Urethral Surgery

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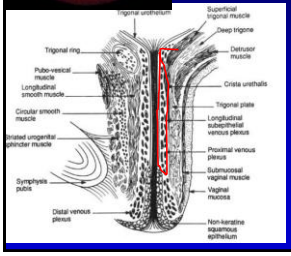
Outline

- Introduction
  - Principles of Urethral Surgery
  - Surgical Anatomy of the Urethra
  - Instrumentation
- Specific Cases

Principles of Urethral Surgery

- Much less forgiving than the bladder
- Delicate, precise work
- Judicious use of cautery
- Clear vision/magnification
- Catheter is your friend—small is OK

No tension, EVER
Do it right the first time!



Urethral Anatomy

- Mucosal infolding
- Submucosal thick vascular spongy tissue
- Combine to create passive continence

- Vaginal wall + connective tissue
- Pubourethral ligaments
- Urethropelvic ligaments

Instruments for Urethral Surgery

- Only the best:
  - Fine sharp and blunt scissors
  - Fine forceps
  - Needleholder for fine needles
- Ring retractor and mosquito clamps
- Nasal speculum
- Bougie-a-boules

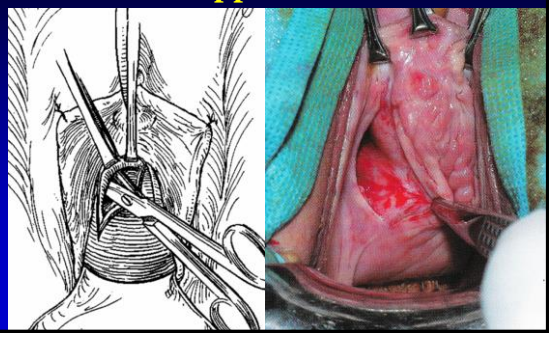
Specific Cases

- Urethrolysis
- Bladder Neck Closure
- Urethral Diverticulum
- Neourethra
- Urethral Prolapse
- Urethral Caruncle
- Urethral Stricture

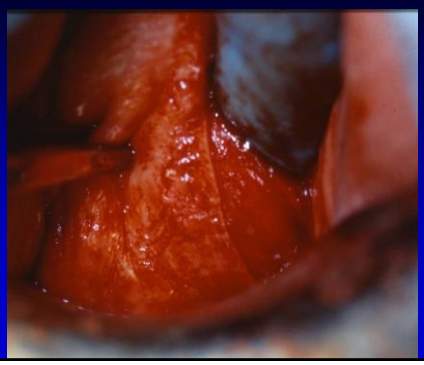
Urethrolysis

- Inevitably after stress incontinence surgery
- Vaginal or abdominal approach
- Standard vaginal approach
  - Good for needle suspensions/fascial slings
  - More "blind" work
  - Heavy Jorgenson scissors
- Suprameatal vaginal approach
  - Perhaps better for Burch/mesh sling
  - More bleeding/neuropraxia

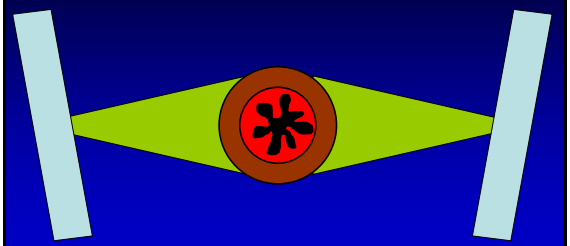
Urethrolysis: standard vaginal approach



Urethropelvic ligament

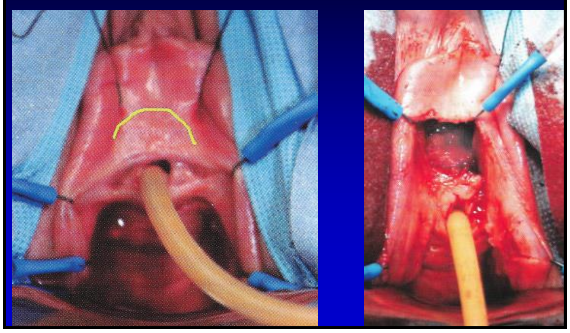


Urethropelvic Ligament

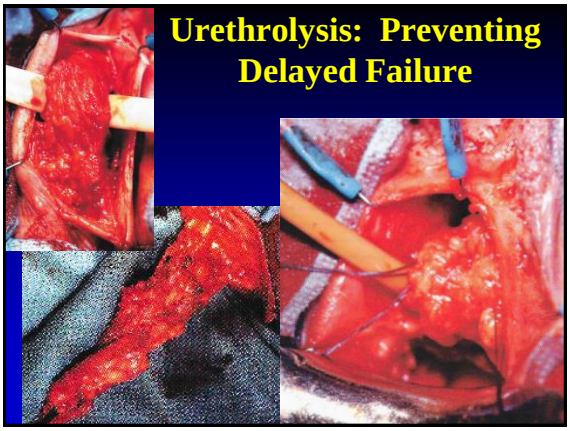


Urethrolysis: Retropubic access

Urethrolysis: suprameatal approach



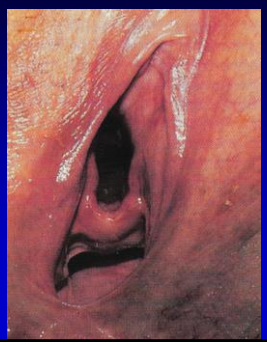
Urethrolysis: Preventing Delayed Failure

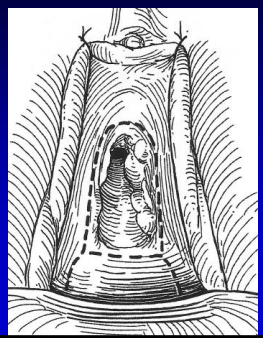


Bladder Neck Closure

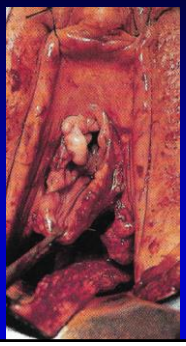
- Indicated for destroyed urethra
  - Chronic catheter (esp. NGB)
  - Other intractable incontinence
- Borderline cases treated with obstructing sling prior to closure.
- Combined with suprapubic tube or continent reconstruction.
- Closure at BLADDER NECK, not urethra

BNC--Destroyed Urethra

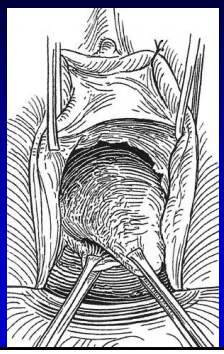


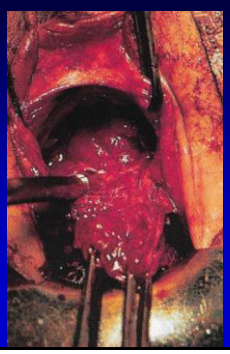


BNC—Dissect bladder flap

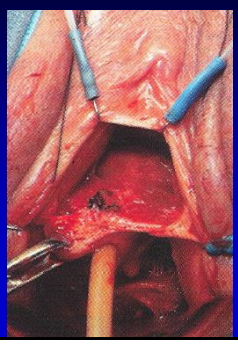


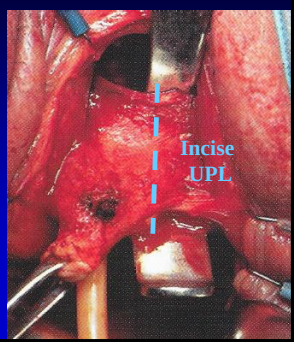
BNC—Urethra mobilized, attached



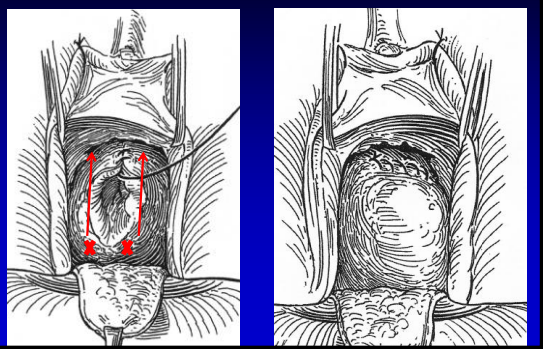


BNC—Detach Urethral Support

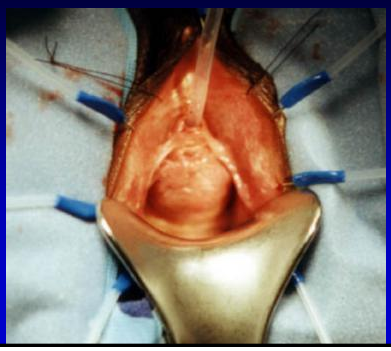




BNC—2 or 3 layers before skin



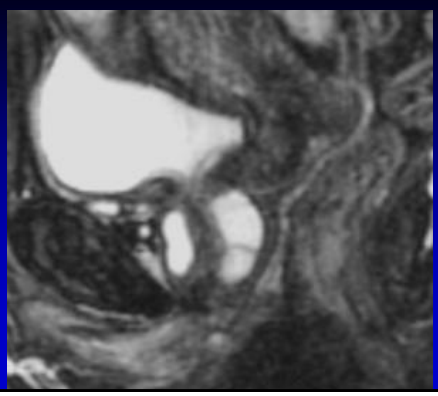
Urethral Diverticulum



Urethral Diverticulum

- Need to know:
  - Location
  - Size
  - Number
- Evaluation
  - Cystoscopy—only helpful if neck visualized
  - Voiding cystogram
  - Double balloon urethrogram
  - Translabial ultrasound
  - MRI (by far the best)

Urethral Diverticulum

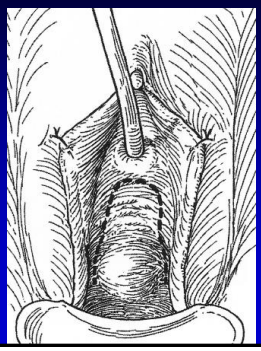


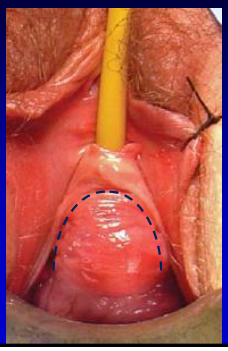
Urethral Diverticulum

All diverticuli are covered by fascia

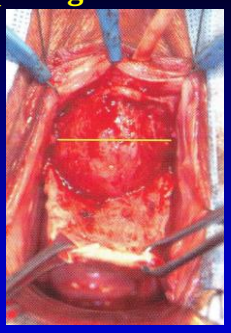
Recurrence due to leak into potential space?!

Urethral diverticulum



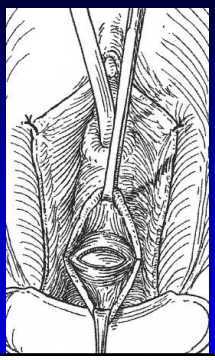


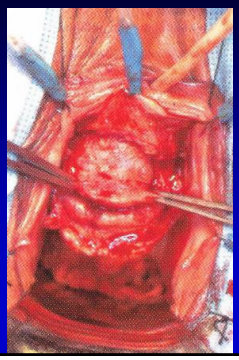
Dissect skin flaps exposing diverticulm



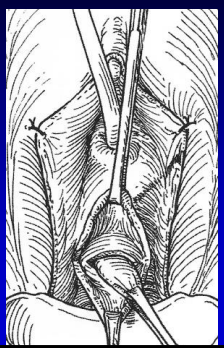
Now just slow down . . .

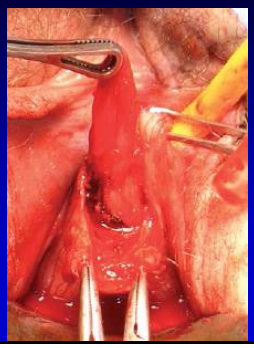
Incise fascia over diverticulum



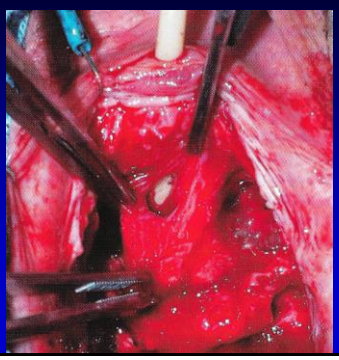


Dissect out the entire sac

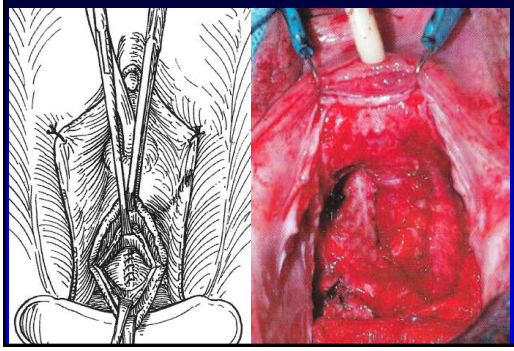




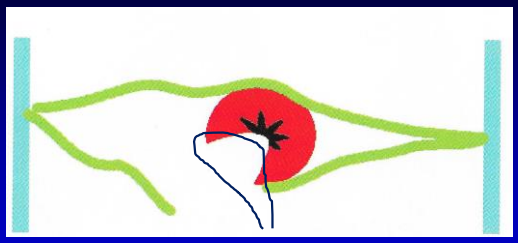
Excise the sac



Close the Urethra

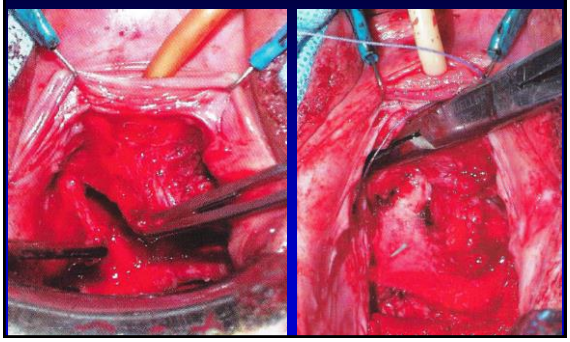


Where are we now?

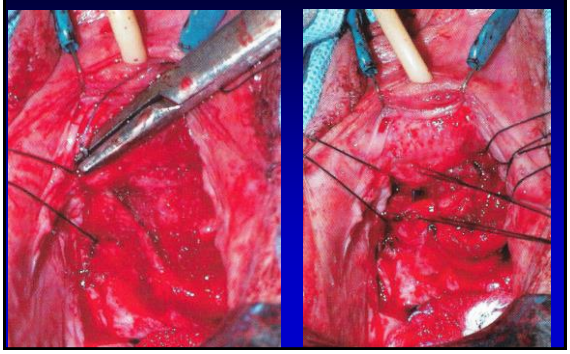


- Urethral closure along inadequate
- Repair the fascia and obliterate dead space

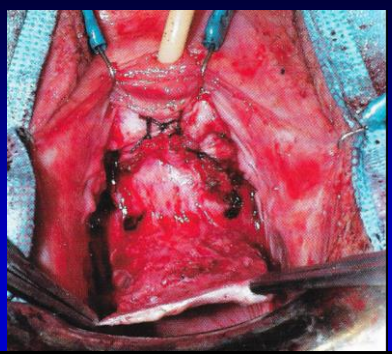
Fascial closure



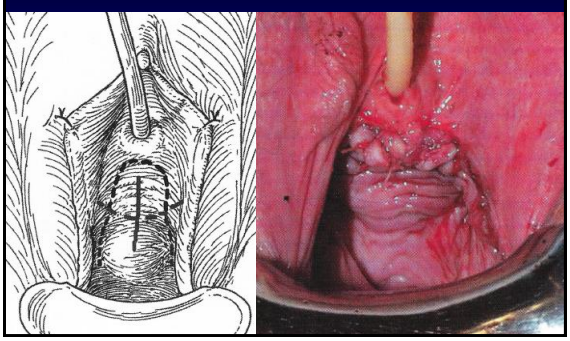
Fascial closure continued



Fascia Closed



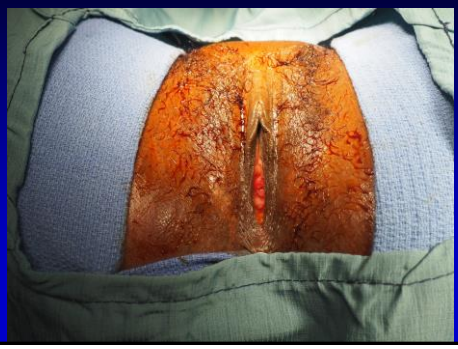
Skin Closed



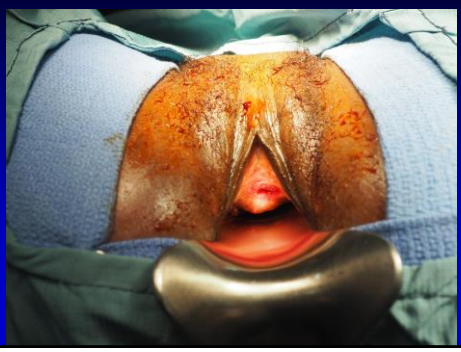
Neourethra

- Worst results of all urologic reconstructive surgery?!
- Results depend on indication, quality of tissues available, meticulous technique
- Options:
  - Bladder flap (abdominal or vaginal)
  - Vaginal flap
  - Local vaginal tissues

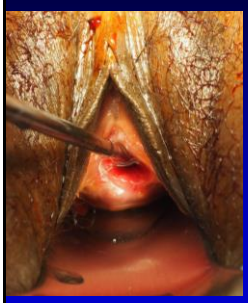
Is this a normal female?



Apparently Not

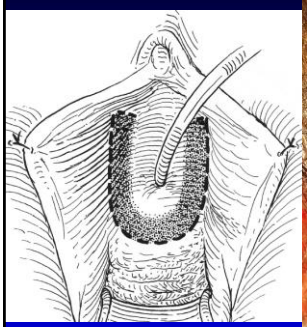


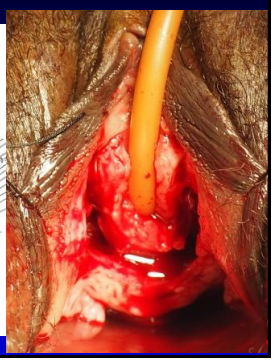
Neourethra



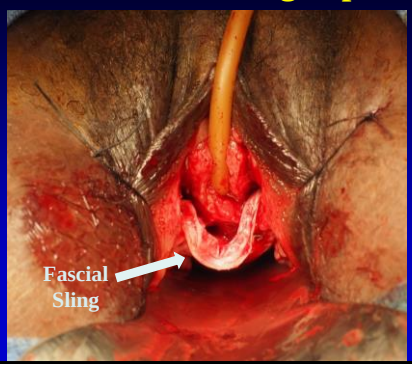
- Several techniques possible
- Does bladder neck have some competence?
  - Add sling procedure
- Tissue quality
  - Add Martius flap?
- Place suprapubic tube
- Position of ureters

Neourethra--Incision

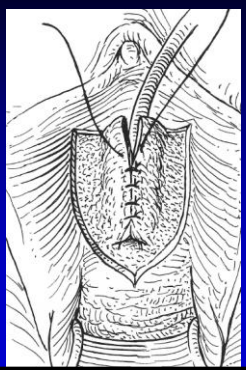


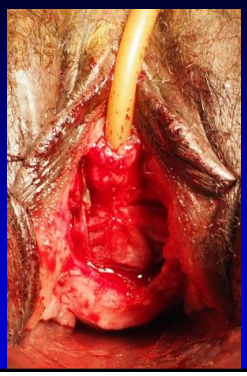


Neourethra—Sling in position

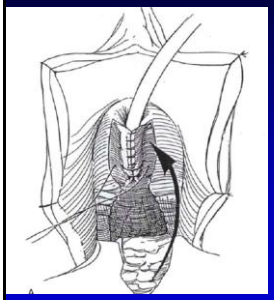


Neourethra—primary layer



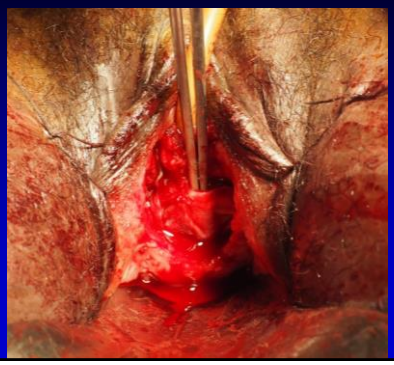


Neourethra—second layer

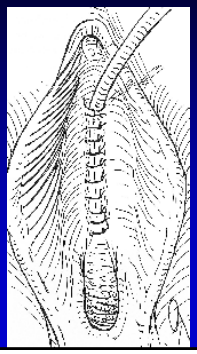


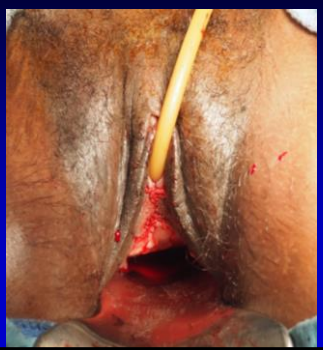
- Good technique if bladder neck intact
- Can add extra plicating sutures at bladder neck if questionable
- Our technique differs

Neourethra with sling

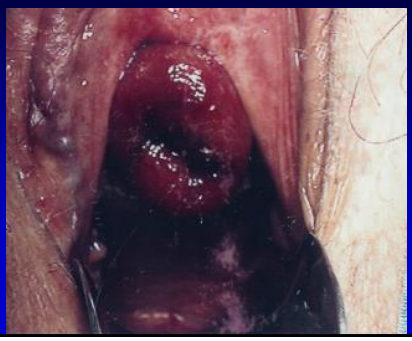


Neourethra--Completed





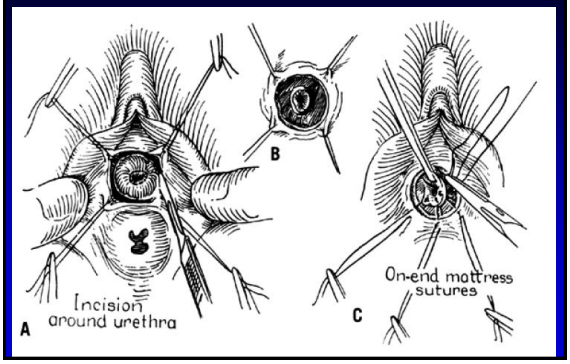
Urethral Prolapse



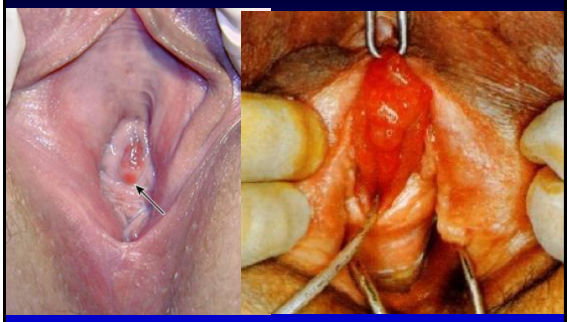
Urethral Prolapse

- Must be circumferential
- Most common pubertal girls, catheter related in older women
- US appears more common in AfroAmericans
- Sudden onset of pain
- Ischemia/necrosis
- Often treated surgically; can try estrogen + antibiotics + analgesics

Resection/Repair Urethral Prolapse



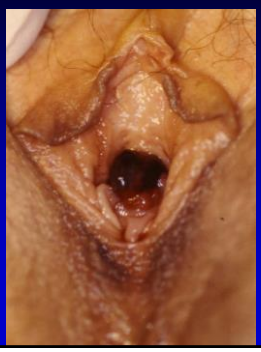
Urethral Caruncle



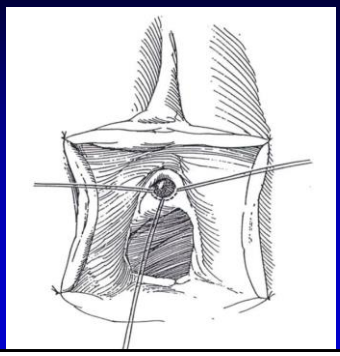
Urethral Caruncle

- Usually asymptomatic
- Can cause dysuria or bleeding/spotting
- Nearly always responds to topical estrogen
- Don't operate if possible
  - Persistent symptoms despite estrogen
  - Sudden necrosis (even then could wait)

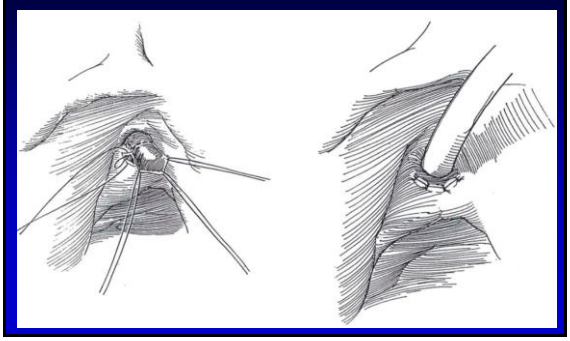
Necrotic Urethral Caruncle



Urethral Caruncle Excision



Urethral Caruncle Excision



Urethral Stricture

- Deliberately left this out
- Controversial issue, generally poor results
- If this turns out to be a significant problem it is worthy of a special trip, collaborative prospective trial

Urethral Stricture Requirements

- Facility with suprapubic catheters
- Contrast radiology/live fluoroscopy
- Flexible/rigid cystoscopy
- Instruments
  - Nasal speculums
  - Bougies
- Buccal graft harvest
- Commitment to follow-up

Urethral Stricture Treatment

- Management
  - Dilation followed by self-cath
  - Incision (rarely curative)
- Reconstruction
  - Vaginal flap
  - Free buccal graft