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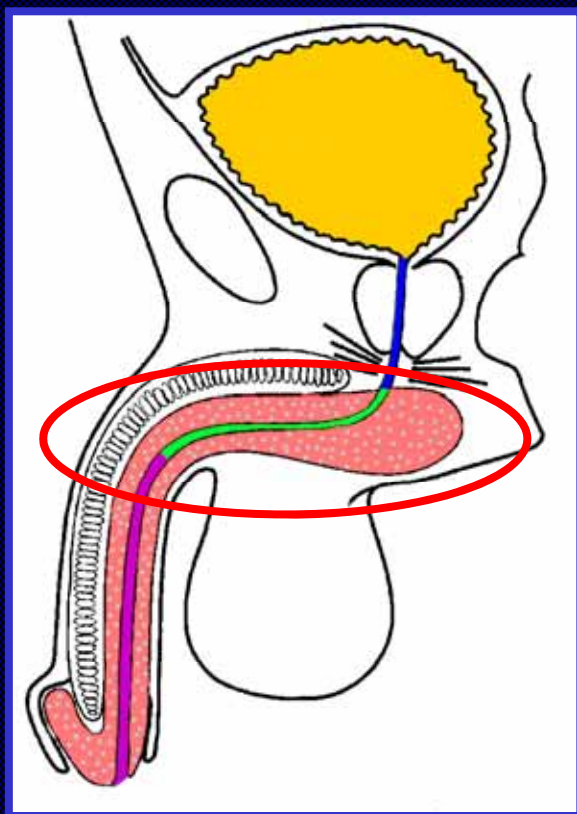
Joint Meeting of the ESAU and the ESGURS

October 25 – 27, 2007

Madrid – Spain



Urethral stricture surgery - tips and tricks



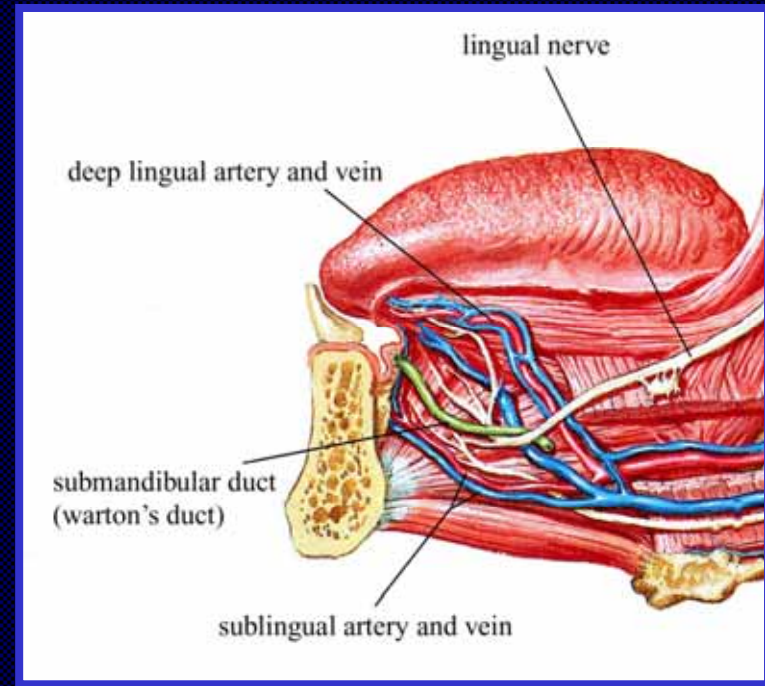
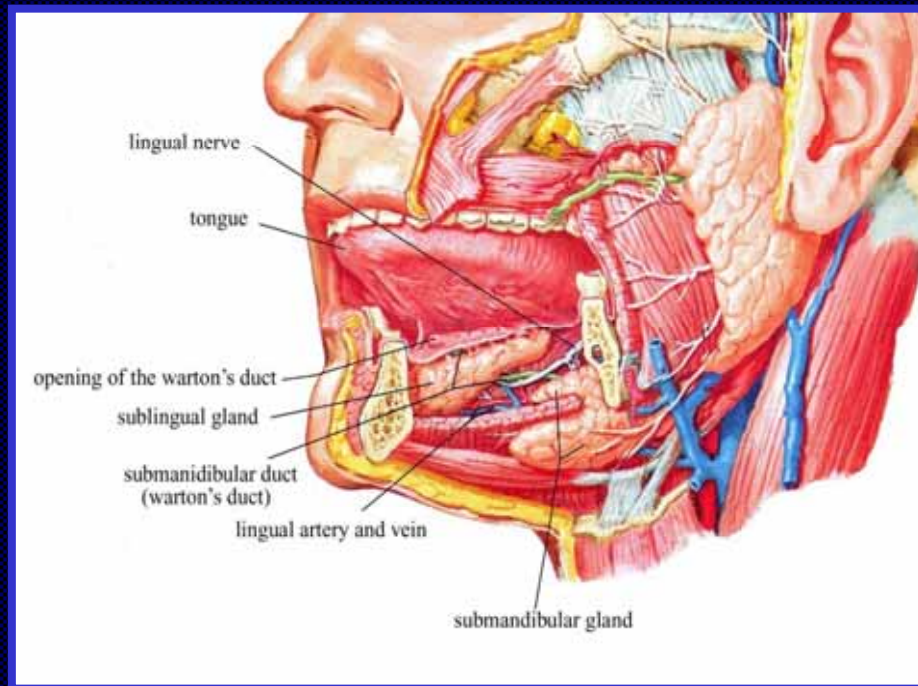
Surgery of the bulbar urethra



Harvesting the graft from the tongue



Anatomy of the tongue



Harvesting of lingual mucosal graft was first described by Italian Authors

The Tongue as an Alternative Donor Site for Graft Urethroplasty: A Pilot Study

Alchiede Simonato,* Andrea Gregori, Andrea Lissiani, Stefano Galli, Francesco Ottaviani, Roberta Rossi, Anna Zappone and Giorgio Carmignani

From the Department of Urology "Luciano Giuliani," University of Genoa (AS, GC), Genoa and Departments of Urology (AG, AL), Pathology (RR) and Anesthesiology and Intensive Care (AZ), and Otorhinolaryngological Clinic IV (FO), "Luigi Sacco" University Medical Center (SG), Milan, Italy

Purpose: Urethroplasty with a buccal mucosal graft provides excellent clinical results but it may also cause oral complications in some cases. The mucosa covering the lateral and under surface of the tongue is identical in structure with that lining the rest of the oral cavity. We evaluated LMGs for urethroplasty.

Materials and Methods: From January 2001 to September 2004, 8 men 34 to 65 years old (mean age 46.1) with urethral strictures 1.5 to 4.5 cm long were selected for 1-stage dorsal onlay urethroplasty. The site of the harvest graft was the lateral mucosal lining of the tongue. Postoperatively all patients were followed with urethrography, uroflowmetry, cystourethrography and flexible urethroscopy after 3 and 12 months. Successful reconstruction criteria were peak flow rate greater than 15 ml per second and no need for postoperative urethral dilation.

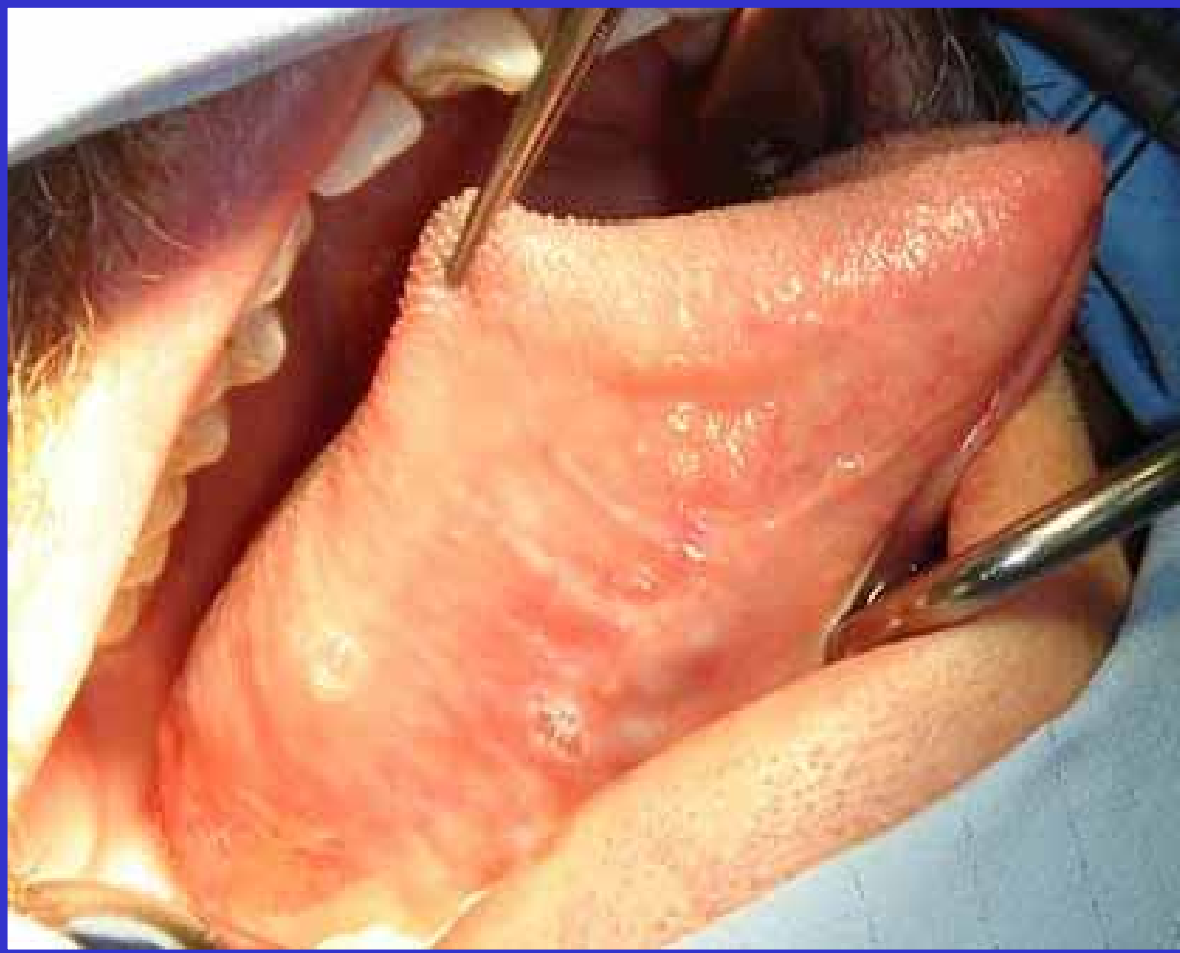
Results: Median followup was 18 months (mean 22.1, range 3 to 47). Seven cases were successful. One patient had a partial urethral stricture. In successful cases cystourethrography revealed no significant graft contractures or sacculations and at flexible urethroscopy LMG was almost indistinguishable from native urethra. There were no pain, esthetic or functional complications at the donor site.

Conclusions: Harvesting the LMG is feasible and easy to perform. Compared with the buccal mucosal graft the LMG seems to be associated with less postoperative pain and a minor risk of donor site complications. These preliminary functional and esthetic data are satisfactory.

Journal of Urology, 2006; 175: 589-592

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The site of the harvest graft was the lateral mucosal lining of the tongue

The length of the grafts were 3 to 7 cm (mean 3.3 cm) with a width of 1.5 cm

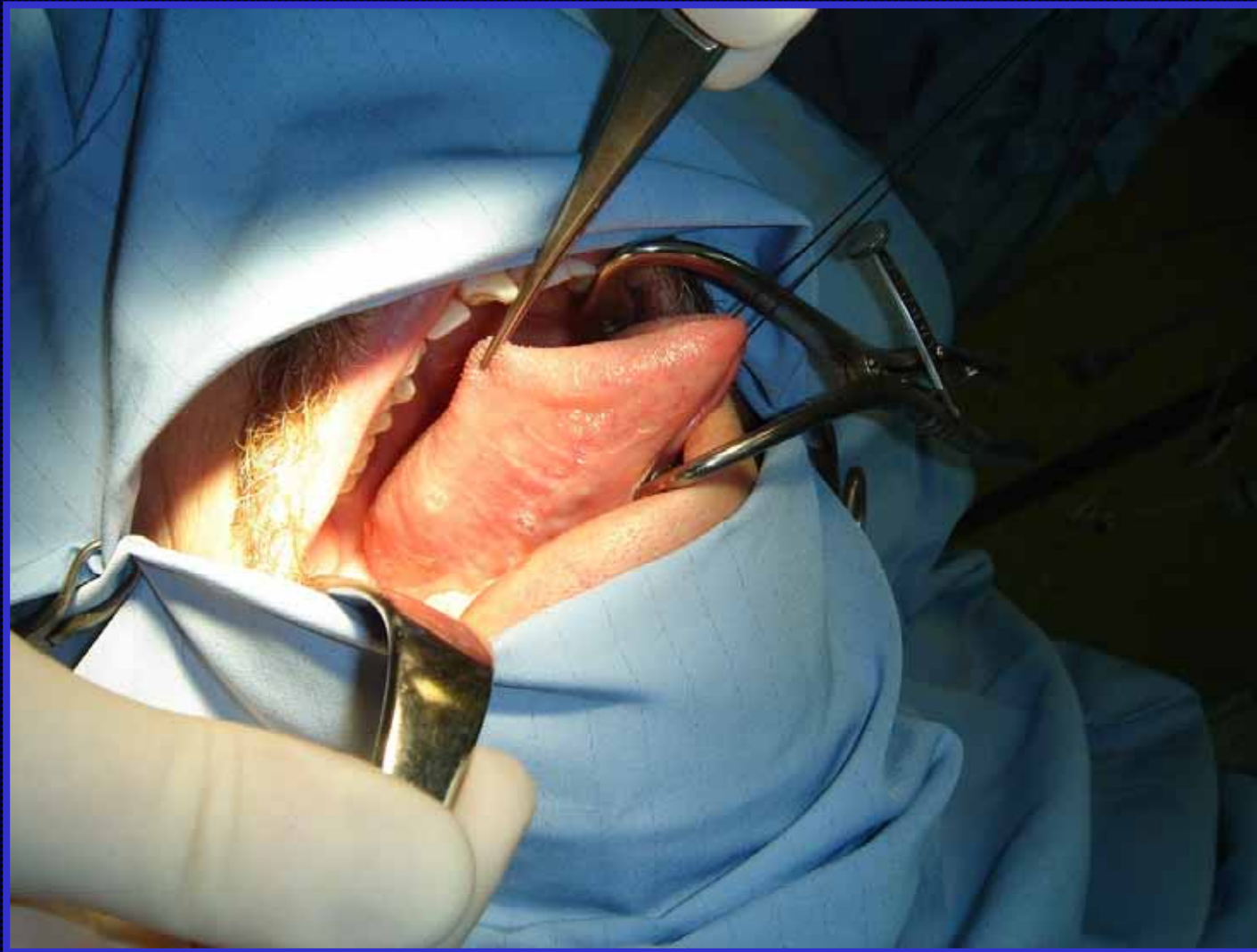
Simonato et al, J Urol, 2006; 175: 589-592





Mouth opener is put into place





The ventral surface of the tongue is exposed

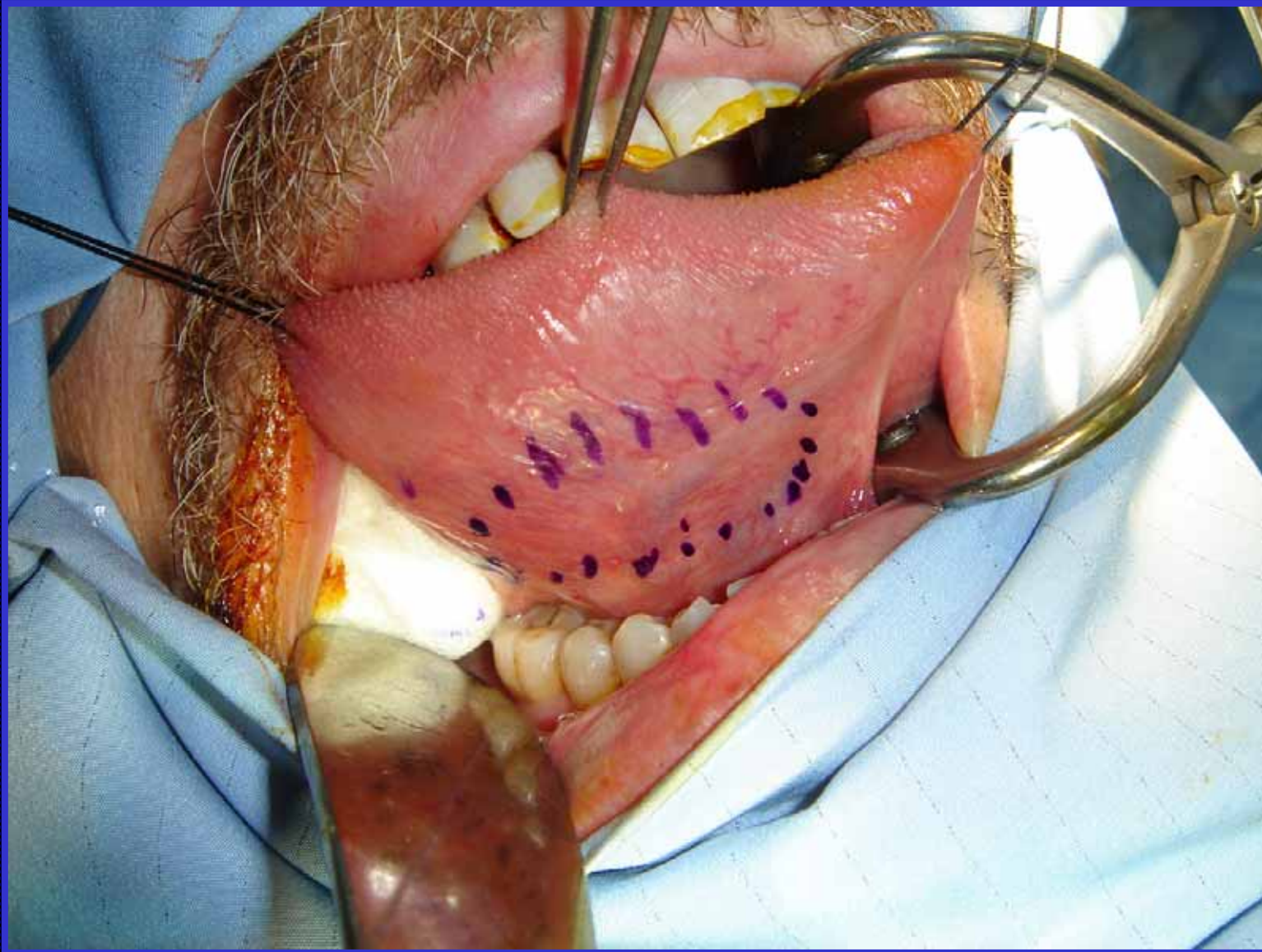




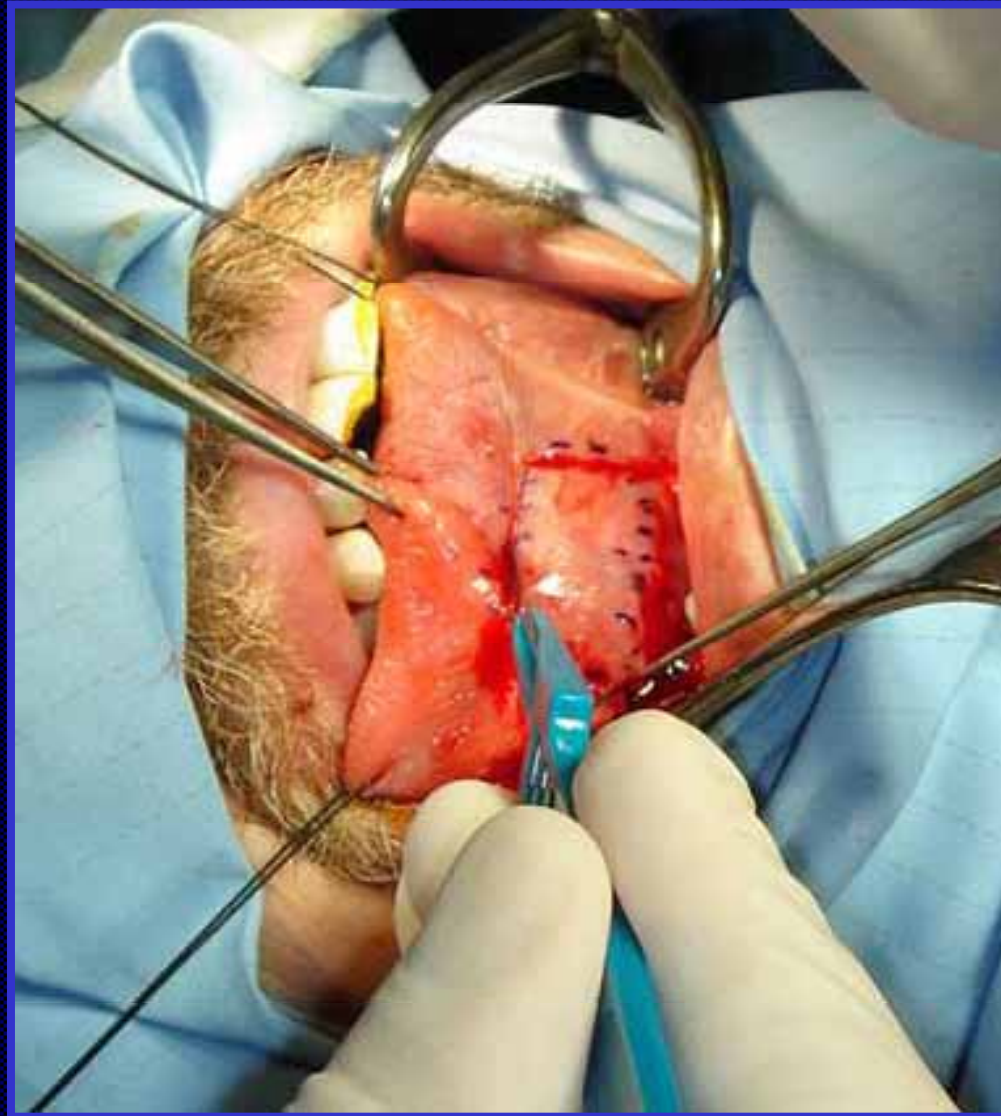
The opening of the Wharton's duct is identified



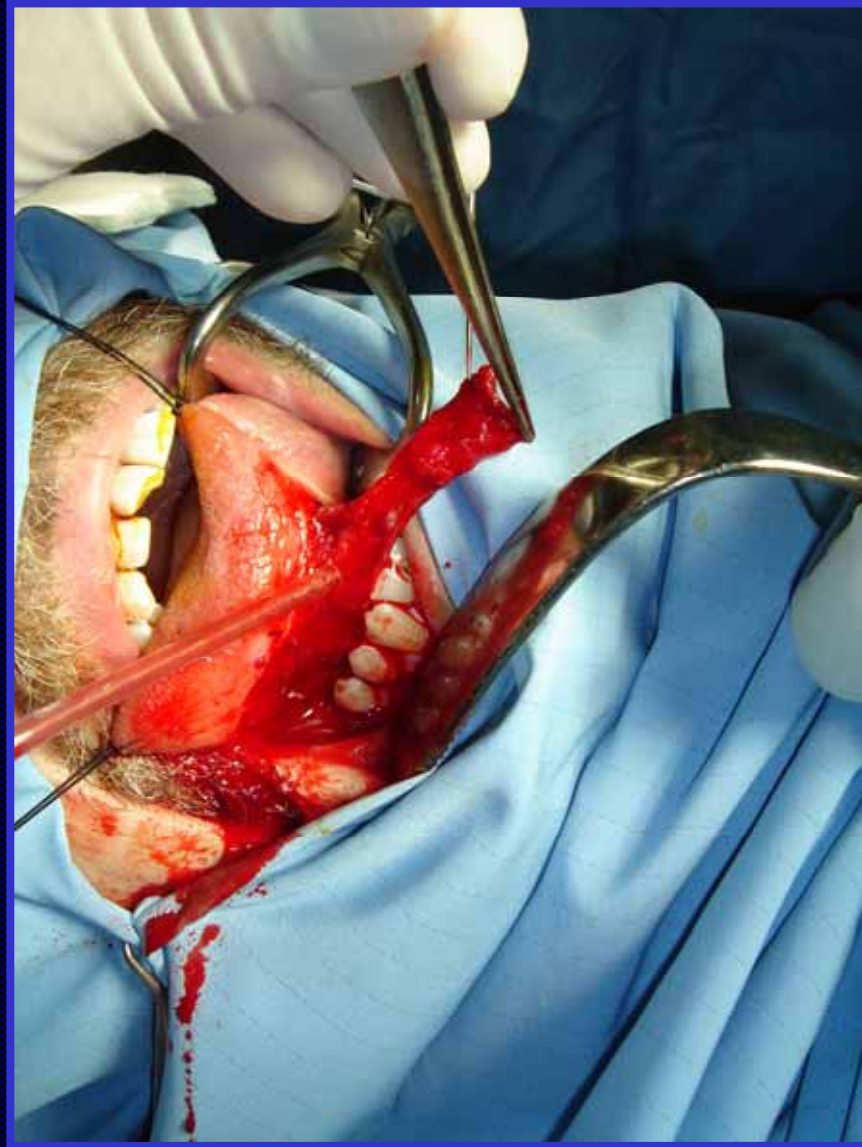
The site of the lingual nerve is identified



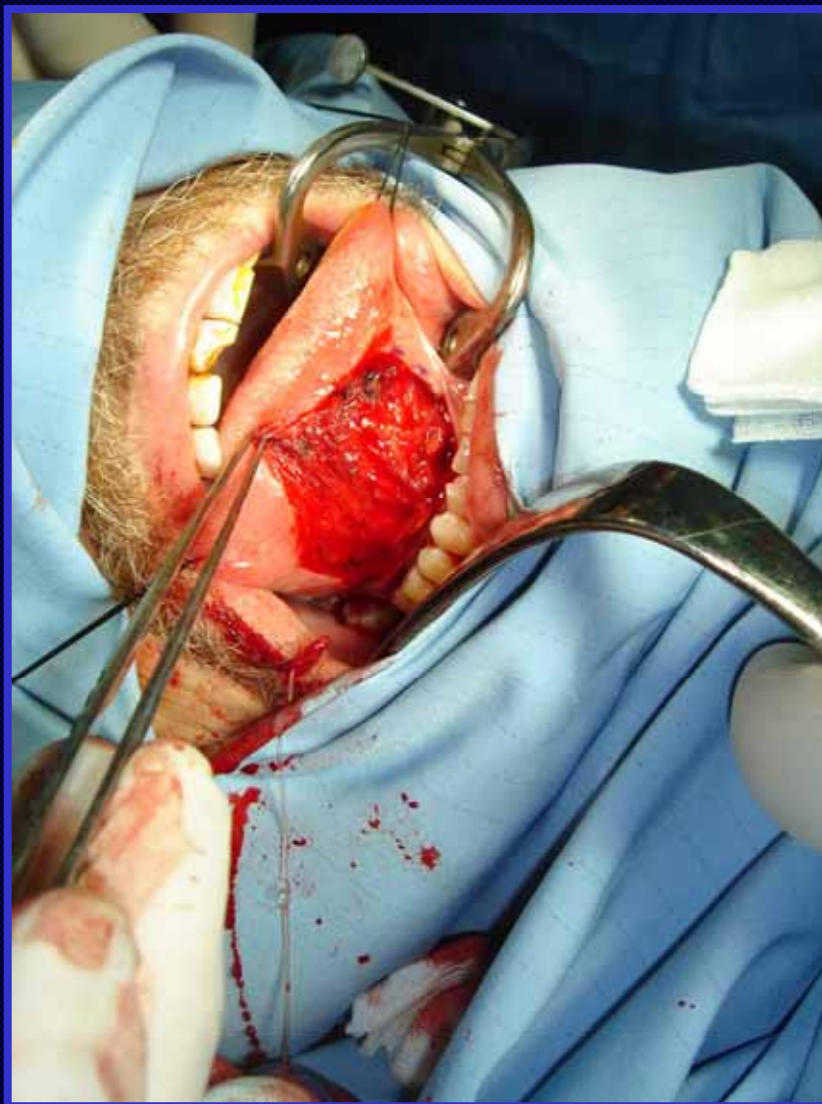
The graft is measured and marked



The graft edges are incised



The graft is removed

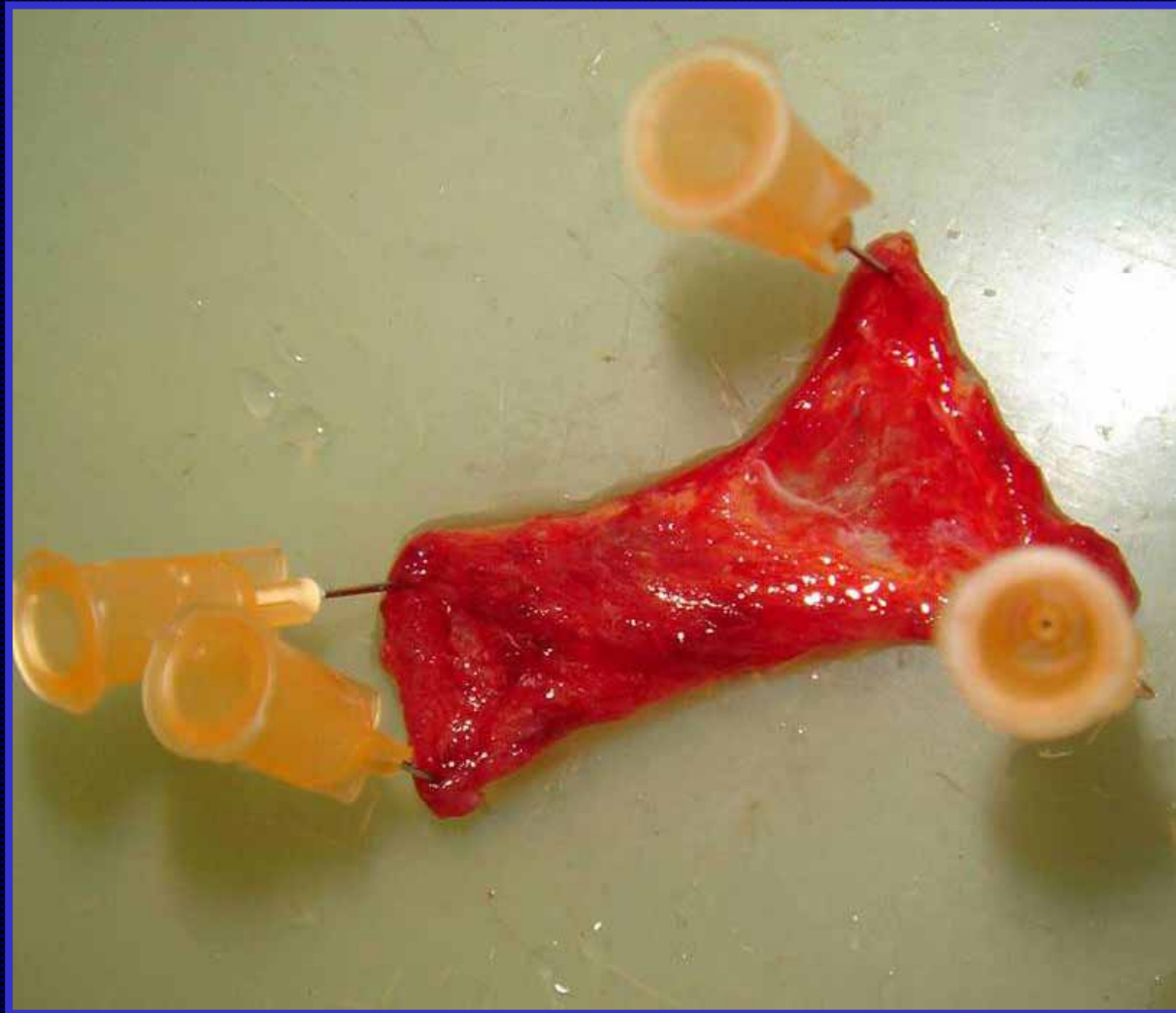


The graft bed is examined for bleeding



The donor site is closed with interrupted sutures





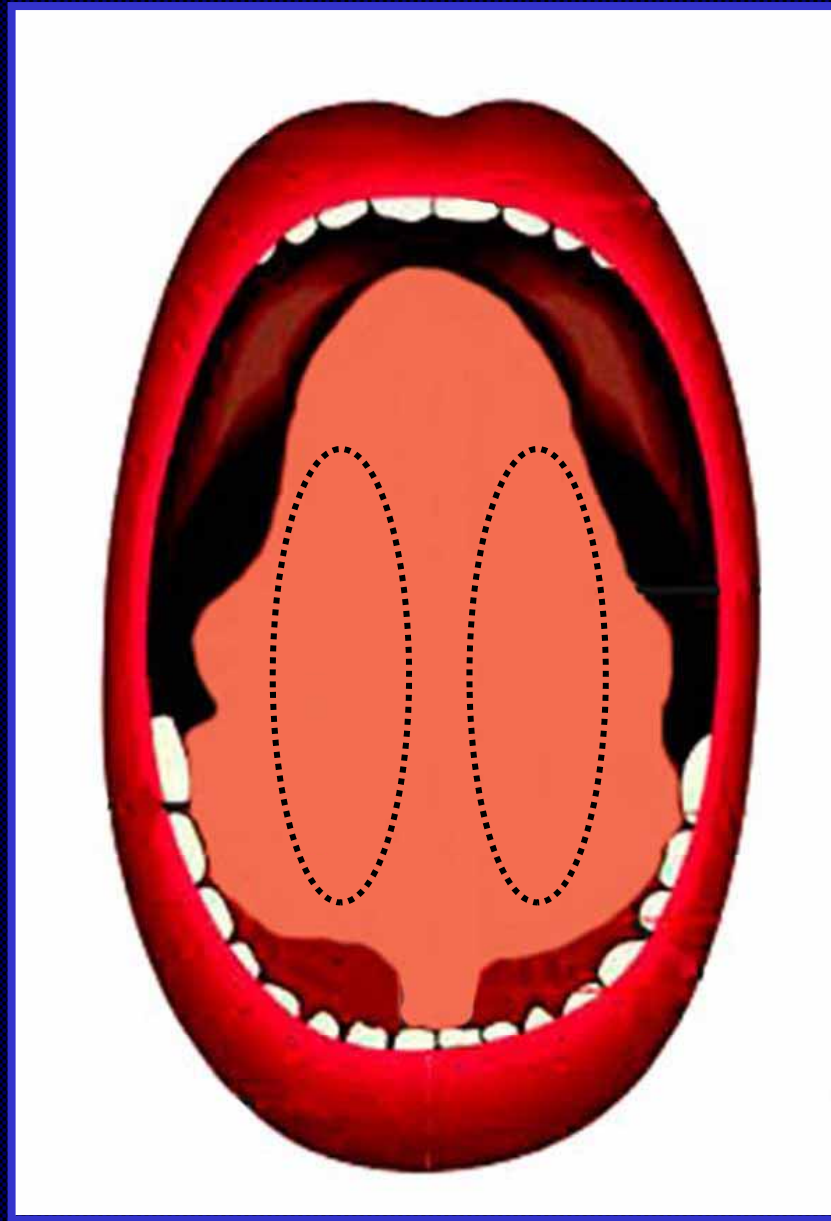
Graft defatting is necessary to remove the underlying fibrovascular tissues





The graft is 4 cm long and 2.5 cm wide







**We would like to thank doctor Pier Guido Ciabatti, Head of the
Department of Otorhinolaryngology at San Donato Hospital
(Arezzo – Italy) for harvesting the graft**



The use of lingual graft for adult anterior urethroplasty

Patient population

- **10 patients (average age 41 years)**
- **5 penile urethral strictures (dorsal inlay) and 5 bulbar urethral strictures (3 dorsal inlay) (2 ventral onlay)**
- **Graft harvesting was performed by the oral surgeon in 5 cases and by the young urologist in training in 5 cases**
- **In 2 patients, 2 grafts from the tongue were harvested**



The use of lingual graft for adult anterior urethroplasty

Follow-up criteria

- **During the hospital stay, the oral surgeon and the urologist visited the patient 2 times a day**
 - **The patient was requested to return to the hospital weekly for 1 month, and monthly for 4 months for a follow-up visit**
-
- **All patients were investigated by the oral surgeon to determine salivatory activity and the presence of disturbances in food tasting, kissing, speaking, swallowing and other problems**



The use of lingual graft for adult anterior urethroplasty

Results

- No patient developed early or late post-operative complications on the harvest site
- No difference was observed in patients in whom the harvesting was performed by the oral surgeon compared to patients in whom the procedure was performed by the urologist
- No difference was observed in patients who underwent single (8 cases) or double (2 cases) graft harvesting from the tongue



The use of lingual graft for adult anterior urethroplasty

Results

- The series of patients we present here is so small and with so short a follow-up (mean 5 months) that it is not possible to draw any definitive conclusion on the long-term results of urethroplasty using lingual graft compared to buccal mucosa graft



The use of lingual graft for adult anterior urethroplasty

Conclusions

- The surgical technique for harvesting a graft from the tongue is simple and safe in the hands of the young urologist as well
- The LMG is more similar to a graft harvested from the lip than the BMG
- The tongue represents an alternative donor site to the lip in adult patients requiring a small and thin graft for urethroplasty
- The cheek is still an irreplaceable donor site for any kind of urethroplasty when an abundant and resistant substitute graft material is required
- Some patients, who had undergone BMG urethroplasty, showed stricture recurrence requiring additional graft harvesting. In these cases, the urologist should consider the tongue an alternative donor site to the lip



Harvesting sites in the mouth



Right cheek



Left cheek



Lip



Tongue



right cheek	5 x 2.5 cm
left cheek	5 x 2.5 cm
lip	4 x 1.5 cm
tongue	4 x 2.5 cm
	4 x 2.5 cm



22 cm x 2.5 cm



A new muscle and nerve sparing bulbar urethroplasty



Substitution urethroplasty

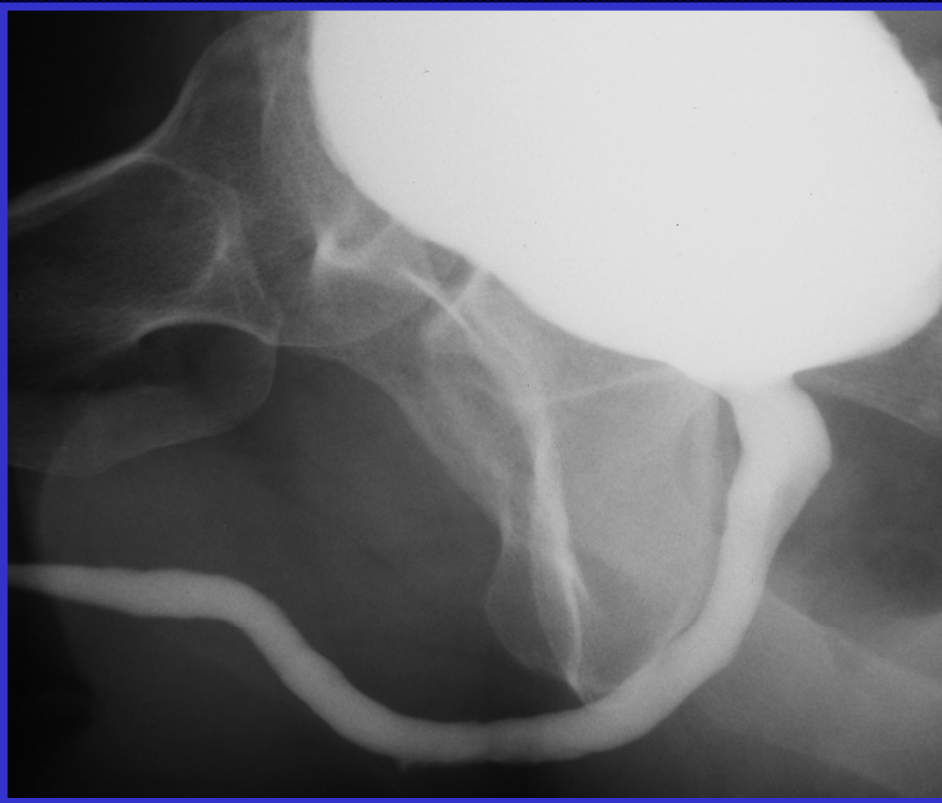


- post-voiding dribbling
- semen sequestration in the urethral bulb



End-to-end anastomosis

Substitution urethroplasty



- post-voiding dribbling
- loss of ejaculation
- semen sequestration in the urethral bulb



In our experience, out of 60 patients who underwent end-to-end anastomosis:

- **12 (20%) showed decreased ejaculation force**
- **2 (3.3%) showed ejaculation was possible only by manually compressing the perineum at the level of the urethral bulb**

Barbagli G. et al, J Urol December 2007; in press



In our experience, the patient who underwent substitution onlay graft urethroplasty showed the same incidence of:

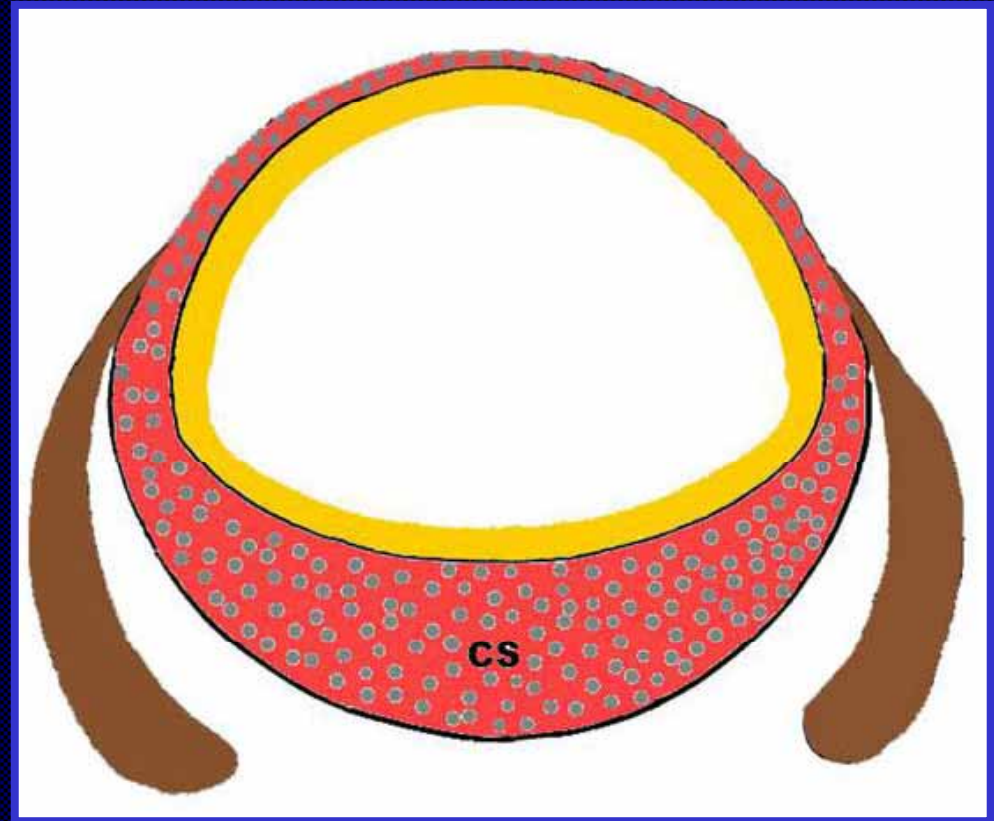
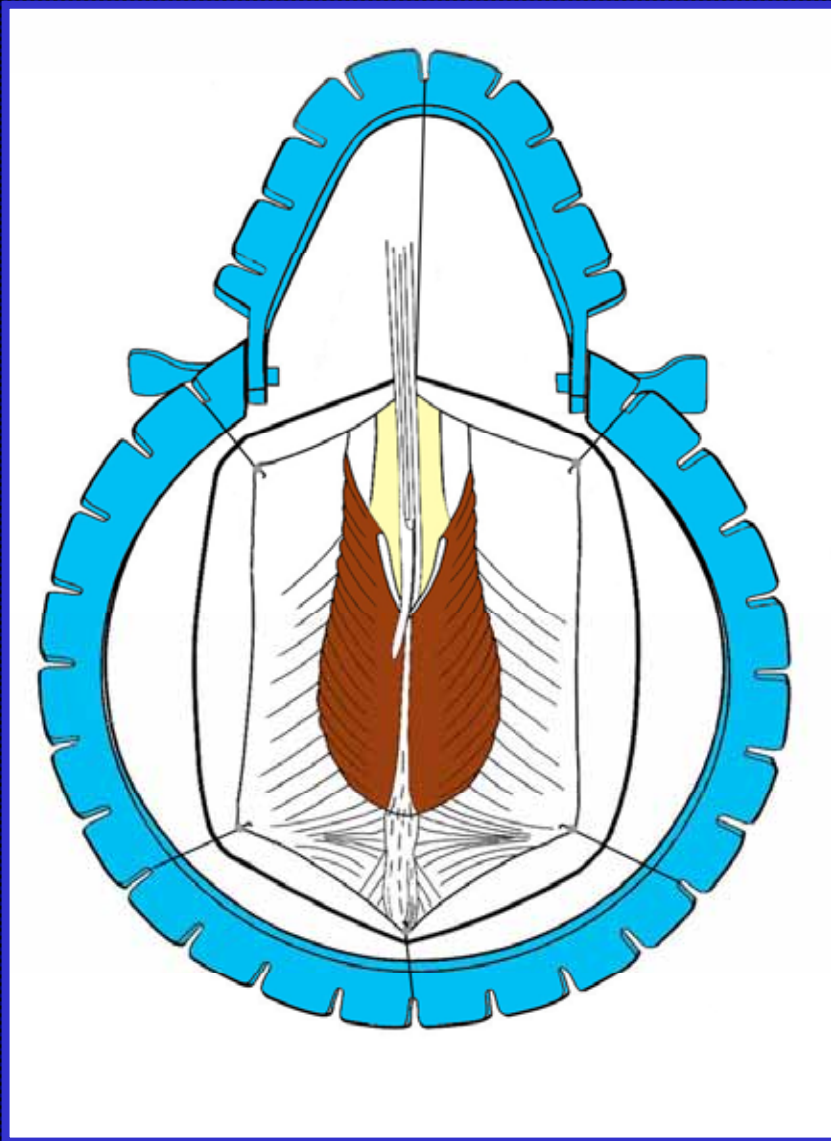
- **post-voiding dribbling**
- **decreased ejaculation force or loss of ejaculation**
- **partial semen sequestration in the urethral bulb**

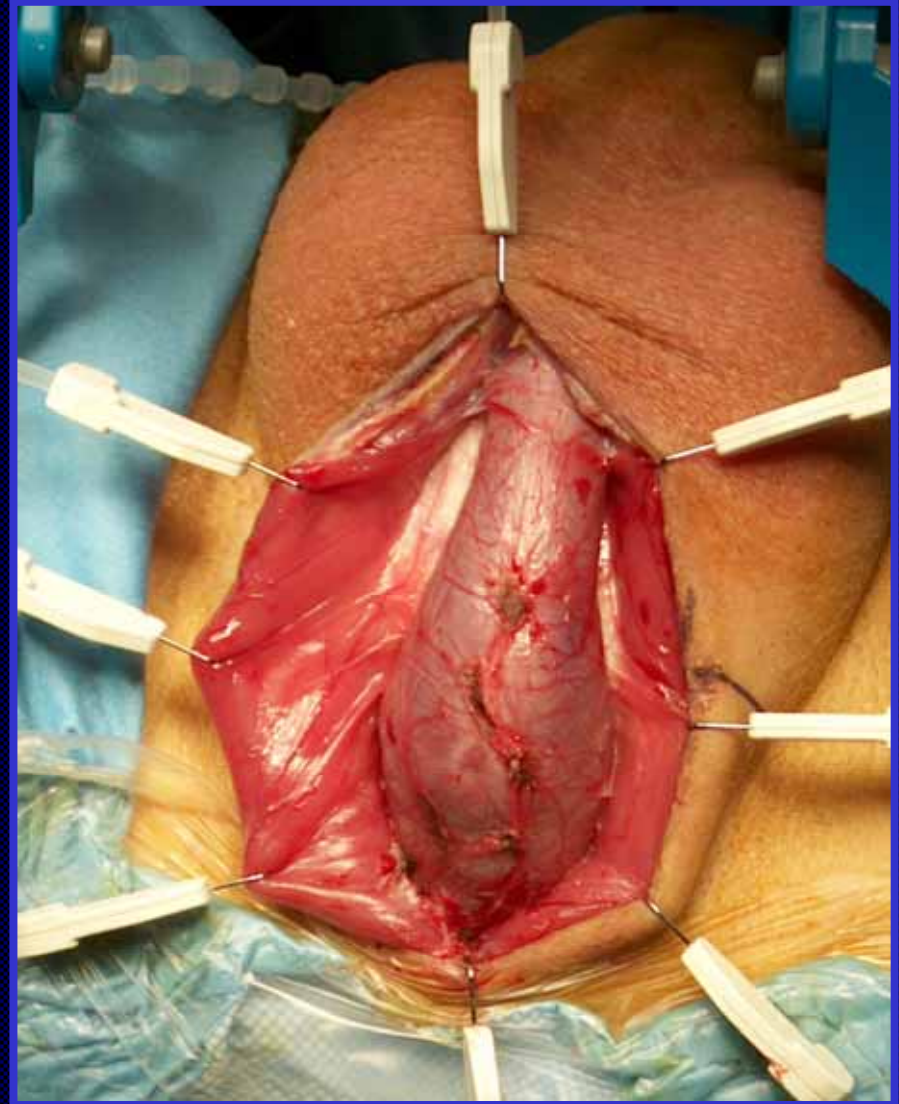
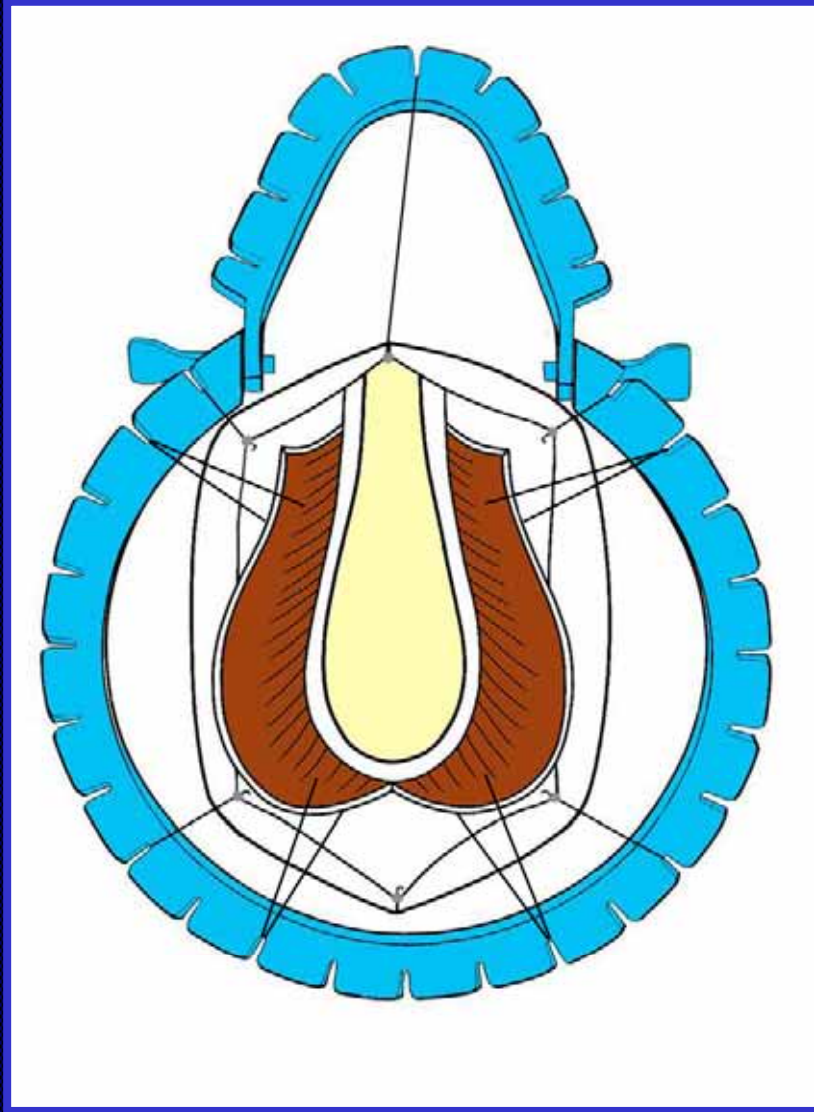
Barbagli G. et al, study currently underway

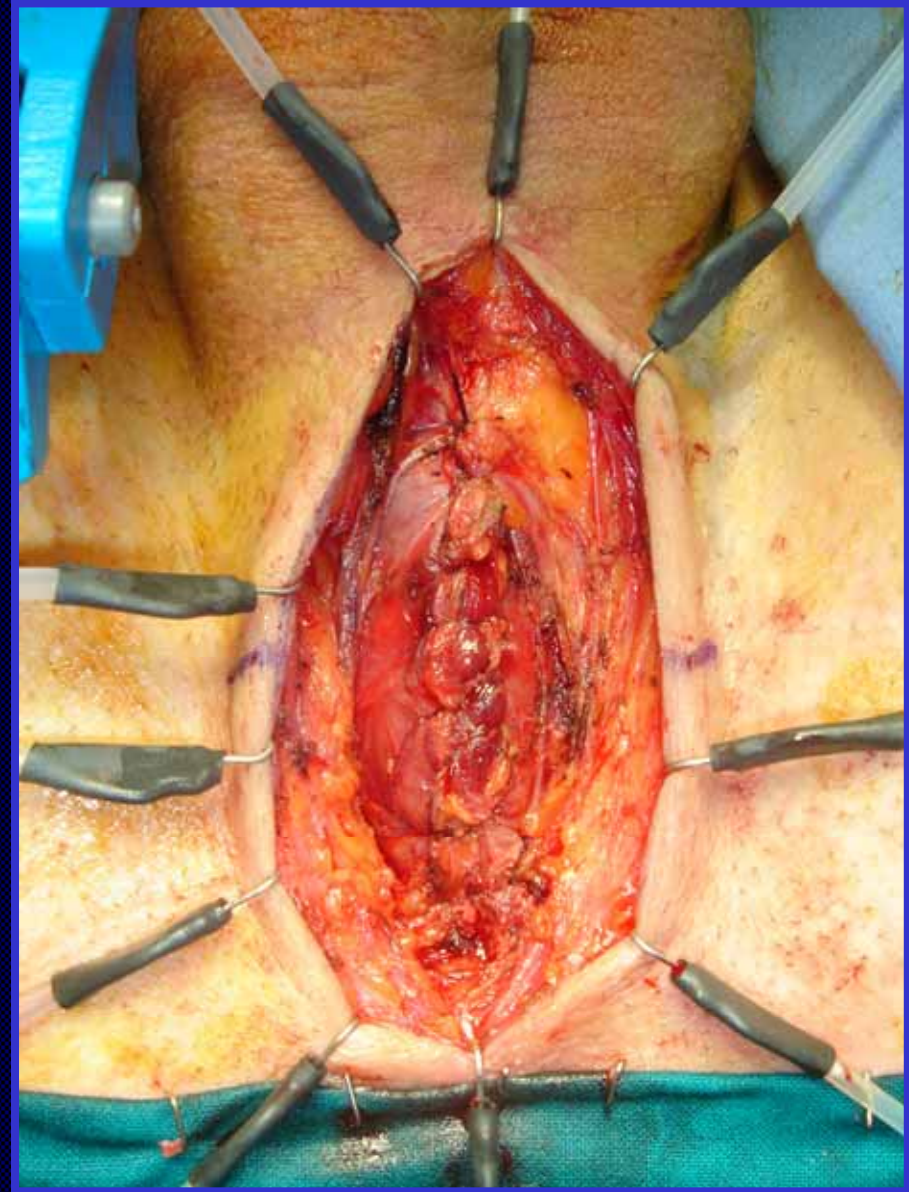
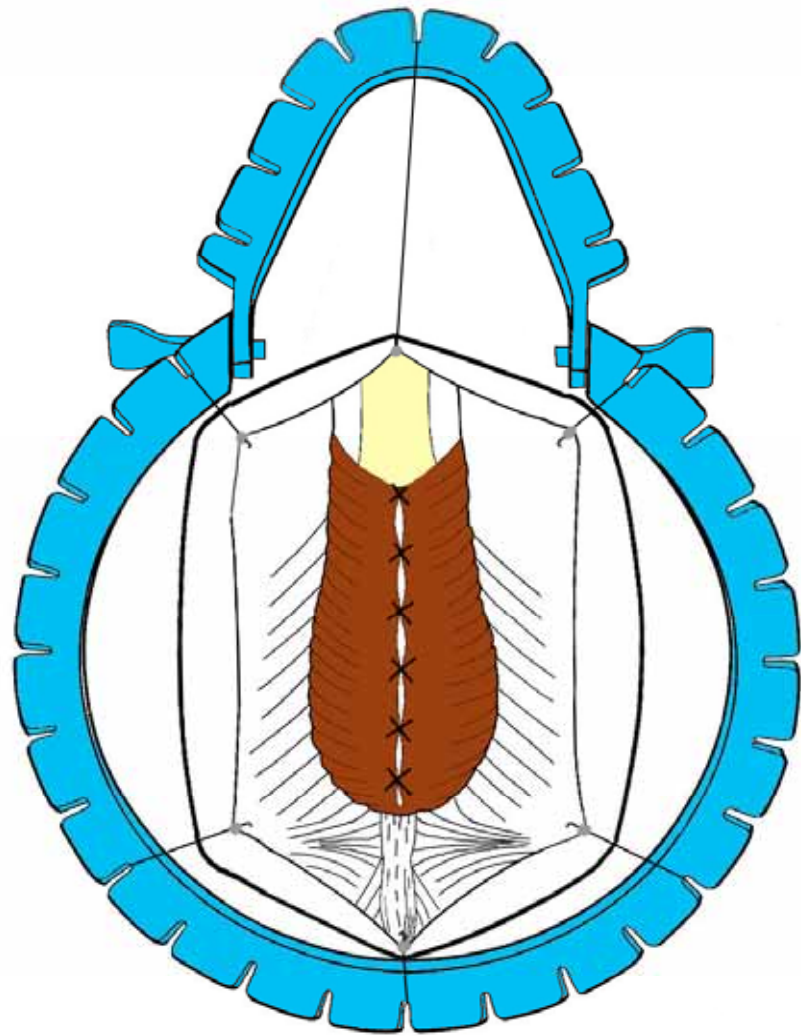


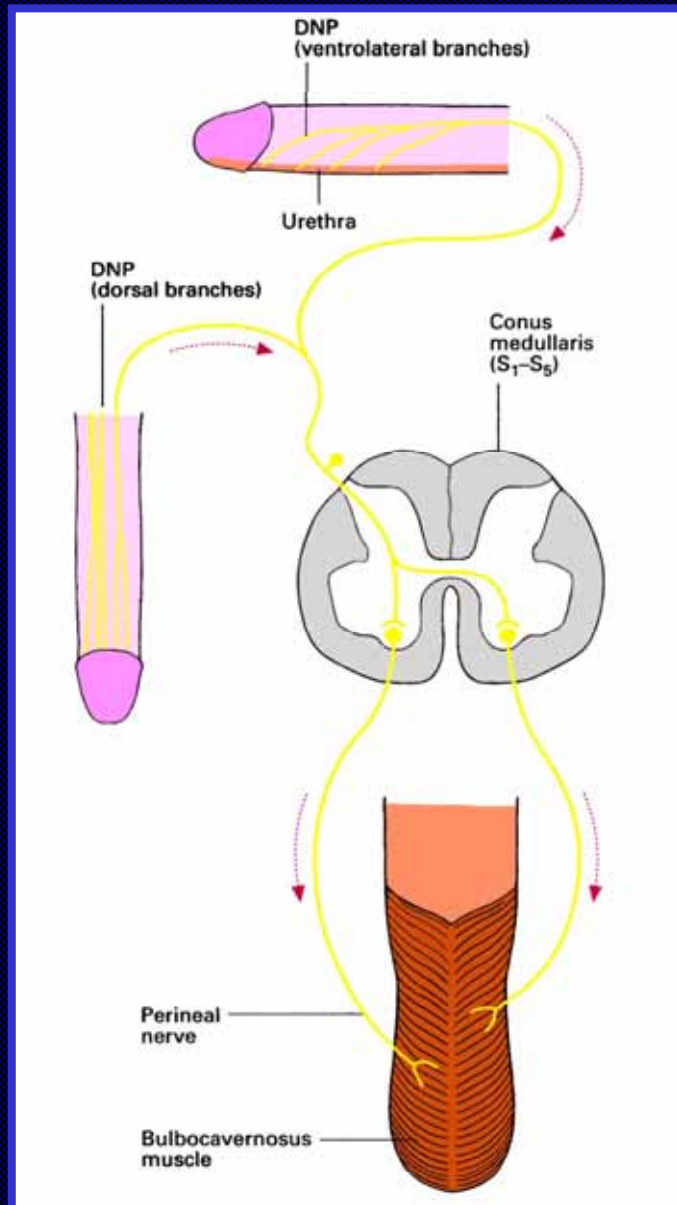
Why ?







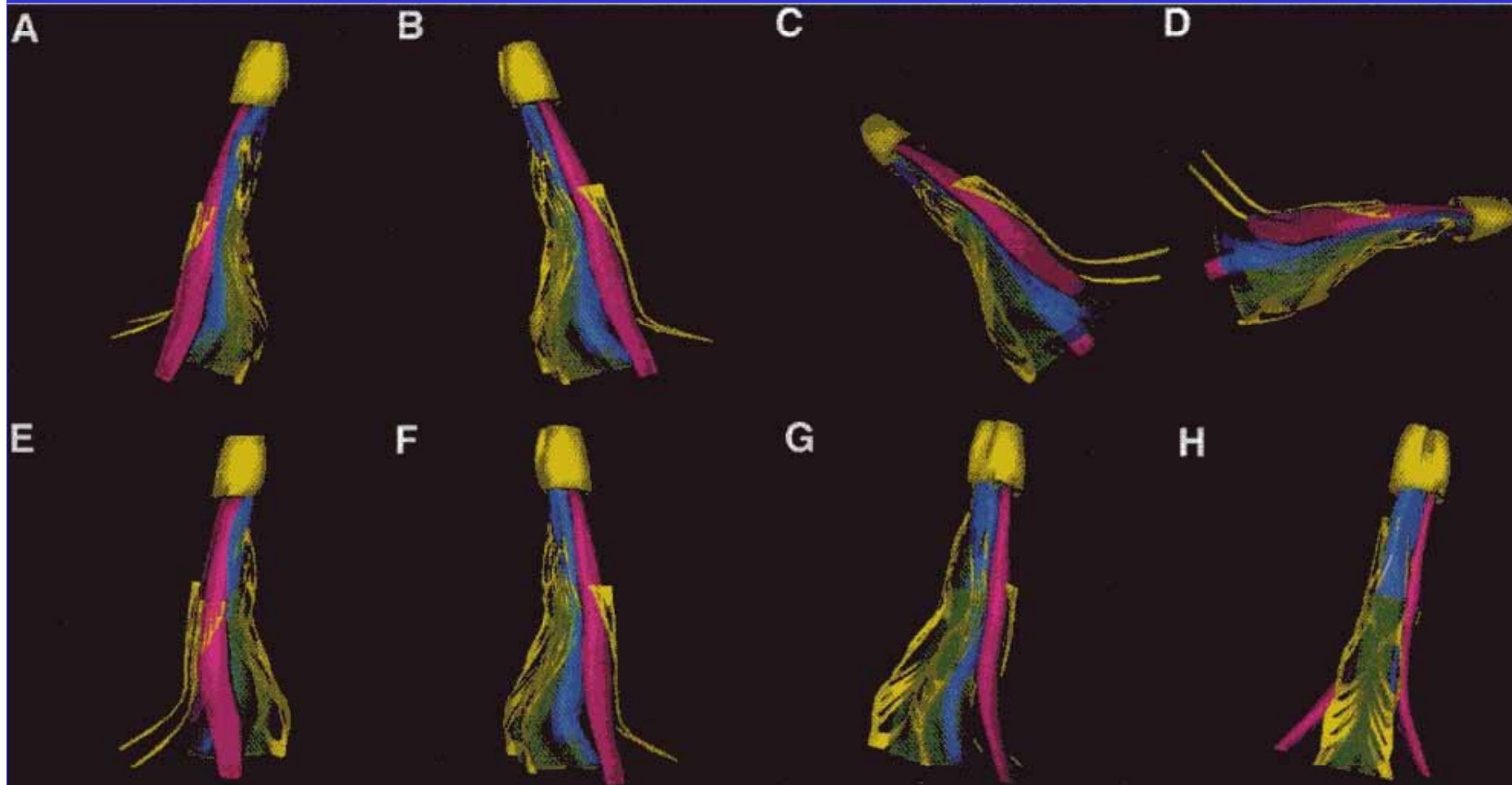




Rhythmic contractions of the bulbo-spongiosum muscles and other perineal muscles expel semen from the urethra and have an important role in expelling urine, avoiding urine sequestration in the large urethral bulb.

Yang and Bradley, BJU International 2000; 85:857-863



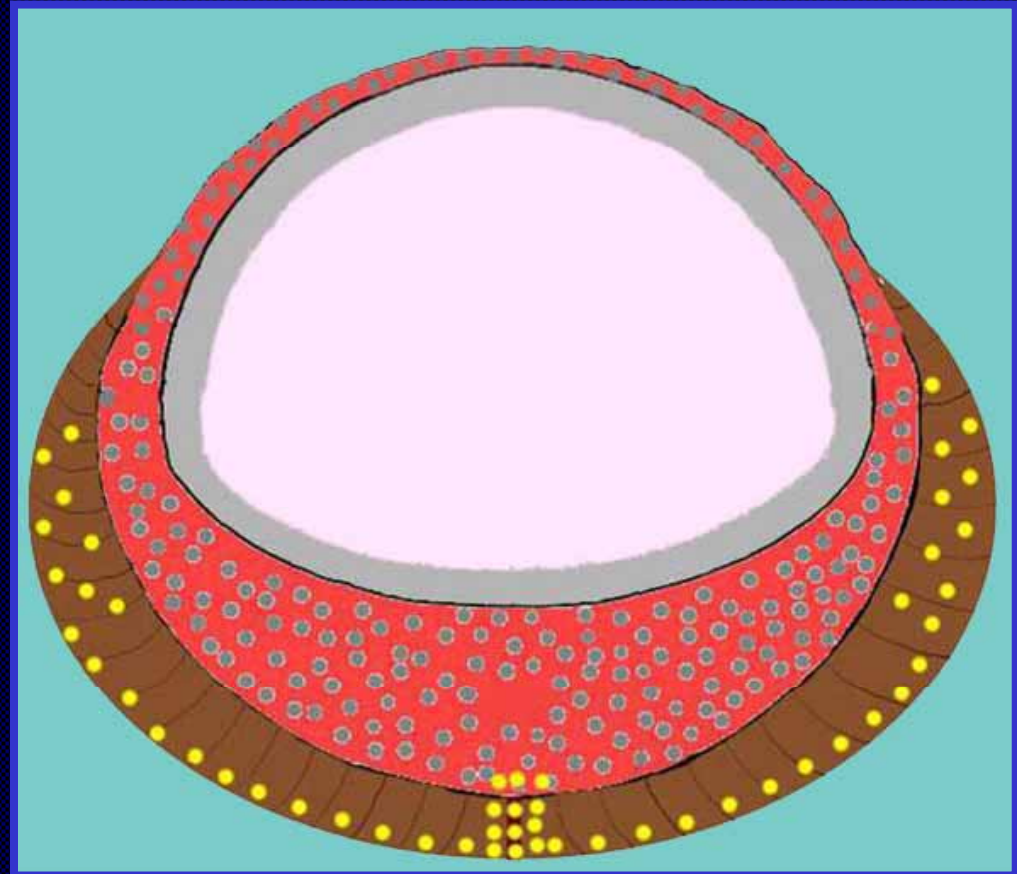
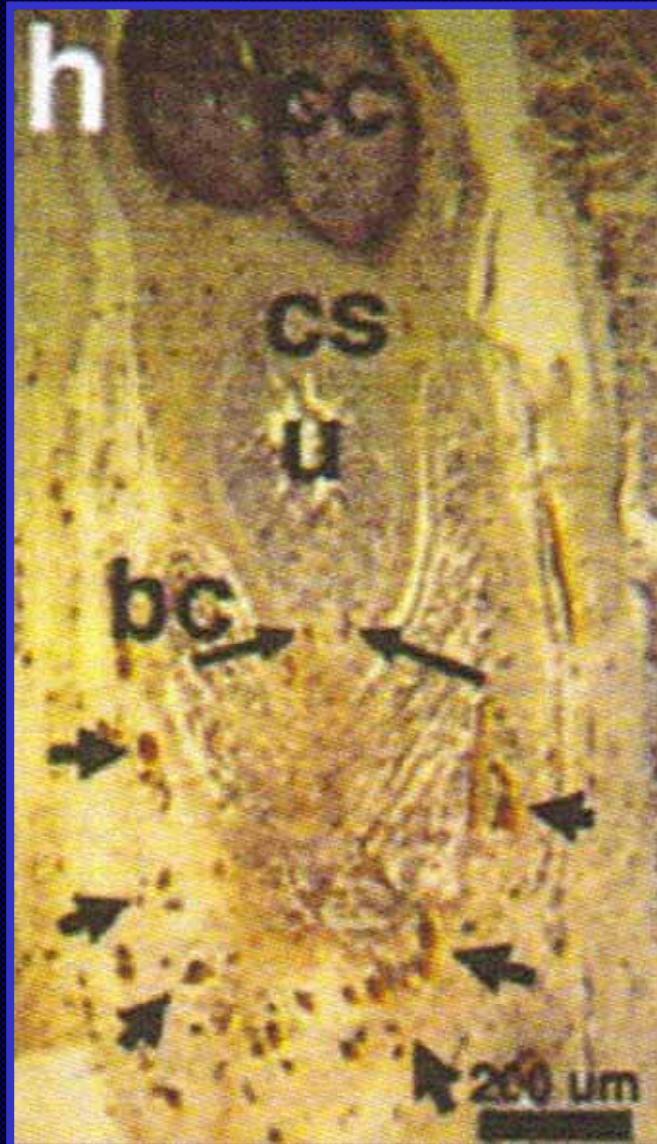


Yucel and Baskin, BJU International 2003; 92: 624-630

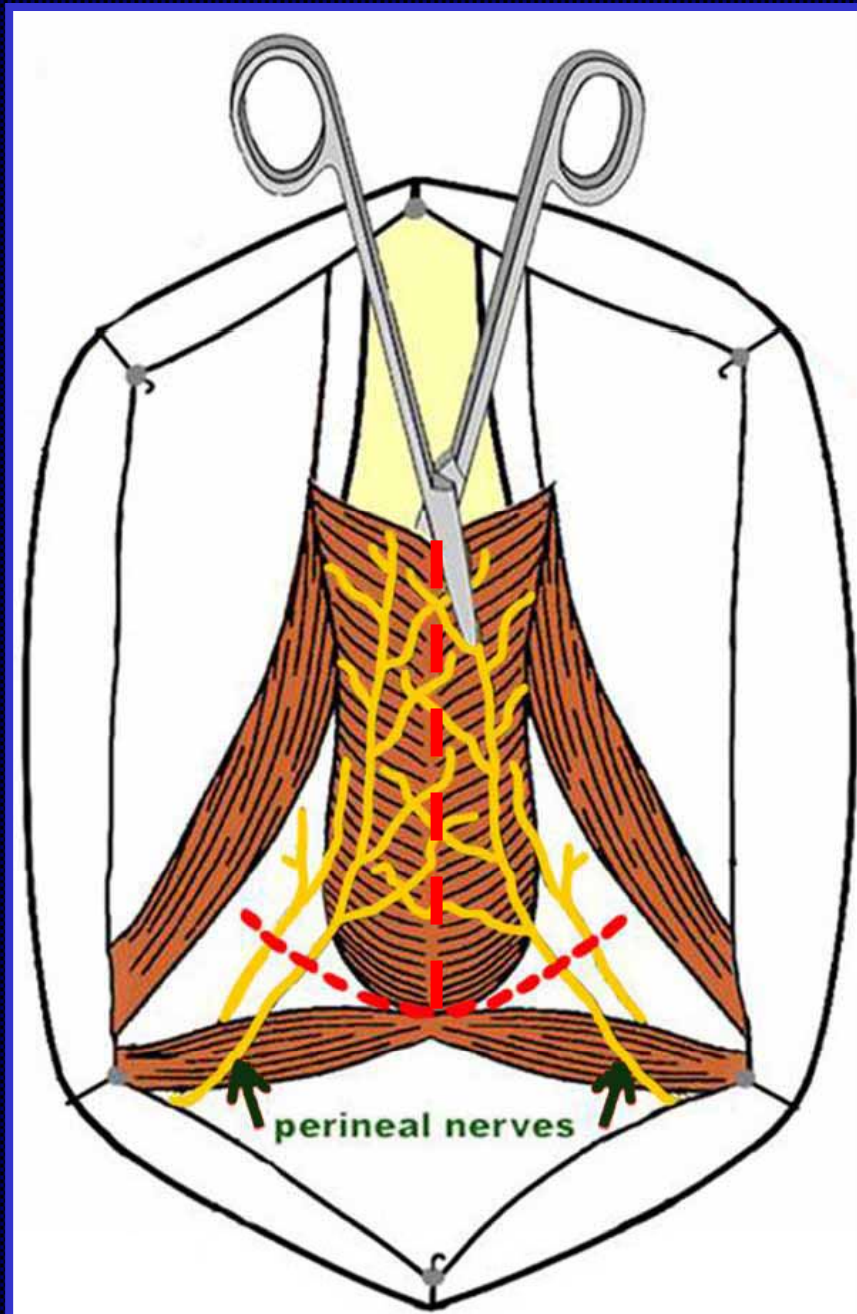


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Yucel and Baskin, BJU International 2003; 92: 624-630



**During bulbar urethroplasty,
damage to the bulbo-
spongiosum muscle and to the
perineal nerves may play a
role in determining loss of
efficient urethral contraction,
causing difficulties in
expelling semen and urine,
and temporary or permanent
sexual dysfunction**

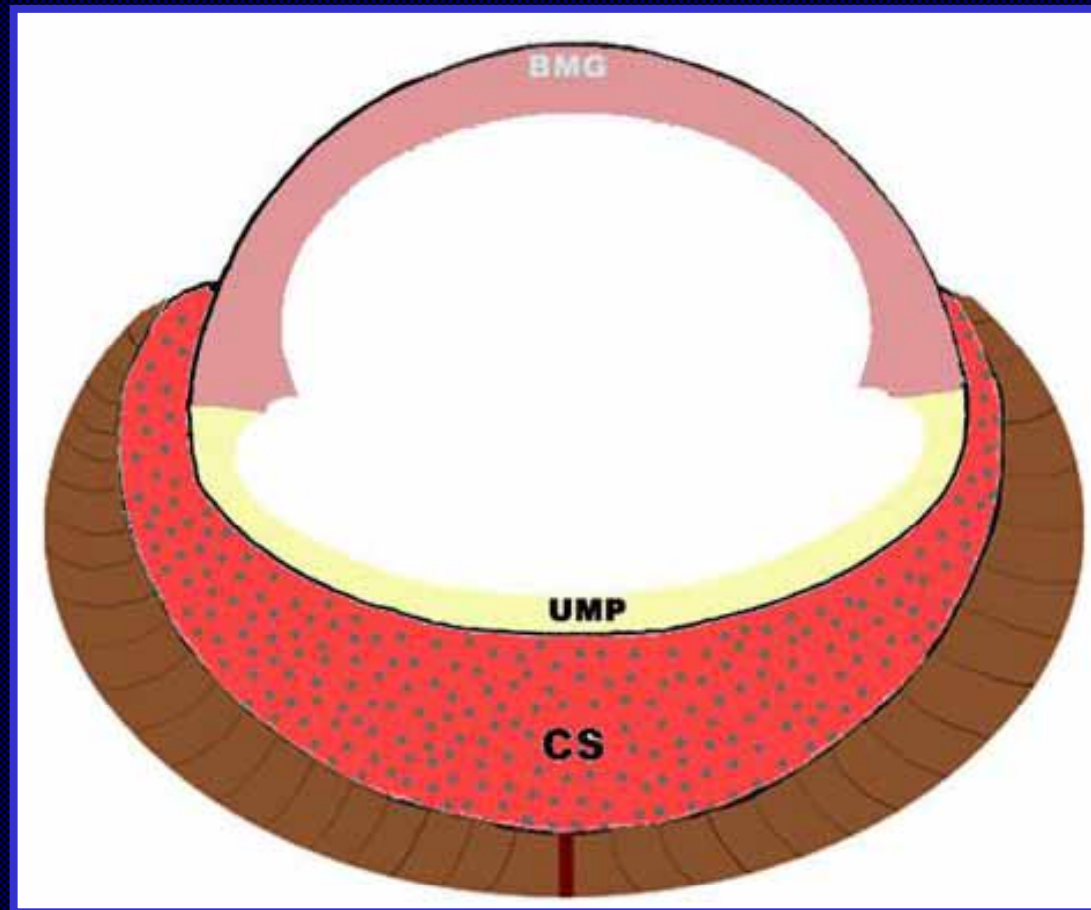


Loss of efficient contraction of the bulbo-spongiosum muscles and corpus spongiosum

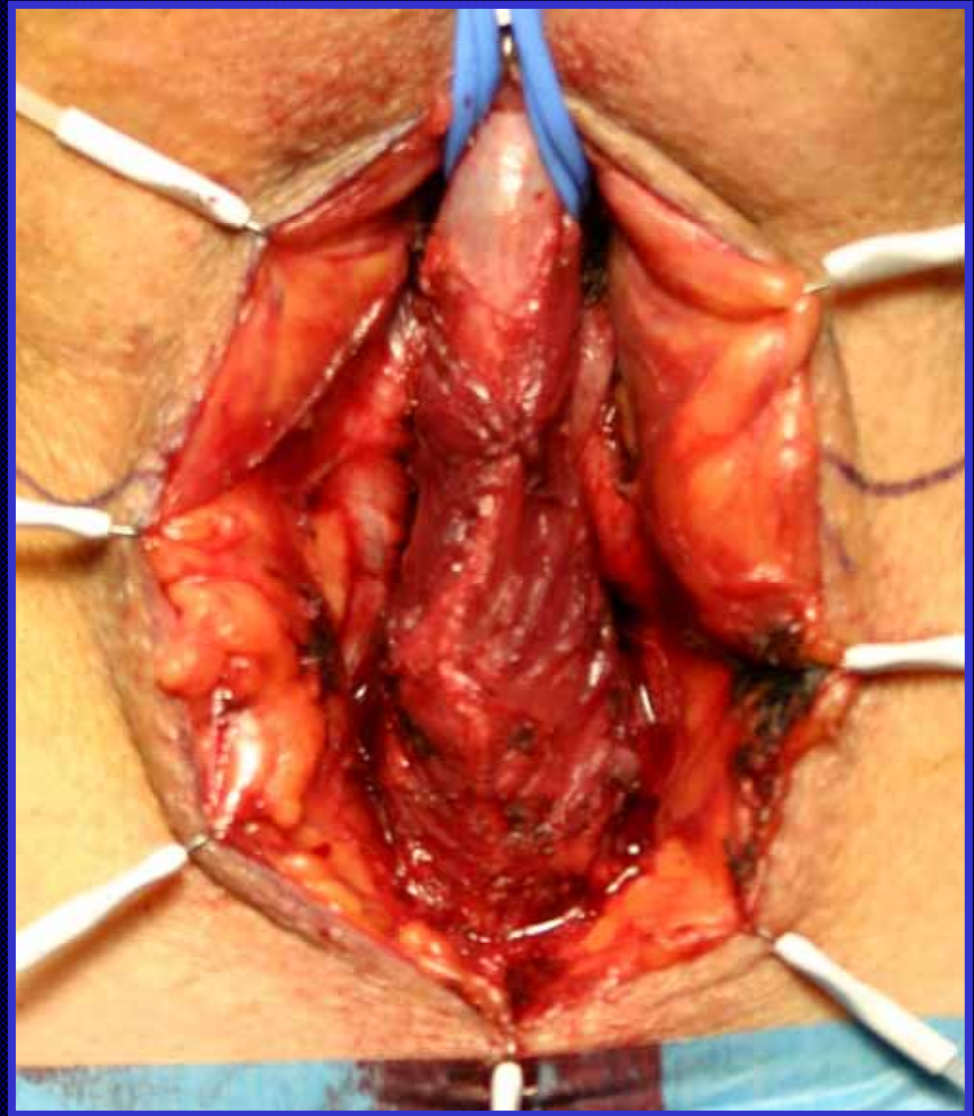
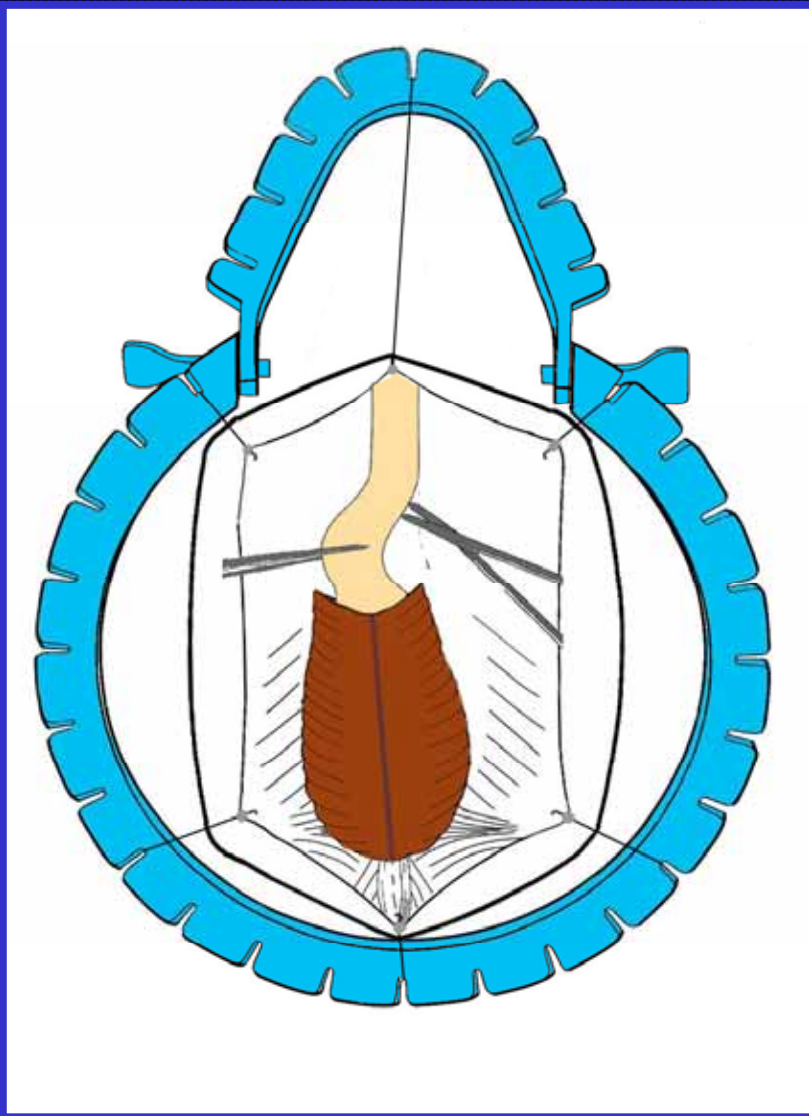
- decreased force of the ejaculation jet
 - loss of the ejaculation jet
 - semen sequestration
 - infertility
-
- urine sequestration in the urethral bulb
 - post-voiding dribbling

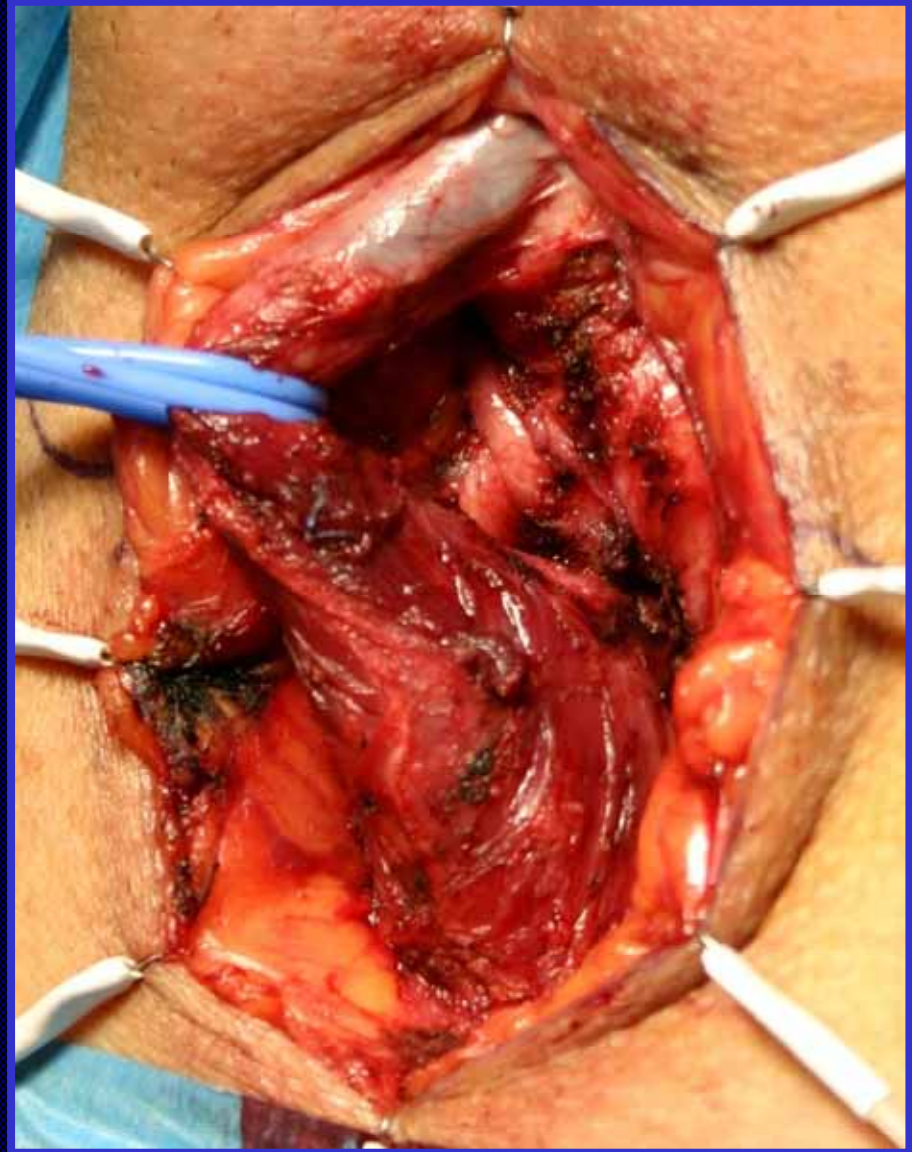
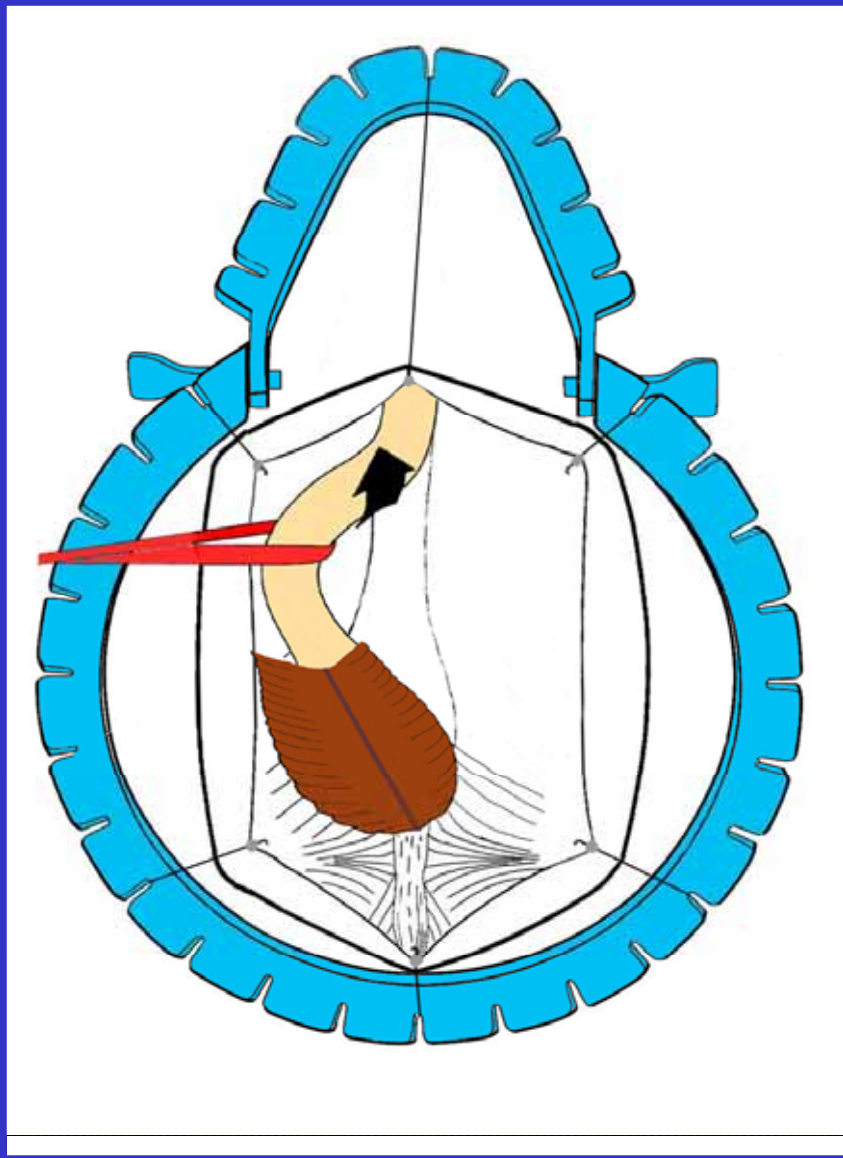


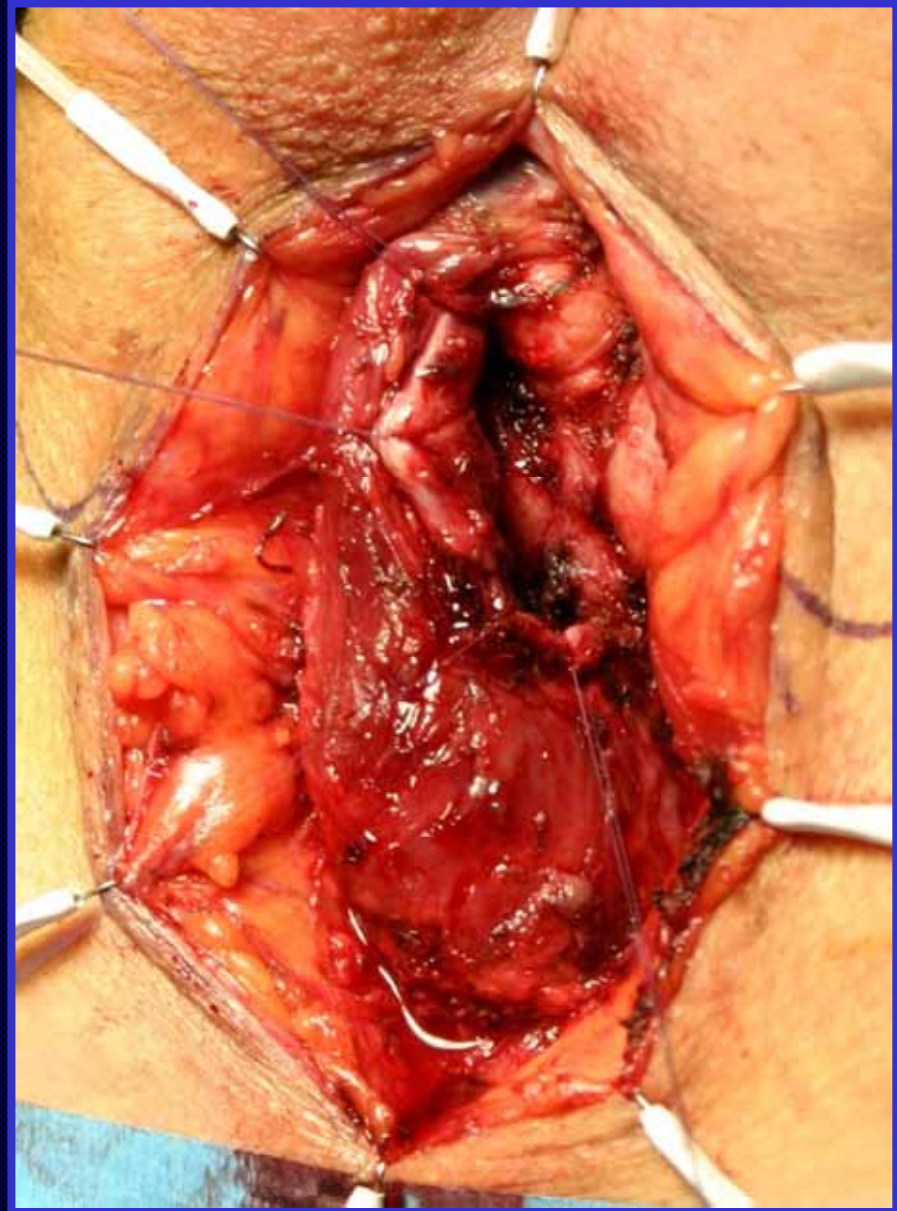
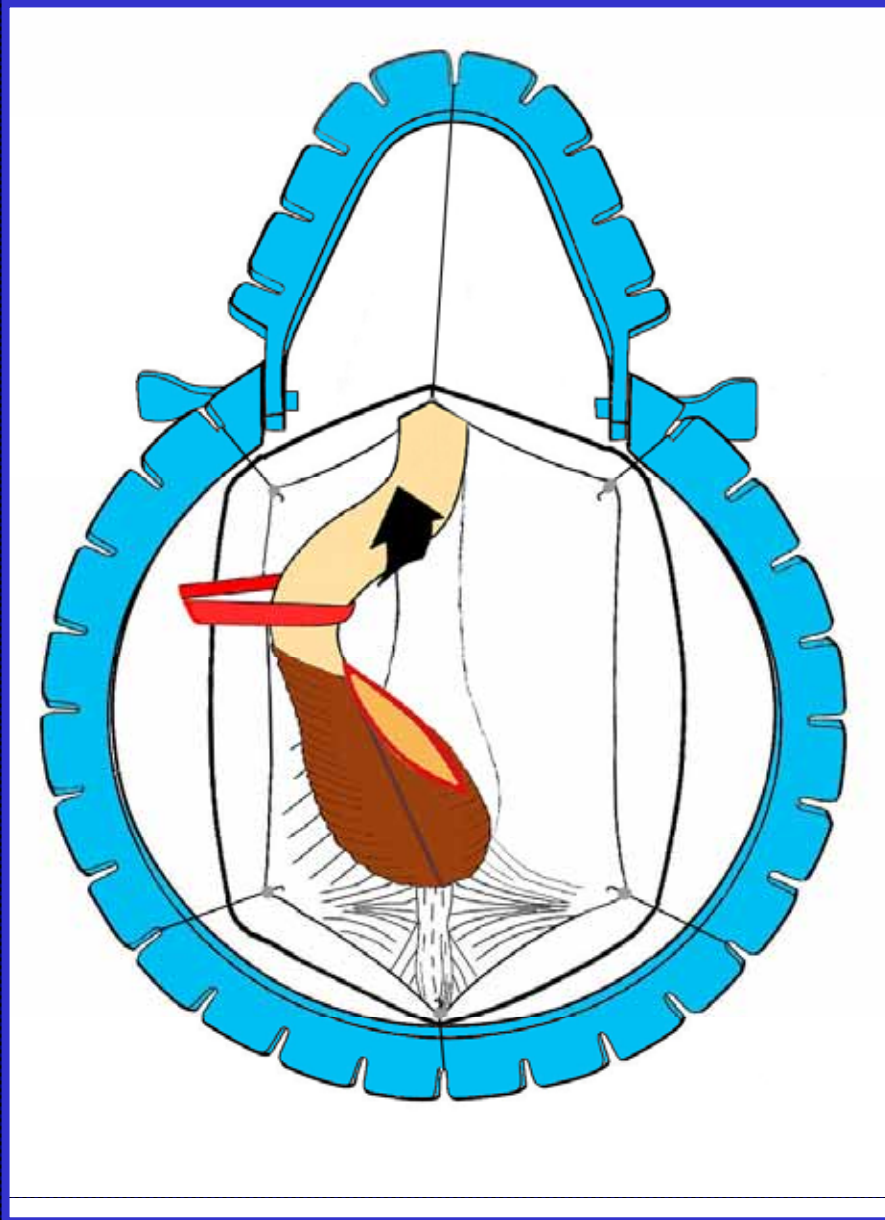
A new muscle and nerve sparing **dorsal** onlay graft bulbar urethroplasty

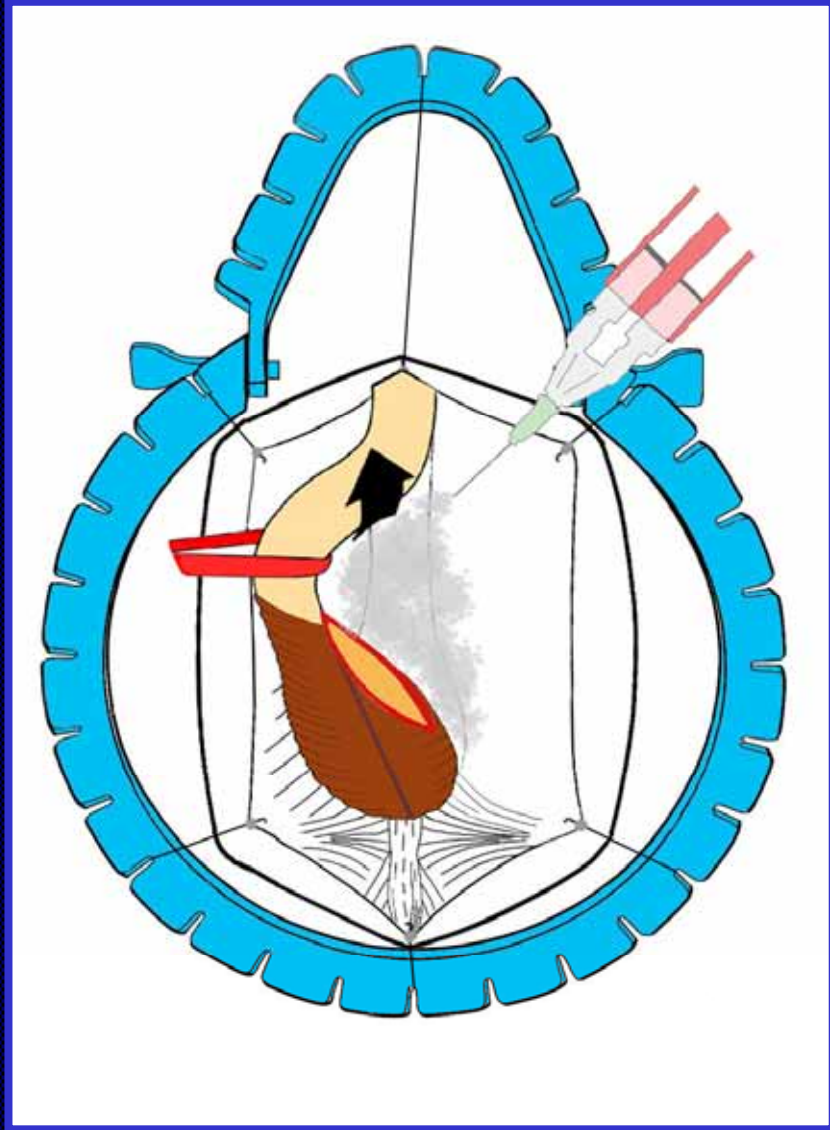


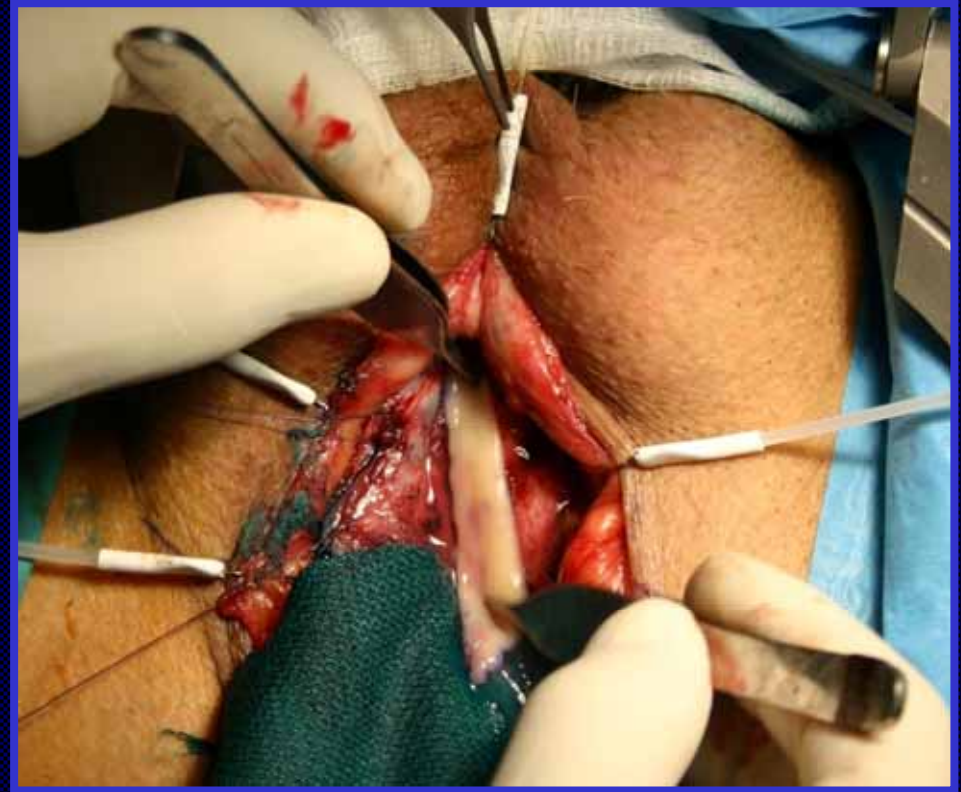
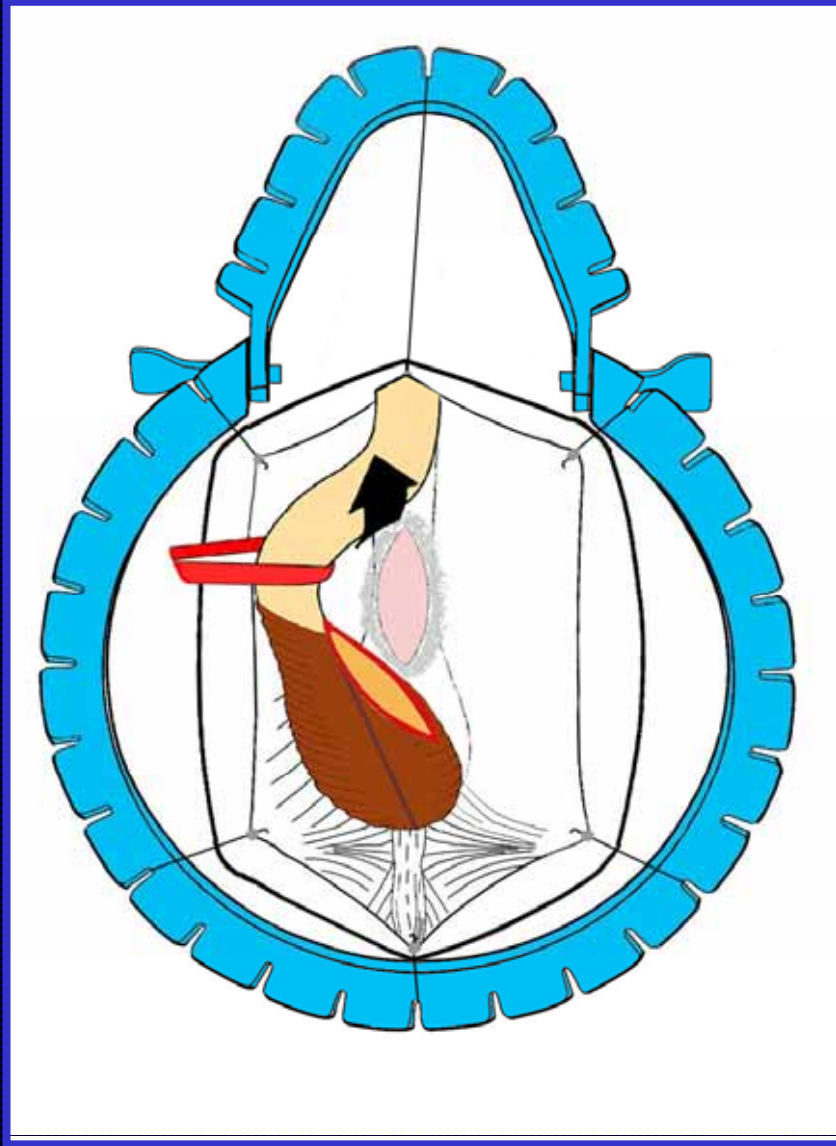


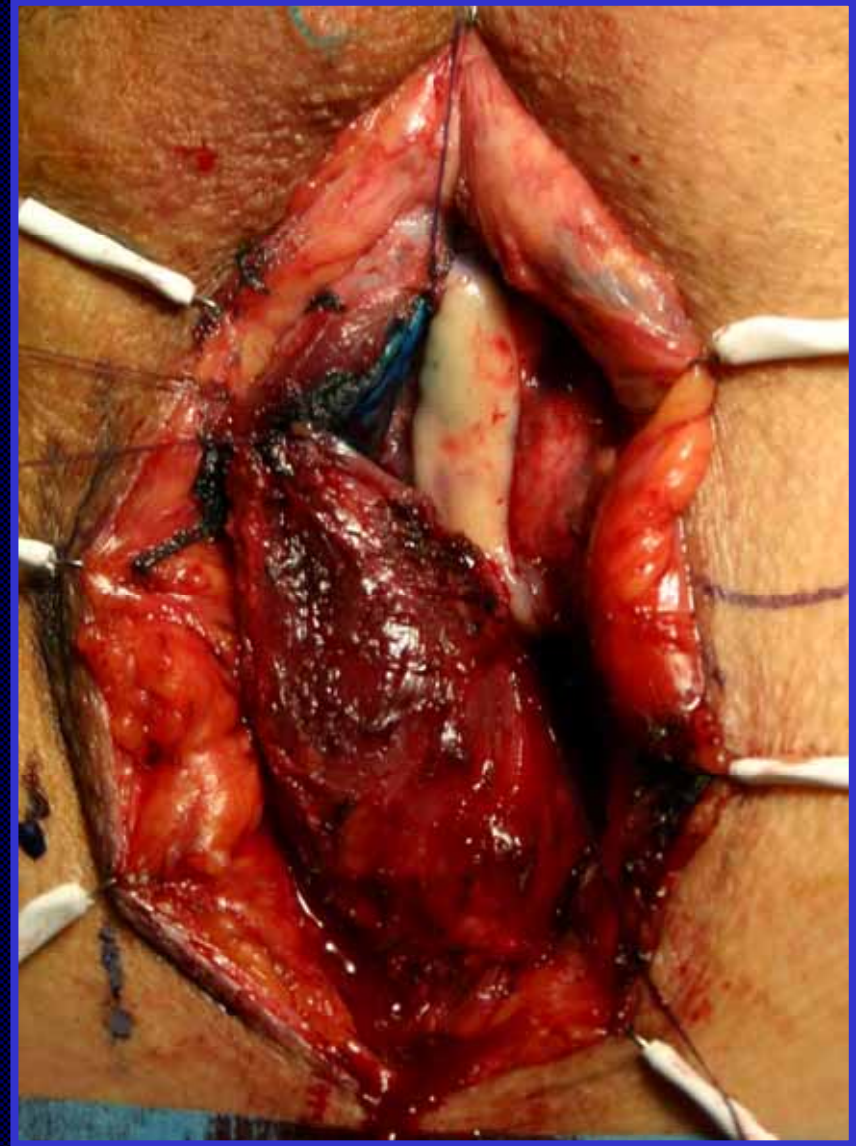
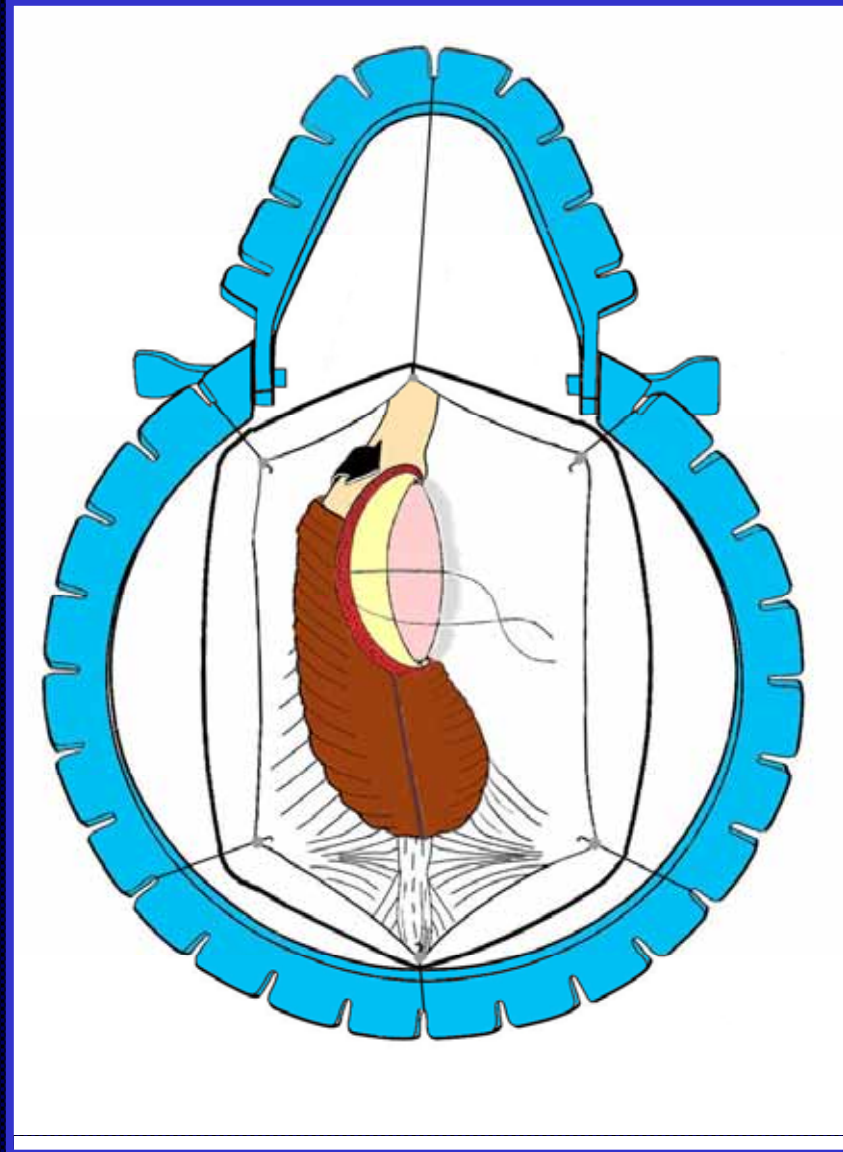


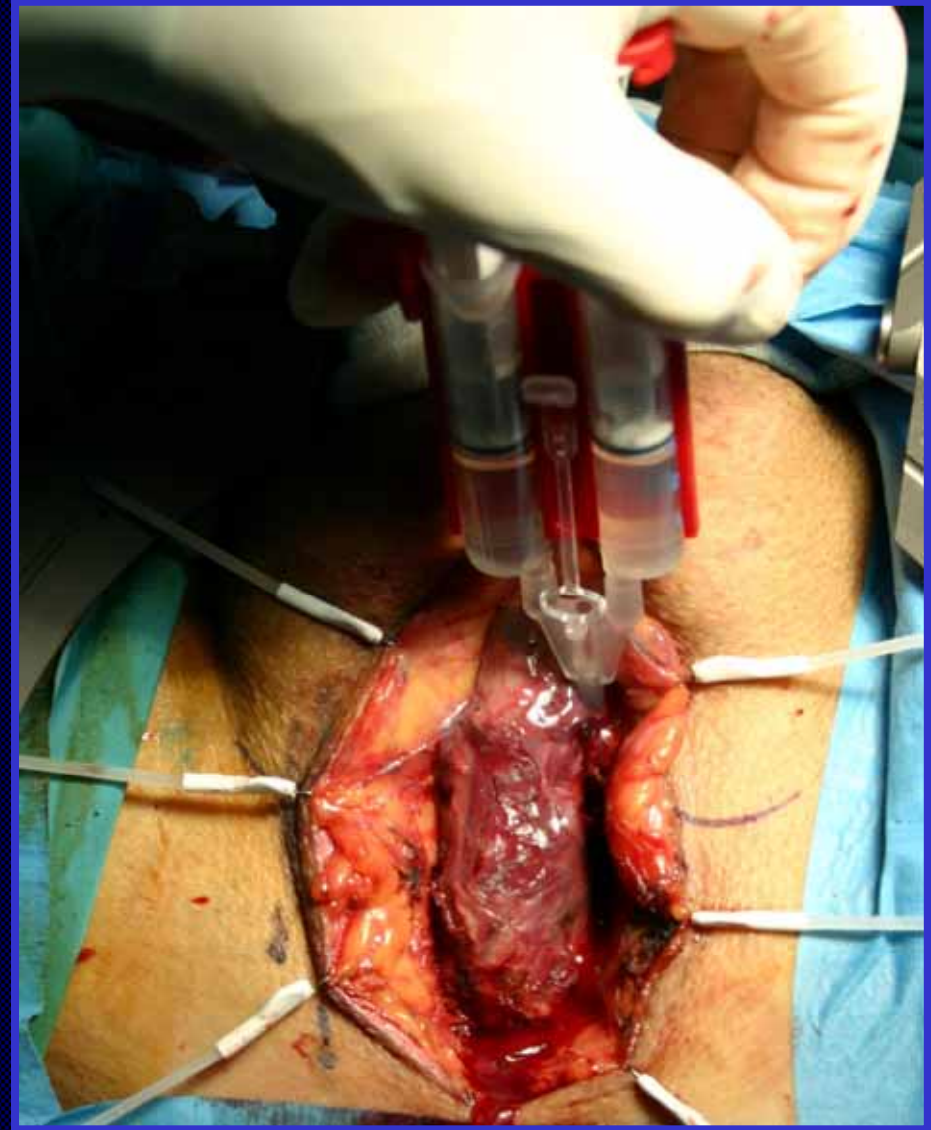
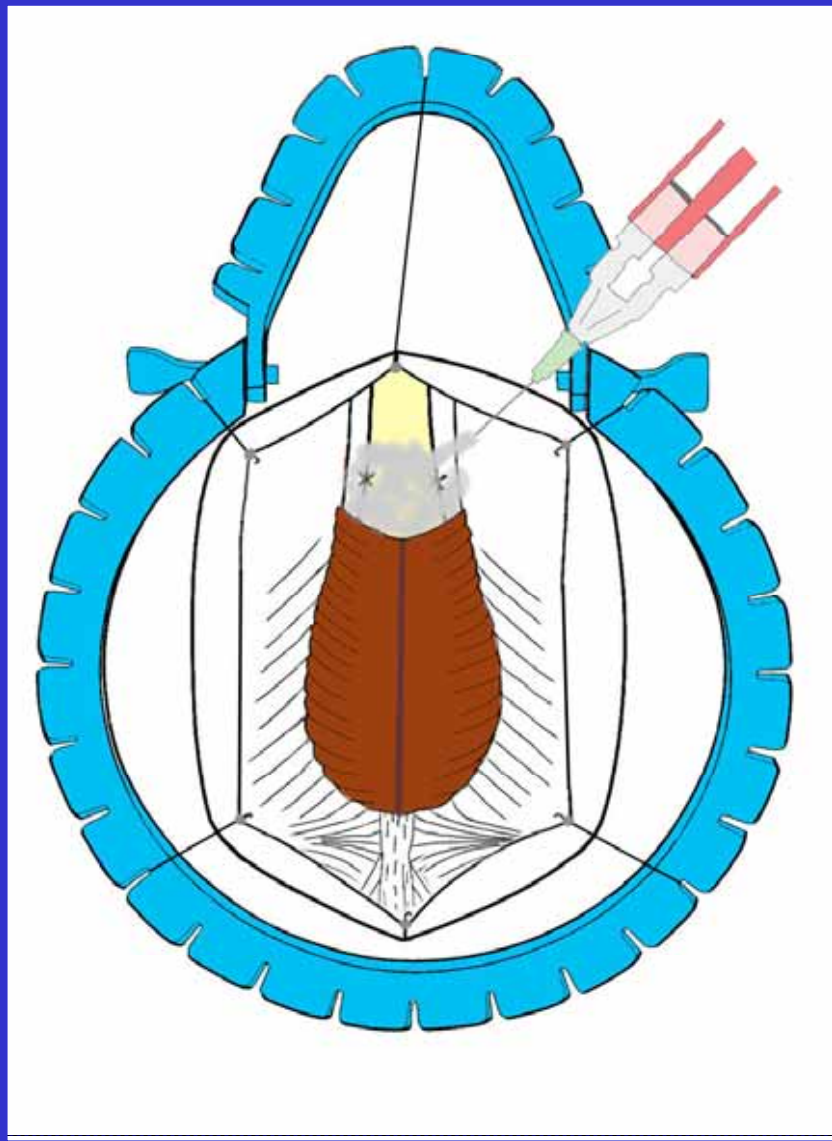




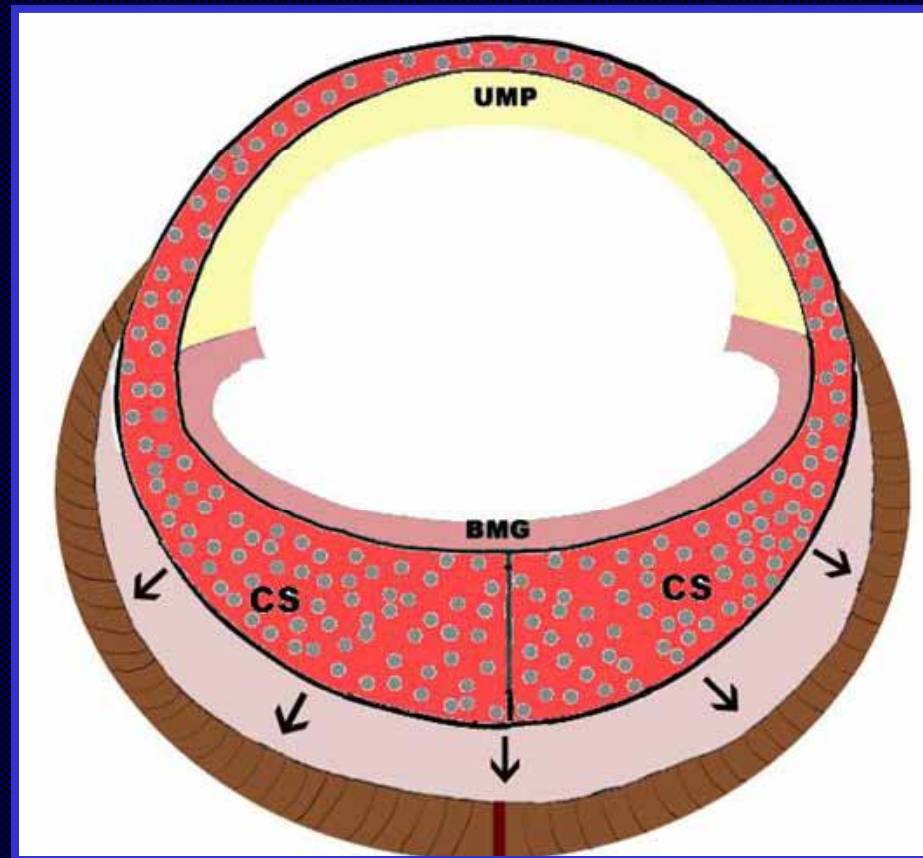




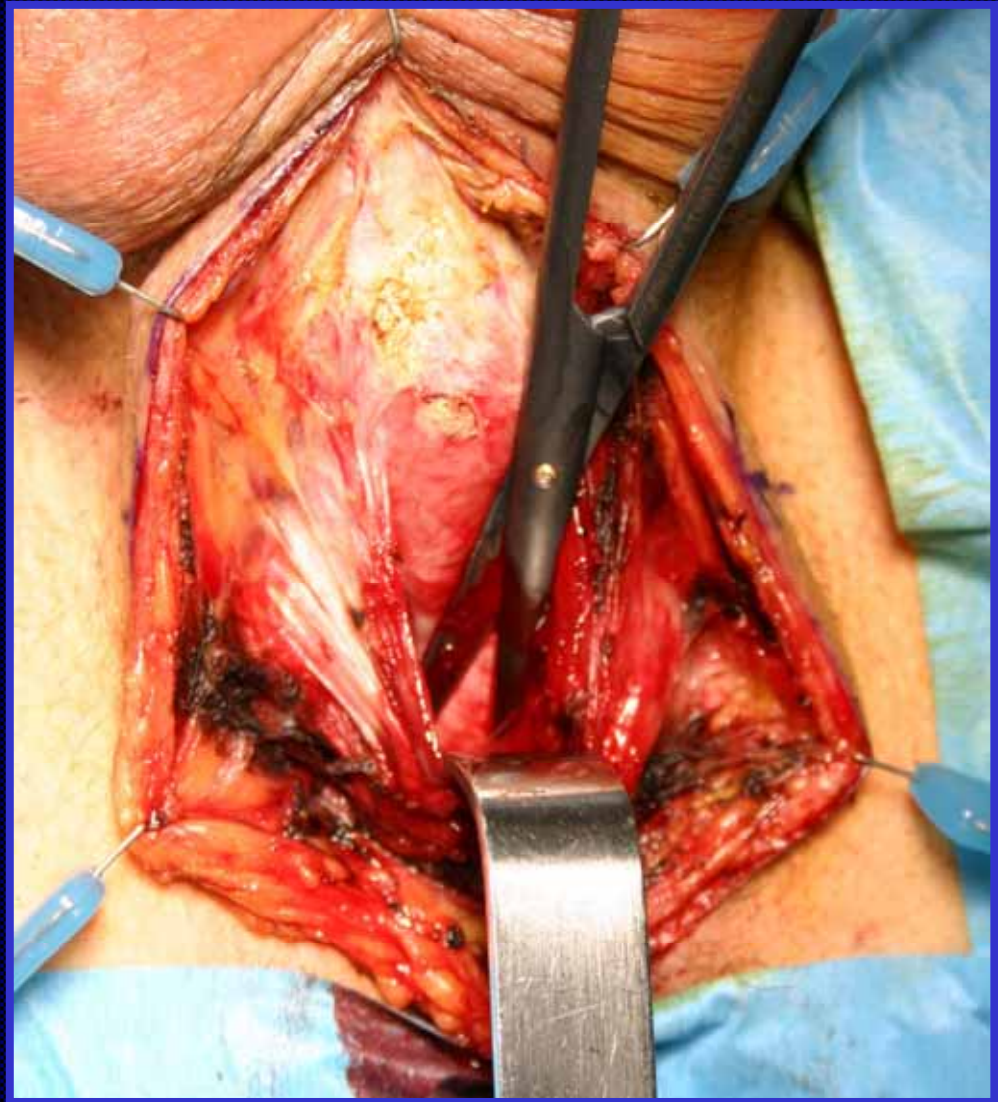
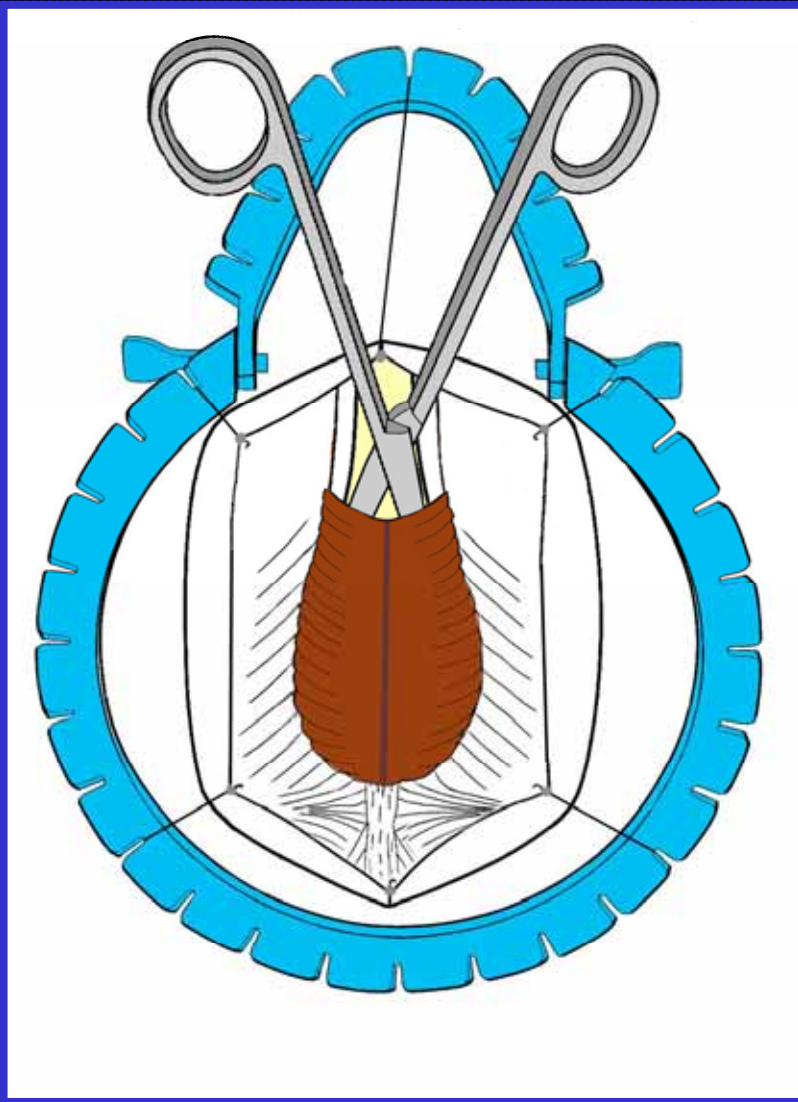


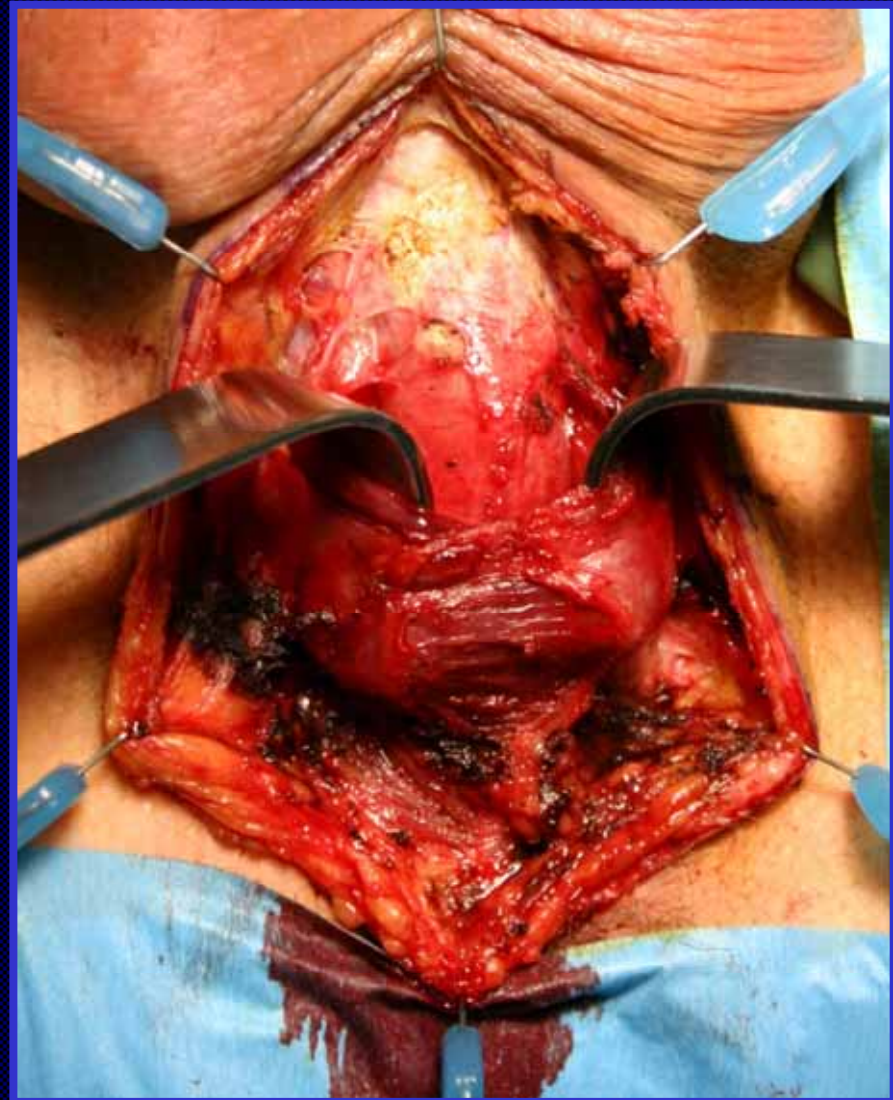
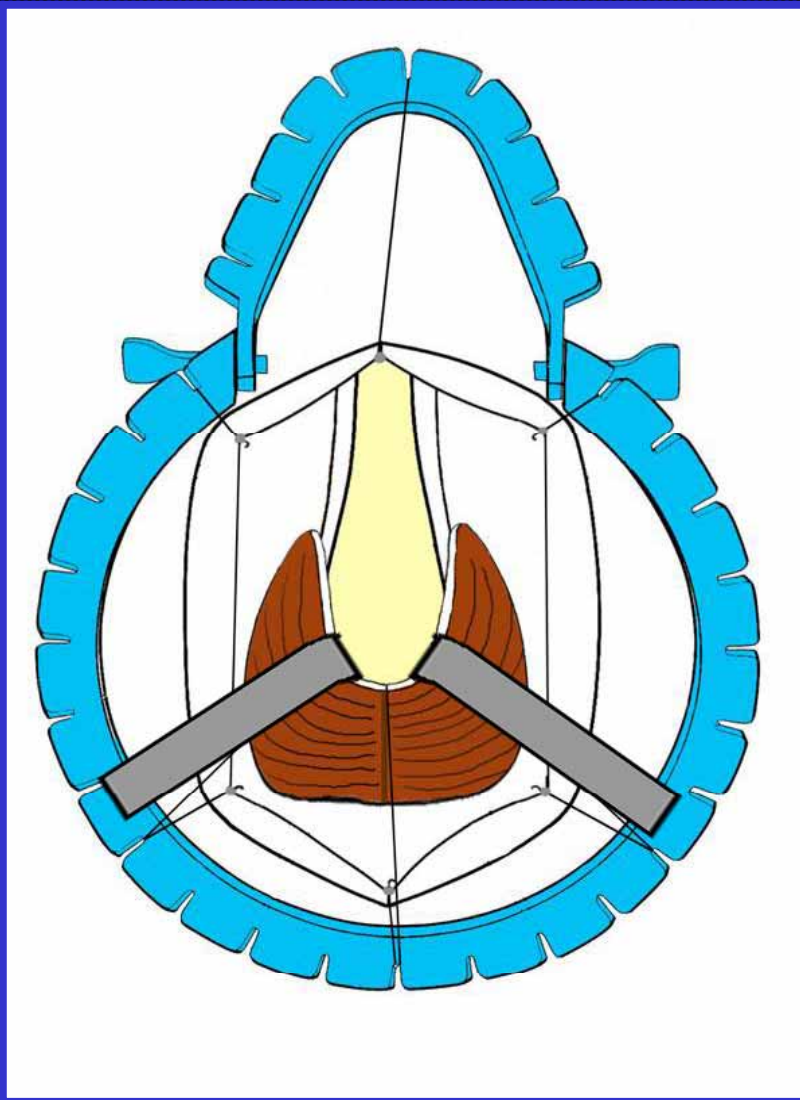


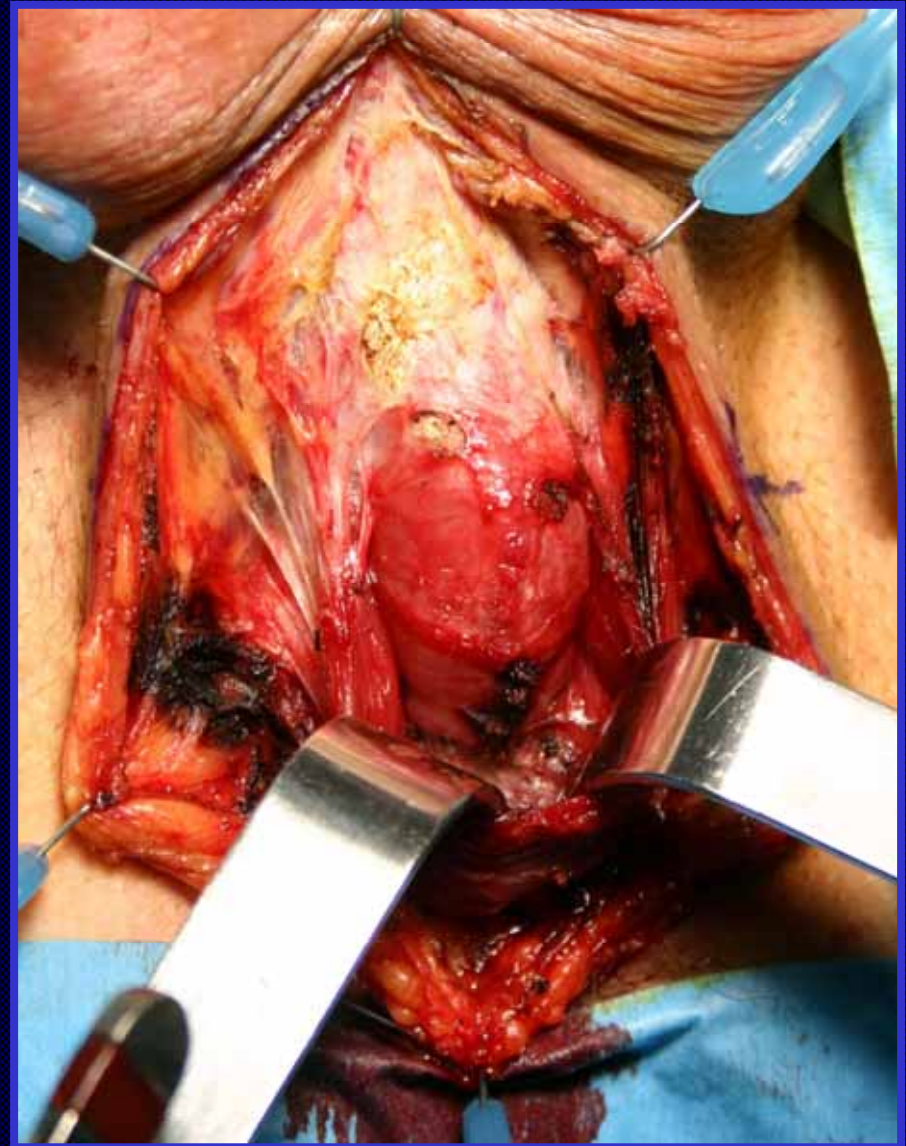
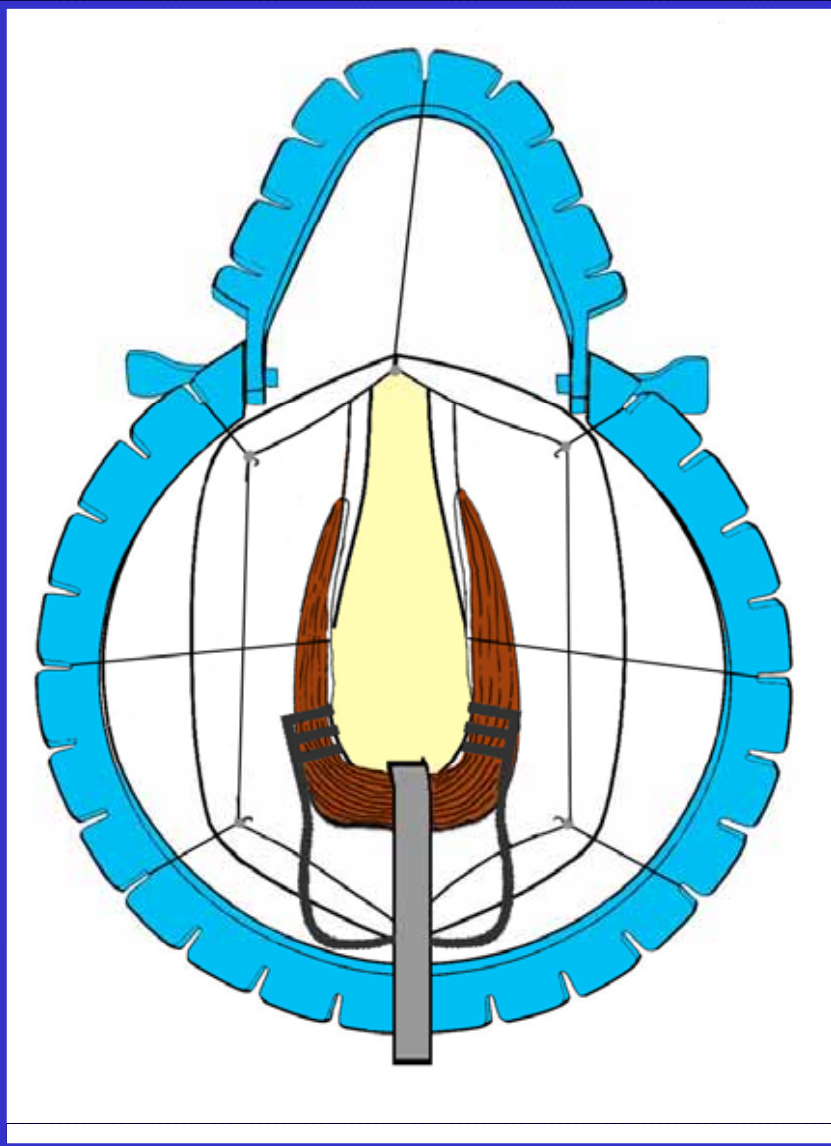
A new muscle and nerve sparing **ventral** onlay graft bulbar urethroplasty

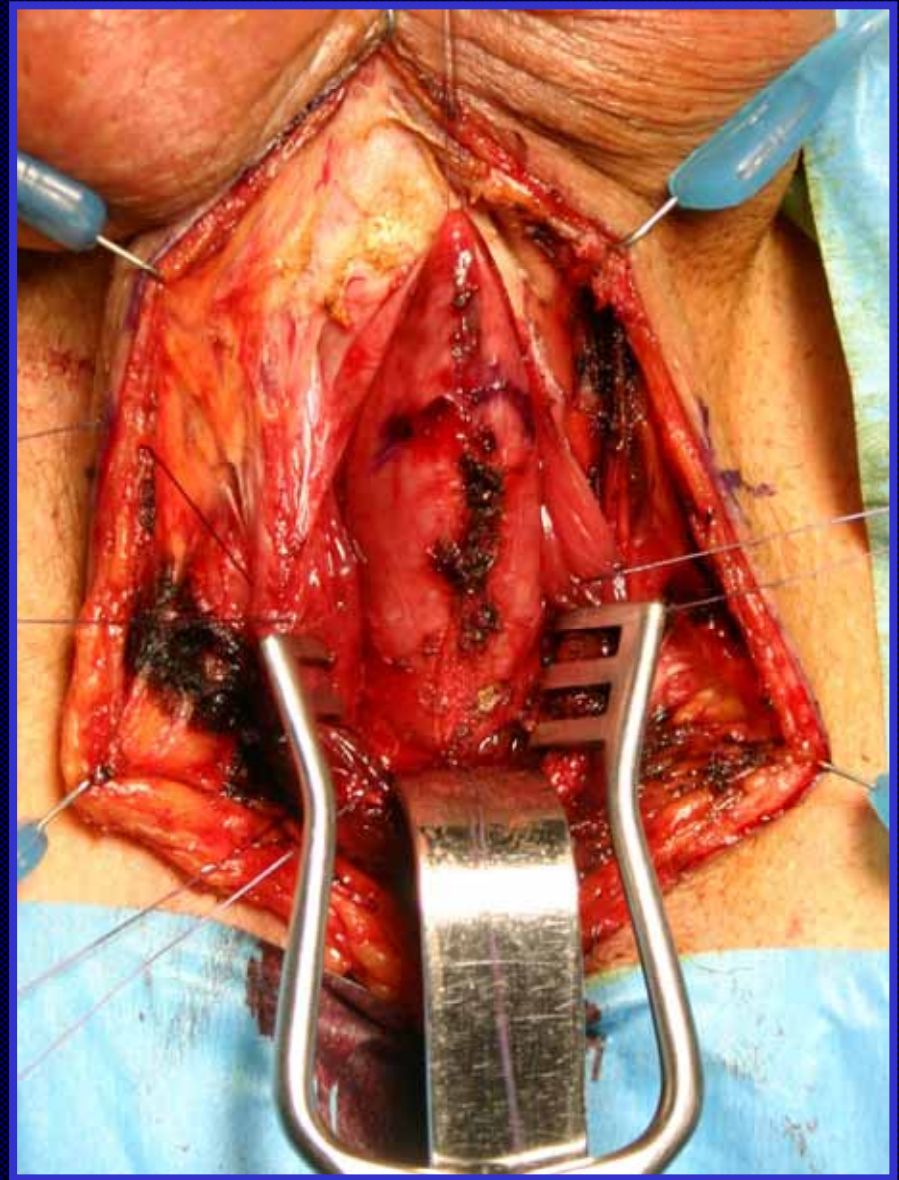
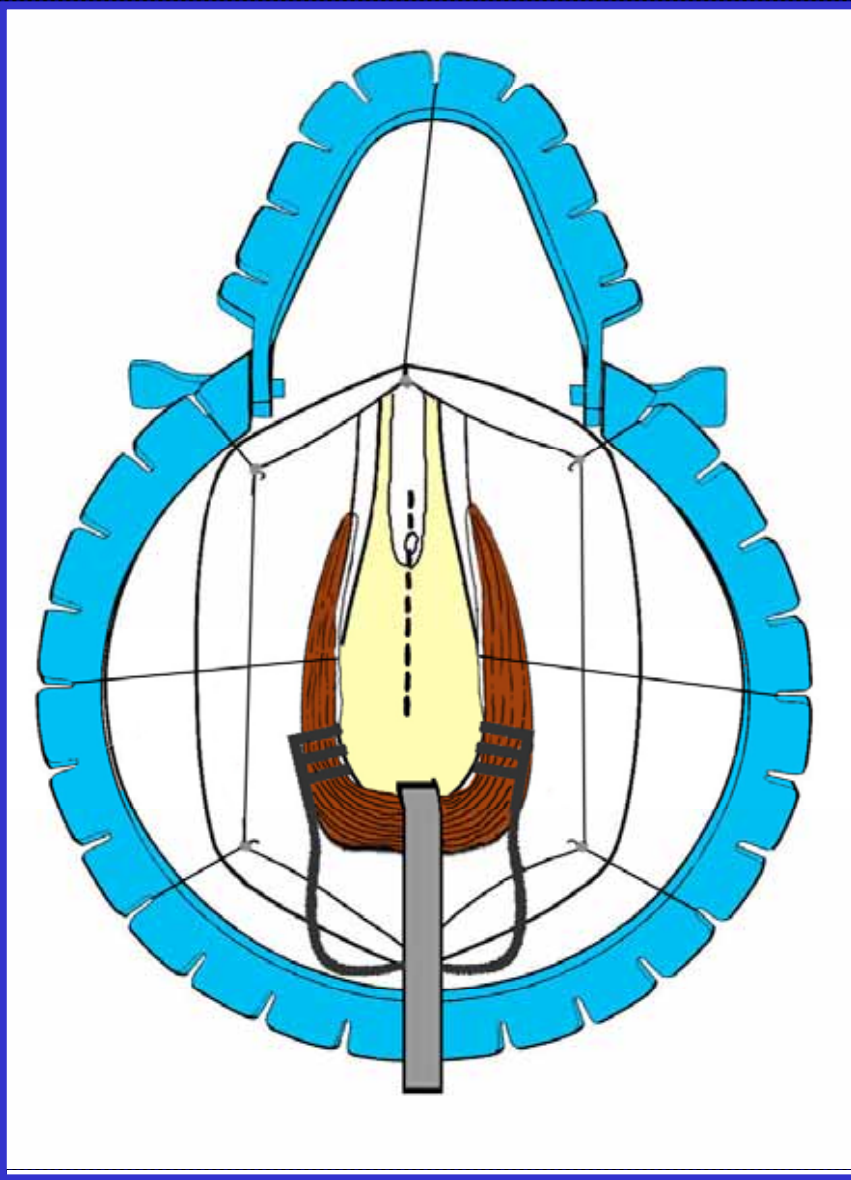


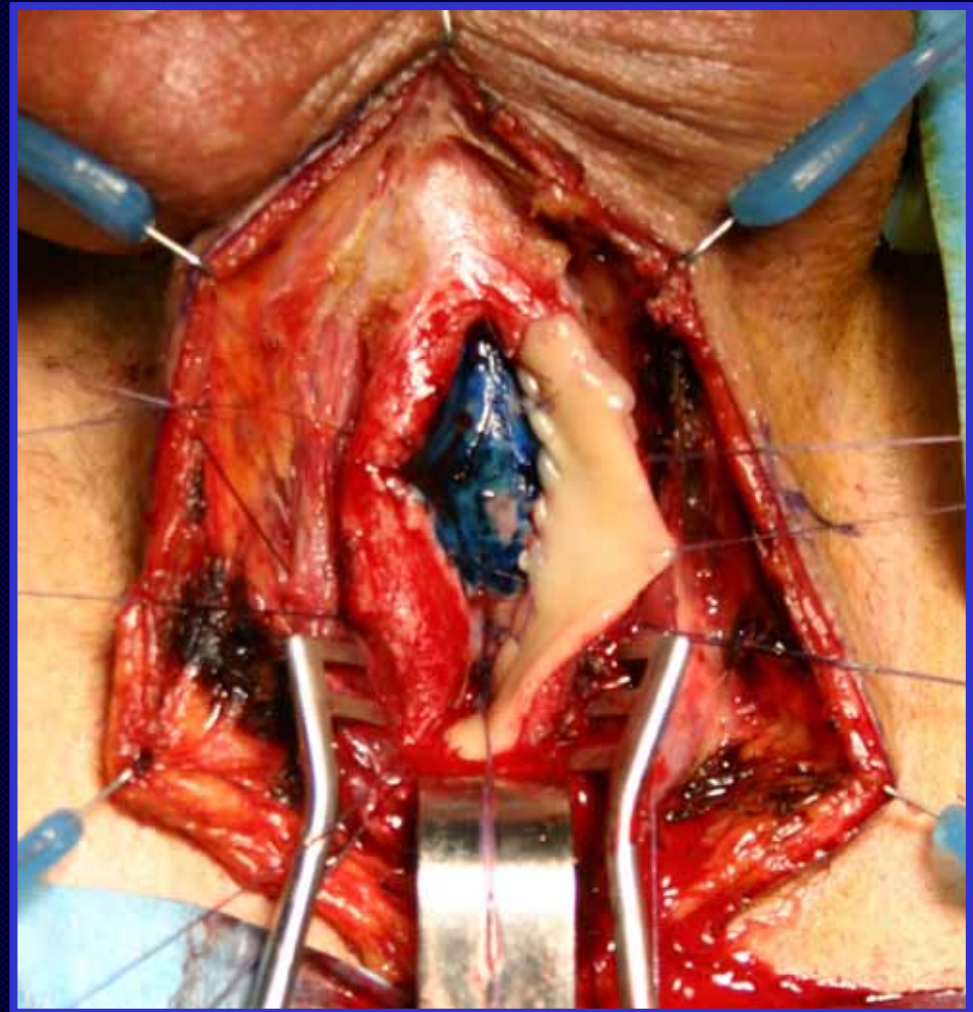
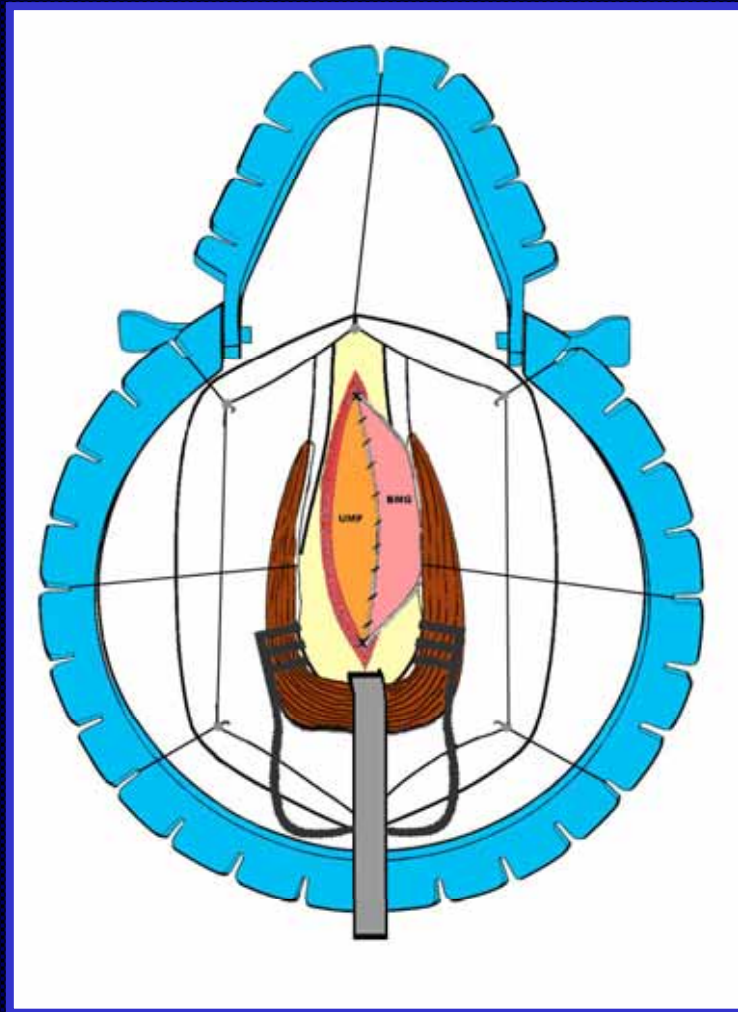


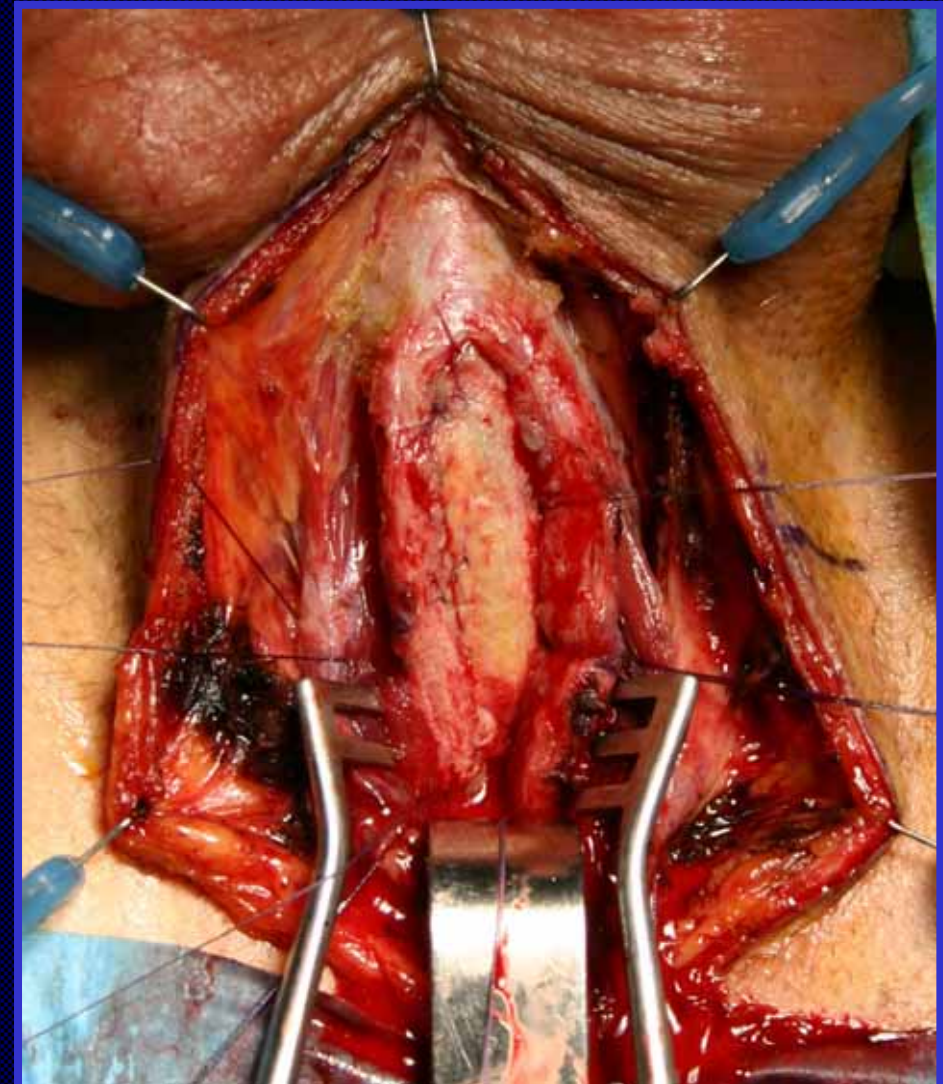
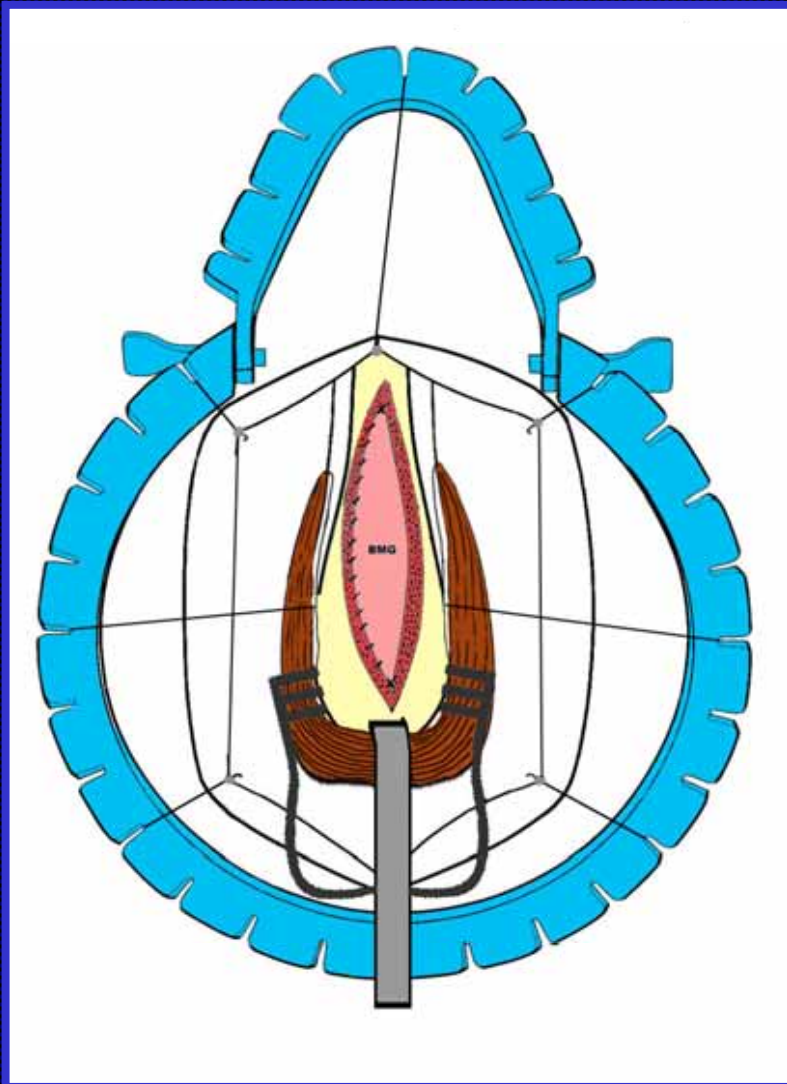


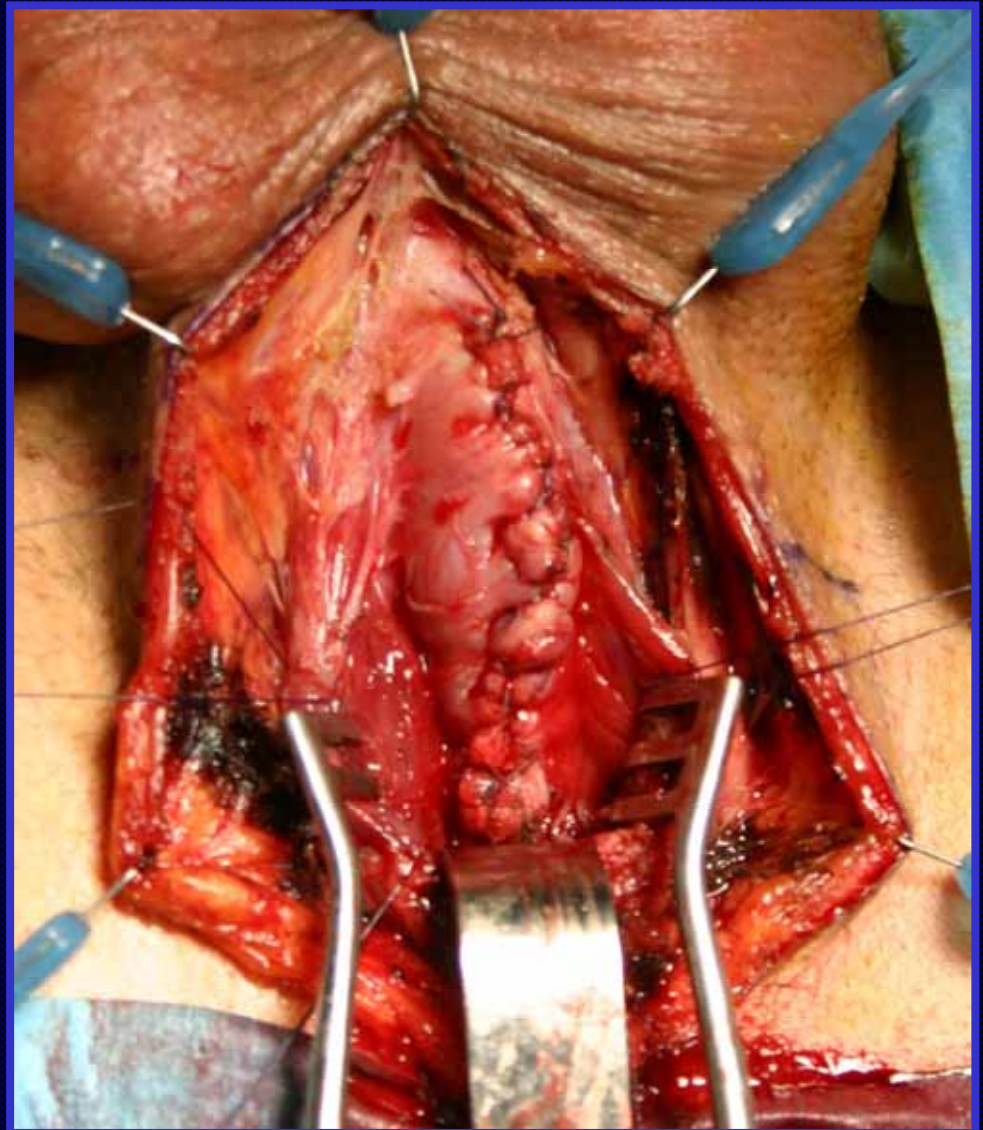
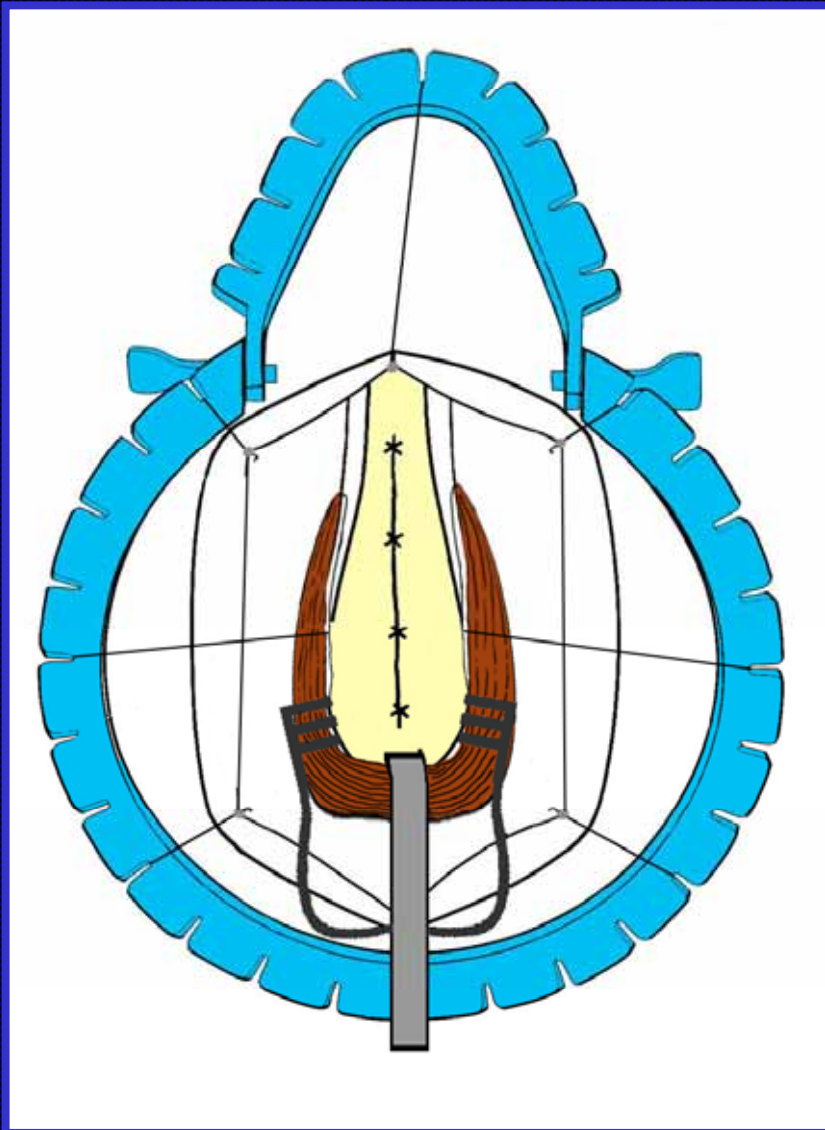


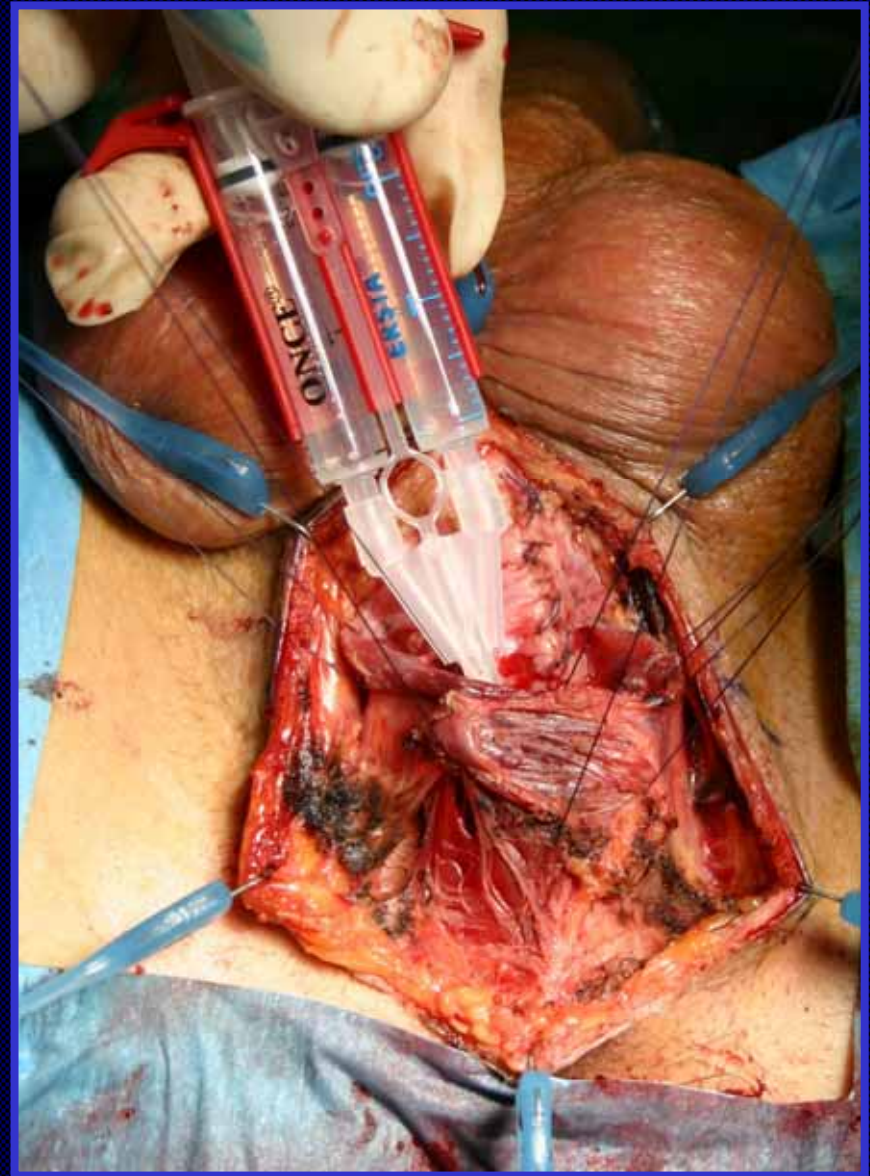
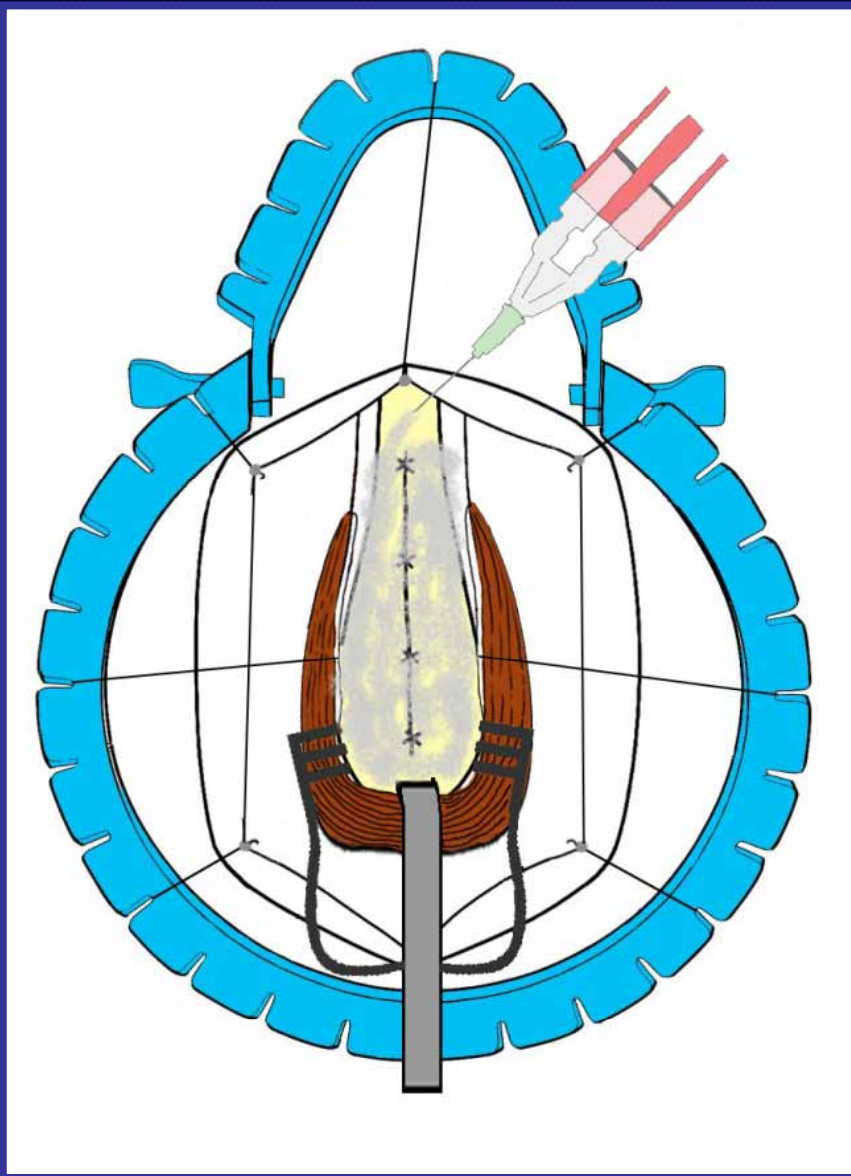


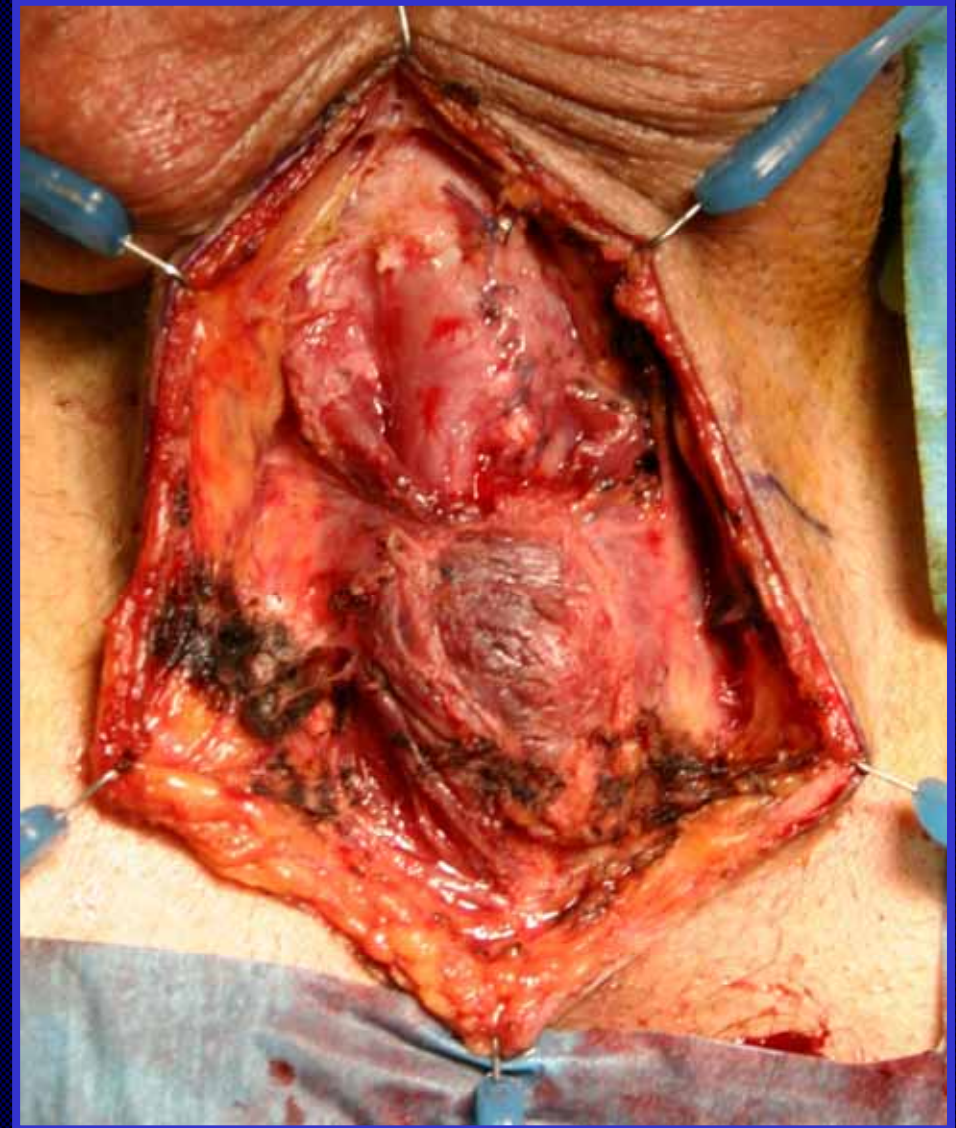
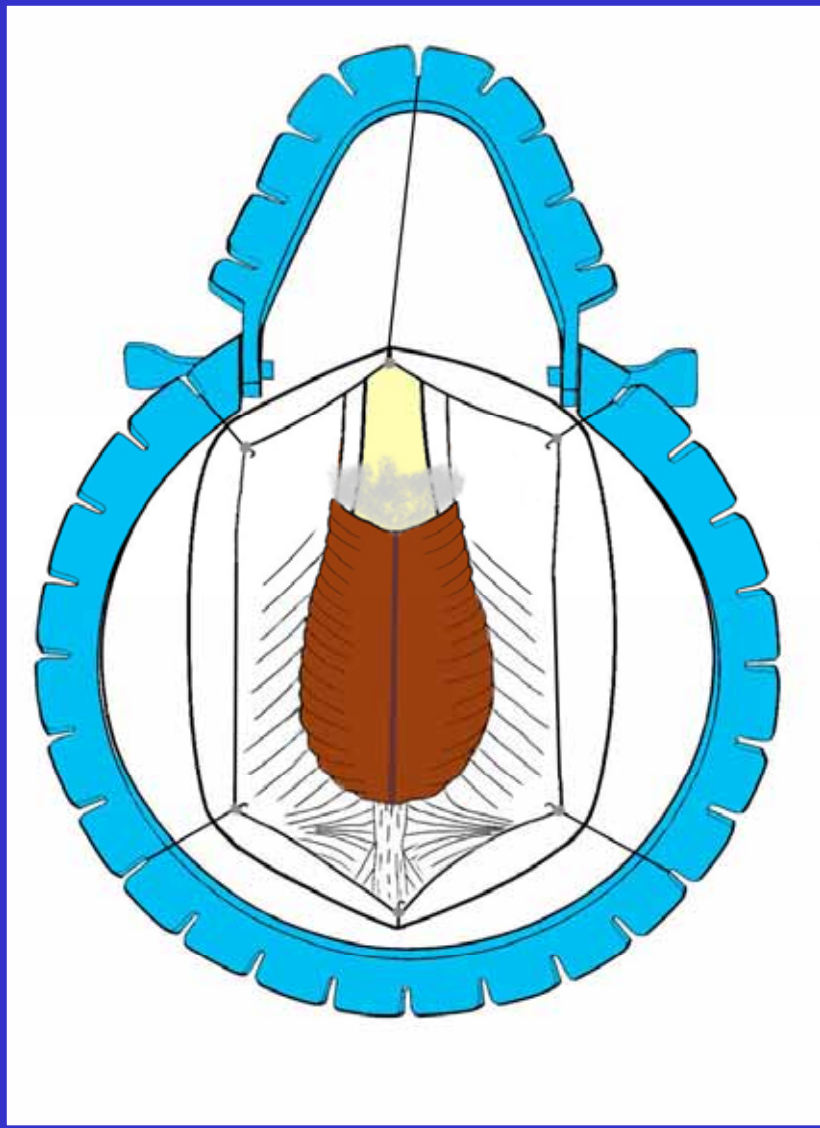












Conclusions

Preservation of the bulbo-spongiosum muscle and perineal nerve should represent a slight but significant step toward perfecting the surgical technique of bulbar urethroplasty, using a minimally invasive approach



Conclusions

Longer follow-up on a larger series of patients is necessary to confirm our preliminary satisfactory results, showing that preservation of muscle and nerve avoid the occurrence of post operative complications such as:

- **Post-voiding dribbling**
- **Loss of ejaculation**
- **Partial urine and semen sequestration in the urethral bulb**

We are currently working on gathering data



www.urethralcenter.it



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- 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 !



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