystography

Immediate management of posterior urethral trauma without associated lesions



Percutaneous suprapubic cystostomy
under ultrasonographic guidance

Immediate management of urethral trauma with associated lesions



- bladder rupture
- bladder neck lesions
- rectal tear



Immediate surgical exploration

Endoscopic urethral realignment



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Endoscopic urethral realignment

appropriate operating room

appropriate instruments

appropriate patient

appropriate surgeon

Endoscopic urethral realignment

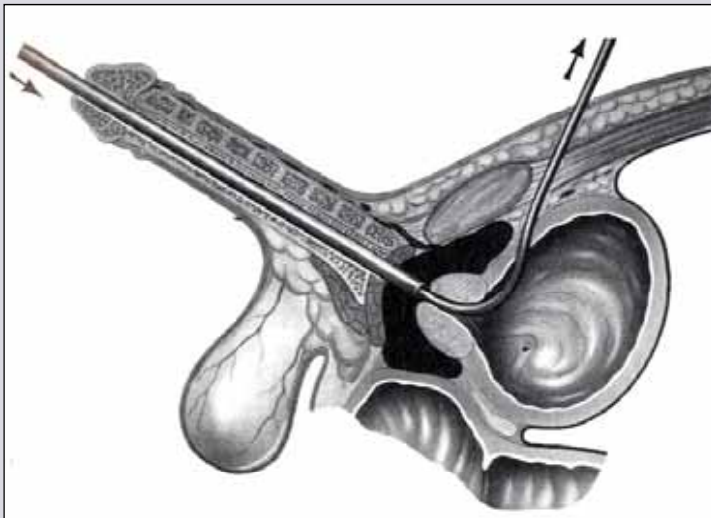


appropriate operating room ?

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Endoscopic urethral realignment



appropriate instruments ?

Endoscopic urethral realignment



appropriate patient ?

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Endoscopic urethral realignment



appropriate surgeon ?

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**Four-hour emergency (?) urethral realignment in the
plaster-cast room (?)**



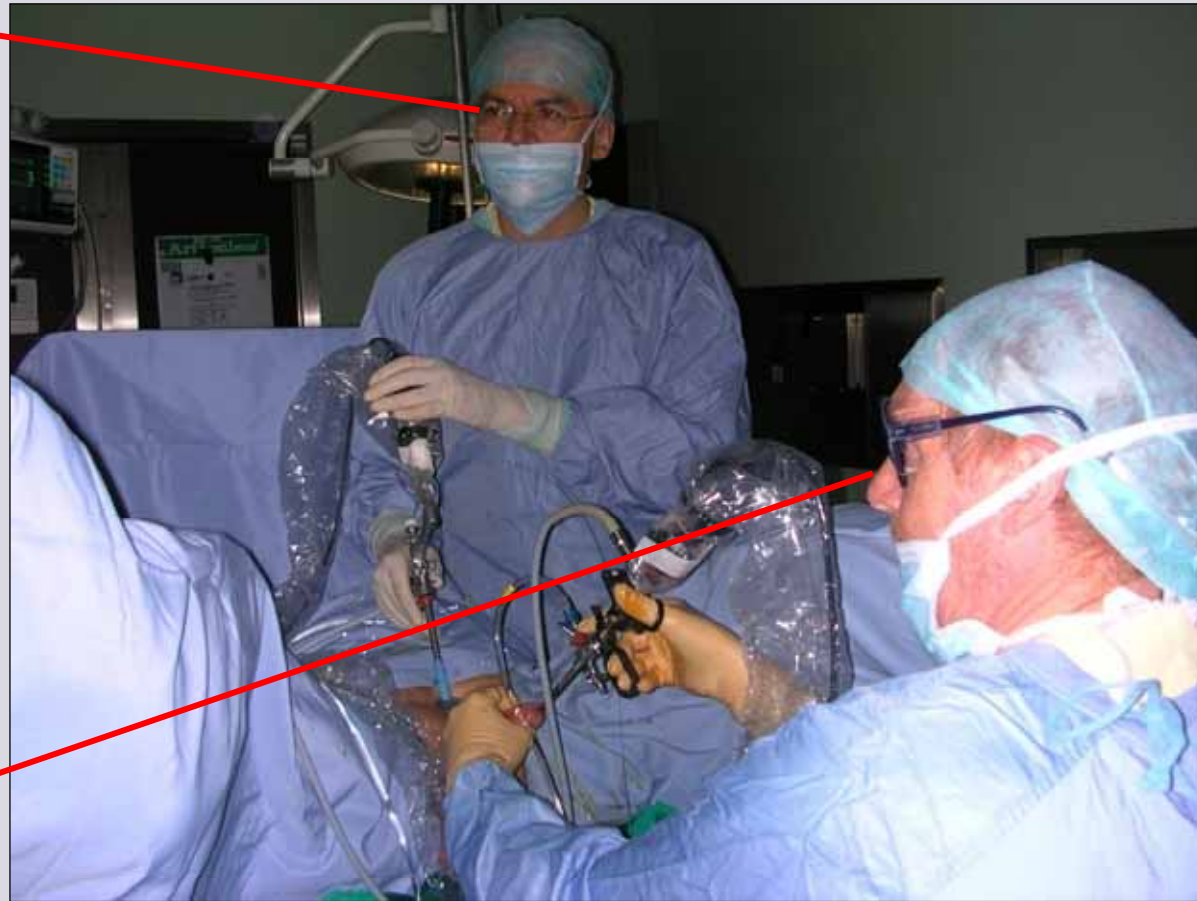
Five-hour **emergency** (?) urethral realignment

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In one week, this patient underwent **five attempts (?) to perform endoscopic and surgical urethral realignment**



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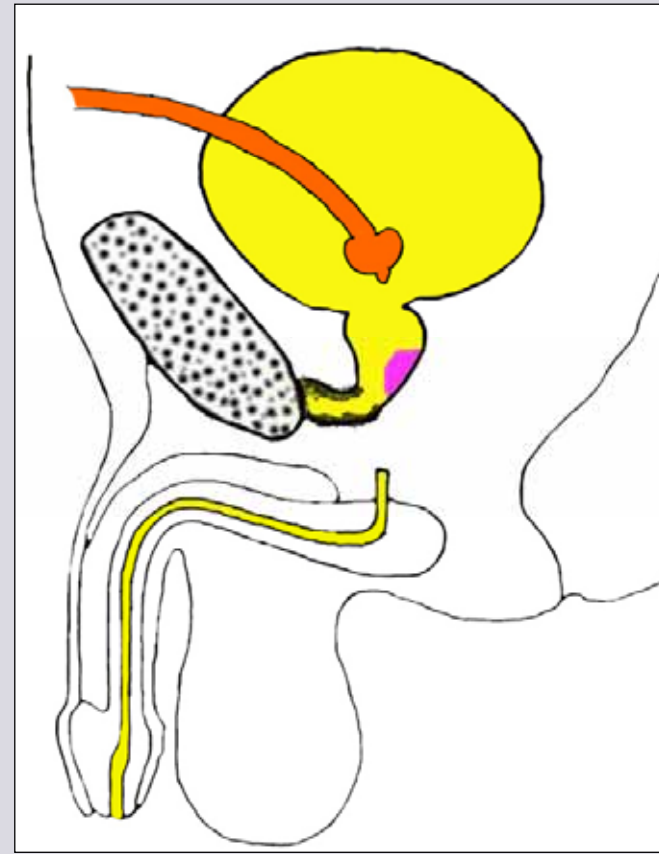
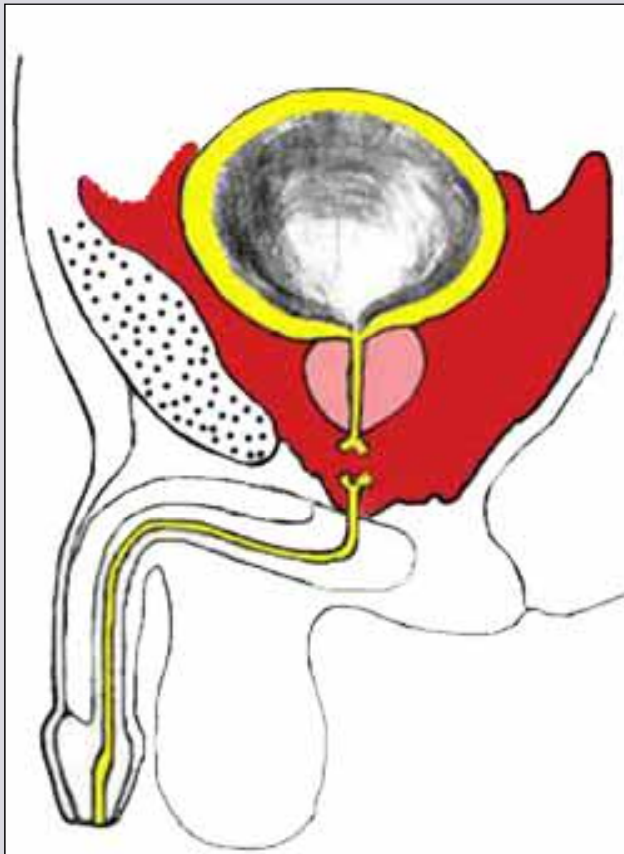
Endoscopic urethral realignment

7 – 15 days following trauma

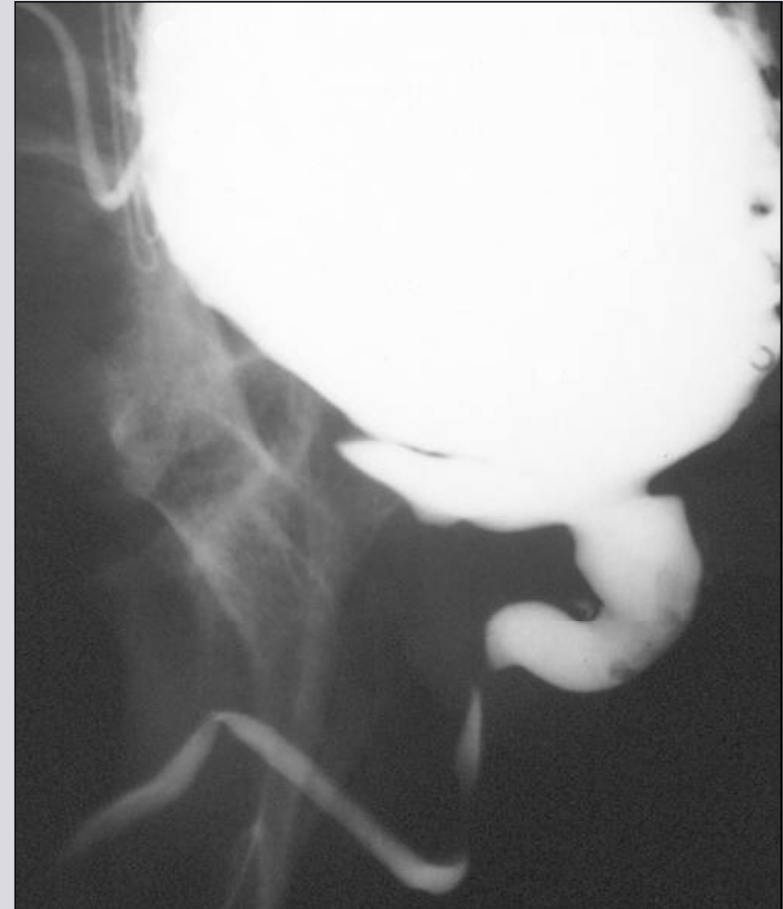
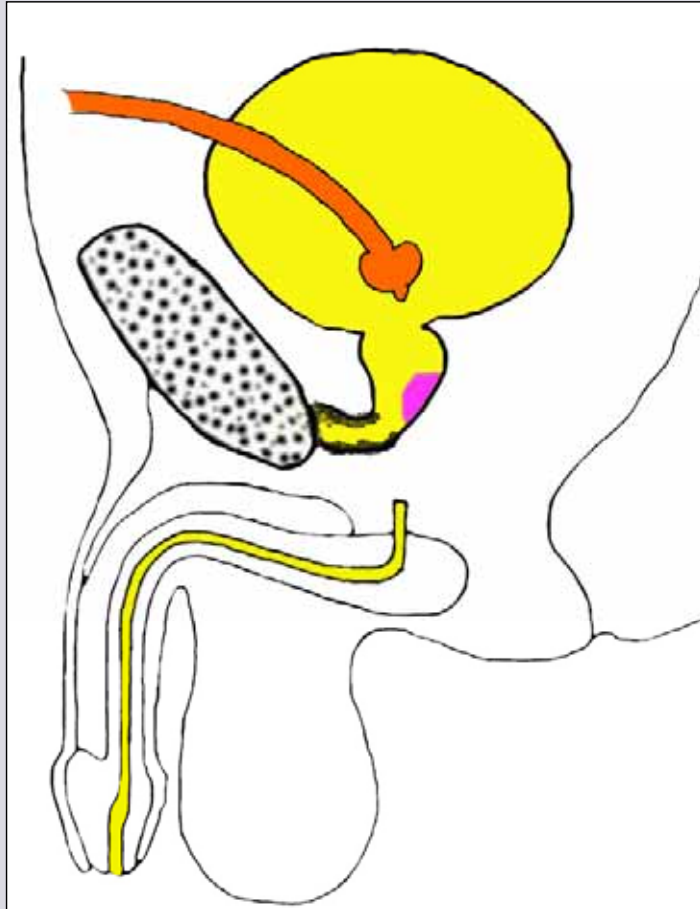
Why ?

NO

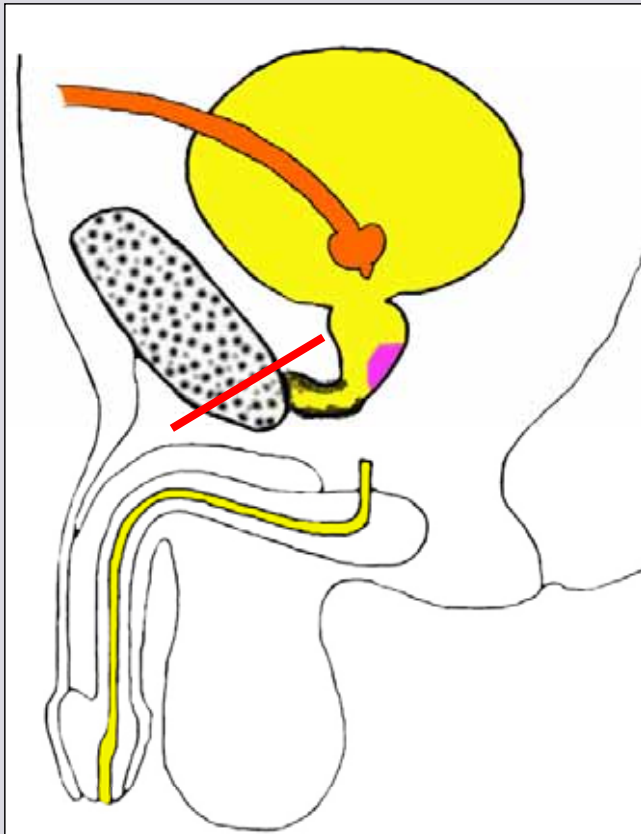
Endoscopic urethral realignment



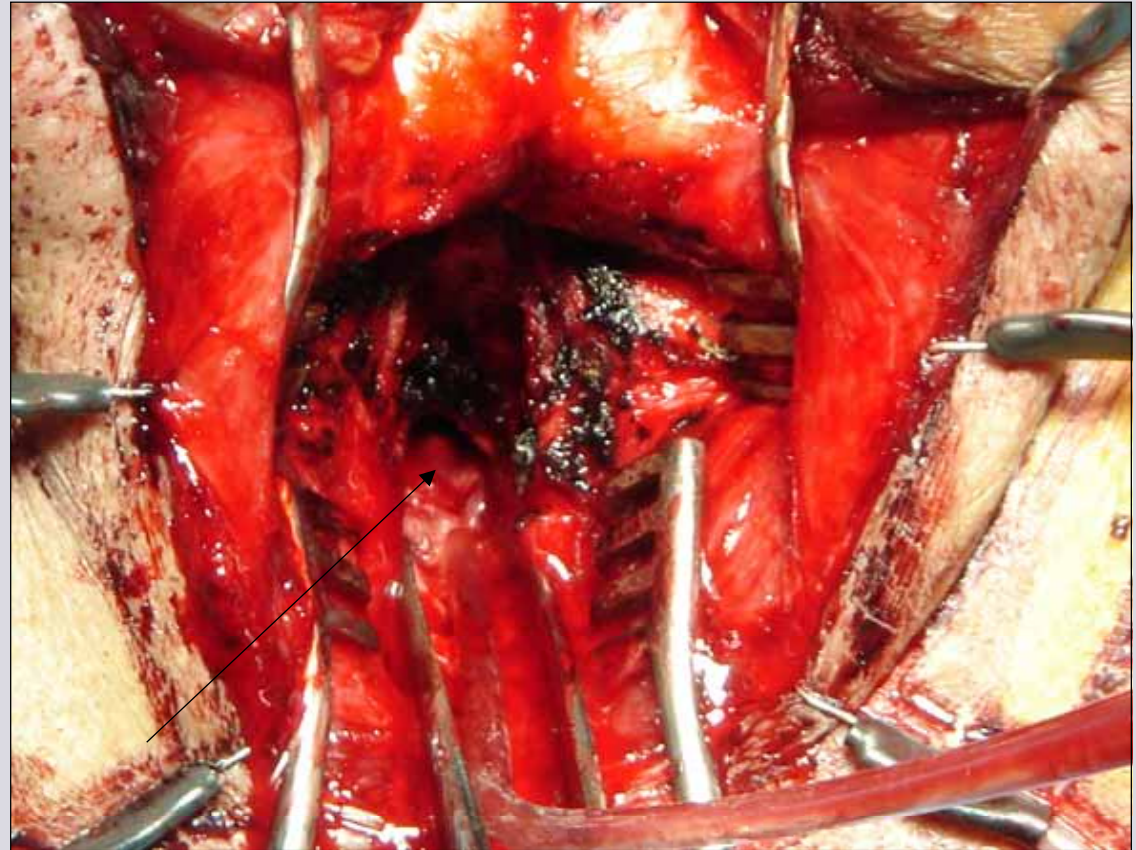
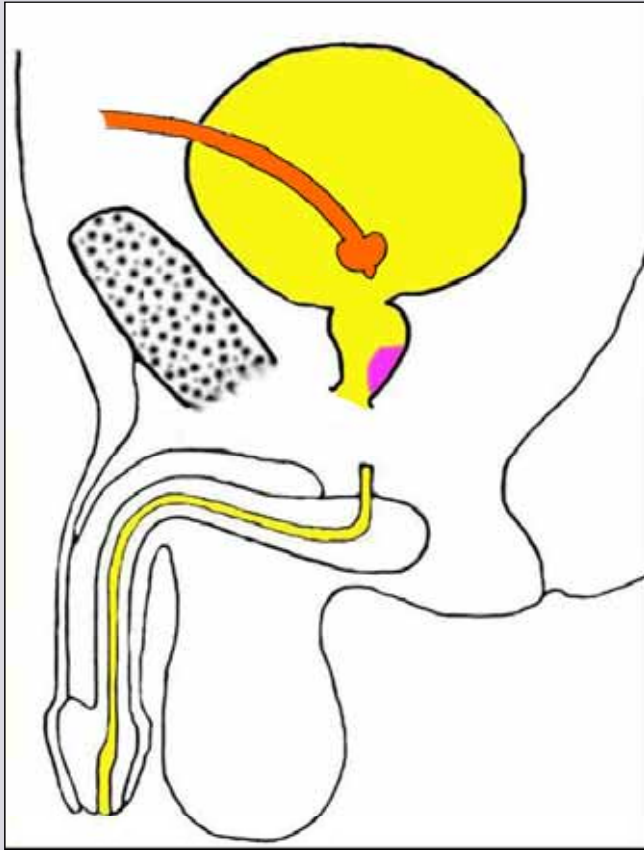
Complex posterior urethral stricture



Perineal pubectomy

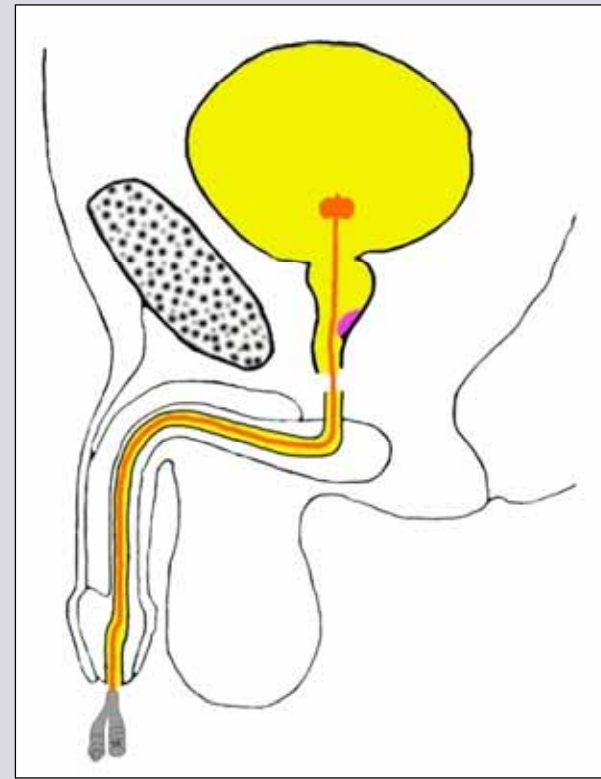
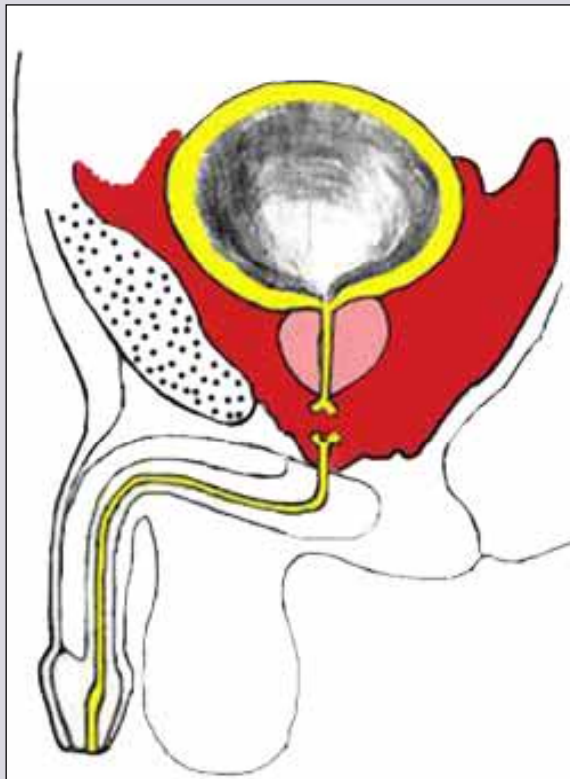


Perineal pubectomy



YES

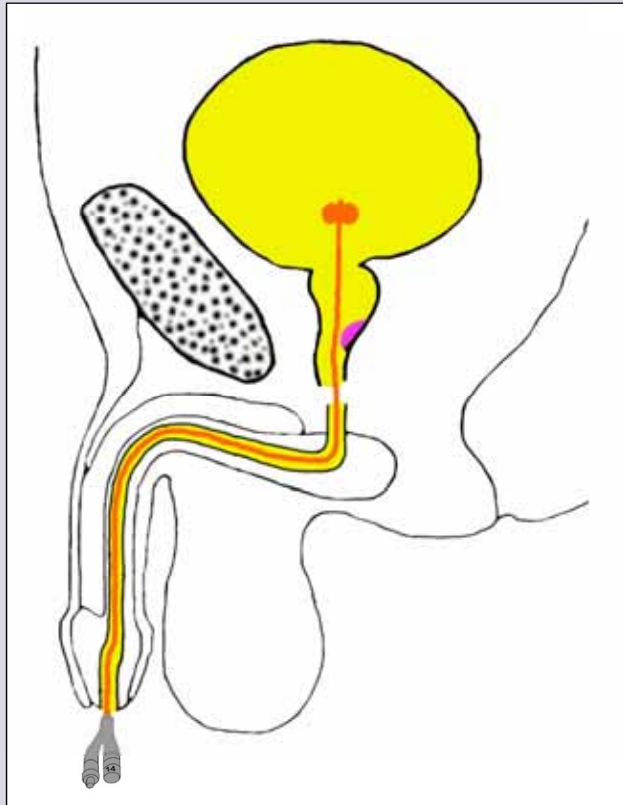
Endoscopic urethral realignment



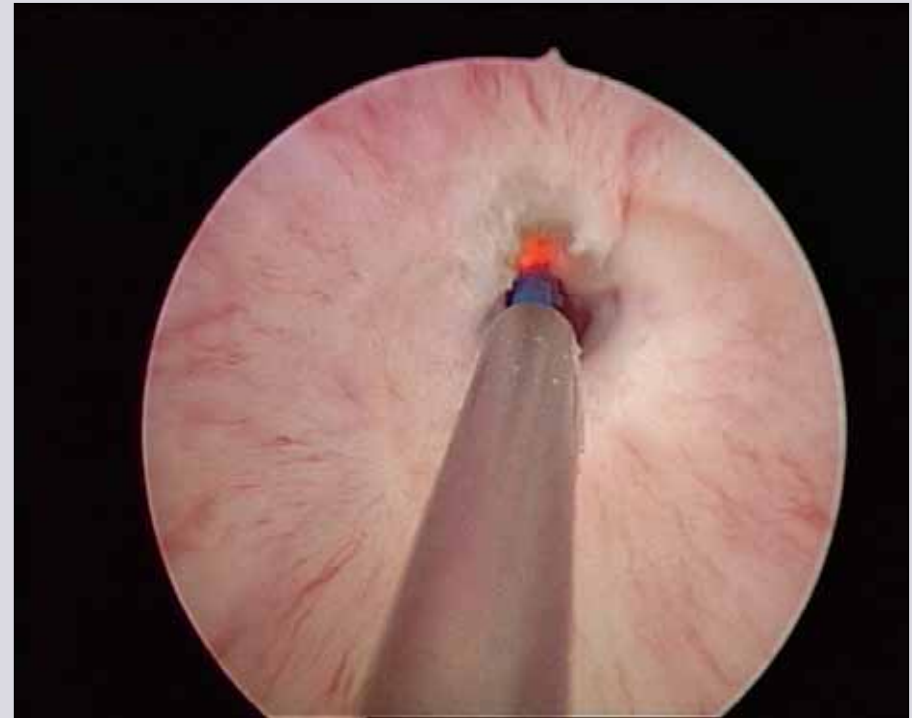
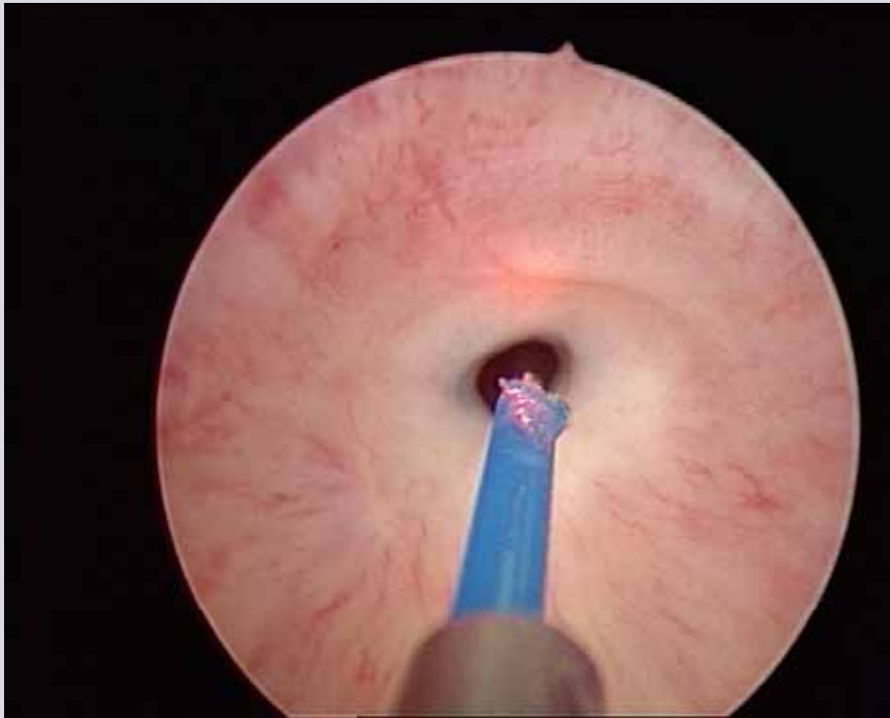
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Websites: www.uretra.it
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Simple posterior urethral stricture



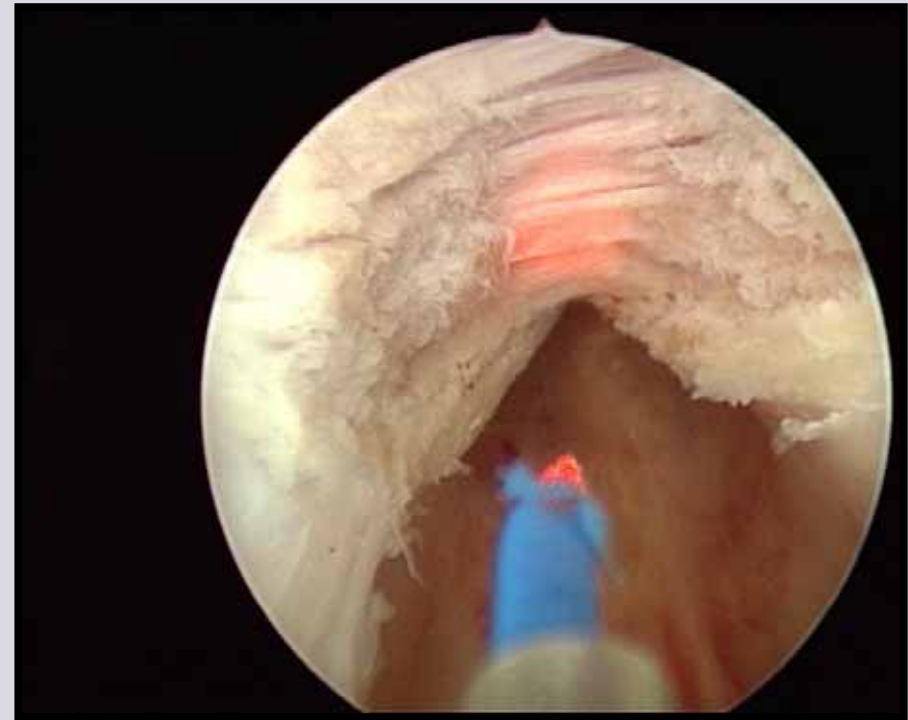
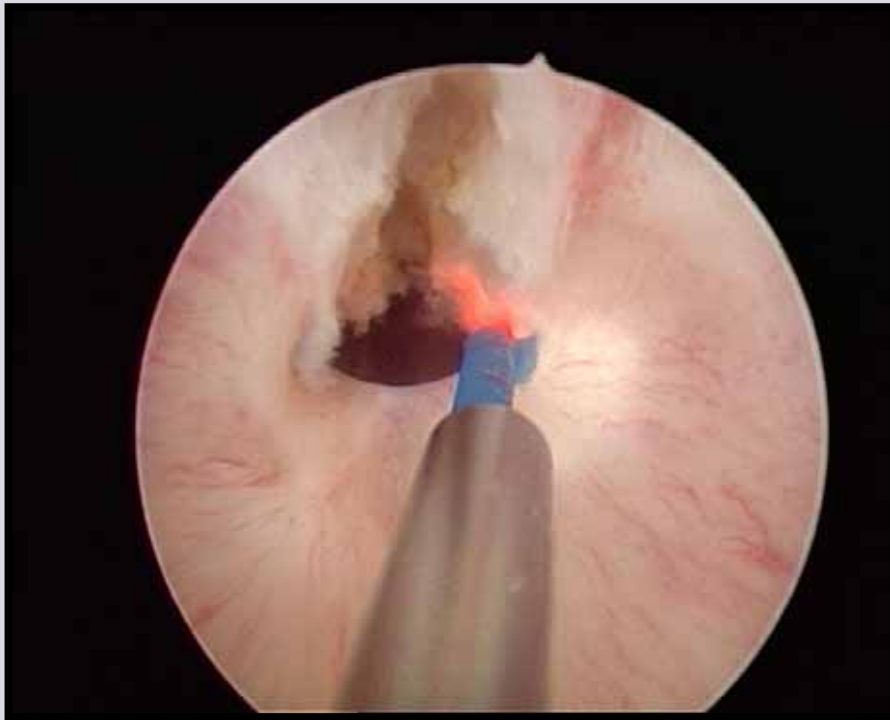
Holmium laser urethrotomy



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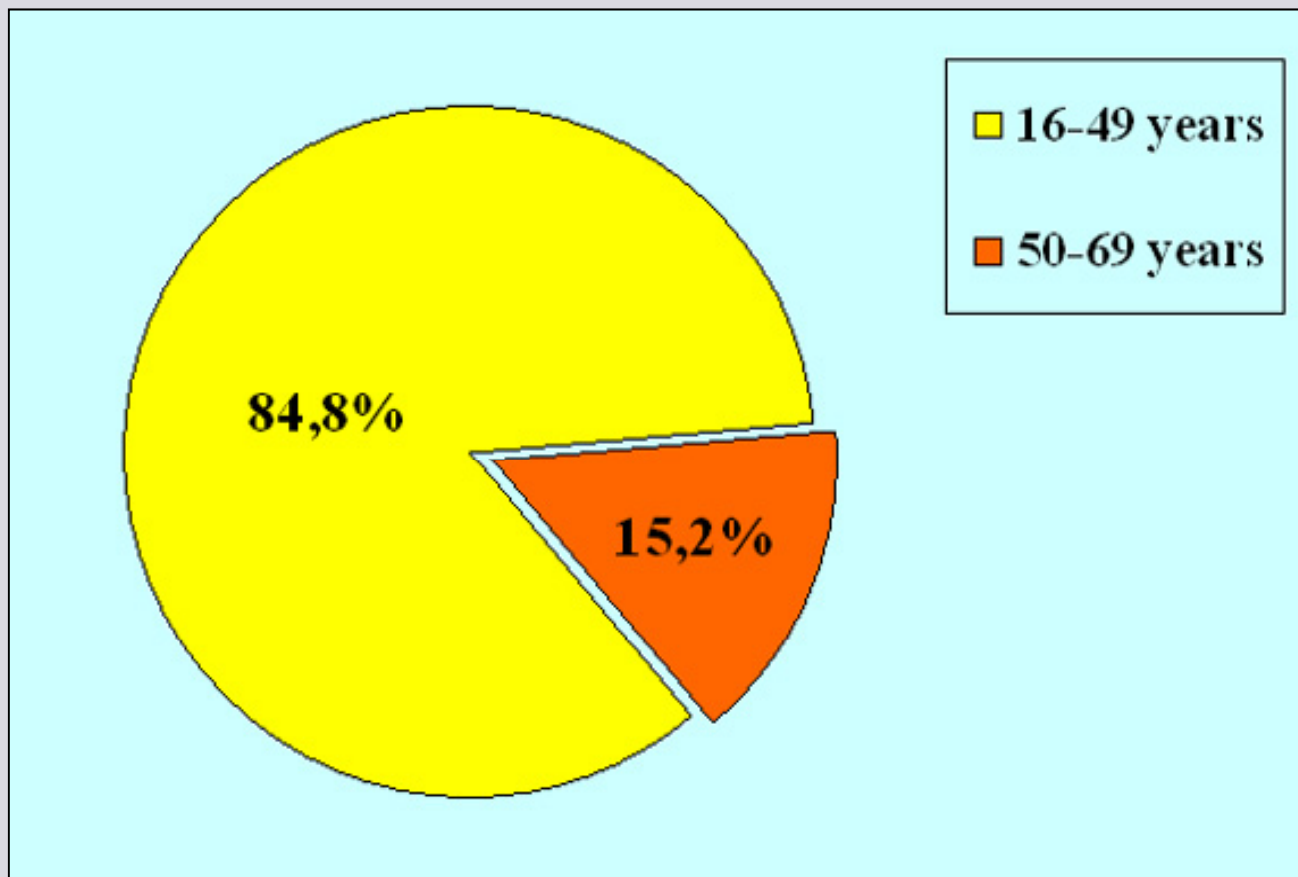
Holmium laser urethrotomy



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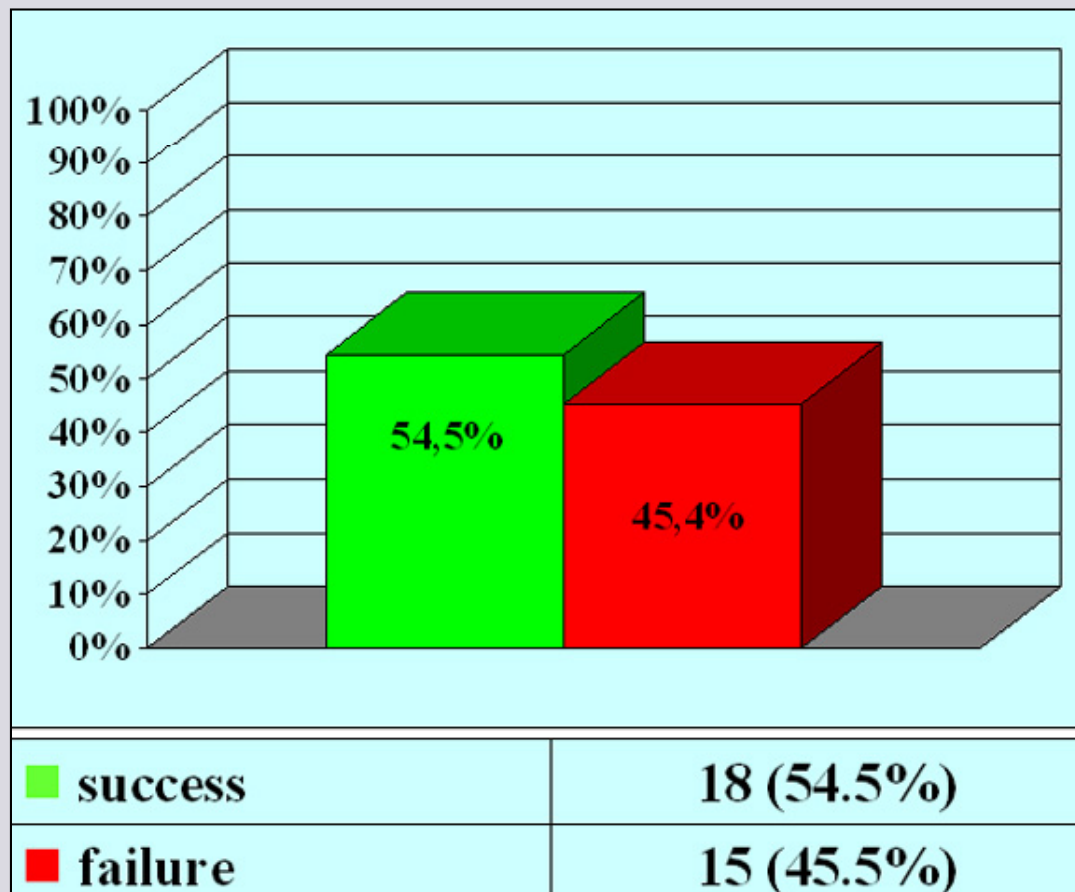
Results on 33 patients who underwent holmium laser urethrotomy for traumatic posterior urethral strictures



Age

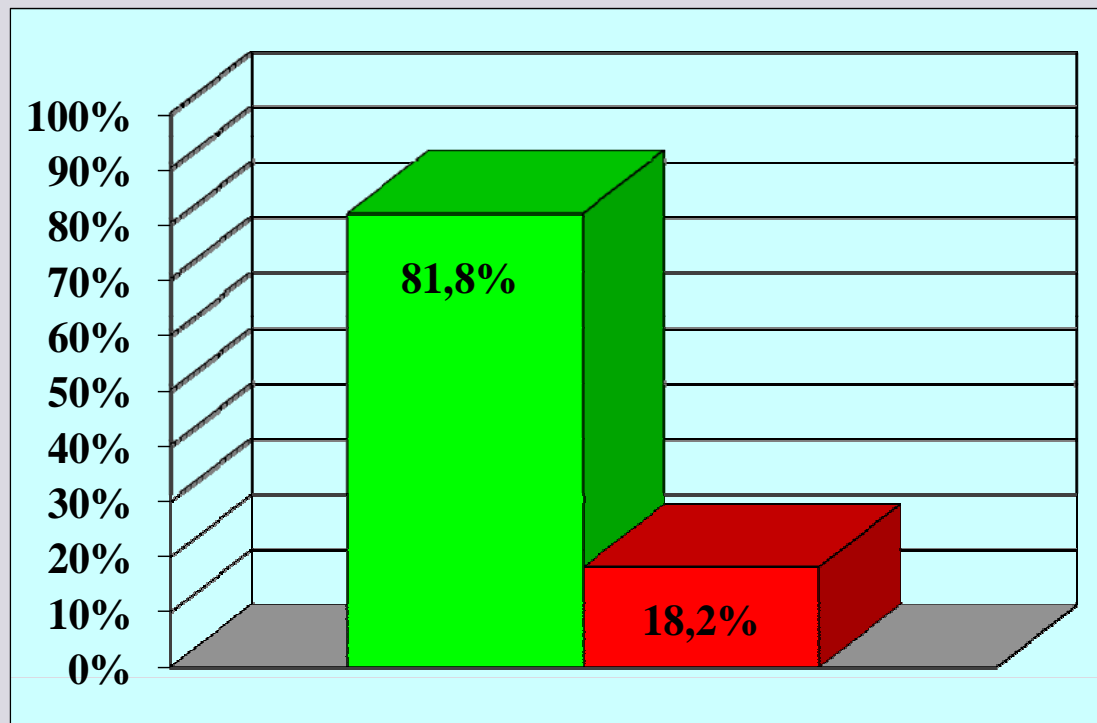
Mean follow-up 73 months (12 – 125 months)

Results on 33 patients who underwent holmium laser urethrotomy



Result after one urethrotomy

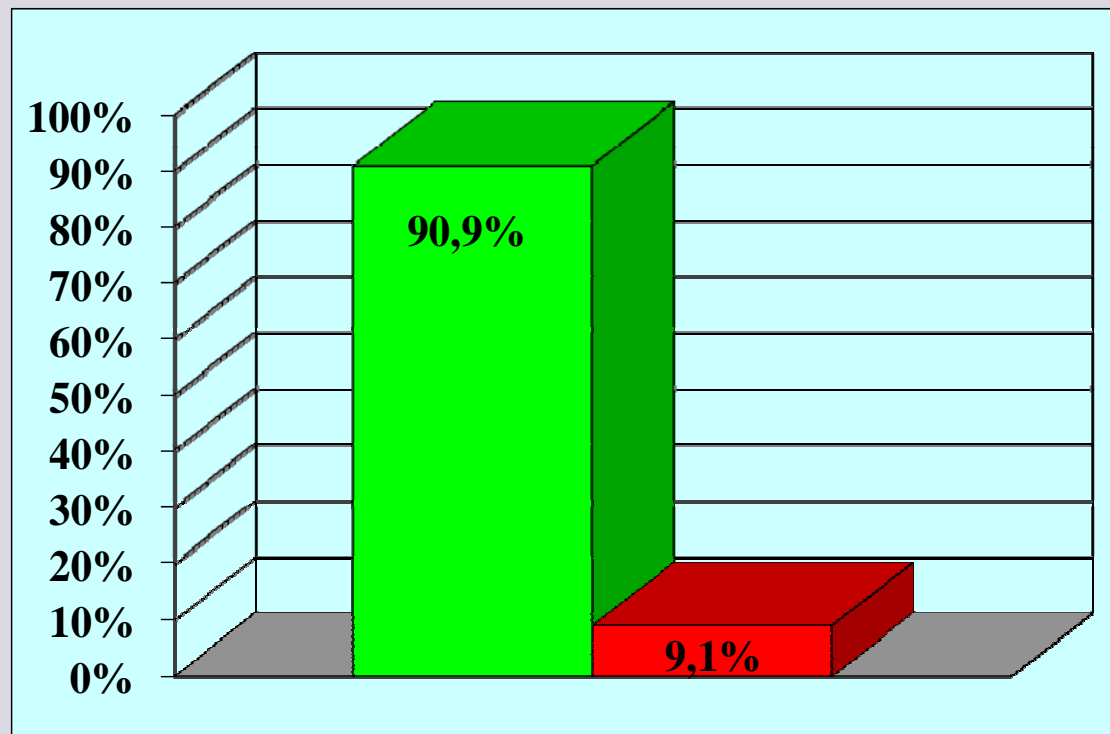
Results on 33 patients who underwent holmium laser urethrotomy



■ success	27 (81.8%)
■ failure	6 (18.2%)

Result after two urethrotomies

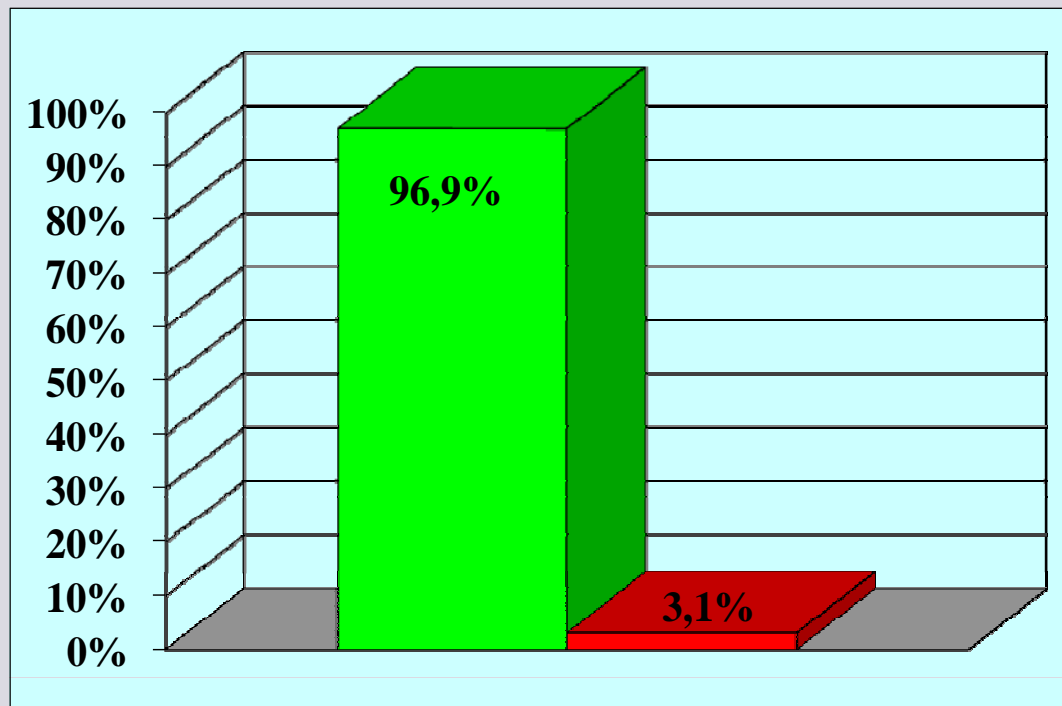
Results on 33 patients who underwent holmium laser urethrotomy



■ success	30 (90.9%)
■ failure	3 (9.1%)

Result after three urethrotomies

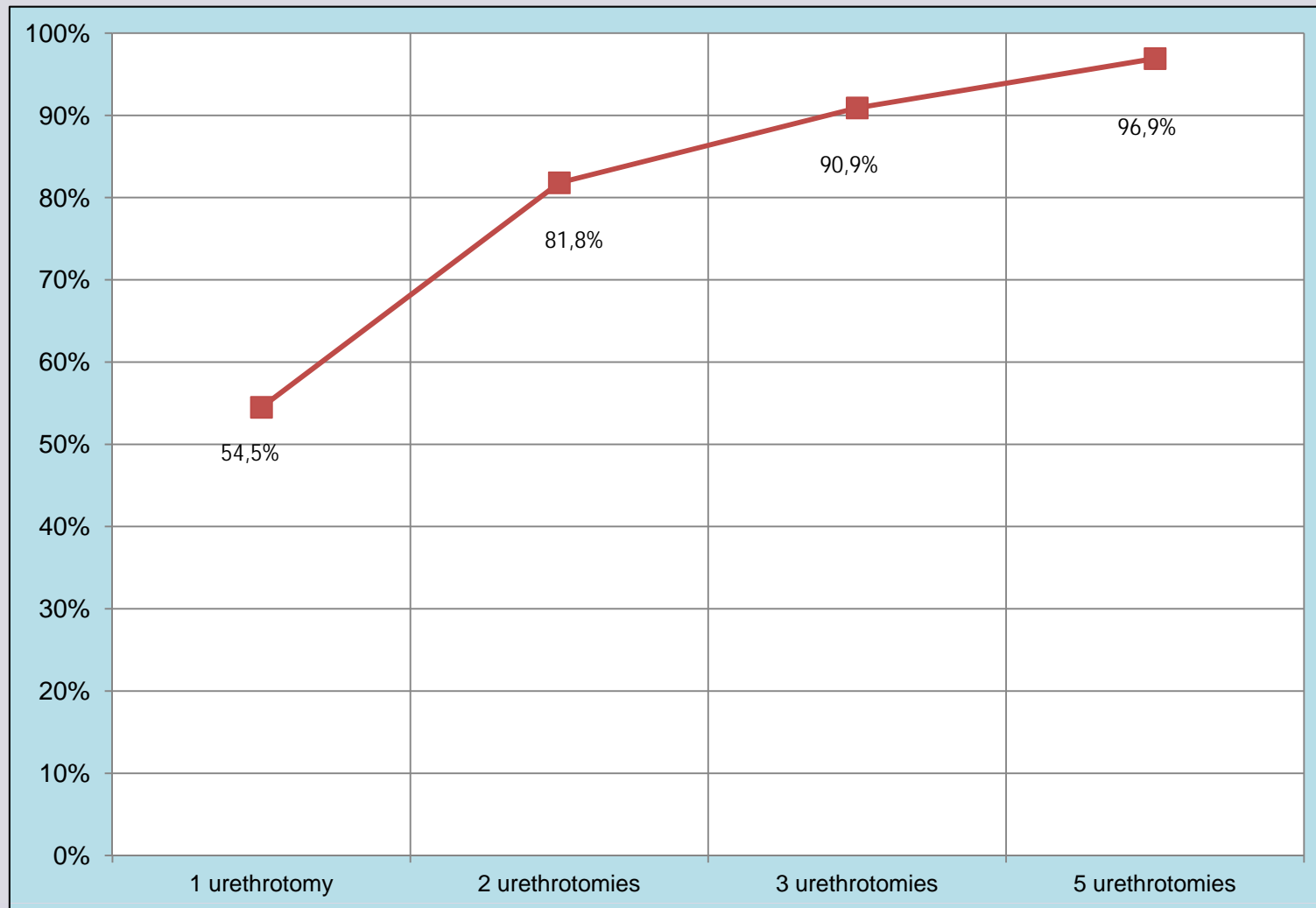
Results on 33 patients who underwent holmium laser urethrotomy



■ success	32 (96.9%)
■ failure	1 (3.1%)

Result after five urethrotomies

Results on 33 patients who underwent holmium laser urethrotomy



The use of holmium laser urethrotomy may represent a rational option in patients with posterior traumatic

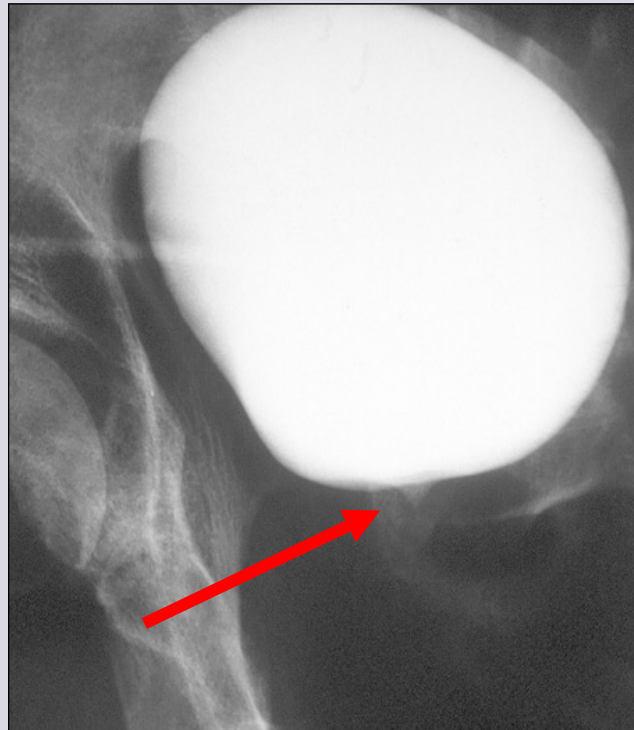
No-obliterative short urethral stricture

No damage to the erectile neuro-vascular tissue

Patient should be fully informed that only 54.5% of patients require only one urethrotomy

45.5% of patients require two or more urethrotomies to obtain a stable result over time

Goal of the initial evaluation and management of the patient with PFUDD



Preserve the residual sphincter mechanism at the bladder neck

Goal of the initial evaluation and management of the patient with PFUDD



Realignment of the injured urethra and restore the urethral lumen

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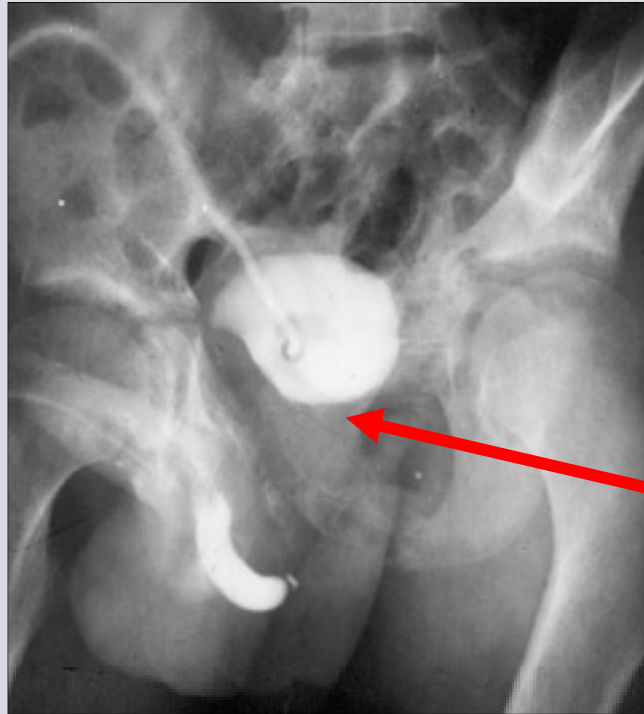
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Delayed treatment of patients with pelvic fracture urethral distraction defects

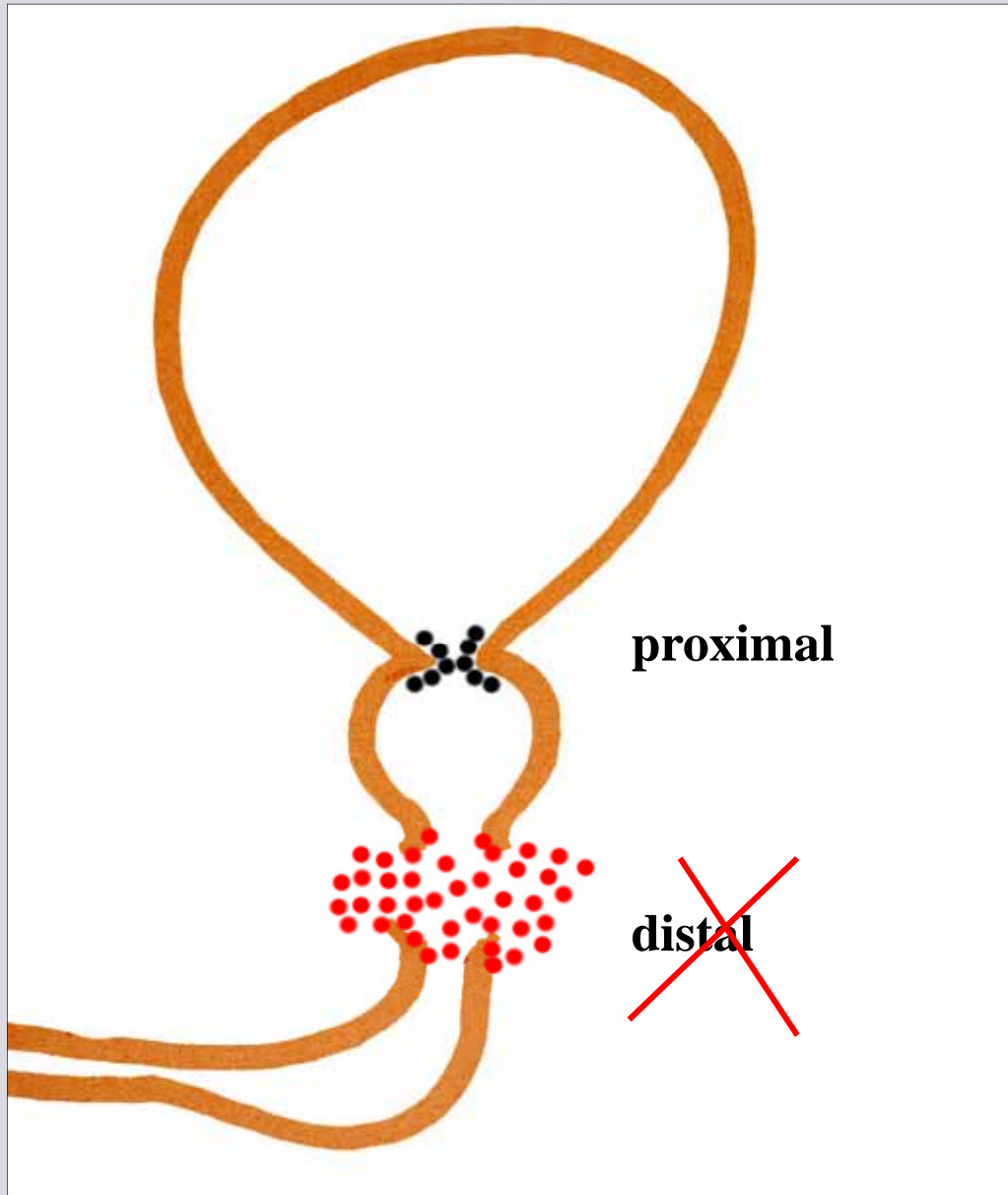


Posterior urethroplasty

Posterior urethroplasty



**How to repair posterior urethral stricture
preserving urinary continence**





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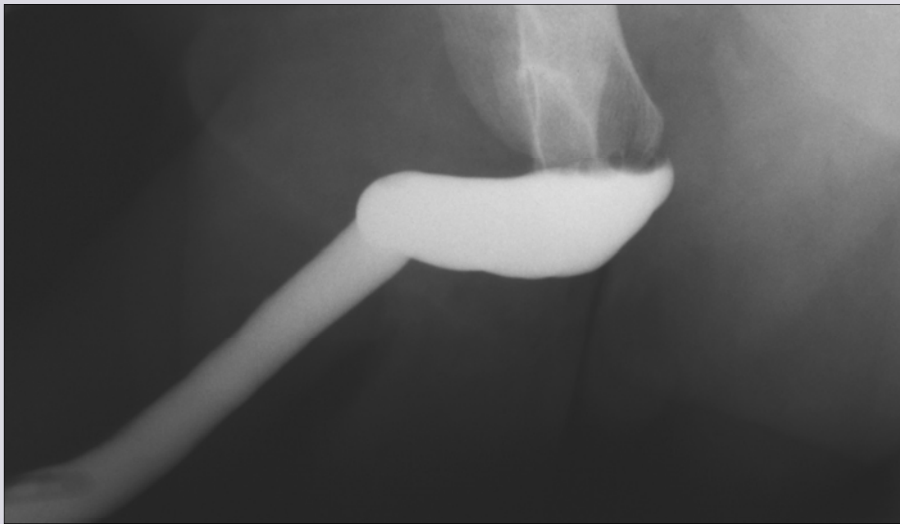
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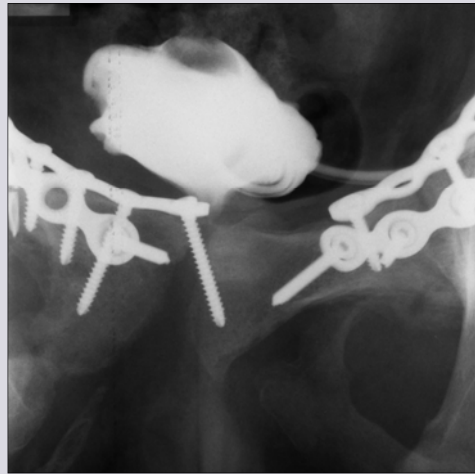
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Preoperative patient evaluation

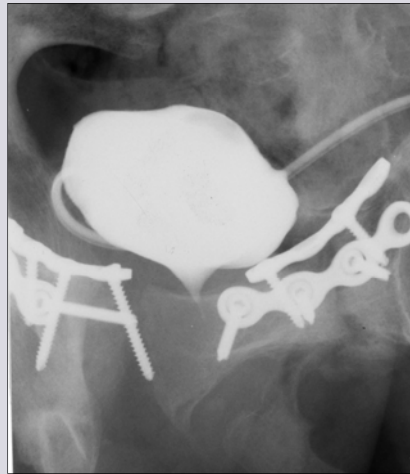


Retrograde urethrography

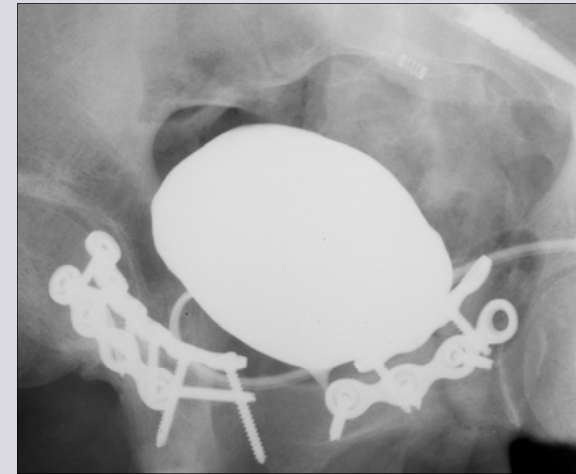
Cystography – supine position



50 cc

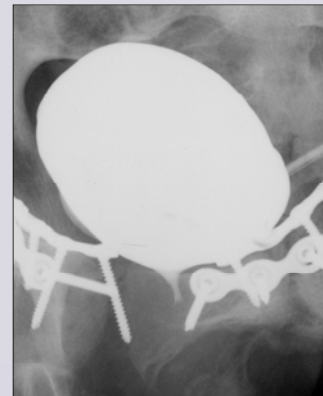
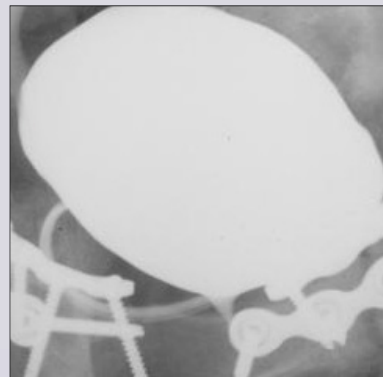


100 cc



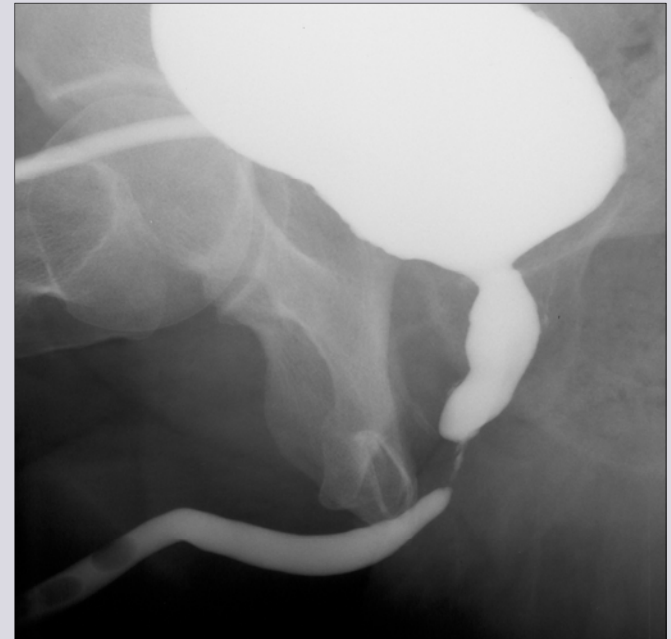
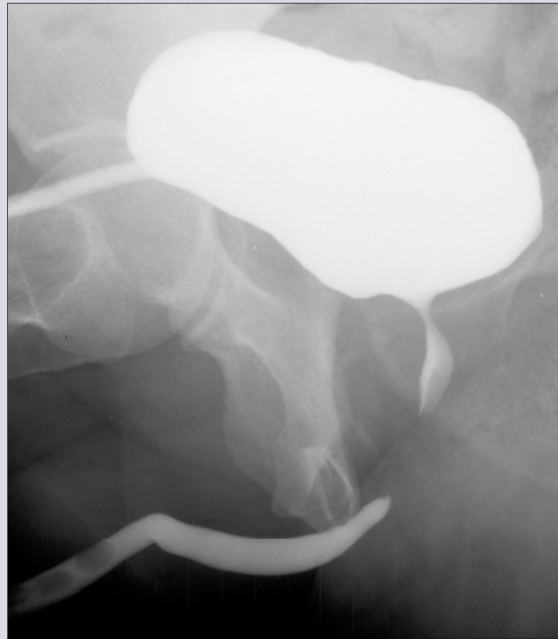
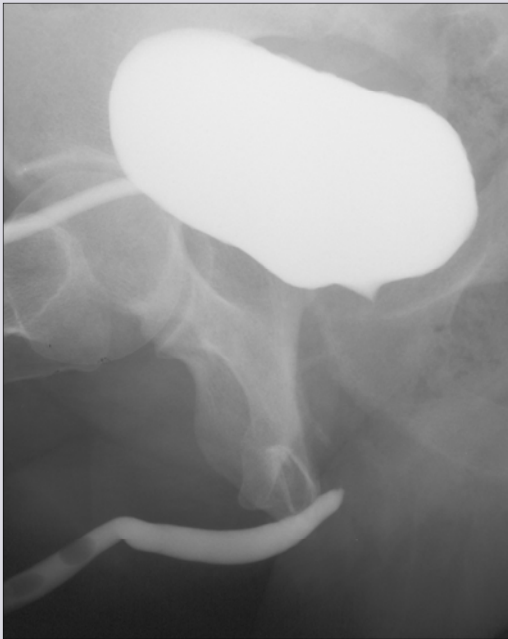
200 cc

Cystography – standing position



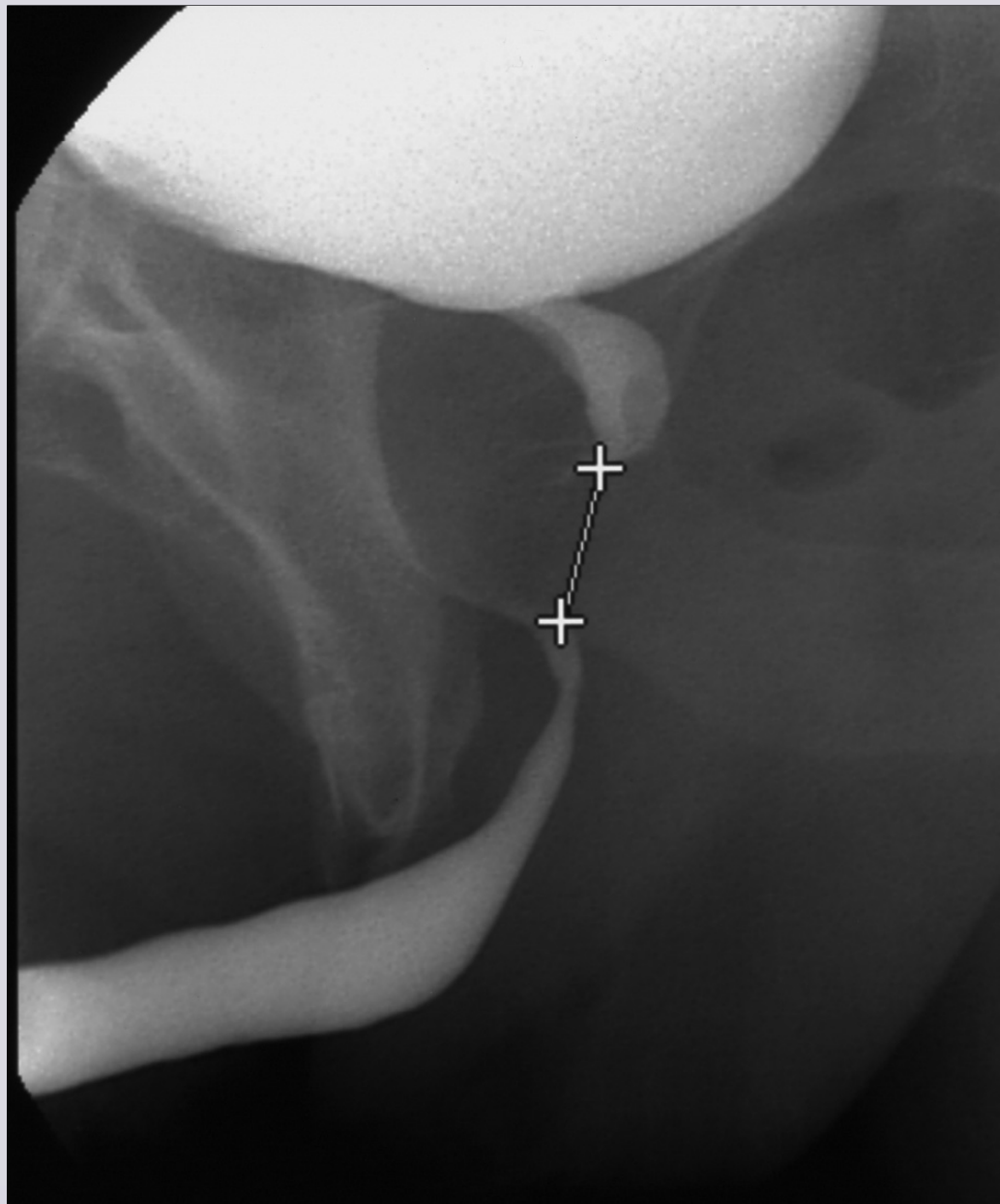
Valsalva

Combined retrograde and voiding urethrography



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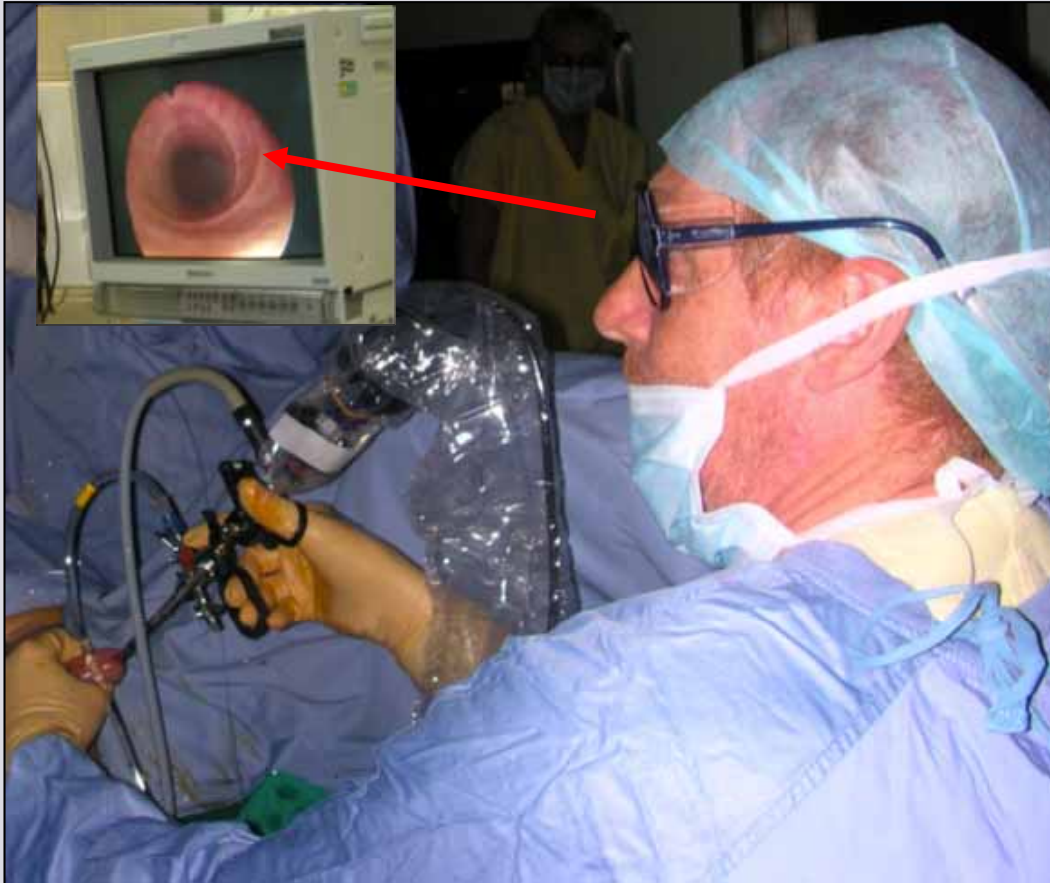
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Endoscopic evaluation of the anterior urethra



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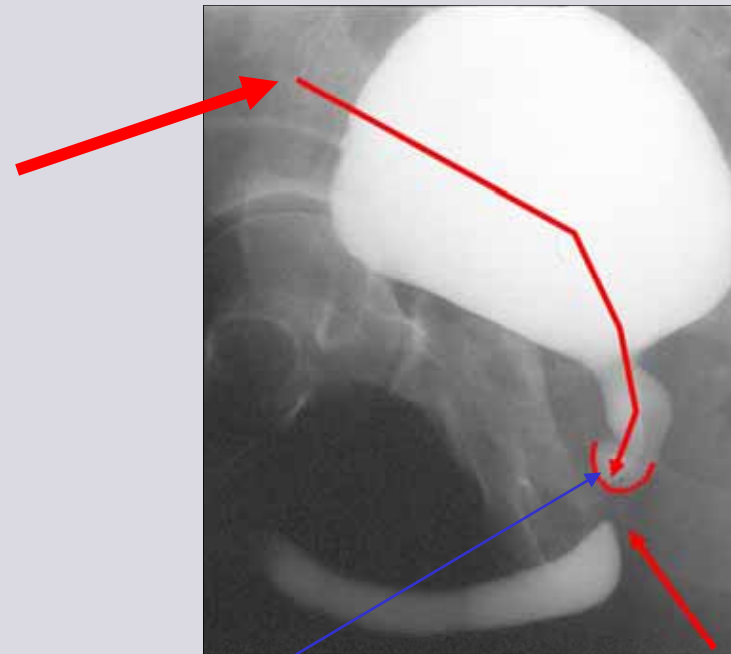
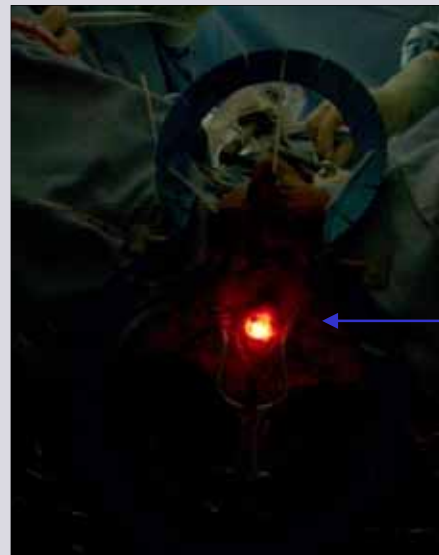
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Endoscopic evaluation of the bladder neck and prostatic urethra



Posterior urethroplasty using combined approach

suprapubic
endoscopic
approach



light

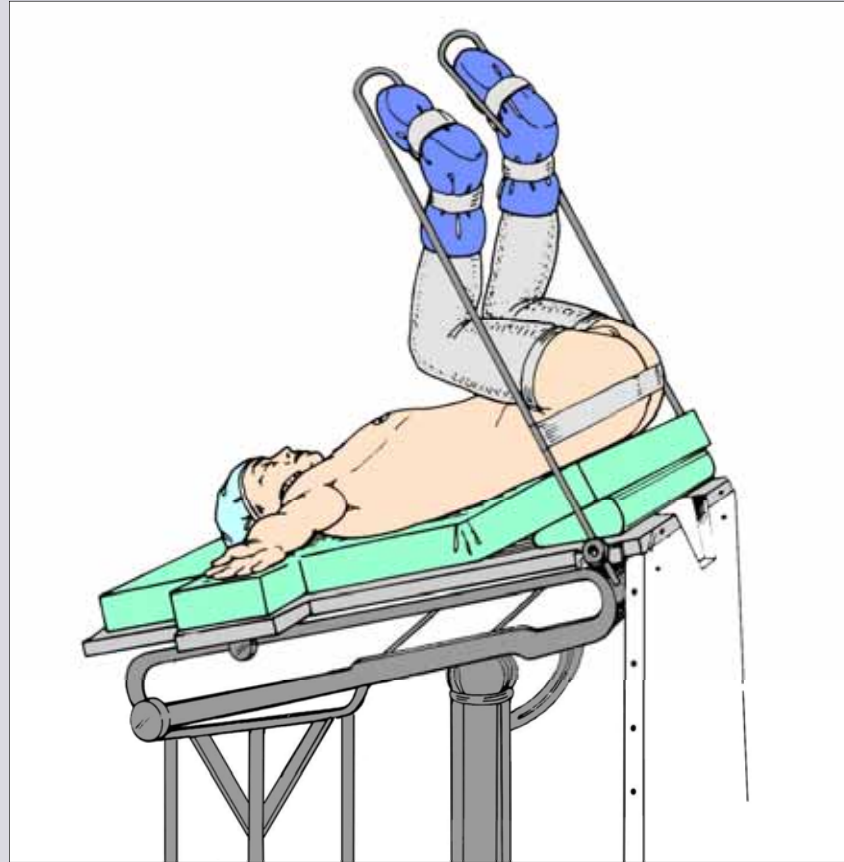
perineal surgical approach

Patient preparation



simple lithotomy position

Positioning-related complications



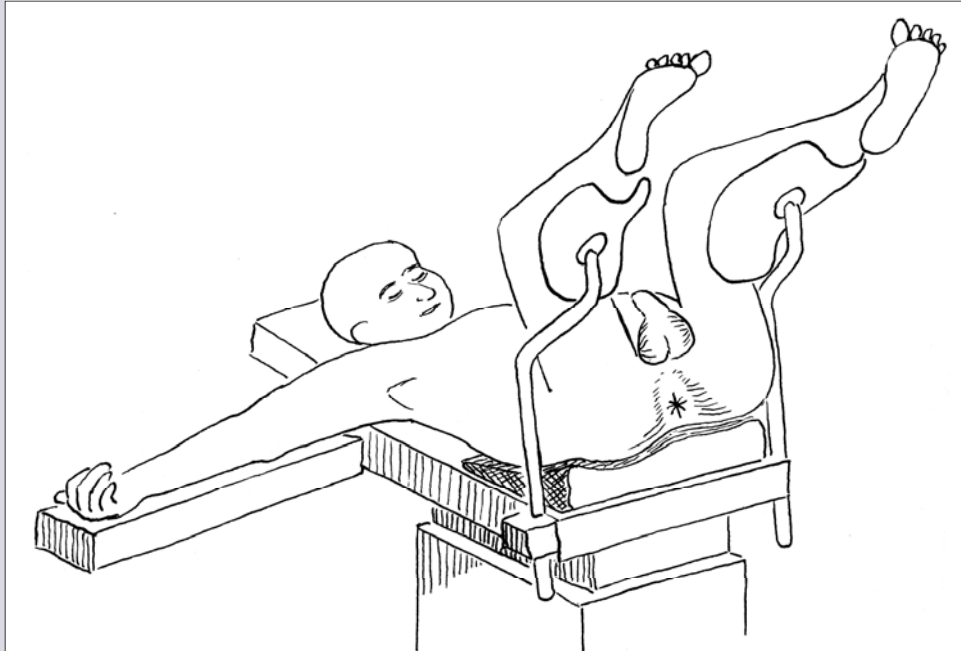
Exaggerated lithotomy position

Patient preparation



Allen stirrups

Positioning-related complications



Standard stirrups

Patient preparation



Sequential inflatable compression sleeves

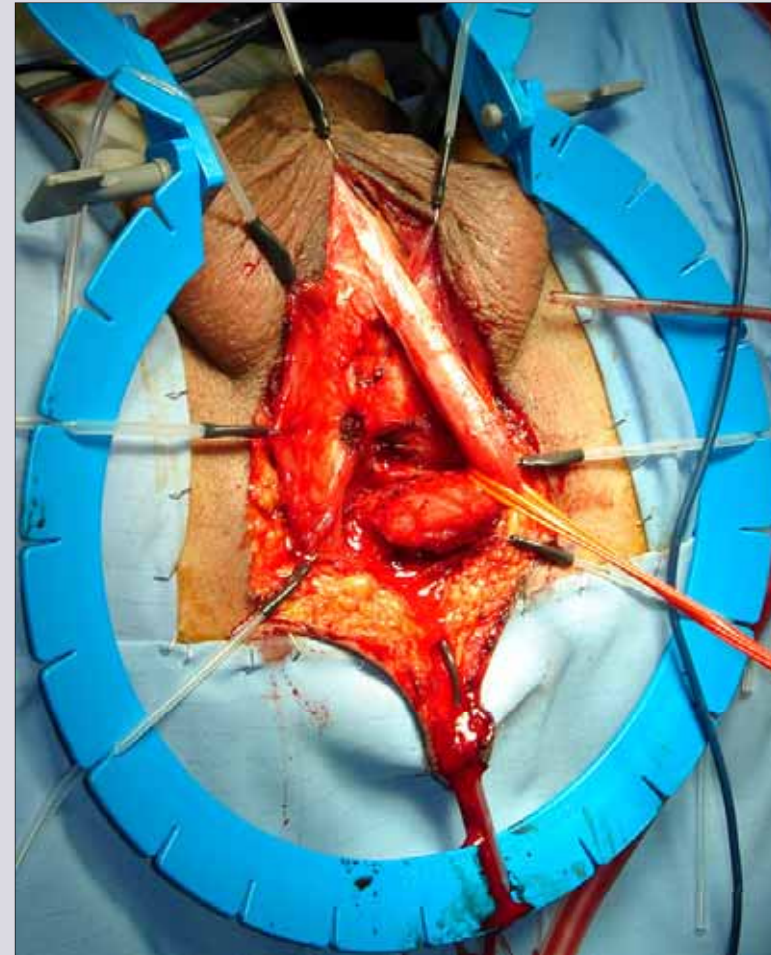
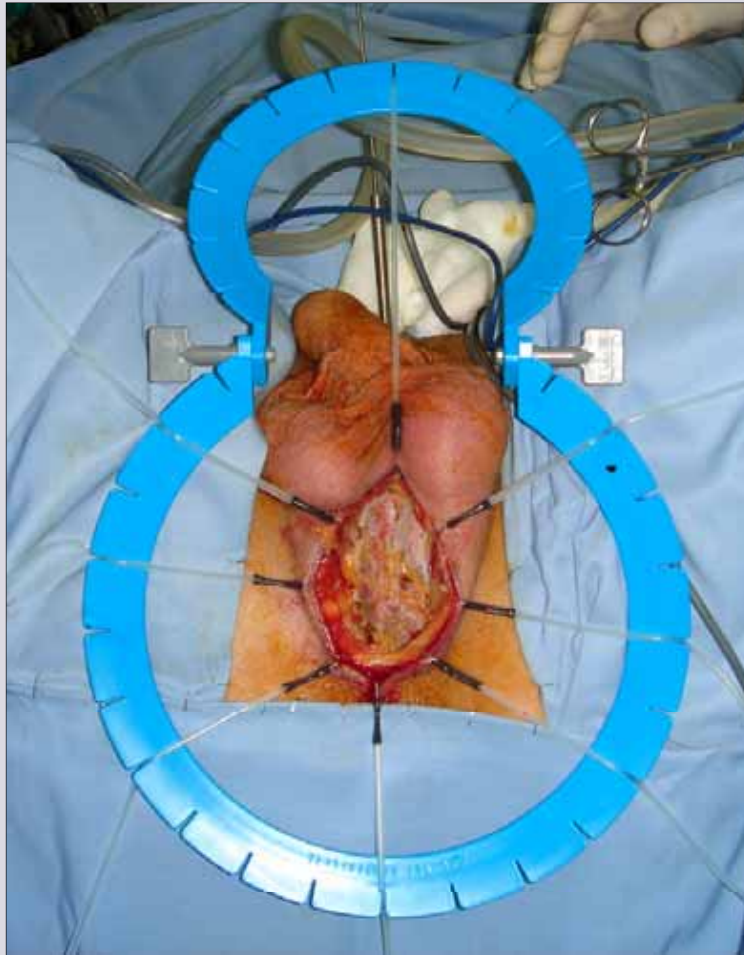
Combined approach



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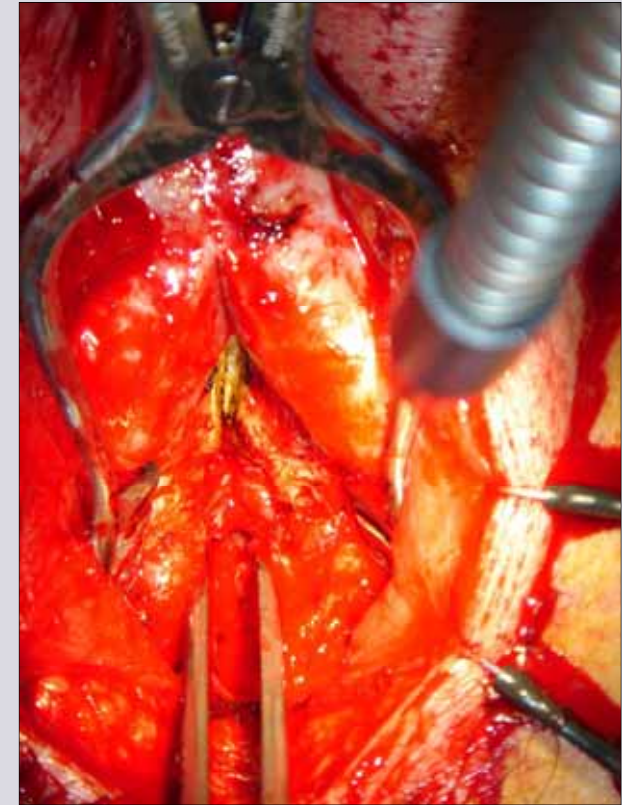
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Appropriate surgical instruments



Simple retractor using atraumatic hooks

Appropriate surgical instruments

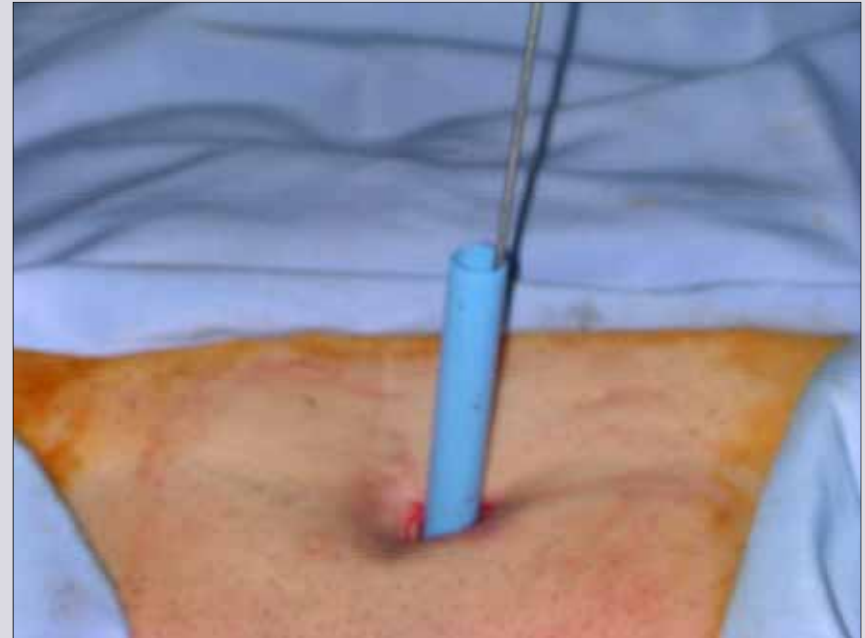
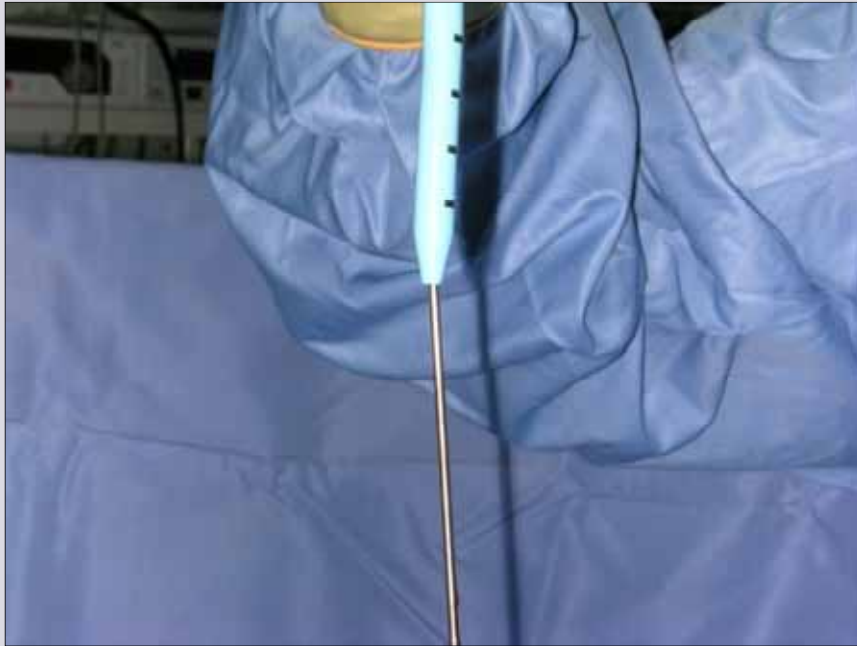


Perineal flexible light



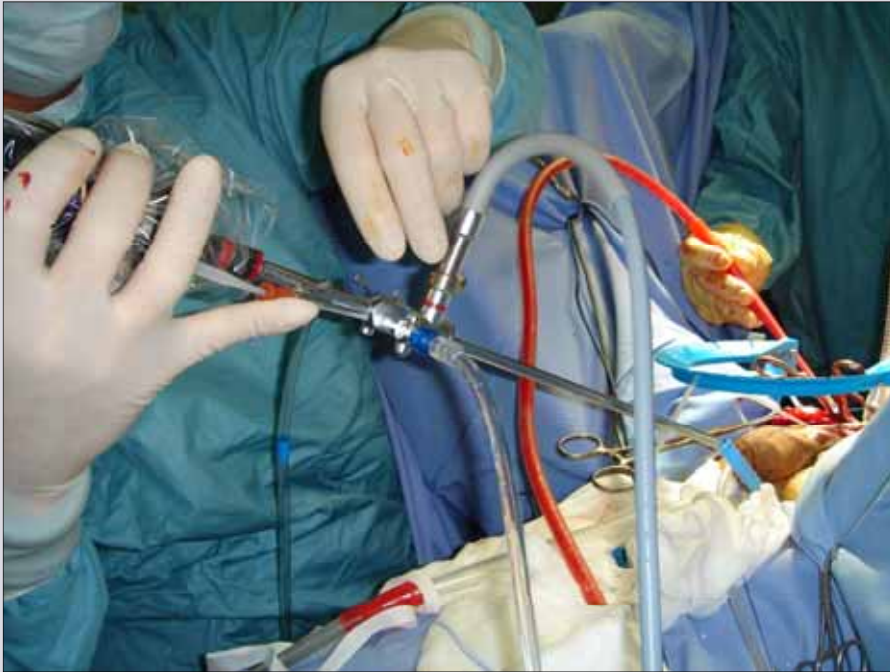
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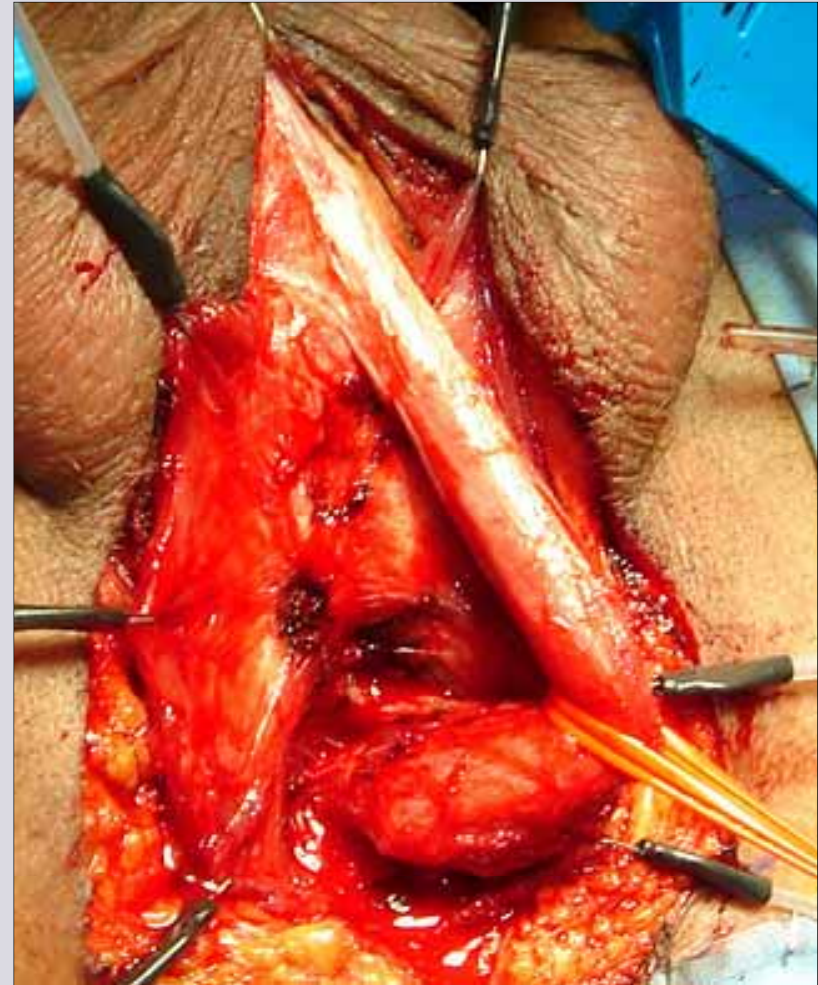
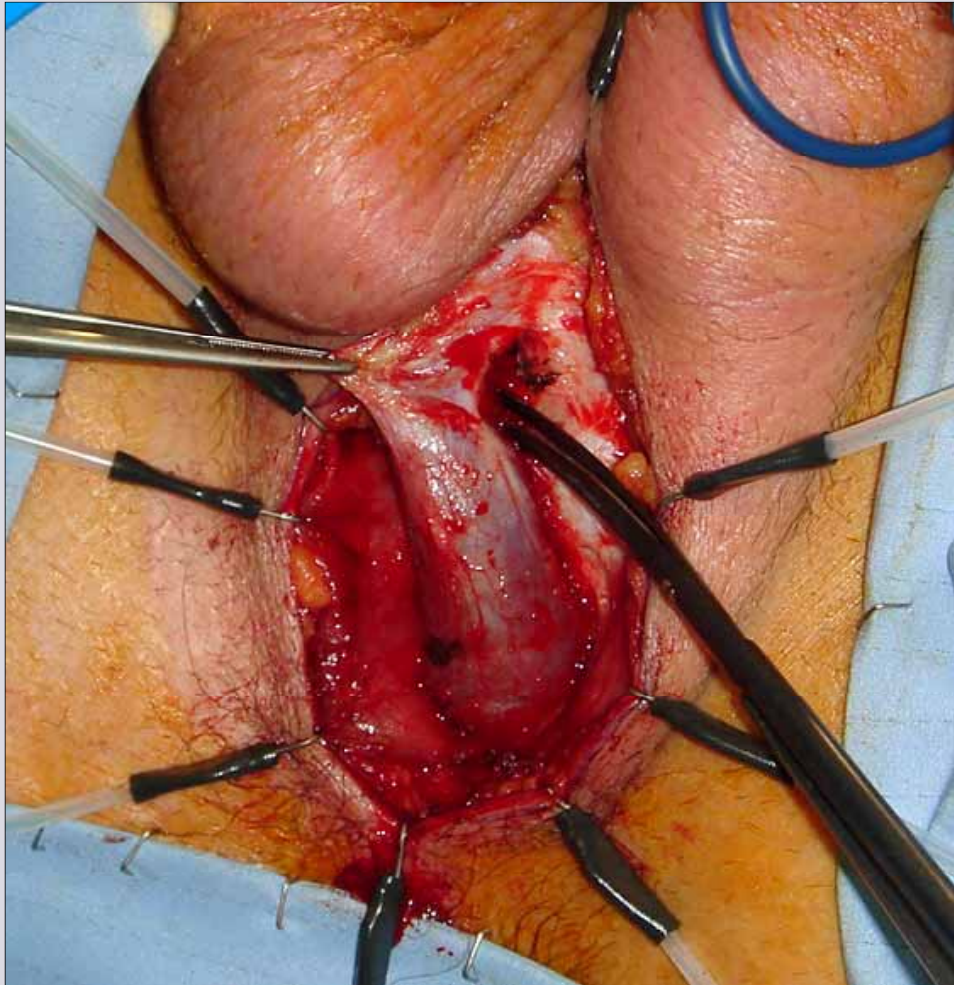
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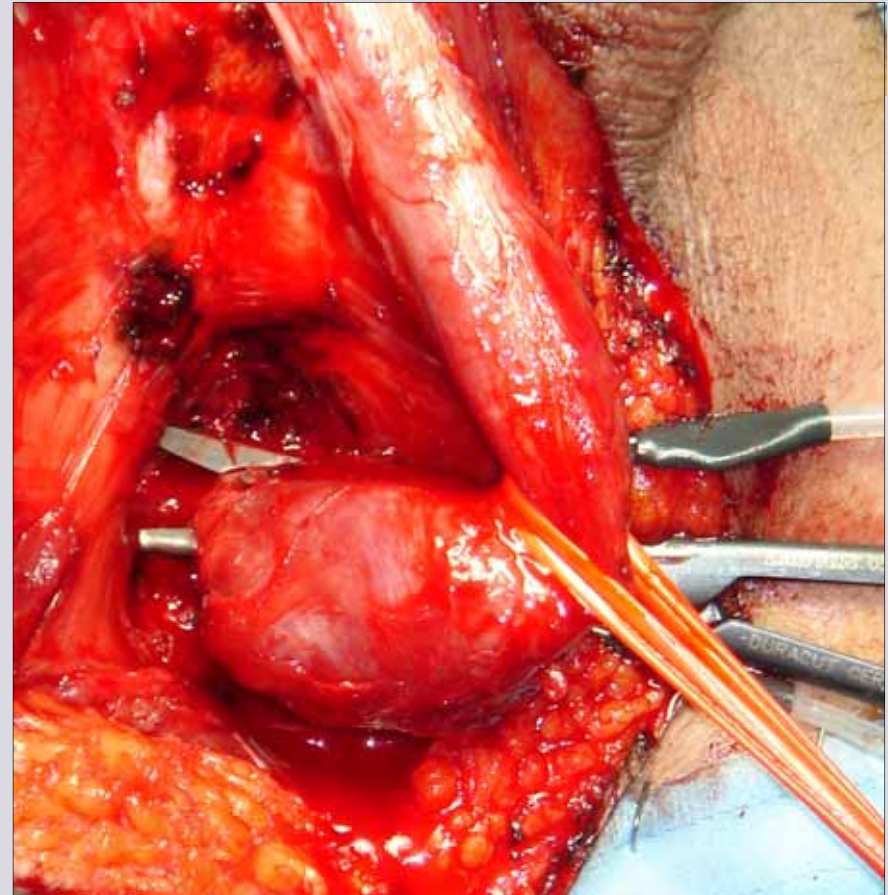
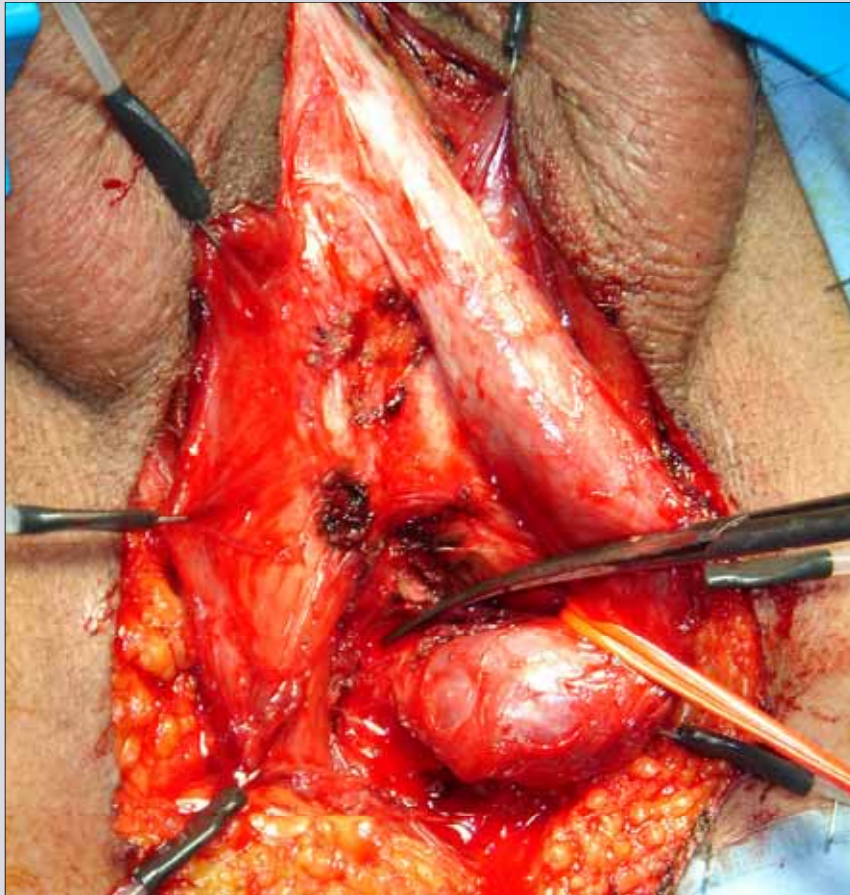
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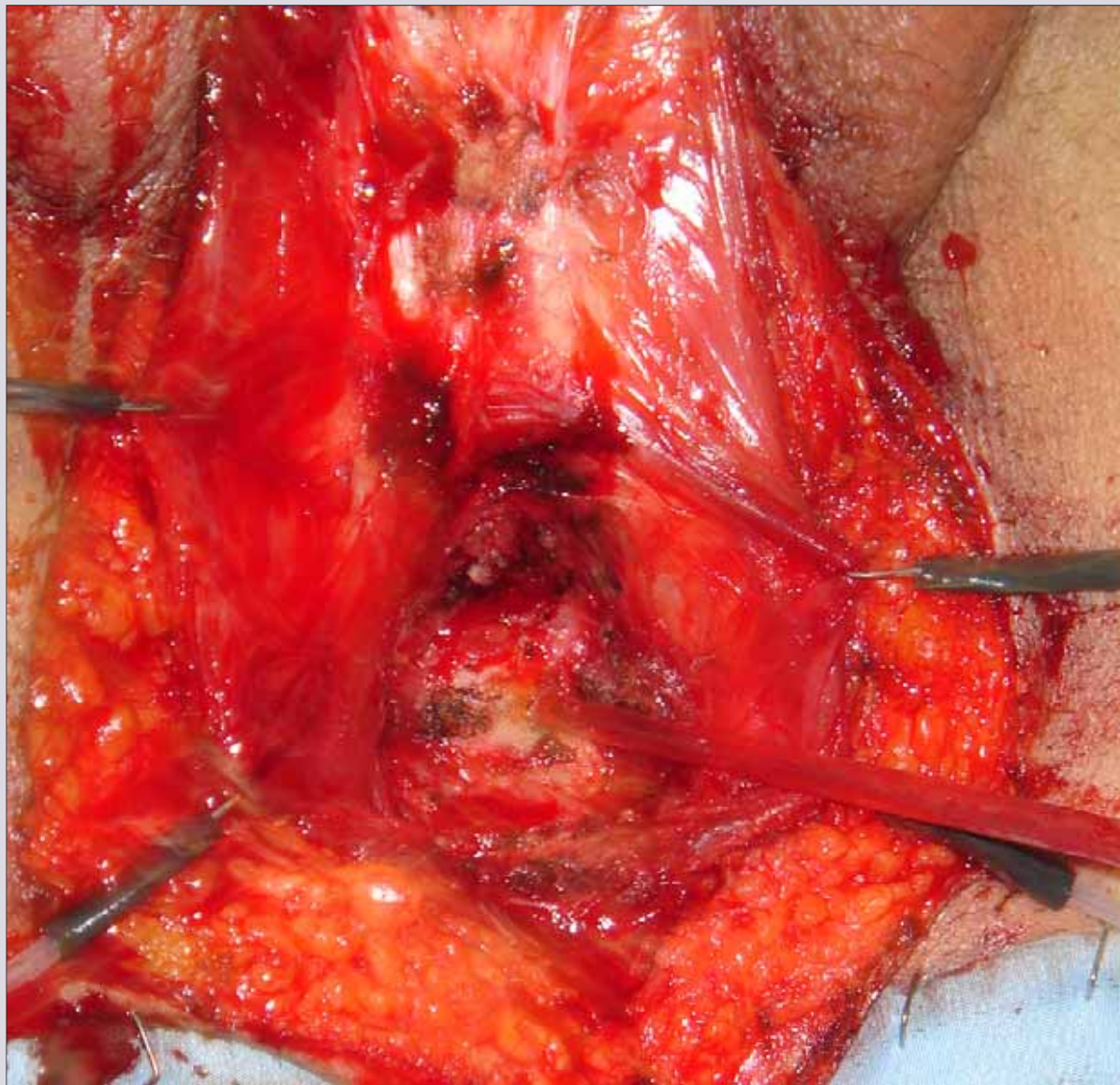
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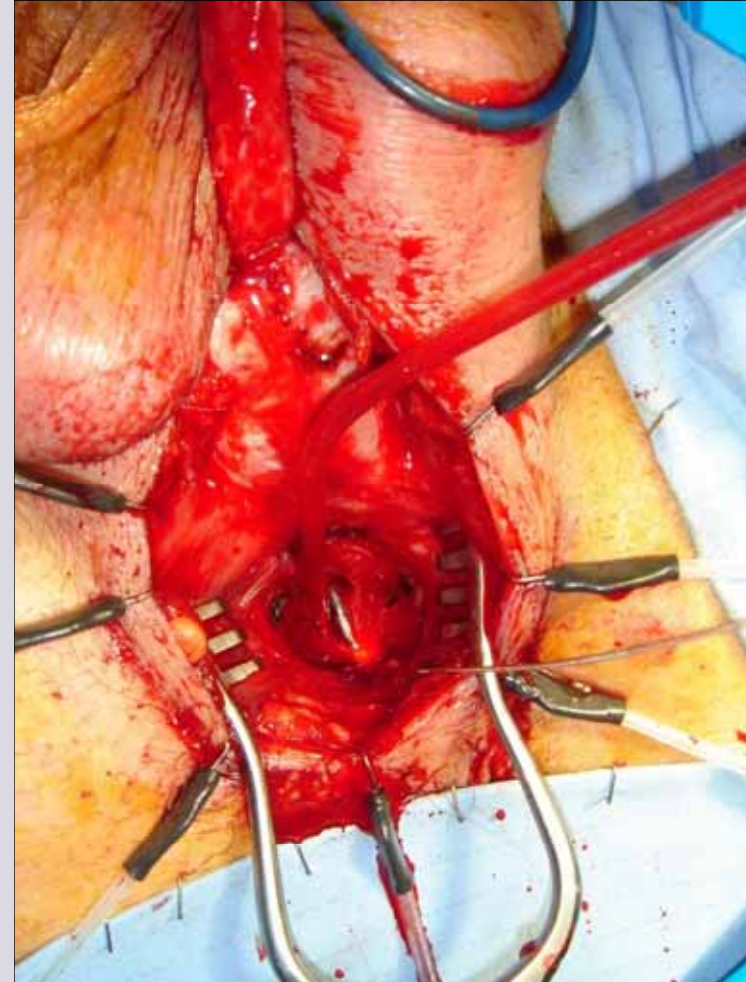
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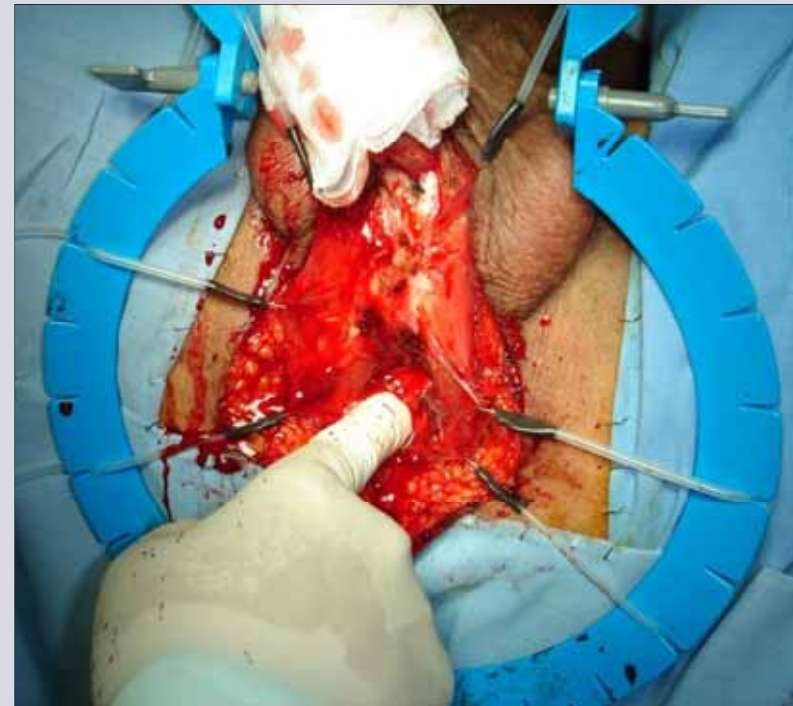
Cut on the light



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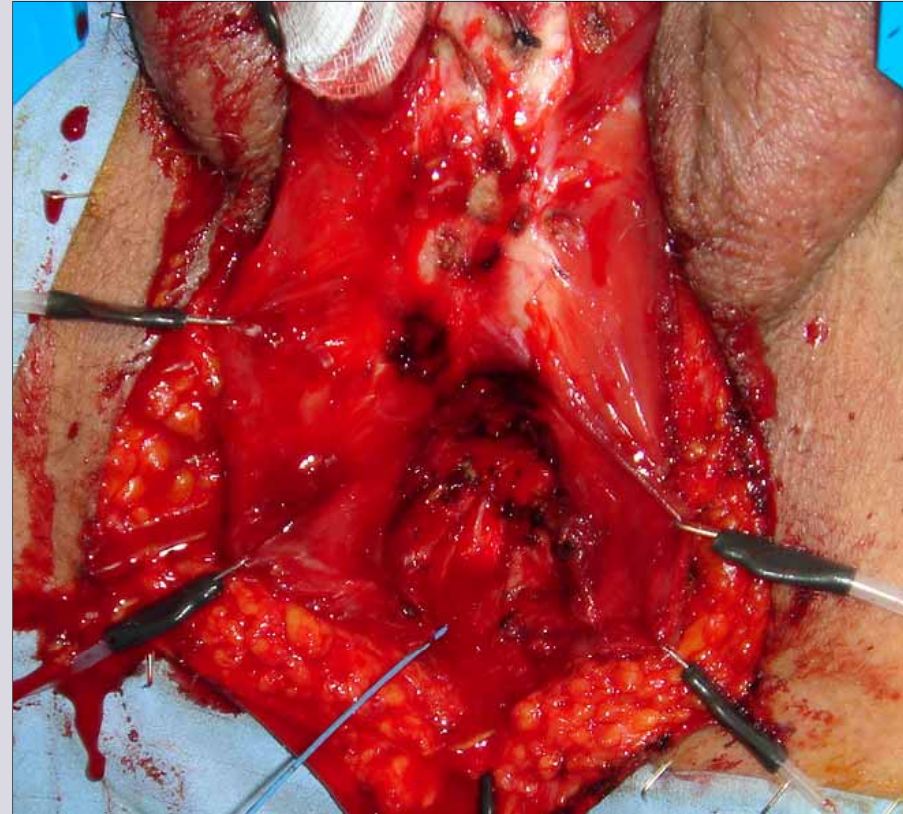
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Cut on the tip



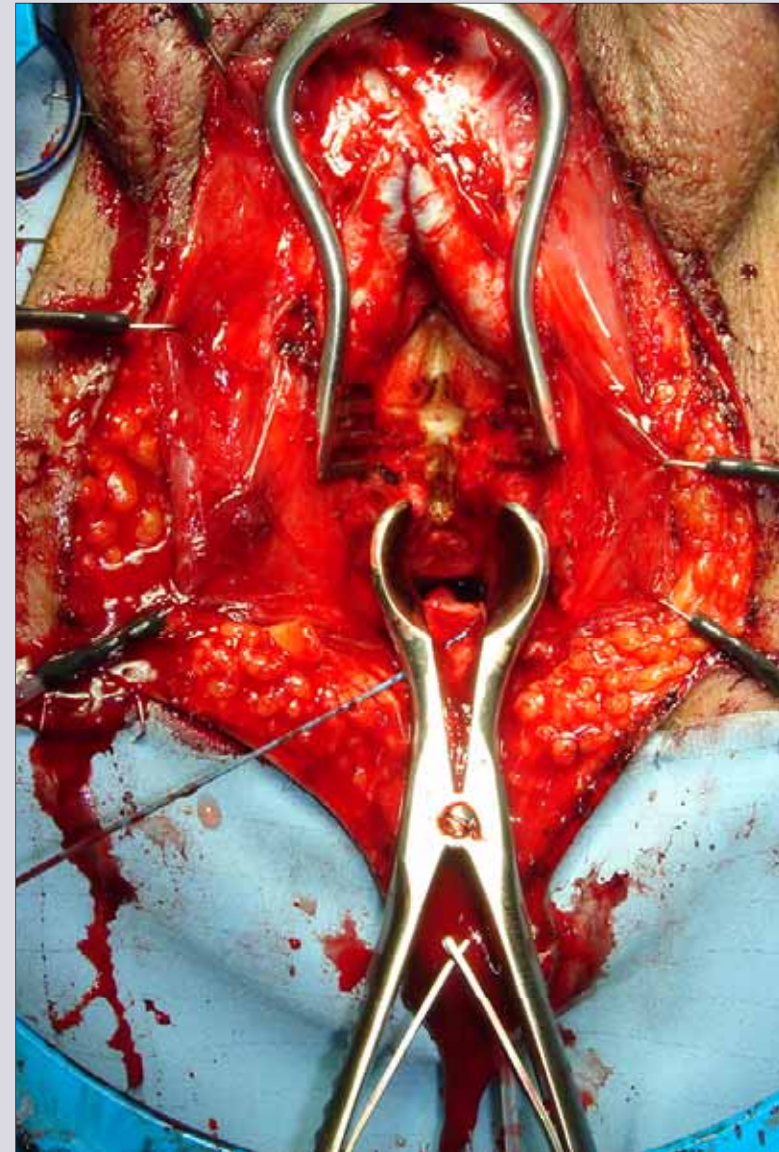
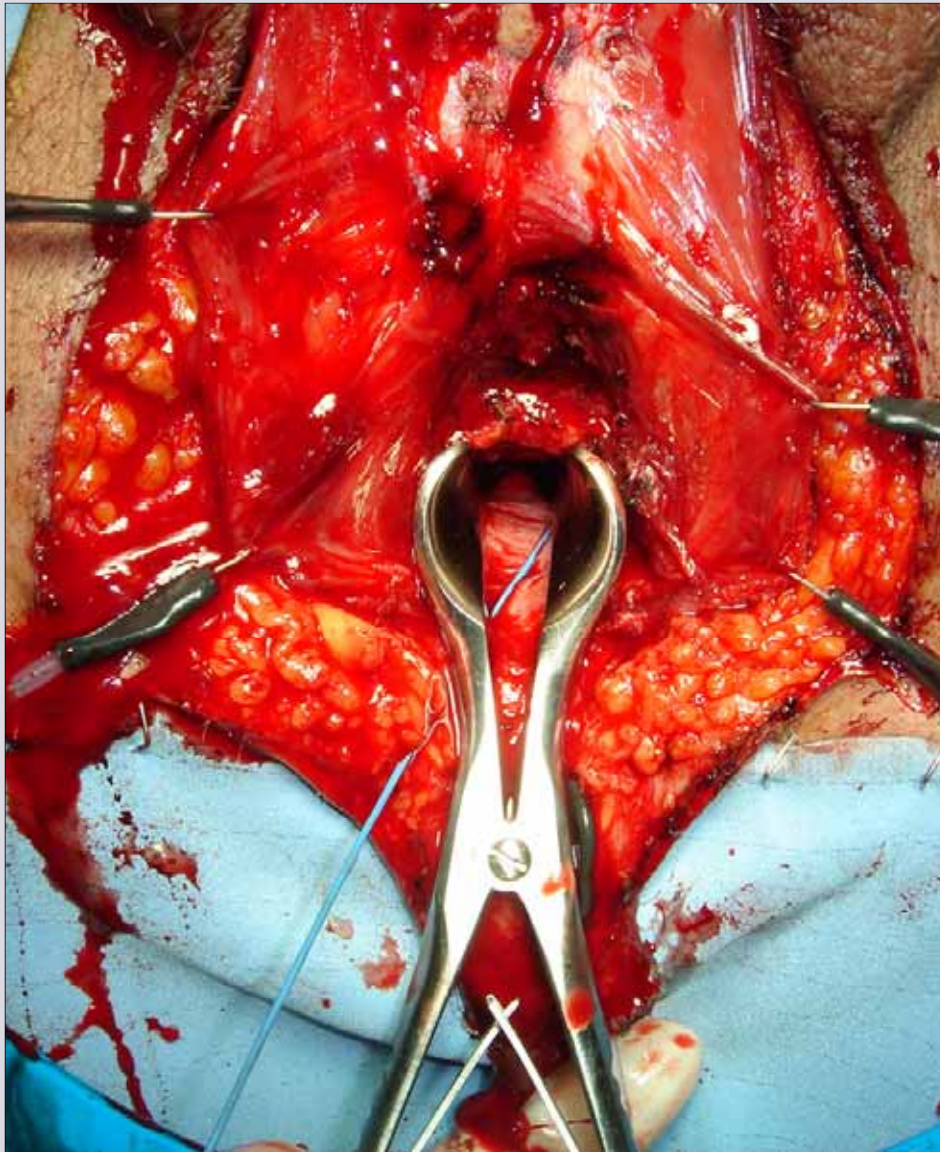
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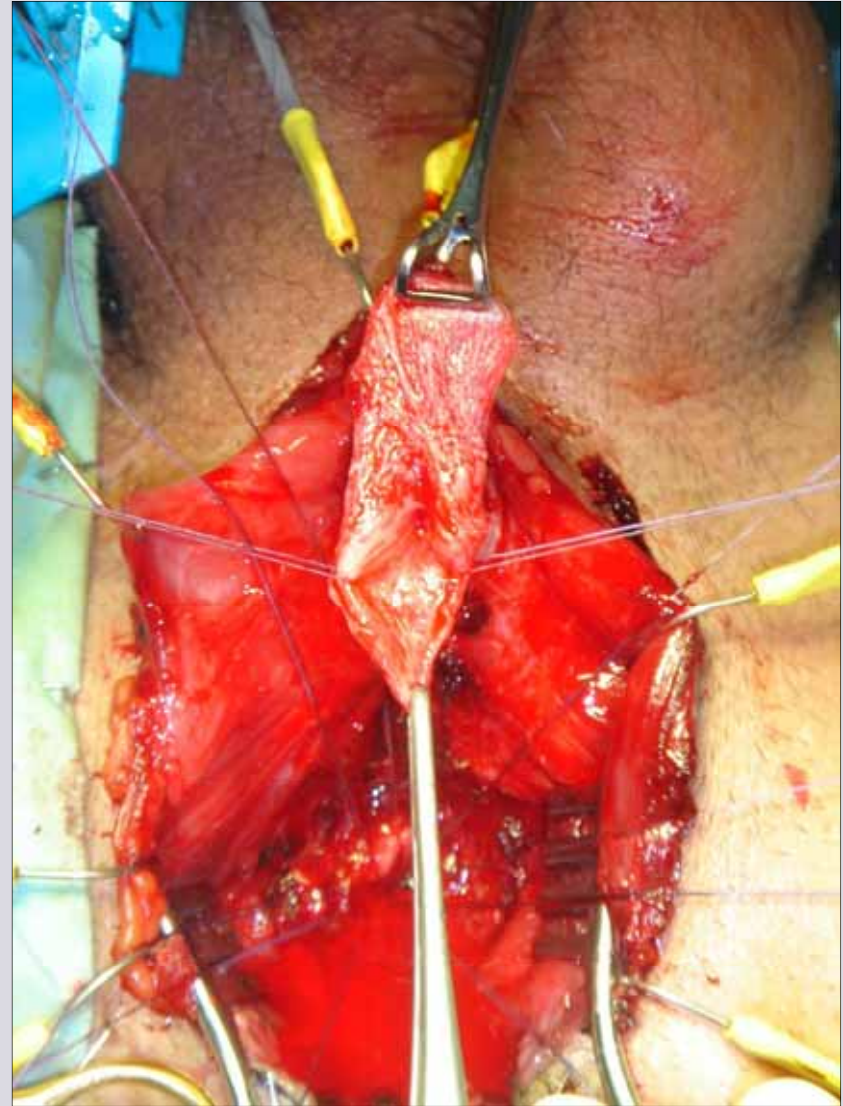
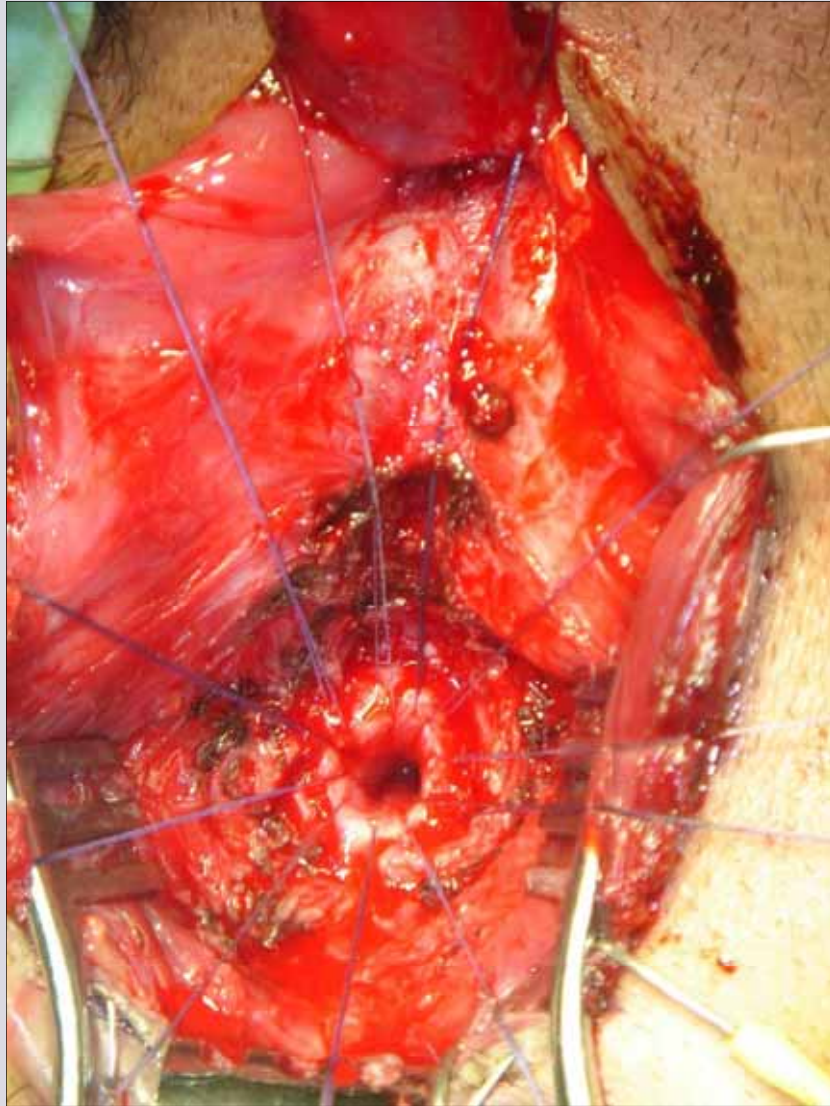
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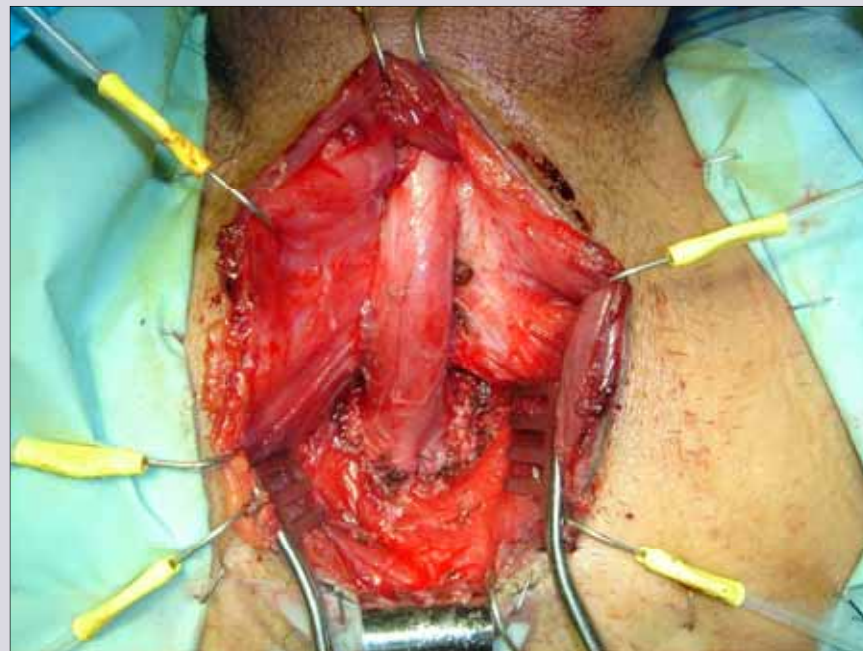
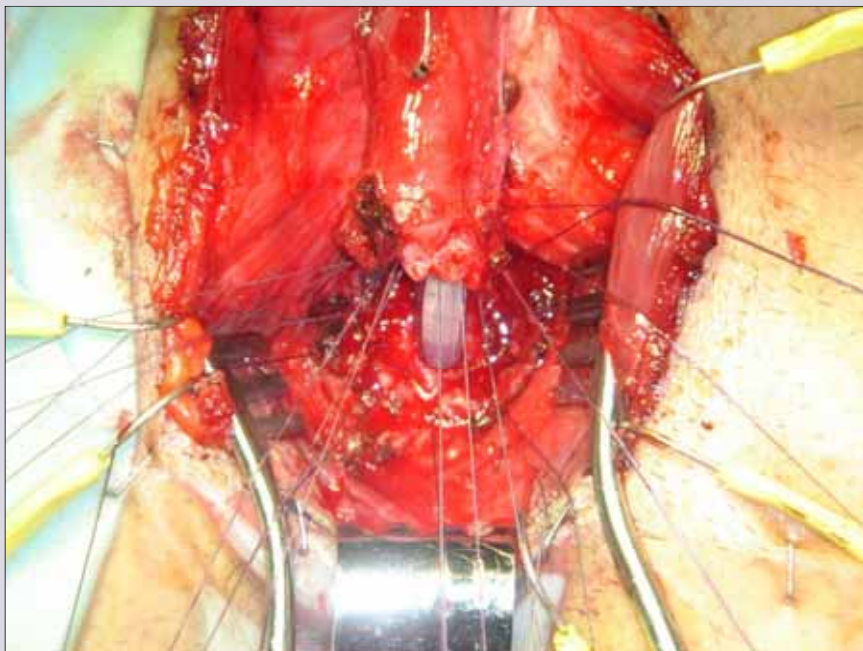
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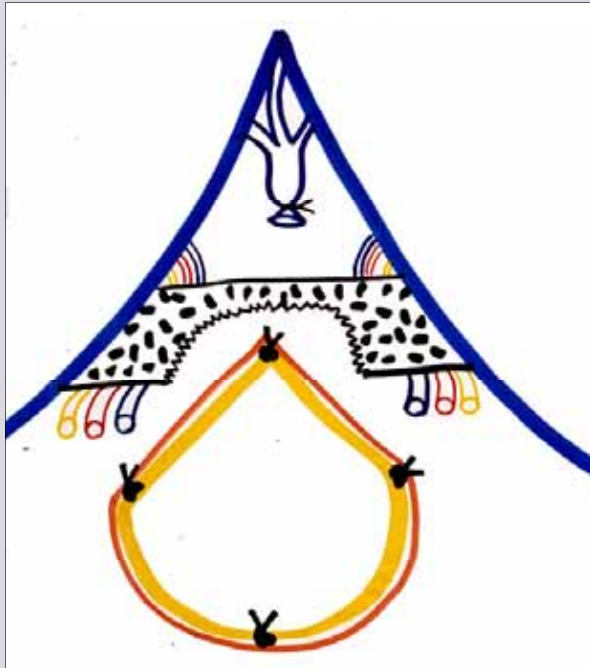
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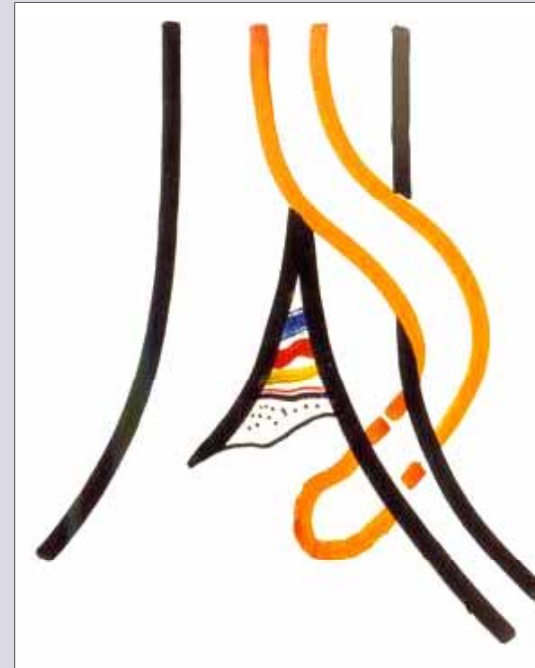
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when ?

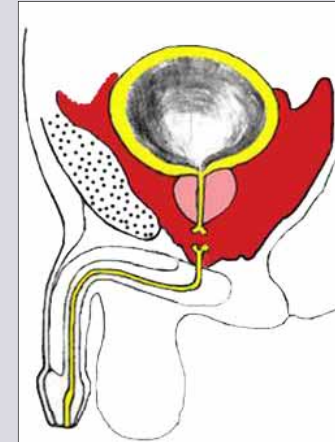


perineal pubectomy

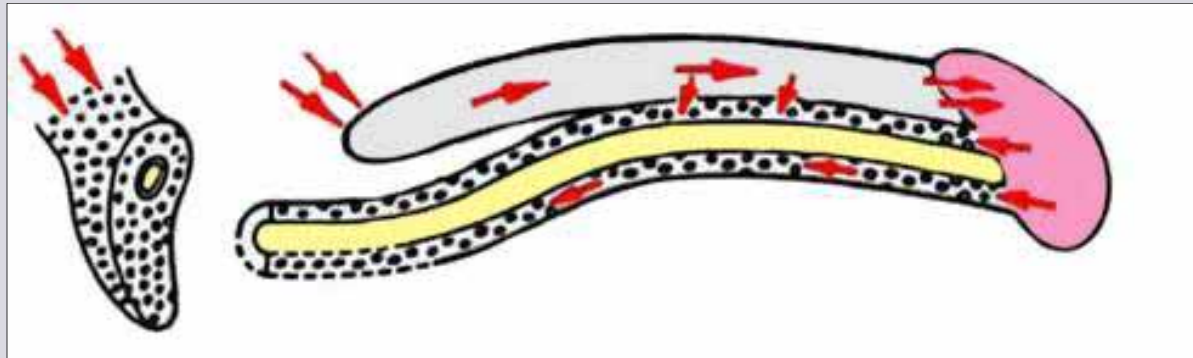


**retrocrural urethral
re-routing**

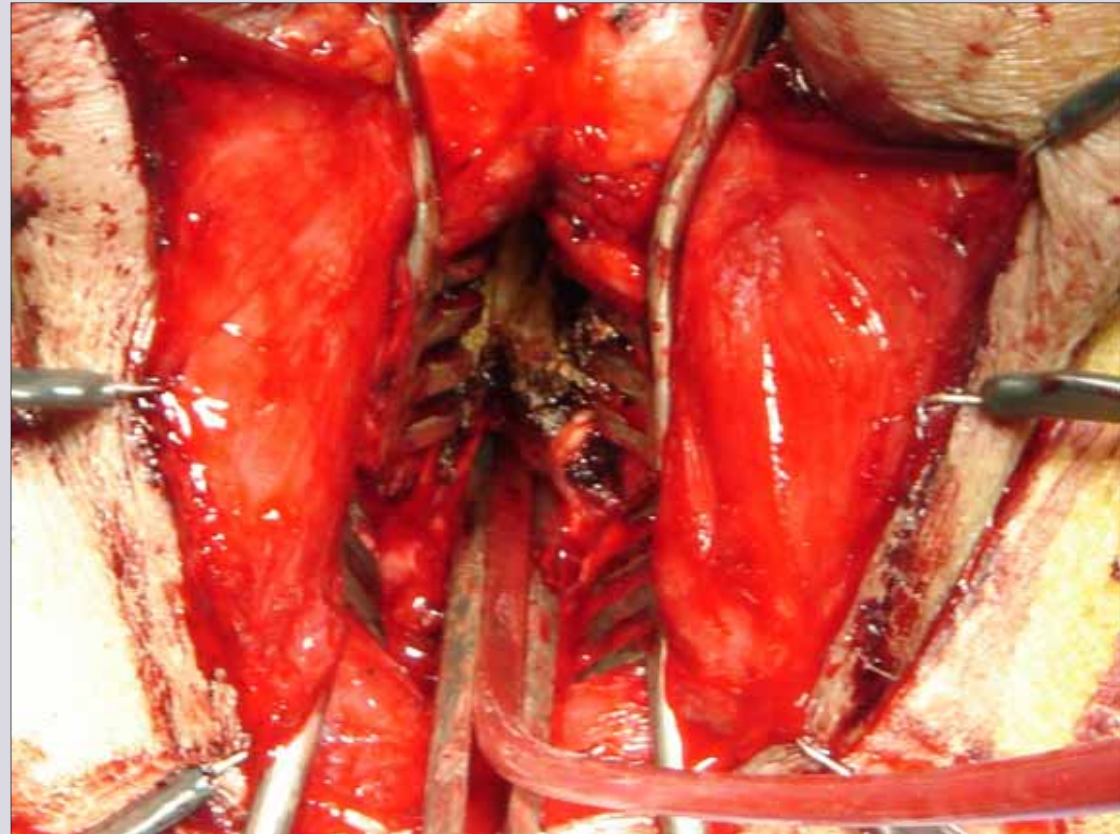
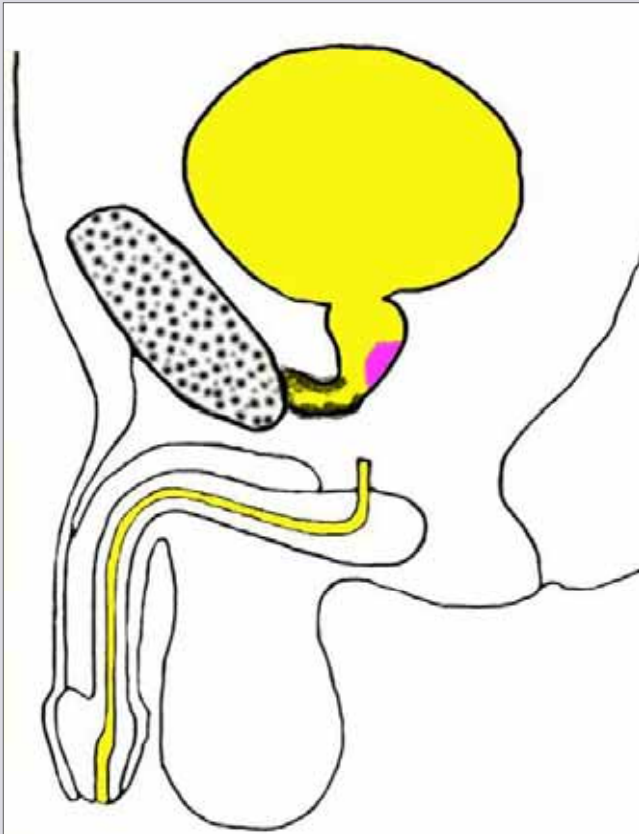
1. Anatomical relationship between pubic bone and prostatic apex

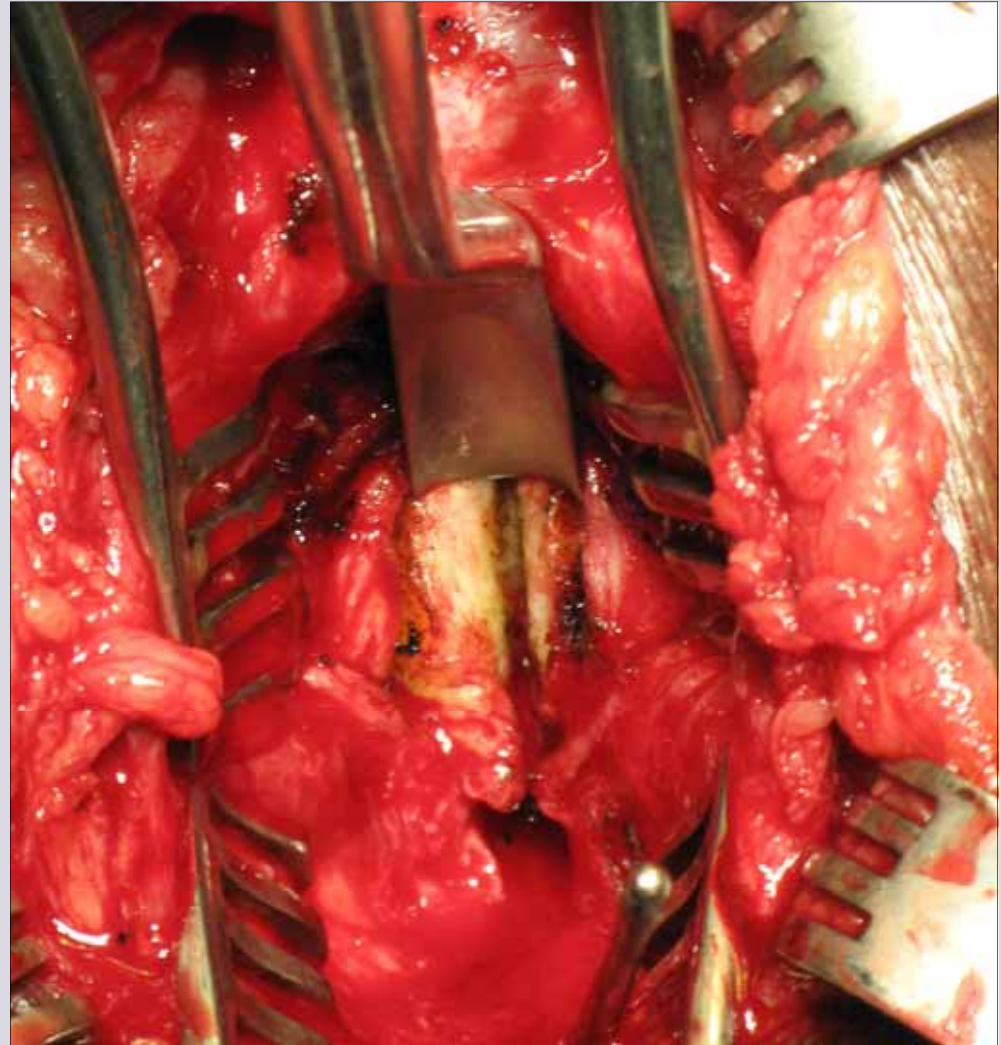
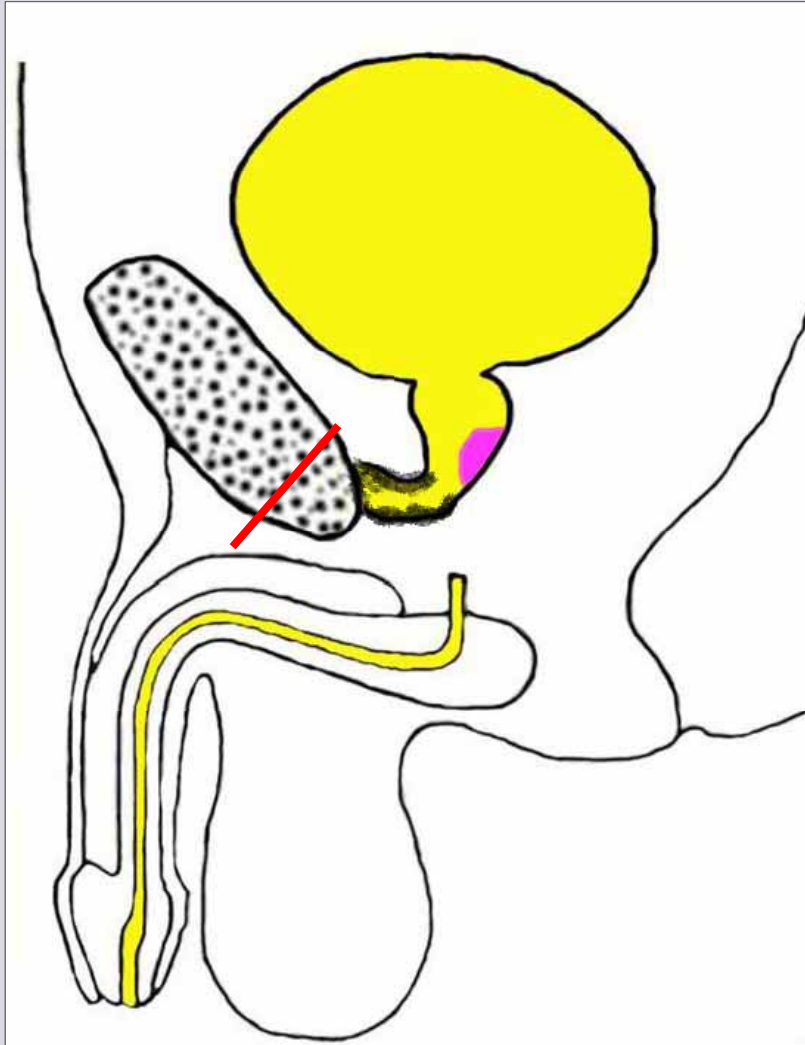


2. Length and blood supply of the bulbar urethra



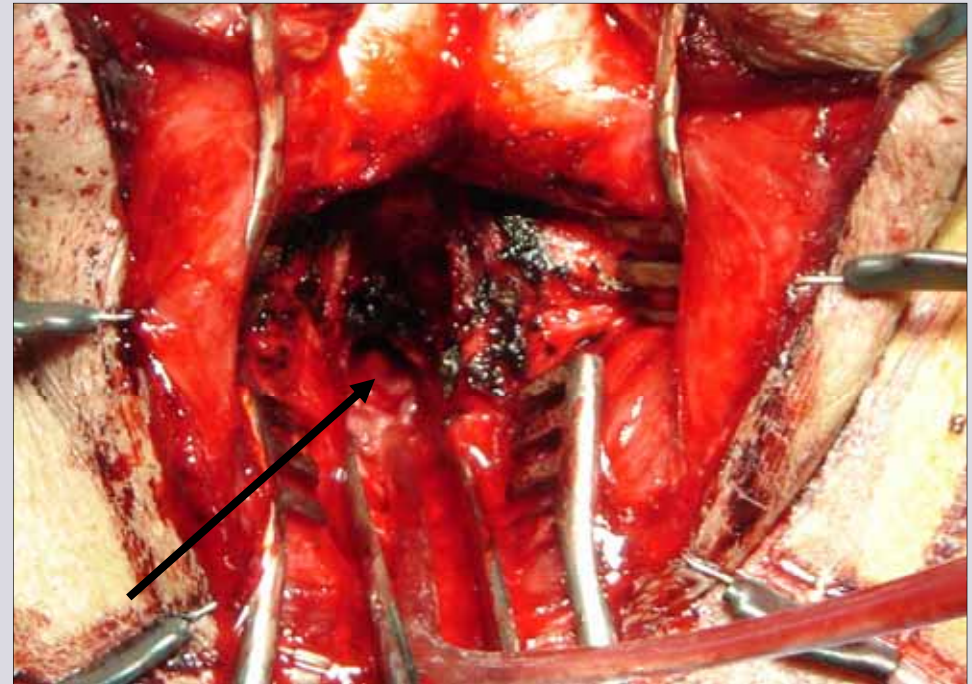
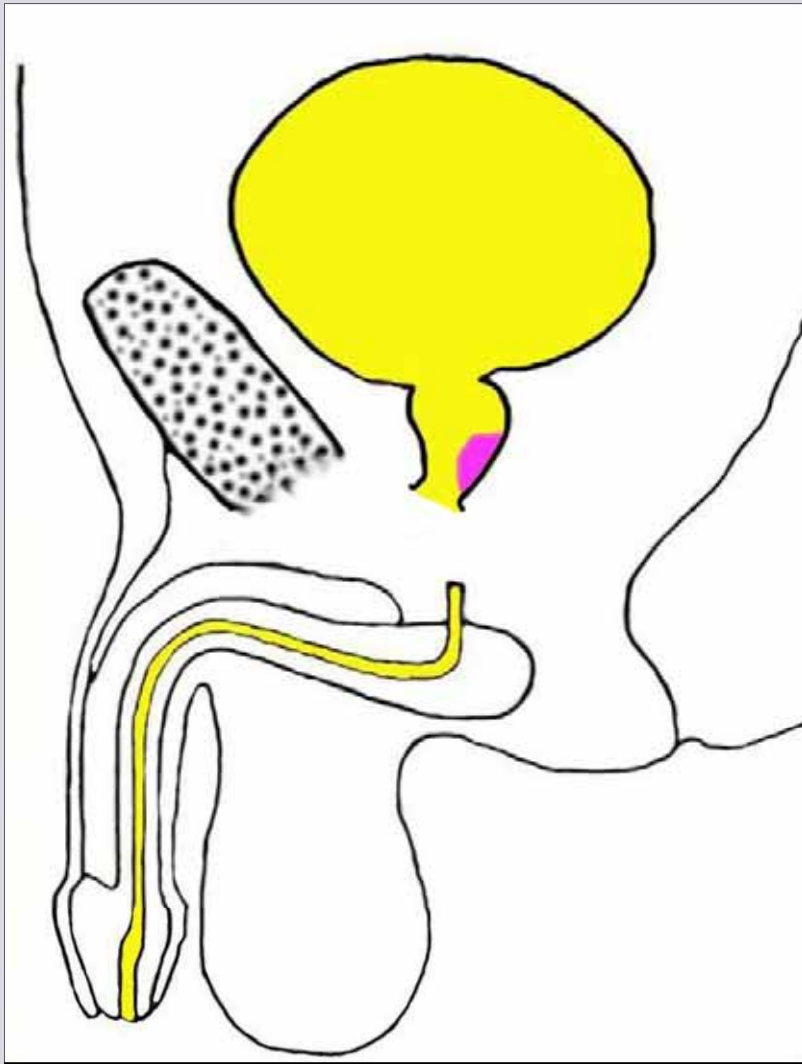
Anatomical relationship between pubic bone and prostatic apex





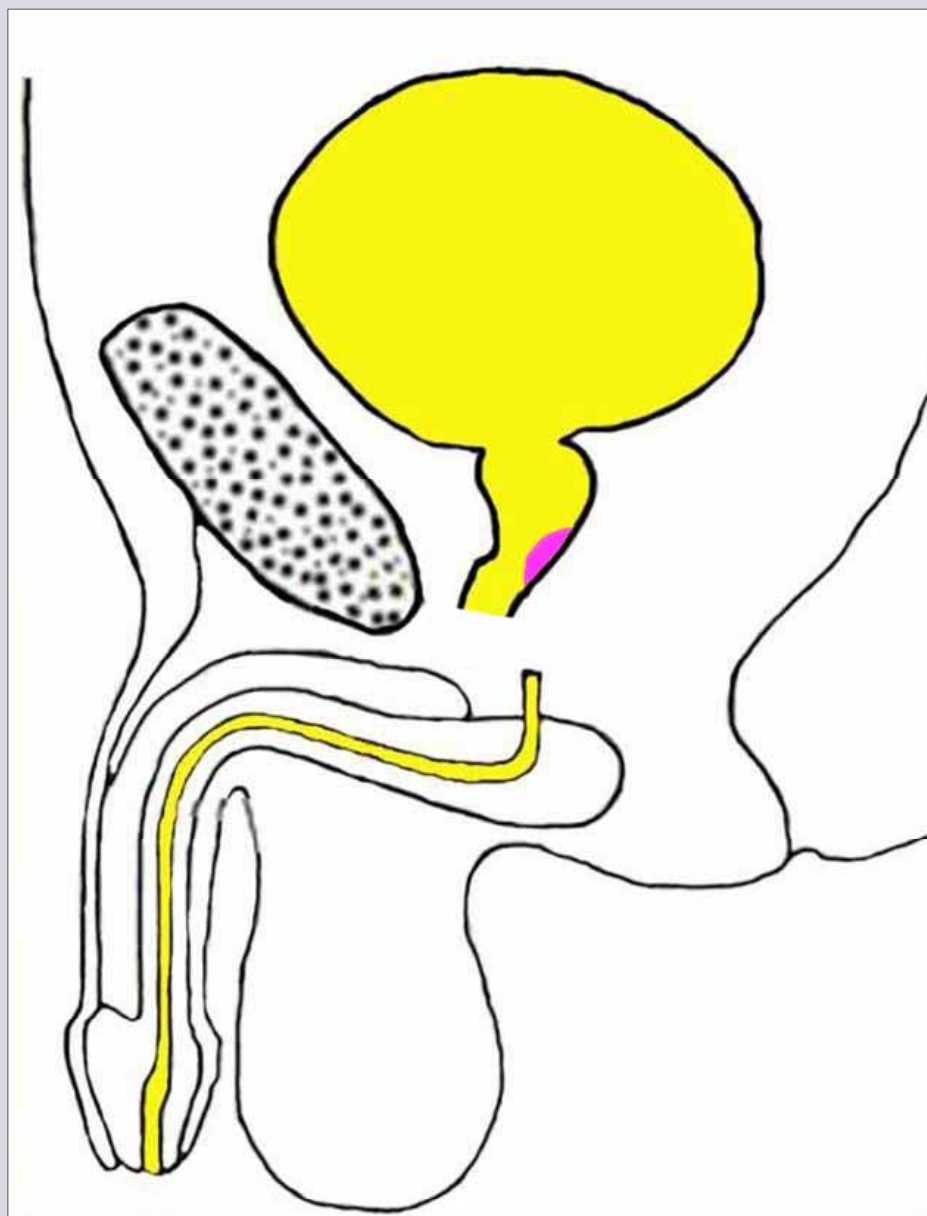
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The urethrography dont' provide any information about the anatomical relationship between pubic bone and prostatic apex



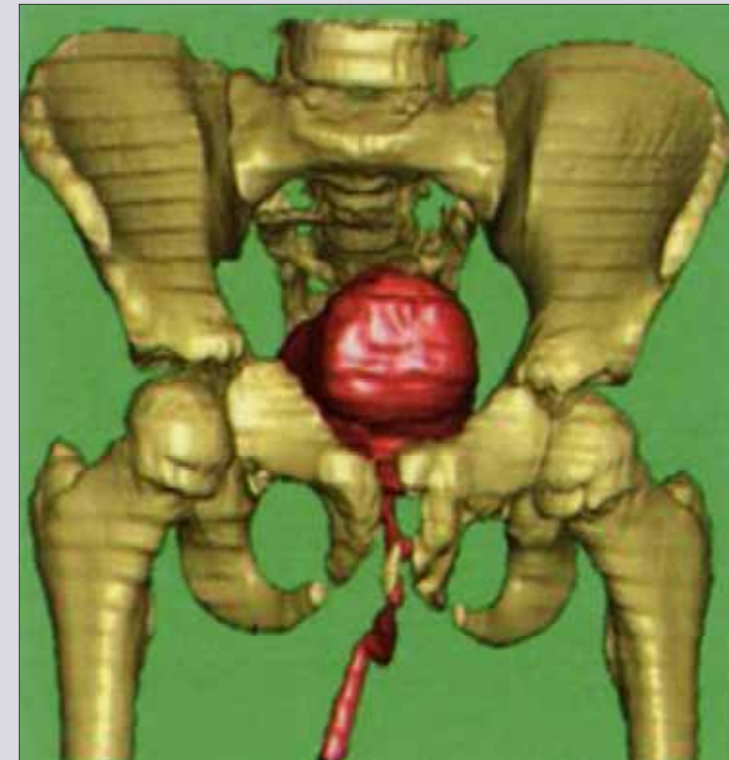
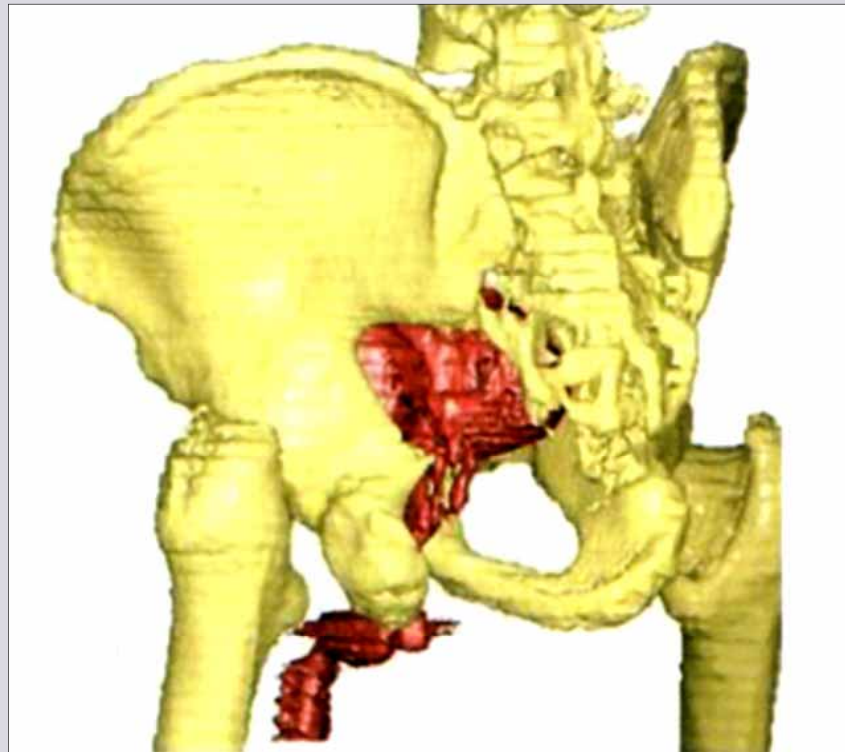
?

Dynamic three-dimensional spiral computed tomographic cysto-urethrography: a novel technique for evaluating post-traumatic posterior urethral defects

A.-W. EL-KASSABY, T. OSMAN, A. ABDEL-AAL, M. SADEK and N. NAYEF*

*Departments of Urology and *Radiology, Ain-Shams University, Cairo, Egypt*

Accepted for publication 23 April 2003

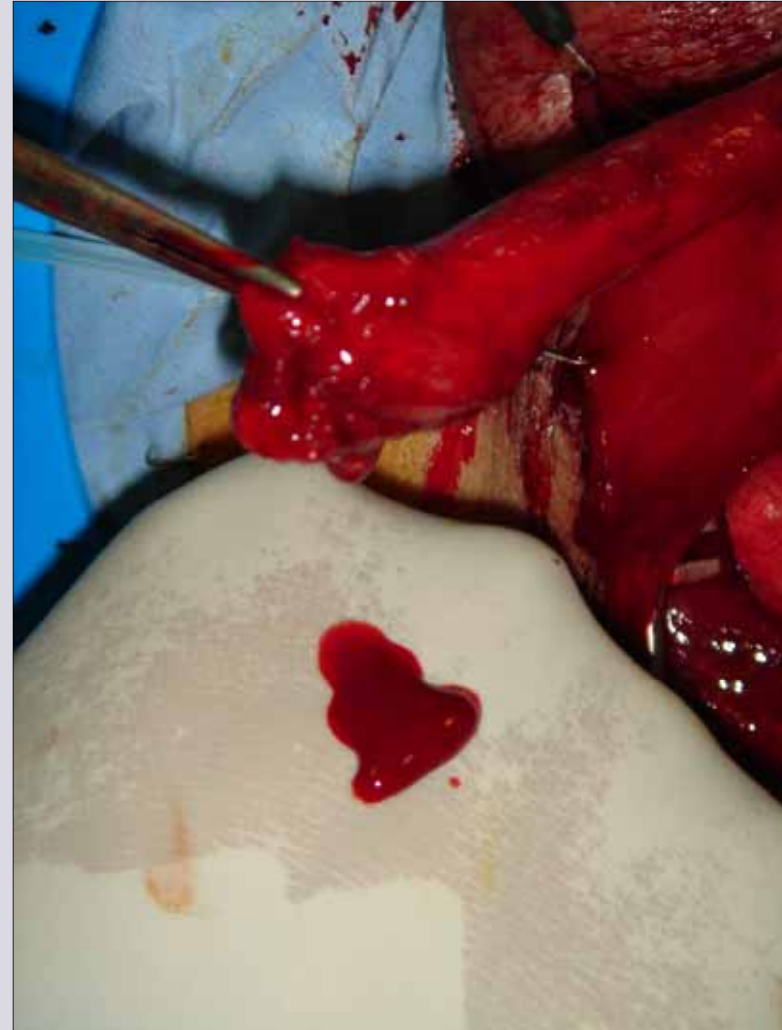
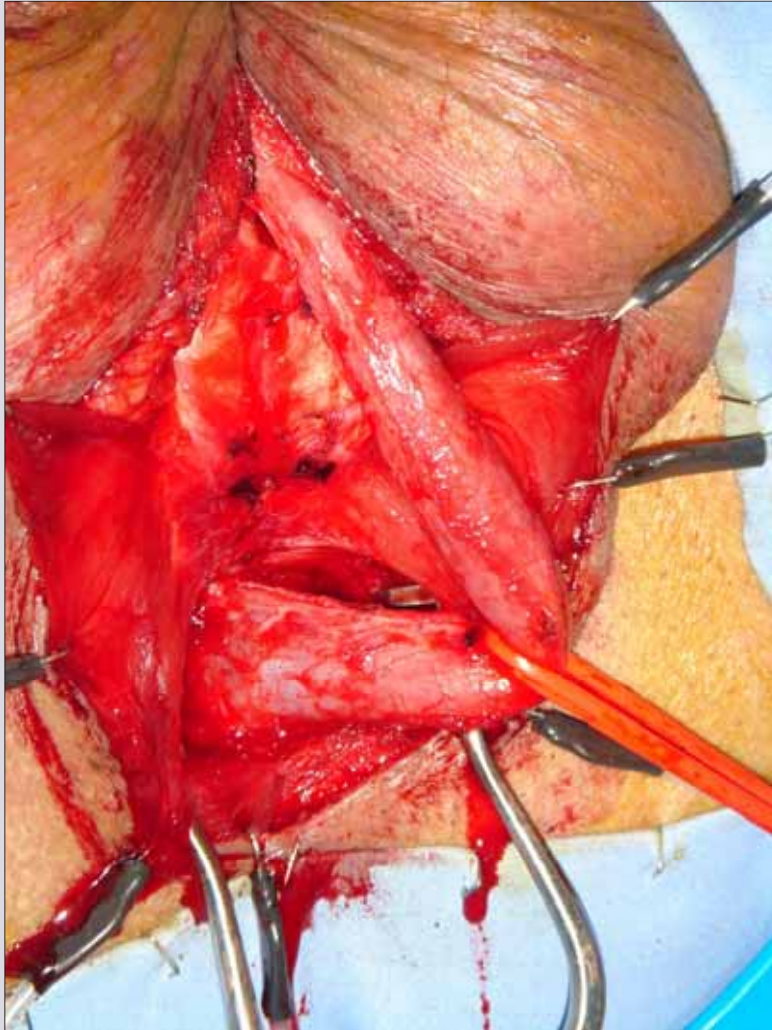


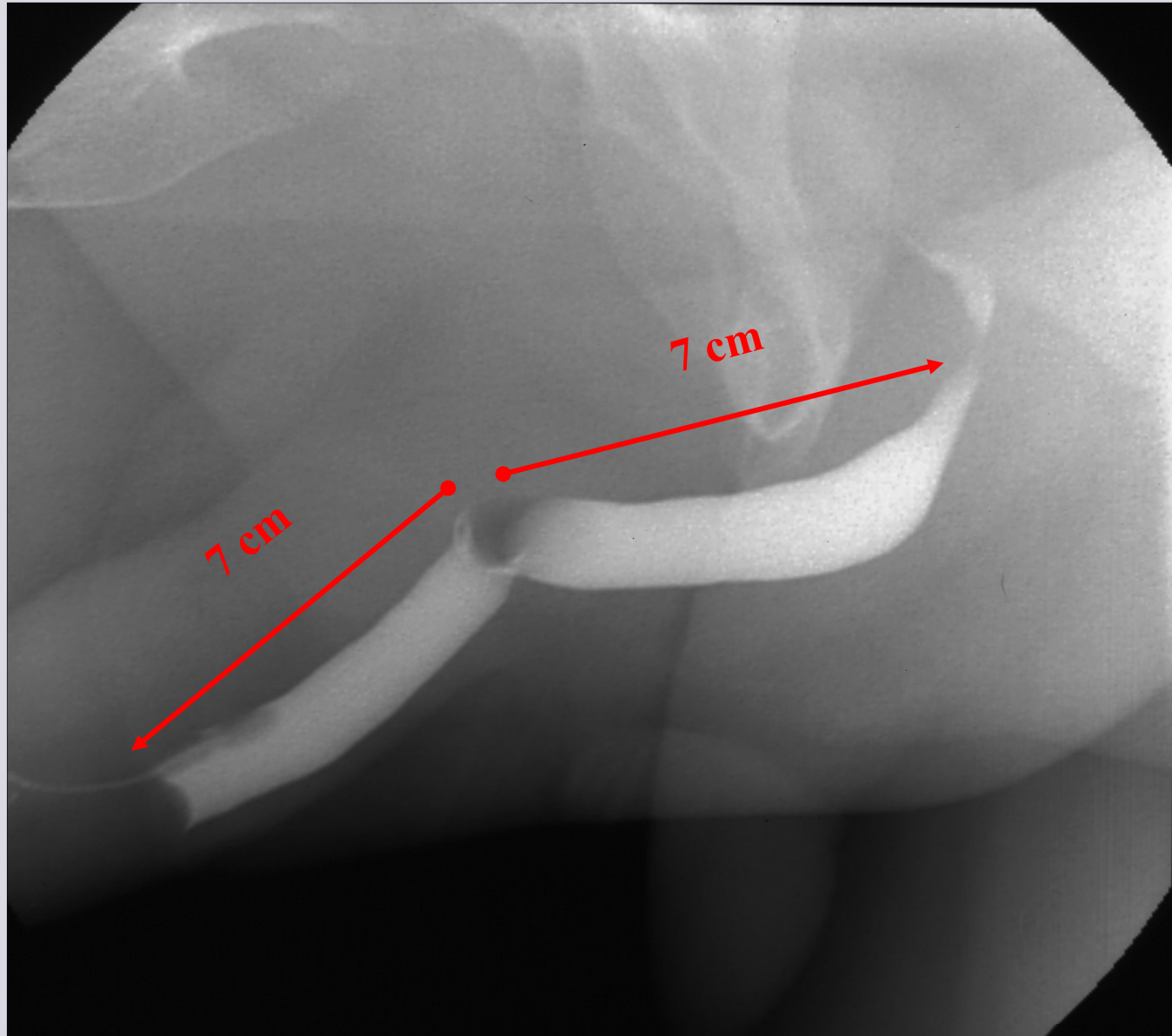
B J U International 2003; 92: 993-996

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Length and blood supply of the bulbar urethra





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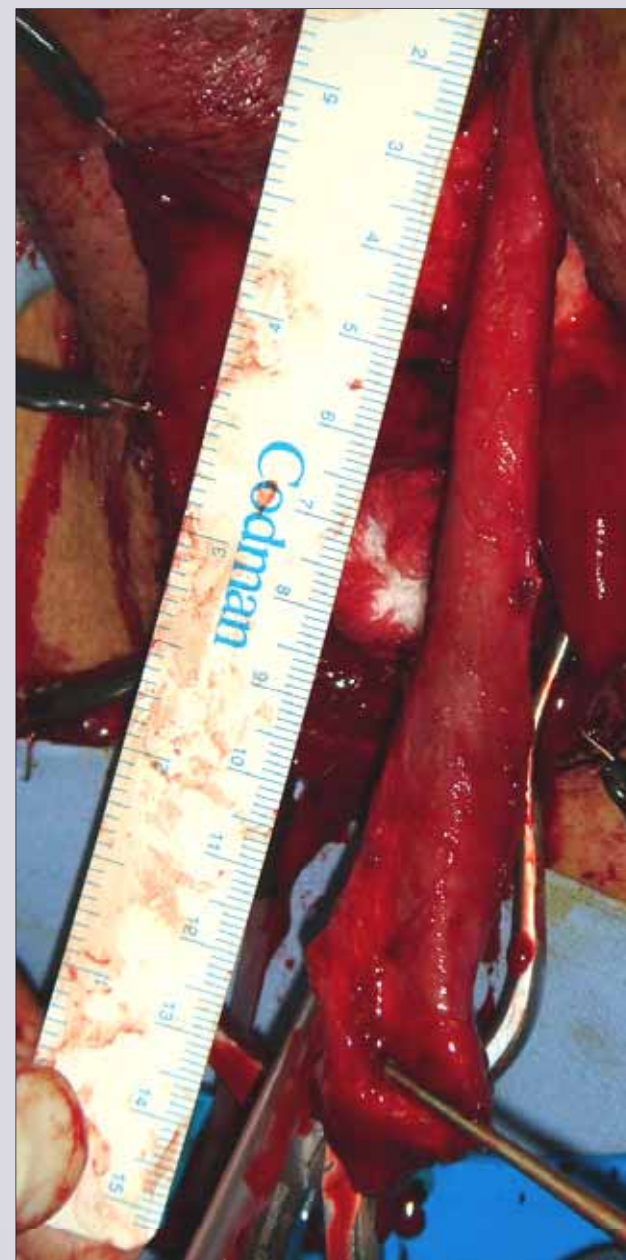


9 cm





12.5 cm



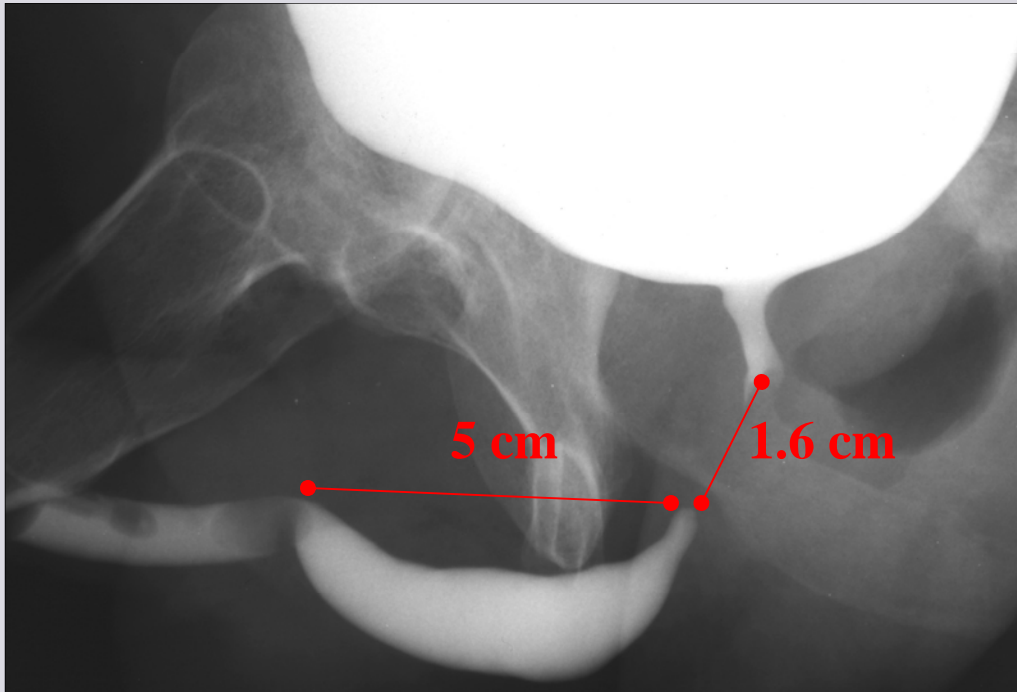
Gapometry and Anterior Urethrometry in the Repair of Posterior Urethral Defects

Mamdouh M. Koraitim

From the Department of Urology, College of Medicine, University of Alexandria, Alexandria, Egypt

- **Bulbo-prostatic gap shorter than 1/3 of the entire length of the bulbar urethra may be repaired using simple perineal approach**
- **Bulbo-prostatic gap longer than 1/3 of the entire length of the bulbar urethra may required perineal pubectomy**

J Urol 2008; 179: 1879-1881



bulbo-prostatic gap: 1.6 cm

entire length of bulbar urethra : 5 cm

1/3 of the entire length of bulbar urethra: 1.6 cm

According to Koraitim' gapometry, on this case pubectomy is unnecessary

?

Pubectomy and retrocrural urethral re-routing is reported in the following cases

redo-cases

pediatric cases

pre-adolescent boys

patients from Egypt, India, Nepal

showing short bulbar urethra with poor vascular blood supply

Length of the penis and bulbar urethra according to the race

- black: 6.56
- white: 6.11
- hispanic: 6.01
- amerindian: 6.00
- east indian: 5.89
- middle eastern: 5.87
- east asian: 5.32

The BBC reported an Indian Council of Medical Research study finding that “about 60% of Indian men have penis which are between three and five centimeters shorter than international standards used in condom manufacture”

http://en.wikipedia.org/wiki/Penis_size

Conclusion

Posterior urethral distraction defects have a wide spectrum of presentation from simple to complex.

The reconstruction required is influenced by multiple factors.

Conclusion

Penile length represents a factor that may influence the surgical technique (pubectomy vs simple perineal approach) and the result of posterior urethroplasty





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

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