Urological Consults and Emergencies

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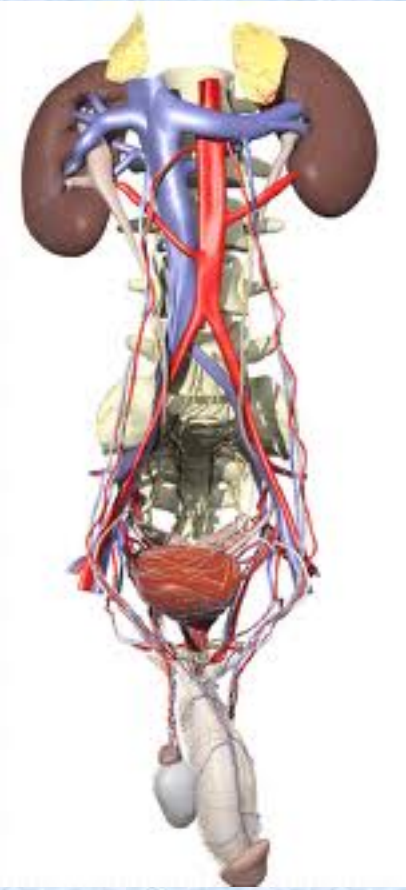
Goals

- Discuss urological topics
- Discuss workup
- Learn tx options
- Answer any questions pertaining to urology

TOPICS

- Hematuria (bleeding is bad)
- Acute Scrotum (torsion , fourniers and ingrown hairs)
- BPH/BOO
- Stones (infected or just hurtful)
- Paraphimos, penile fracture, priapism



Case #1

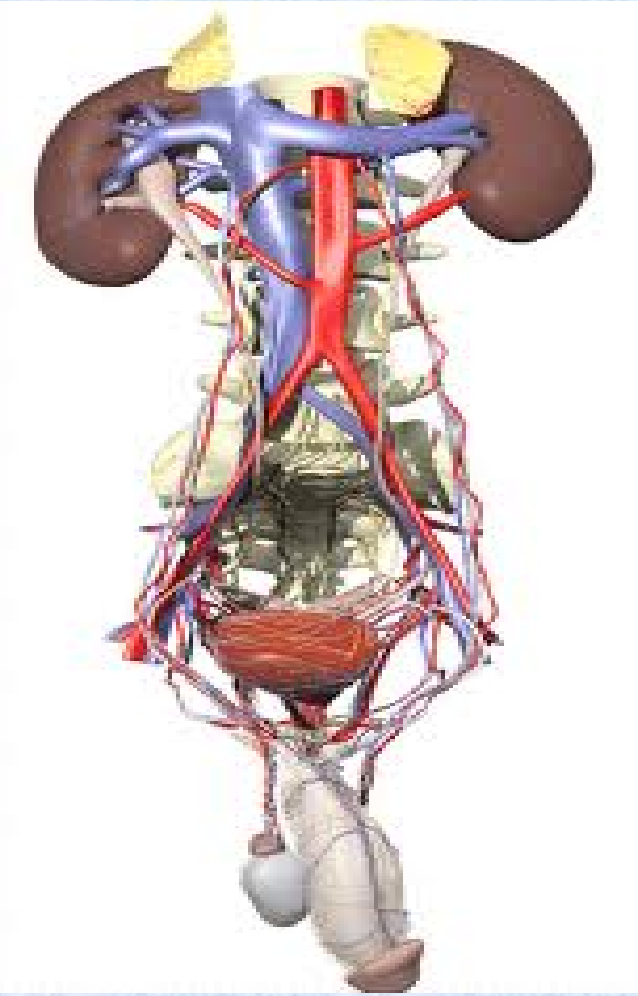
- A 60 year old with gross hematuria
- Several episodes of gross (visible), total (all through the urinary stream), painless hematuria.

Workup

- Hx: Ex smoker (50 pack years)
- Ex Texas Refinery Worker
- No ASA or thinners
- Exam: No masses
- DRE 50 g no masses
- Labs:
- UA 20 – 30 RBC – otherwise negative
- CBC
- CMP

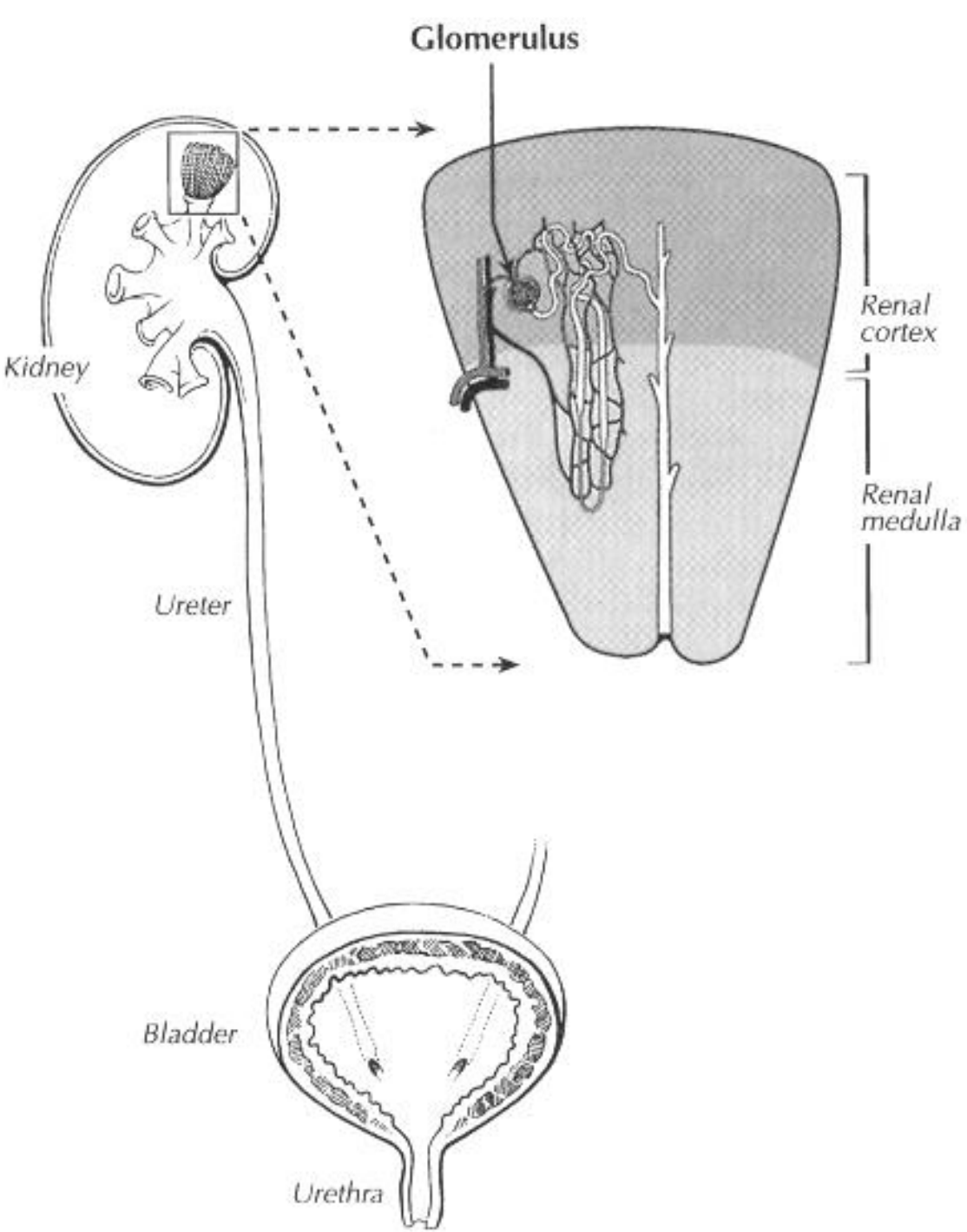
What Next?

- Upper and Lower Tract Evaluation
- Urine Studies
- Cx and cytology



Hematuria

- Red flag that demands careful attention and must not be ignored
- Defined as abnormal excretion of red blood cells (>3 RBF/hpf)
- Associated with multiple medical and surgical problems, ranging from minor incidental findings to urologic neoplasms
- Categorized into glomerular, non-glomerular, coagulopathy-related, trauma, and factitious causes


Glomerulus
Kidney
Renal cortex
Renal medulla
Ureter
Bladder
Urethra

Glomerular
IGA nephropathy (Berger's disease)
Postinfectious glomerulonephritis (poststrep, endocarditis, viral)
Glomerulonephritis caused by systemic disease
Vasculitis (lupus, Wegener's granulomatosis, polyarteritis)
Henoch-Schonlein Purpura (HSP)
Thrombotic Thrombocytopenic Purpura (TTP)
Hemolytic Uremic Syndrome (HUS)
Familial glomerulonephritis
Alport syndrome
Thin glomerular basement membrane disease
Fabry's disease
Nail-Patella syndrome
Rapidly progressive glomerulonephritis
Goodpasture's syndrome
Membranoproliferative glomerulonephritis
Subacute bacterial endocarditis
Exercise

Nonglomerular
Renal (tubulointerstitial)
Infection
Pyelonephritis
Tuberculosis
Tumor (renal cell carcinoma)
Interstitial nephritis (acute or chronic)
Drug-induced (penicillin, cephalosporin, diuretics, NSAIDs)
Infection (syphilis, toxoplasmosis, cytomegalovirus, Epstein-Barr)
Systemic disease (sarcoidosis, lymphoma, Sjogren's syndrome)
Papillary necrosis (secondary to prolonged NSAID use)
Familial
Polycystic kidney disease

Hematuria

- Most common presenting sign of urinary tract cancer or parenchymal renal disease
- Low threshold for urological workup

Hematuria

- Gross blood or clots in the urine generally prompt patient to seek medical attention
- Painless gross hematuria requires a complete urologic workup
- Patients with gross hematuria have 5x the number of life threatening conditions compared with microscopic hematuria

Hematuria

- Microscopic hematuria >3 RBC's/hpf
- Microscopic hematuria evaluations result in significant disease in 3.4 to 56% of individuals
- 0-26% discover of malignancy
- Wide ranges reflect differences in age and sex of patient population

Hematuria- History

- Silent or Painless
- Irritative voiding symptoms
- Colicky
- Onset and duration
- Associated pain
- History of trauma, catheterization, exercise
- Hematuria history

Hematuria- History

- Family history (DM, sickle cell, polycystic disease, stones)
- Cyclic
- Hematospermia
- Initial vs. terminal vs total
- Systemic symptoms
- Medications (NSAIDS, chemo, coumadin)

Hematuria- History

- Smoking history
- Occupational exposure to chemicals and dyes
- Radiation history
- History of gross hematuria
- Age>40yo
- Previous urological history
- UTI history

Hematuria- History

- UTI: dysuria, frequency, suprapubic discomfort, pyuria. 50% of kids
- Stones: acute, colicky pain, nausea and vomiting
- Cancer- *painless gross hematuria*

Hematuria- PE

- Fever and vital signs
- Abdominal Mass
- Flank pain
- Atrial fibrillation or murmur
- Urethral lesions
- Scrotal exam
- DRE and Vaginal exam

Hematuria- Labs

- UA- midstream or catheterized
- Urine cx
- CBC
- Chem 7
- Coagulation Panel
- Casts and proteinuria

Hematuria- Diagnostic studies

- Ultrasound
- IVP
- CT scans- IVP vs Urography
- MRI

Hematuria management

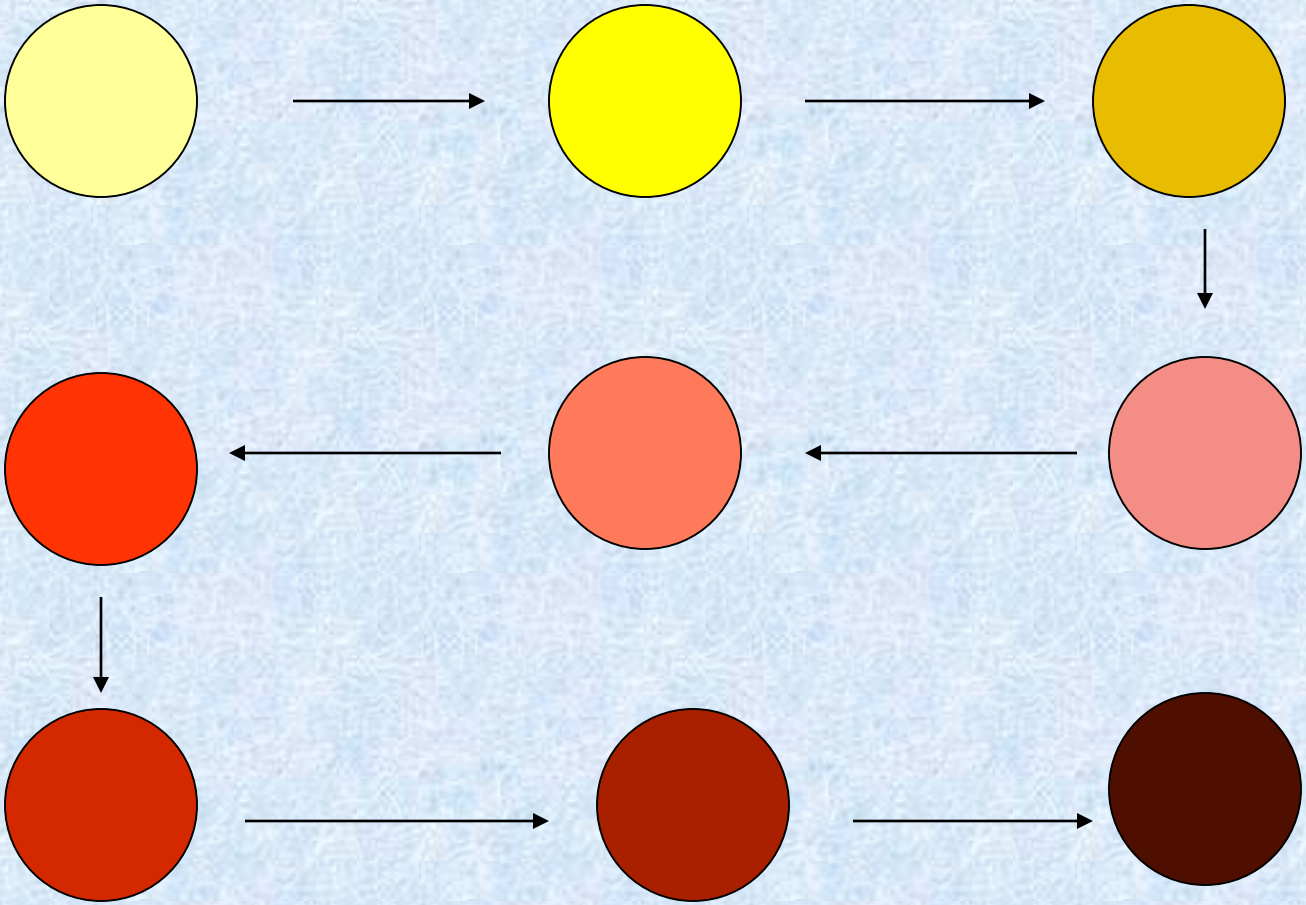
- Most patients with hematuria need urologic workup, especially if have risk factors
- Menstruation, exercise, infection follow up
- Remember that microscopic hematuria can be intermittent
- Complete GU workup includes upper tract studies first then cystoscopy
- If inpatient, can do upper tract studies then follow up for outpatient cystoscopy. Do not need consultation unless other issues involved

Flow diagram

Gross hematuria

- Rarely glomerular in origin
- 5x greater risk of malignancy
- Workup as instructed before
- Can range from slight discoloration to gross blood with clots

Gross hematuria- color



Gross Hematuria Differential

- Bladder/ renal cancer
- BPH
- Traumatic catheterization
- Excessive coagulation
- UTI
- AV fistula
- Bladder stones
- Trauma
- Radiation cystitis

Gross hematuria

- Visible urine is presenting symptoms in up to 85% of patients with bladder ca and 40% of renal ca

Gross hematuria

- Evaluate for clots
- Large bore catheter (22 Fr and above)
- Irrigate out clots
- Hints: two-way catheter, lidocaine urojet, >100 fluid
- Most of the time, that is all you need to do

Gross hematuria

- Murphy drip if still bleeding
- ***MUST HAVE ALL THE CLOTS OUT BEFORE STARTING MURPHY GTT**
- If starting murphy gtt or on gtt for >24 hours, call urology

Random thought

- Dark vs red clots
- Clumps vs stringy clots
- Irrigation amount
- Self TURP: PUT CATHETER BACK IN
- Call with any questions

Summary

- Gross hematuria not uncommon
- History/Exam/Labs/Studies
- Large differential but must rule out cancer
- IRRIGATE out all clots before Murphy gtt
- Two way then three way large bore catheter
- Urojet is your friend
- GU consult if any questions

Case #2

- 10 year old boy in ER with testicular pain

Workup

- Right testicular pain
- He couldn’t eat
- No scrotal injury
- No fever or dysuria

Exam: Right testis is about 2 – 3 times the size of the left, it lies high in the scrotum, the skin is red, and the right hemiscrotum is very tender.

Acute Scrotum

- Not an uncommon occurrence
- Although testicular torsion is one of the least common causes, it should be high on the differential because salvage rates correlate inversely with time to exploration

Acute Scrotum

- Detailed History
- Physical exam
- Studies
- Differential
- Management

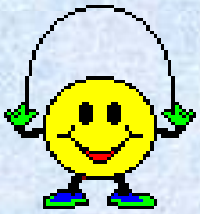
Acute Scrotum

- Onset of Pain
- Duration of Pain
- Radiation of Pain
- Scrotal history
- Associated symptoms
- Trauma

Acute Scrotum
PE

- How Patient Looks

- Initial examination important



Acute Scrotum
PE

Inspection

- Edema
- Erythema
- Inguinal fullness
- Urethral discharge
- Scrotal rash
- Size

Acute Scrotum
PE

Palpation

- Cremasteric reflex
- +/- Hernias
- Unaffected side first
- Testis and Cord
- Position, Lie, Axis

Acute Scrotum
PE

Palpation

- Size
- +/- Tenderness with location
- Blue dot sign
- Testicular manipulation
- DRE

Acute Scrotum
PE

Transillumination

- Darken room
- R/o hydrocele

Acute Scrotum

Studies

- Midstream urine analysis
- Gram stain
- Urine culture
- Pyuria and Bacteriuria
- Sexually active men

Acute Scrotum

Studies

- Ultrasound
- Color dopplar sensitivity 86-92%
- Operator dependent
- SHOULD NOT supplant clinical exam
- Flow: no vs low vs high
- Hydrocele, abscess, epididymitis, hernia
- False Negatives

Acute Scrotum

Differential

- Scrotal edema
- Testicular torsion
- Epididymitis
- Hernia
- Torsed testicular appendage
- Prostatitis
- Abscess
- Necrotizing fasciitis
- Nothing

Scrotal Edema

- Anasarca
- Heart Failure
- Obesity
- Ambulation
- Scrotal elevation
- Medical management

Testicular torsion

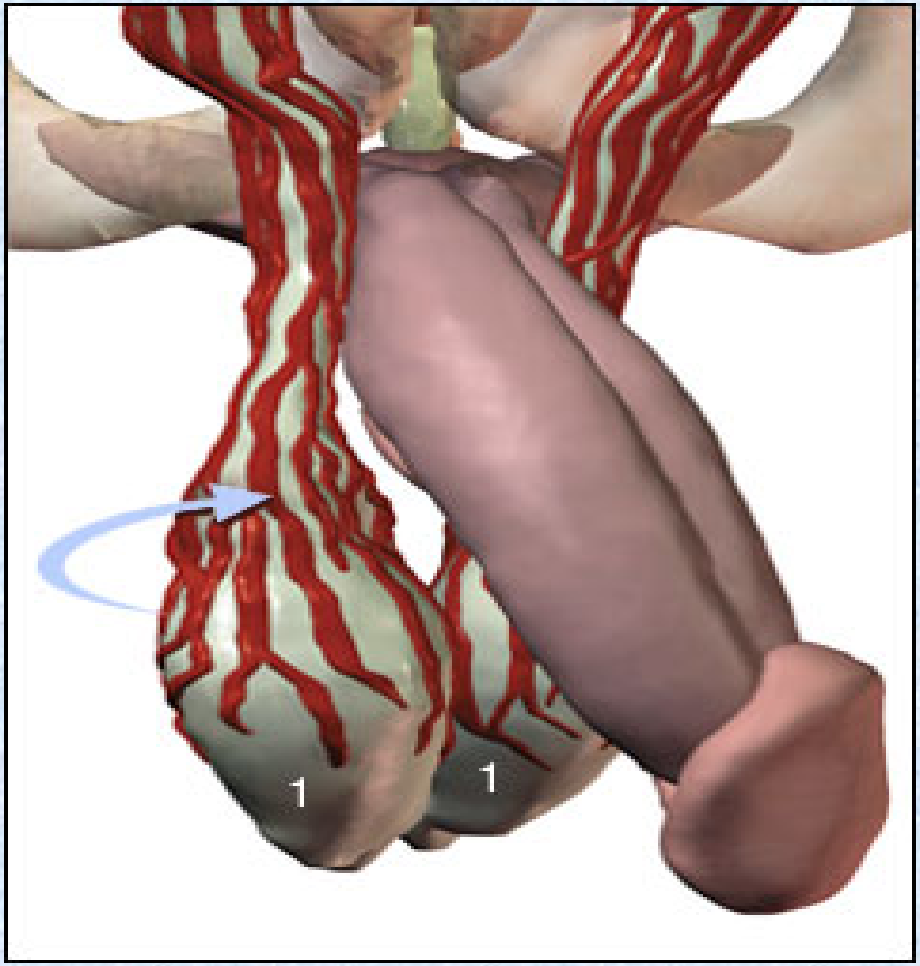
- Bimodal Distribution
- Acute onset
- Severe pain without relief
- Constitutional symptoms
- History of severe pain

Testicular torsion

- Absent cremasteric reflex
- High riding testicle
- Bell clapper deformity
- Axis change
- Pan tenderness
- US: low or absent flow

Testicular torsion

- Surgical emergency
- Salvage >90% if < 6hours
- <20% if >12 hours
- Scrotal exploration with bilateral ochidopexy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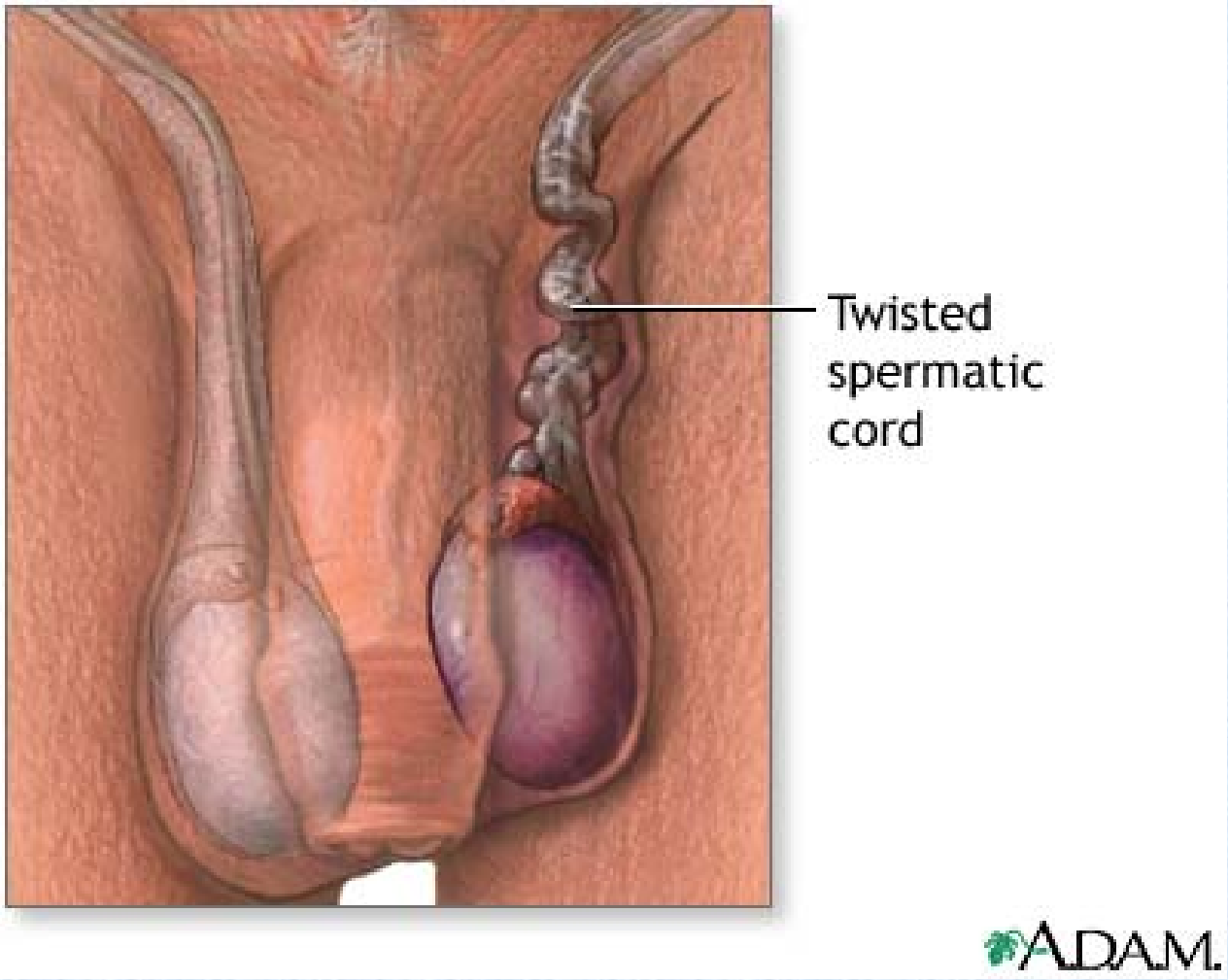
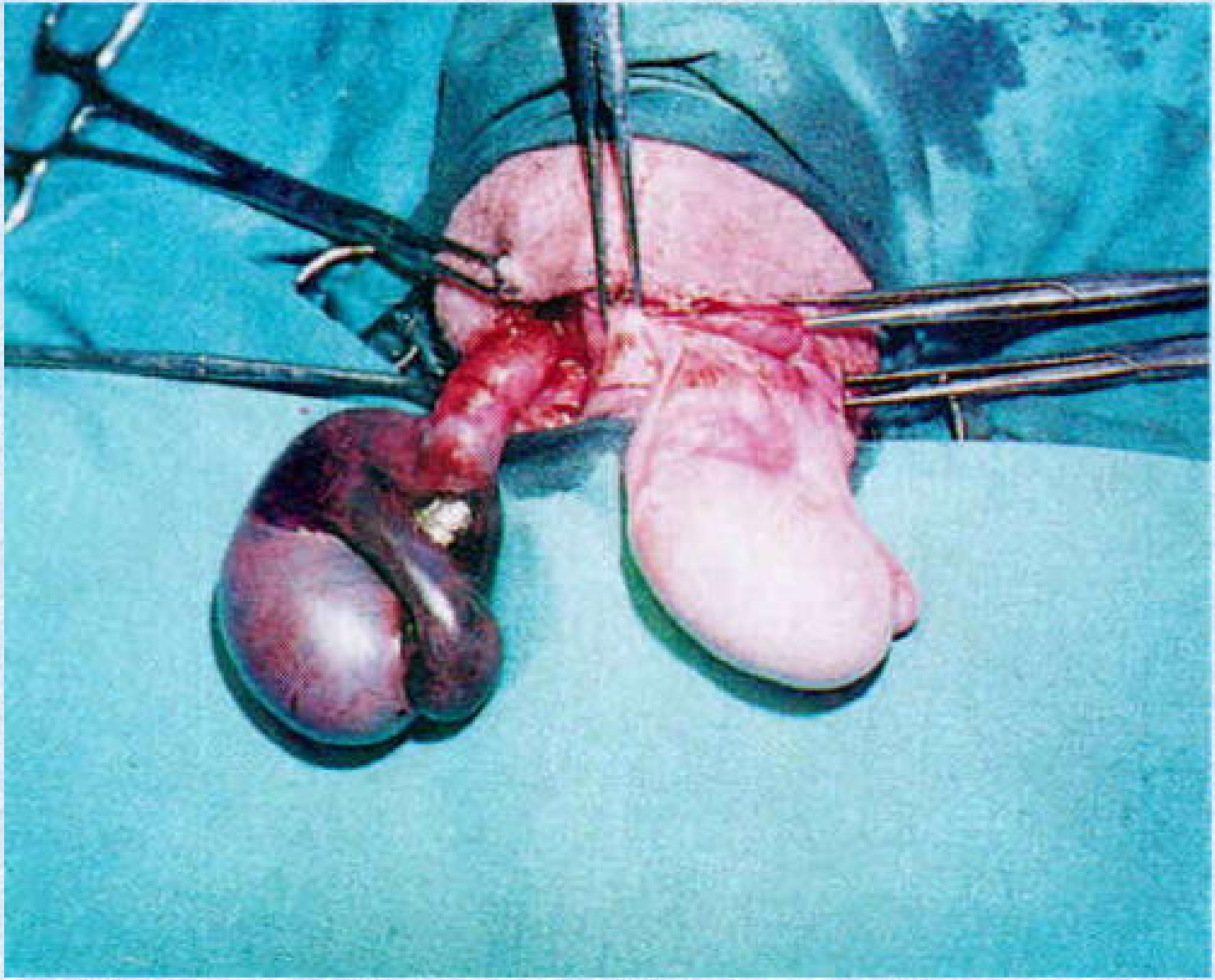

Twisted
spermatic
cord
A.D.A.M.

FIGURE 1

In testicular torsion, the testis is swollen and lies horizontal and higher than normal. Inset: Intraoperative view of testicular torsion.

All photos courtesy of Howard Kaplan, MD

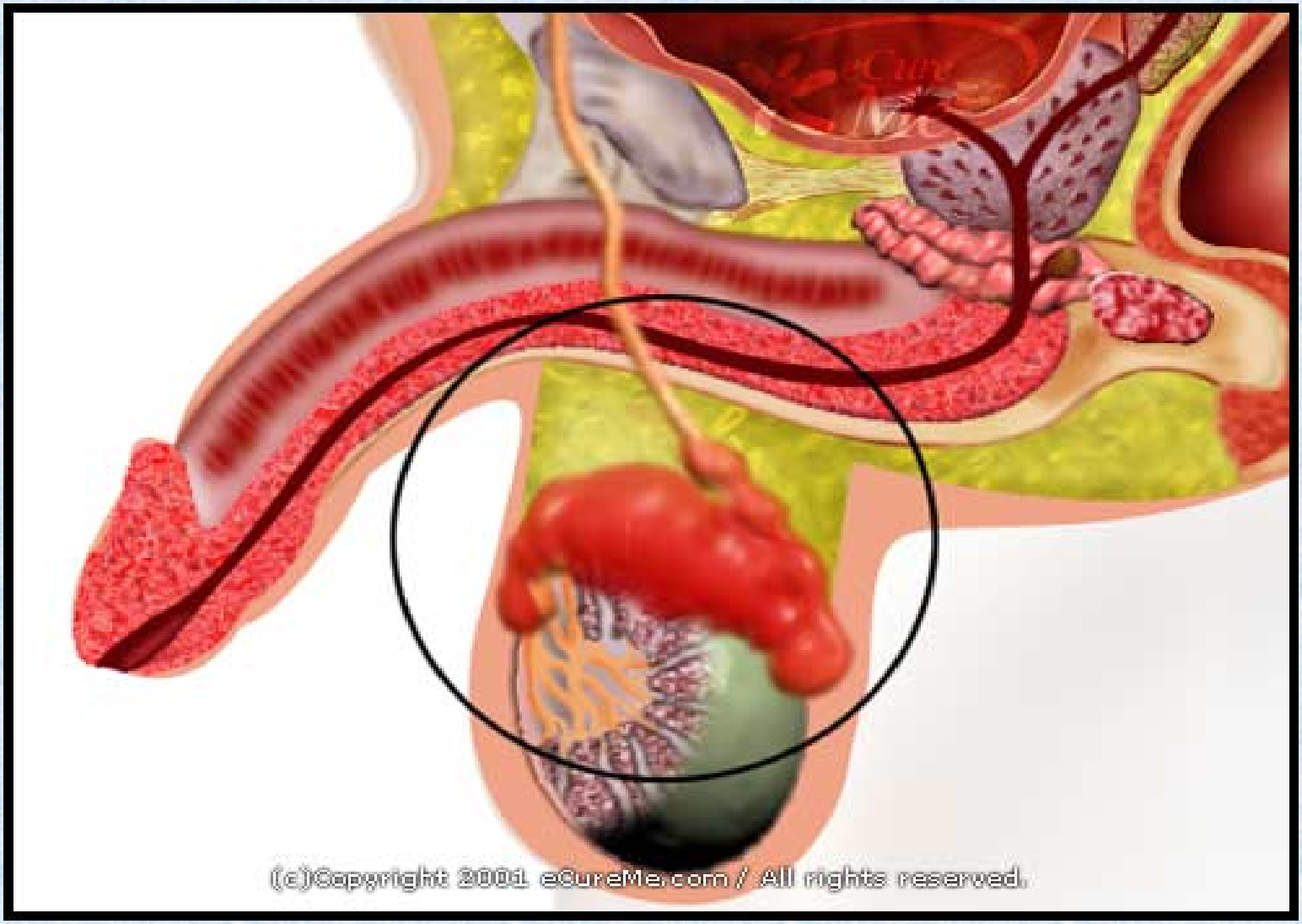


Epididymitis

- Usually secondary to inflammation or infection from GU tract
- Most common cause
- Gradual pain
- Fevers
- Epididymal and testicular pain
- “Prehns” sign

Epididymitis

- UA: pyuria and bacteruria
- US: normal or increased flow
- R/o abscess
- Tx: bedrest, abx, NSAIDs
- <35yo and sexually active: IM ceftriaxome and doxycycline (Gonorrhea & Chylamidia)
- >35yo Fluoroquinolones (E coli)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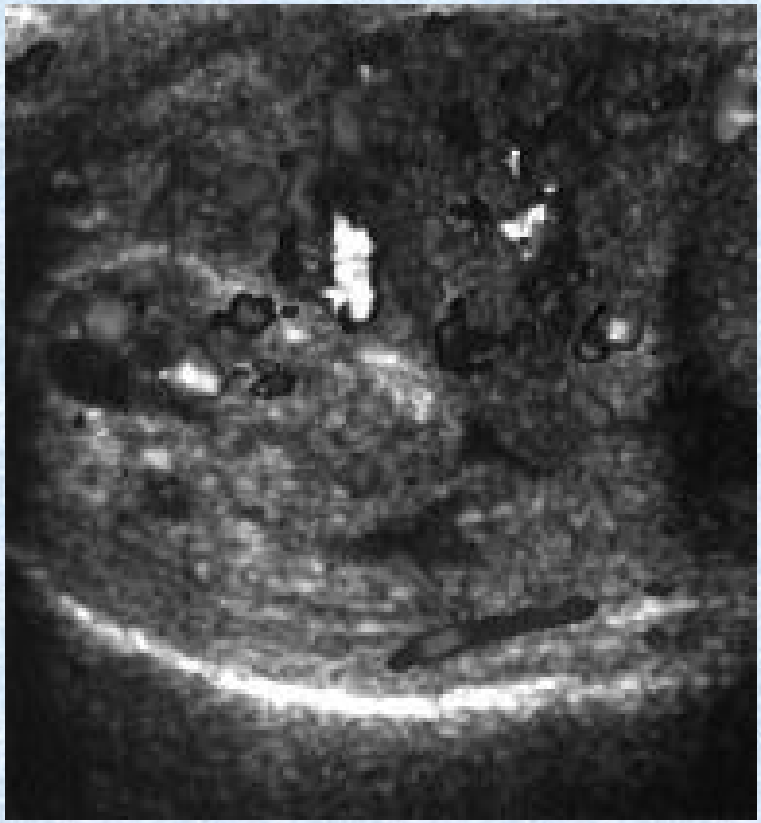
Florida STD/HIV
PREVENTION TRAINING CENTER


epididymitis (a complication of gonorrhea) www.healthac.org



Hernia

- R/o incarceration
- Pain up inguinal canal
- General Surgery consult

Torsed Appendage

- Rare in adults
- Gradual pain
- Blue dot sign
- Localized pain
- Tx: bedrest, NSAIDS, scrotal elevation

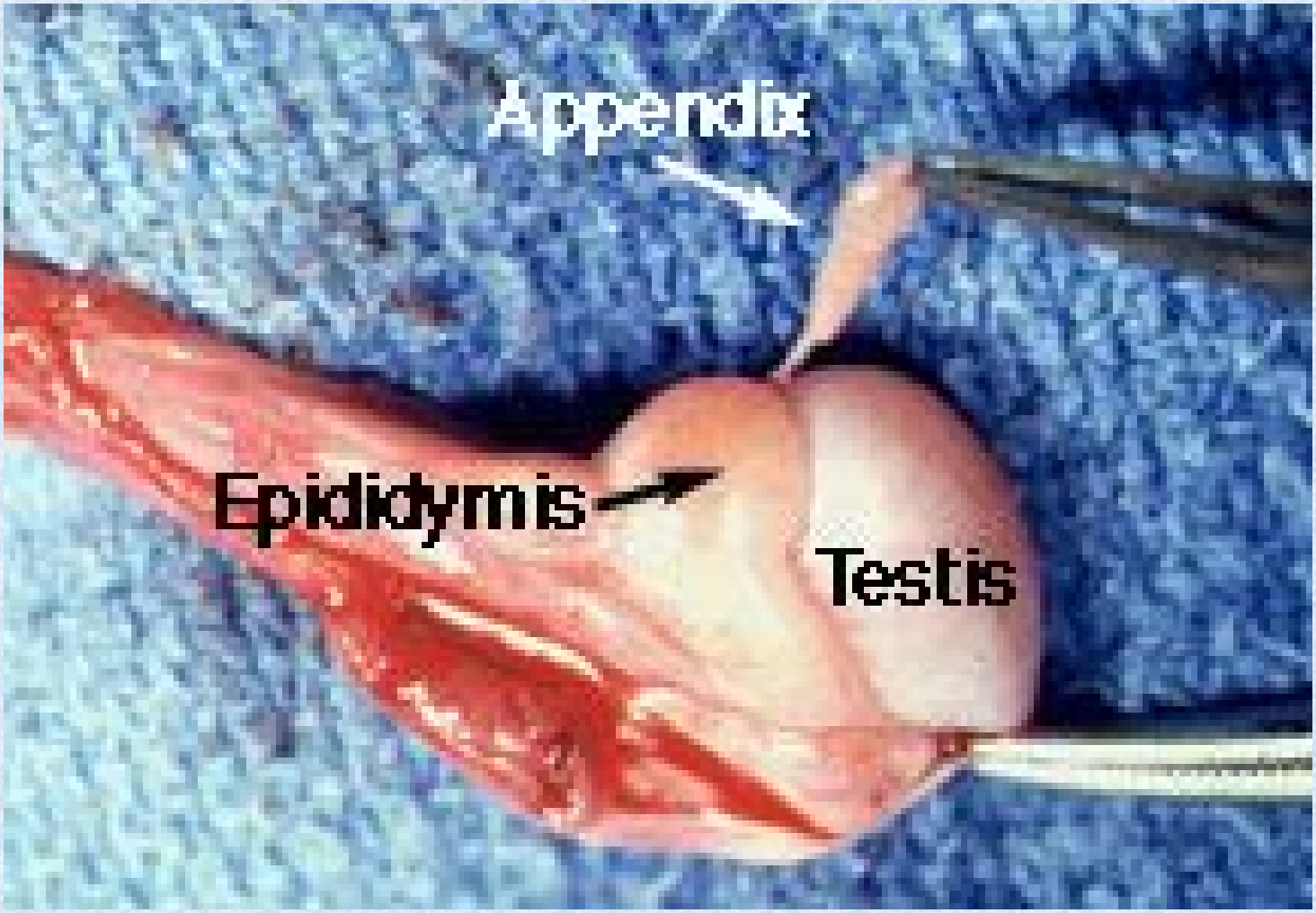
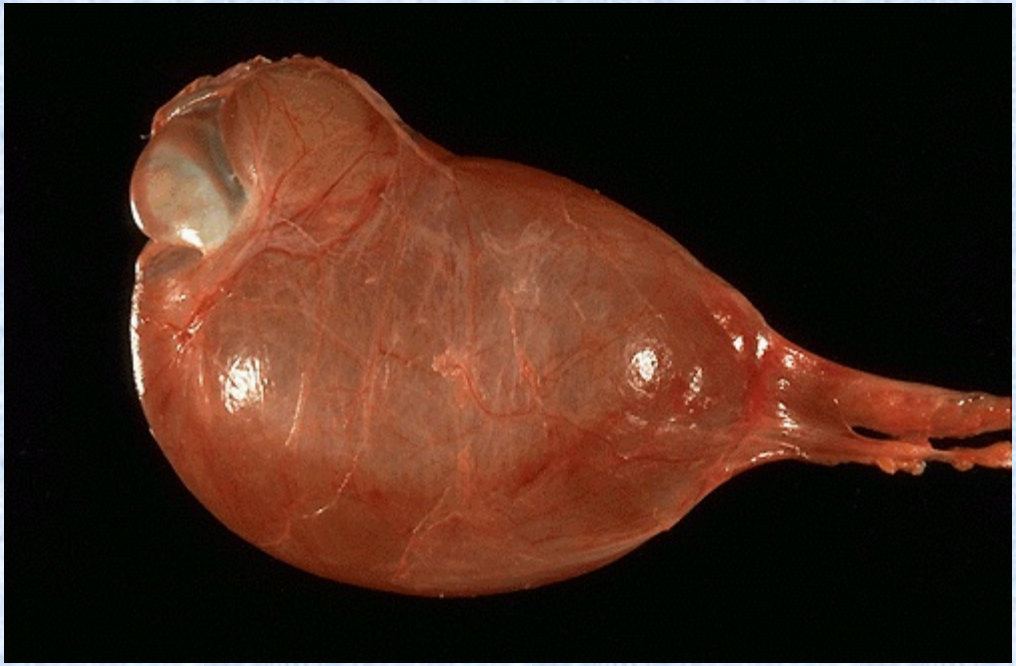

Appendix
Epididymis
Testis

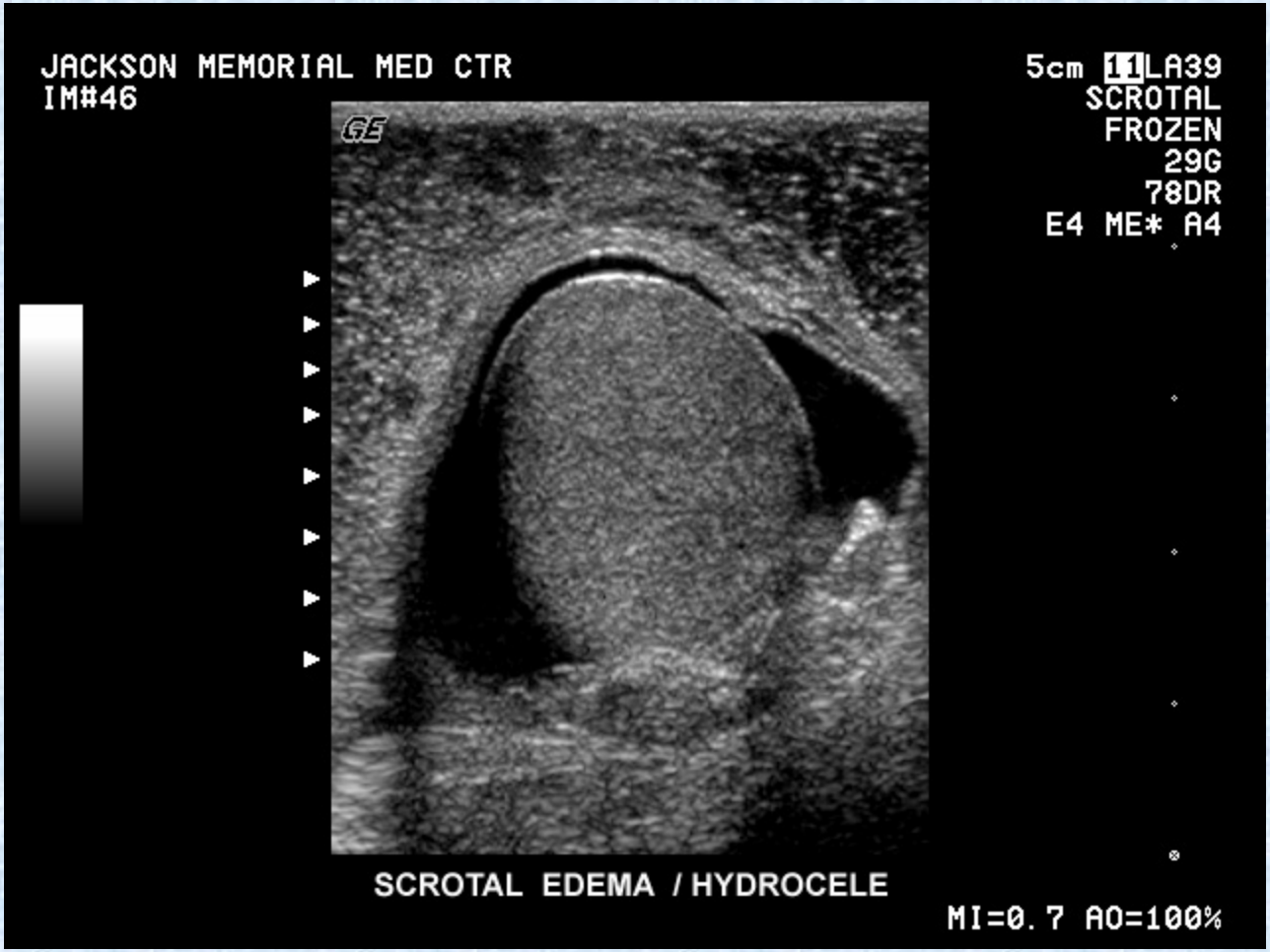
FIGURE 3

The so-called blue-dot sign (left, arrow) is a distinctive, although not universal, finding in a patient who has torsion of an appendix testis that has progressed to infarction. Right: Intraoperative view of torsion of an appendix testis.

Hydrocele

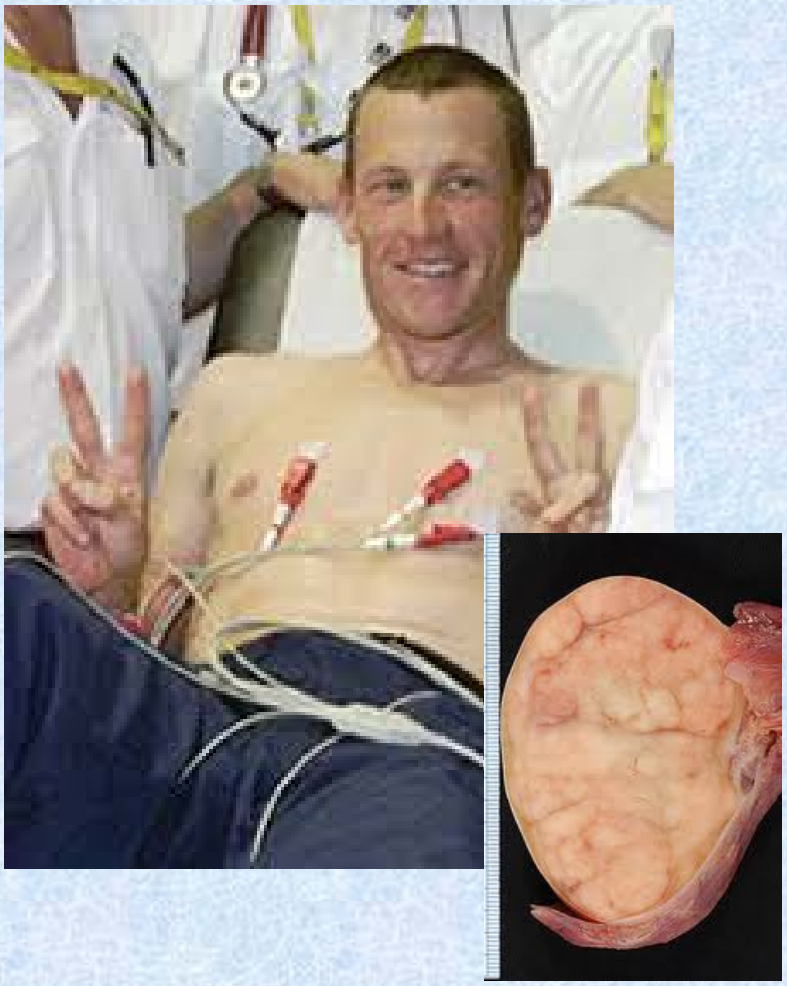
- Can be reactive to changes from other causes
- Must be able to palpate testicle if worried
- US if unclear
- If isolated hydrocele, surgical treatment only if pain, discomfort or affecting movement




JACKSON MEMORIAL MED CTR
IM#46
5cm 11LA39
SCROTAL
FROZEN
29G
78DR
E4 ME* A4
GE
SCROTAL EDEMA / HYDROCELE
MI=0.7 AO=100%

TESTICULAR CANCERS

- 15-34
- Type:
  - Yolk sac
  - Seminoma
  - Spermatocytic seminoma
- Exam, Serum markers
- Rad orch and XRT/RPLND, Chemo



Abscess

- Tenderness
- Fever
- Erythema
- Immunocompromised
- Discharge
- US: if epididymitis not improving
- I&D of scrotum with ABX

Summary

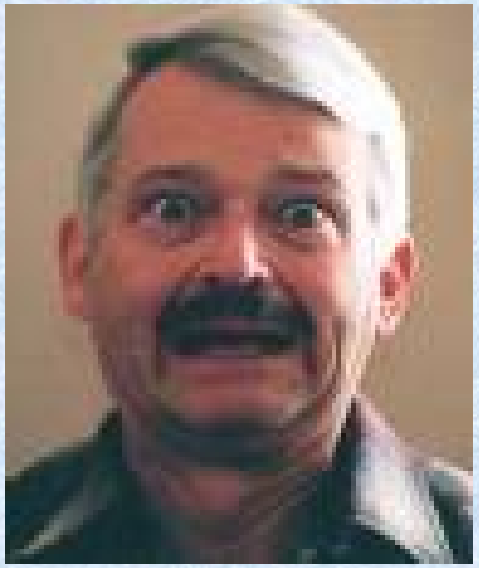
- Acute Scrotal Pain requires urgent evaluation
- Must rule out torsion
- Good history and physical exam
- US if needed
- GU consult if unsure

Case #3

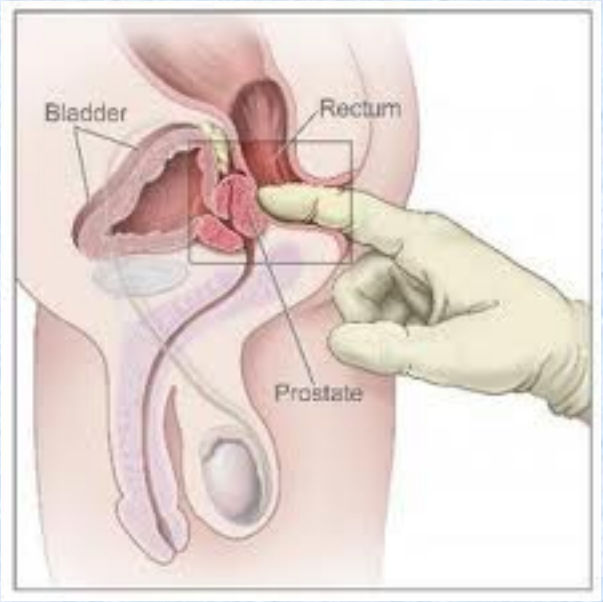
- A 60 year old man
- C/o frequency, nocturia and dribbling
- Dimished urine flow

Urinary Retention

- Typical for hospitalized patients
- Constipation
- Limited activity
- Narcotics
- Recent Surgery
- Urinal



- LUTS
- Obstructive symptoms (hesitancy, weak flow, etc.)
- Irritative symptoms (frequency, urgency, etc.) and
- Bother (the degree to which our man is bothered).



- DRE
- Bowel function (FOS)
- Sacral innervation (anal sphincter)
- Equivocal: urodynamics – as simple as an uroflow and post void residual (PVR) or more invasive like cystometrics and pressure flow studies.

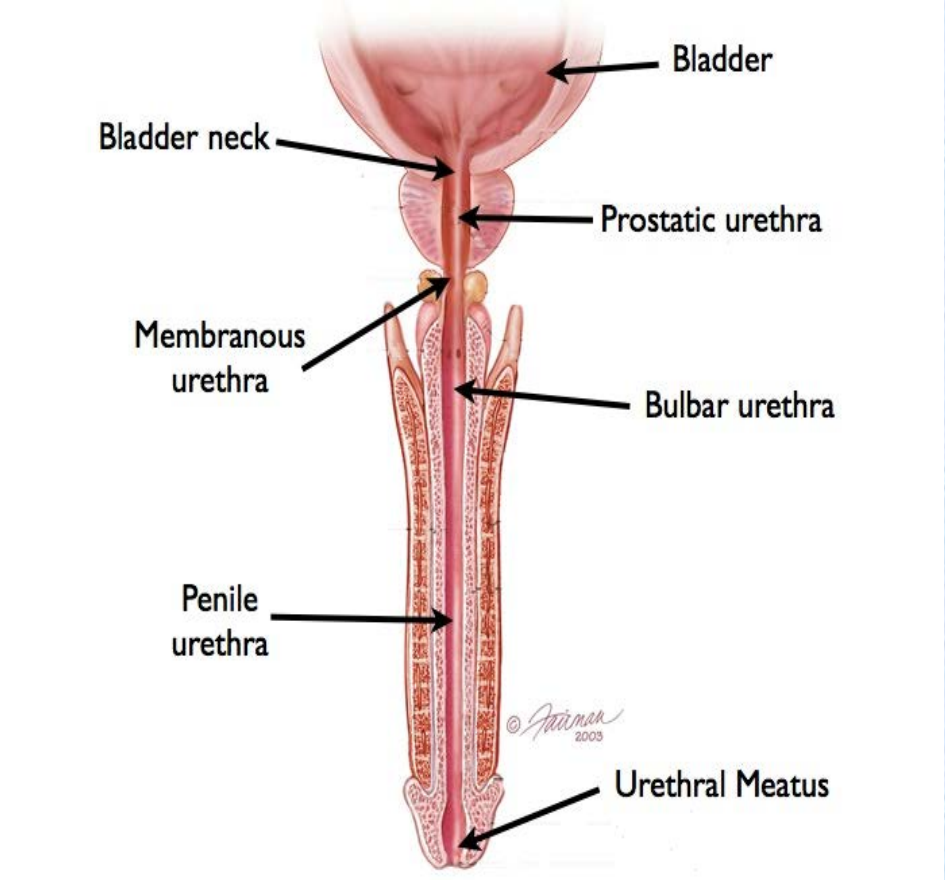
Obstructive Uropathy

- Anatomy
- Innervations
- Mechanisms

- BPH
- Stricture
- BNC
- Stones
- Pca or Bladder Cancer
- Foreign Object

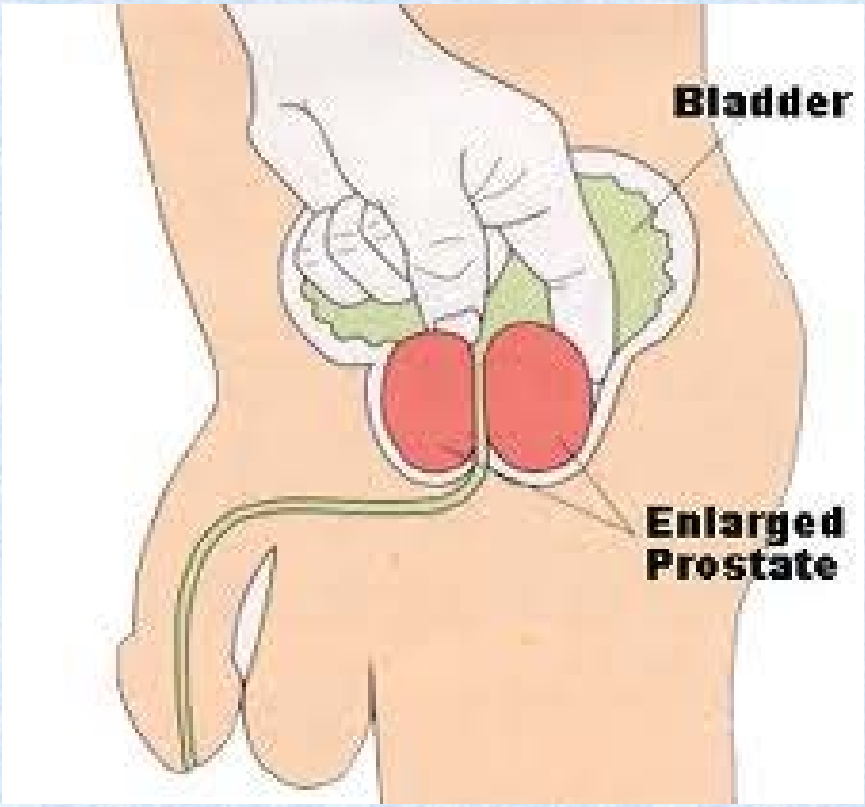
Obstructive Uropathy

- Functional
  - Neurologic
  - Decompensation
  - Dysfunctional Voiding



WORKUP

- HX
- PE
- LABS
- STUDIES
  - PVR
  - URODYNAMICS
  - CYSTO
  - IMAGING



Obstructive Uropathy

ANTICHOLINERGICS

TRICYCLIC ANTIDEPRESSANTS

PROSTOGLANDIN INHIBITORS

CALCIUM CHANNNEL BLOCKERS

BETA ADRENERGIC AGONIST

SYMPATHOMIMETICS

Ephedrine

pseudoephedrine

amphetaminemethamphetaminemethyl phenidate (Ritalin)

lisdexamfetamine (Vyvanse)

cocaine (found in Erythroxylum coca, Coca)

cathinone (found in Catha edulis, Khat)

cathine (also found in Catha edulis)

BPH

- Benign Prostatic Hyperplasia
- (1) direct bladder outlet obstruction (BOO) from enlarged tissue (static component) and (2) from increased smooth muscle tone and resistance within the enlarged gland (dynamic component).

- Traditionally, the primary goal of treatment has been to alleviate bothersome LUTS that result from prostatic enlargement. More recently, treatment has additionally been focused on the alteration of disease progression and prevention of complications that can be associated with BPH/LUTS.

- A variety of pharmacologic classes are employed including alpha-adrenergic antagonists (alpha-blockers), 5-alpha-reductase inhibitors (5-ARIs), anticholinergics and phytotherapeutics. Choosing the correct medical treatment for BPH is truly complex and ever-changing.

LUTS

- **LUTS include storage and/or voiding disturbances common in aging men. Storage symptoms are experienced during the storage phase of the bladder and include daytime frequency and nocturia; voiding symptoms are experienced during the voiding phase. LUTS may be due to structural or functional abnormalities in one or more parts of the lower urinary tract that comprises the bladder, bladder neck, prostate, distal sphincter mechanism, and urethra. Of note, LUTS may result from abnormalities of the peripheral and/or central nervous systems that provide neural control to the lower urinary tract. LUTS may also be secondary to cardiovascular, respiratory or renal dysfunction or disease. Thus, this disease entity is particularly complex to evaluate, survey and treat.**

- The **overactive bladder syndrome is defined as urgency with or without urge incontinence, usually with frequency and nocturia.**
- **Detrusor overactivity is a urodynamic observation characterized by involuntary detrusor contractions during the filling phase. These contractions may be spontaneous or provoked.**

- If the initial evaluation demonstrates the presence of LUTS associated with results of a digital rectal exam (DRE) suggesting prostate cancer, hematuria, abnormal prostate-specific antigen (PSA) levels, recurrent infection, palpable bladder, history/risk of urethral stricture, and/or a neurological disease raising the likelihood of a primary bladder disorder, the patient should be referred to a urologist for appropriate evaluation before advising treatment. Baseline renal insufficiency appears to be no more common in men with BPH than in men of the same age group in the general population.

Tx

- Behavioral Modification
- Lifestyle changes
- Medical Therapy
- More aggressive intervention

- **Watchful Waiting**
- **Medical Therapies**
- *Alpha-Blockers*
- - Alfuzosin
- - Doxazosin
- - Tamsulosin
- - Terazosin
- - Silodosin*

- *5- Alpha-reductase inhibitors (5-ARIs)*
- - Dutasteride
- - Finasteride
-

- *Combination Therapy*
- - Alpha blocker and 5-alpha-reductase inhibitor
- - Alpha blocker and anticholinergics

- *Anticholinergic Agents*

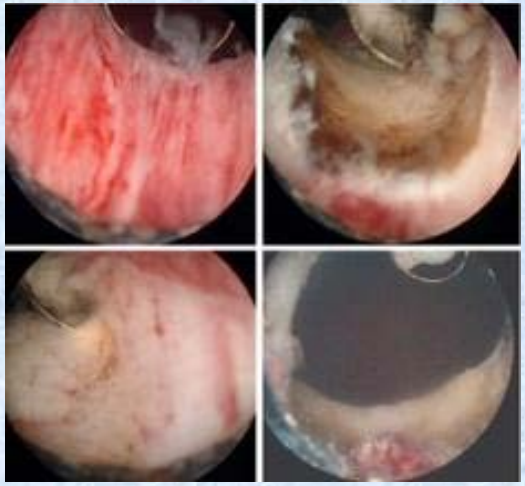
- **Minimally Invasive Therapies**
- - Transurethral needle ablation (TUNA)
- - Transurethral microwave thermotherapy (TUMT)
-
- **Surgical Therapies**
- - Open prostatectomy
- - Transurethral holmium laser ablation of the prostate (HoLAP)
- - Transurethral holmium laser enucleation of the prostate (HoLEP)
- - Holmium laser resection of the prostate (HoLRP)
- - Photoselective vaporization of the prostate (PVP)
- - Transurethral incision of the prostate (TUIP)
- - Transurethral vaporization of the prostate (TUVP)
- - Transurethral resection of the prostate (TURP)

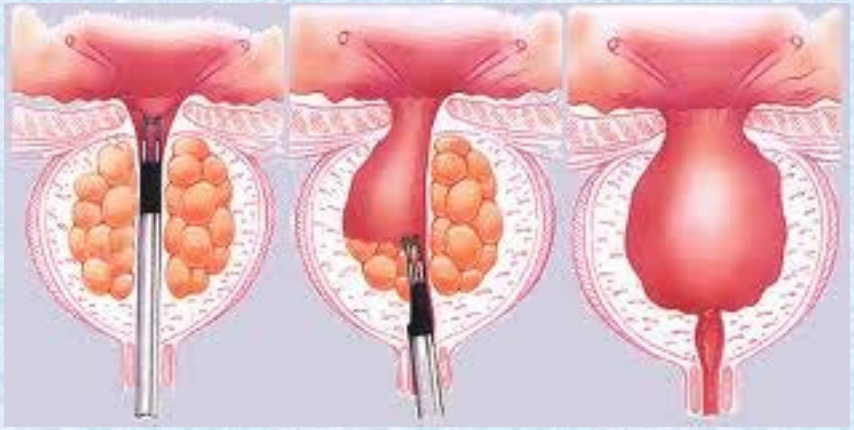
TREATMENT OPTIONS

WATCHFUL WAITING

MEDICATIONS

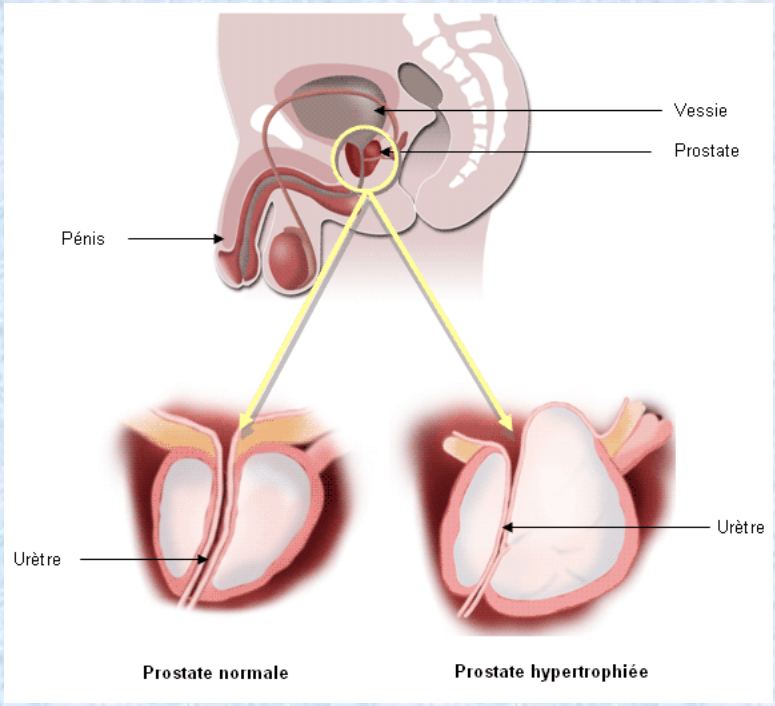
SURGERY





Urinary Retention

- Self catheterizations
- Foley catheterization
- Laser PVP vs TURP



Urinary Retention

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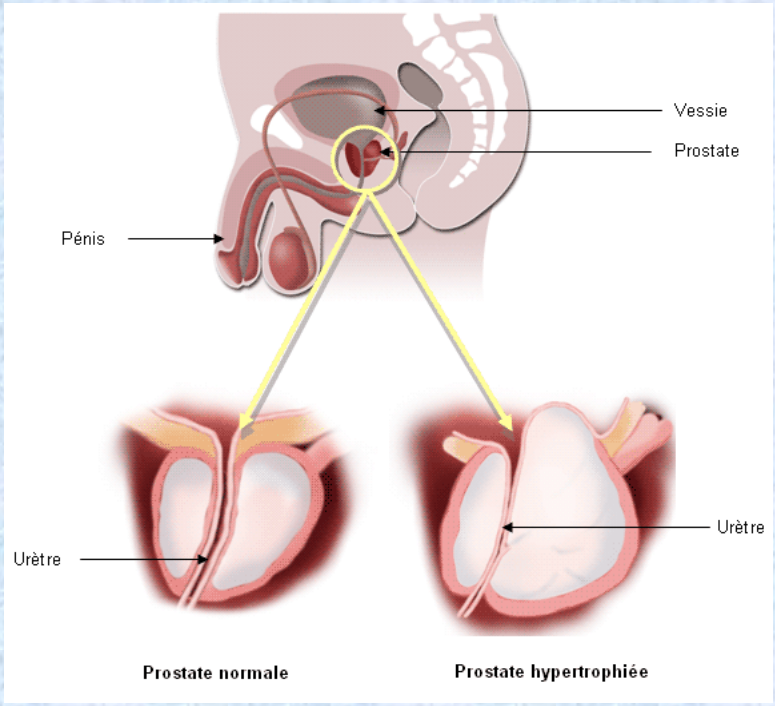
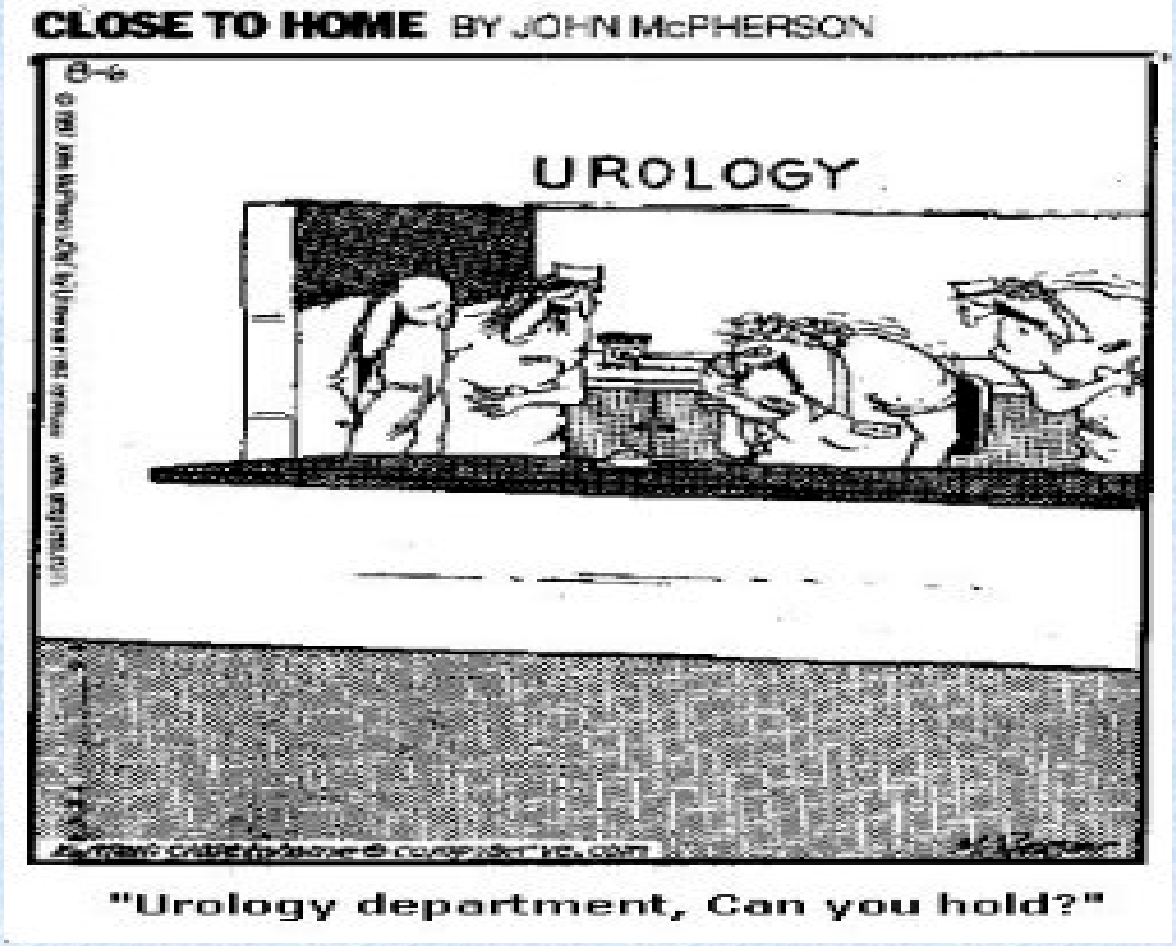


Inability to get the catheter in



Inability to get catheter in
Female

- Older females
- Retracted urethra vs stenotic meatus
- Stenotic: 2%lidocaine and firm catheter
- Retracted: slide finger across anterior vagina with foley on top
- Exposure important: use help

Inability to get catheter in
Males

- Detailed history IMPORTANT

- Urology history (BPH, strictures, prostate surgery, bladder neck contractures, pelvic trauma, difficult catheterizations)

Inability to get catheter in
Males

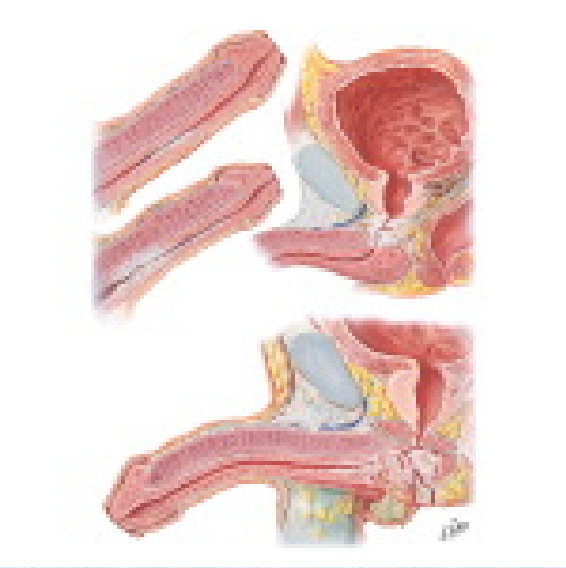
- GU team is not a catheter service!!!!
- Must make attempts
- Whom attempted catheterization
- How many attempts
- Gross blood
- How far catheter went in
- Irrigation

Problem#1: Can't see penis

- Scrotal edema/ obesity
- Key is exposure
- Lift penile, push down edema
- Palpate meatus
- Use finger as a guide
- Combination of exposure, patience, luck and skill

Problem#2: Can't get into meatus

- Meatal stenosis
- Lidocaine urojet
- Hemostat
- Small but firm catheter



Problem#3: goes in initially then stops

- Urethral stricture
- Use small catheter: 12-14Fr
- Lidocaine urojet
- Patients should always be supine

Problem#4: wont get past prostate

- False passage: usually from patient not lying flat, excessive force, not enough lubrication
- BPH
- Bladder Neck Contracture

Problem#4: wont get past prostate

- Supine
- 2% lidocaine urojet
- Coude catheter- 14Fr
- Effort and patience

Catheter: Random thoughts

Irrigate catheter if unsure: 120cc

Long catheter sign

Urinary sphincters

Self catheter removals

Prostatitis

- GU great mimicker
- Pyuria
- Midstream urethral discharge
- Boggy, tender prostate
- 4 week fluoroquinolone and NSAIDS

PROSTATITIS

- ACUTE OR CHRONIC
- DX
- SEPSIS
- TX
- OTHER CONFOUNDING CONDITIONS

Priapism

- Priapus: God of fertility
- Painful condition of penile erection that persists beyond or is unrelated to sexual stimulation
- Urologic emergency as intreated, it may lead to irreversible penile ischemia, necrosis, and scarring of intracavernosal erectile tissue

Priapism

- Ischemic vs non-ichemic
- High vs low flow
- Bimodal distribution
- Four hour duration

Priapism
Low flow

- Compartment syndrome
- Occlusion of venous outflow
- Cessation of arterial inflow
- Acidosis and increased penile pressure
- Failure of detumescence
- Pain, necrosis and fibrosis

Priapism
High Flow

- Unregulated increased arterial inflow
- Most commonly form ruptured cavernosal artery
- Secondary to perineal or direct penile trauma
- No acidosis or pain
- Upwards of 6 month delay
- Not a urological emergency

Priapism
Etiology

- 50% Idiopathic
- Intracavernosal injections
- Psychiatric medication (clozapine)
- Antidepressants (trazodone)
- Antihypertensives (hydralazine)
- Drugs (cocaine)
- Hematological (SS, leukemia)
- Neoplastic or neurologic: rare

Priapism
Evaluation

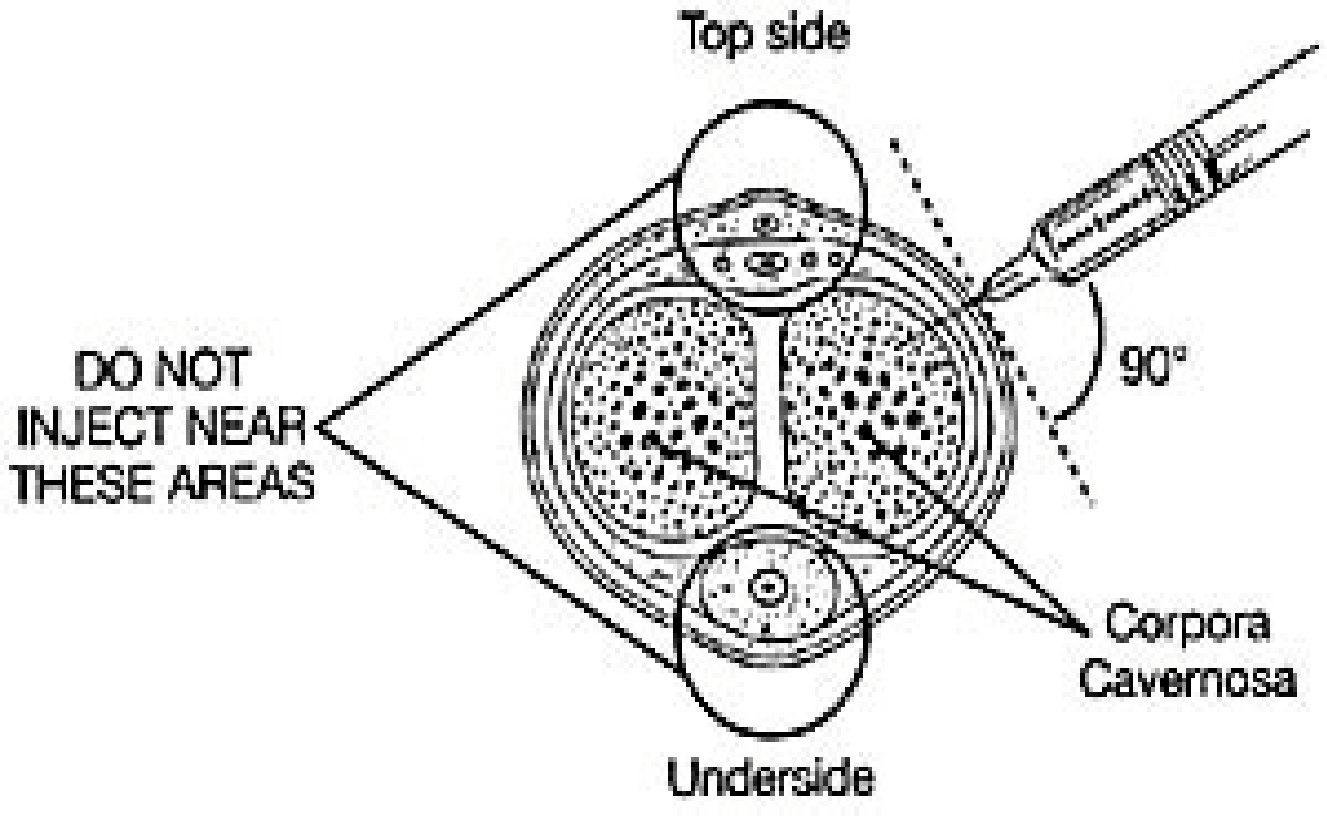
- Duration and quality of erection
- Pain
- Inciting factors
- Medication and drug use
- Sickle cell and hypercoagulable states
- Trauma

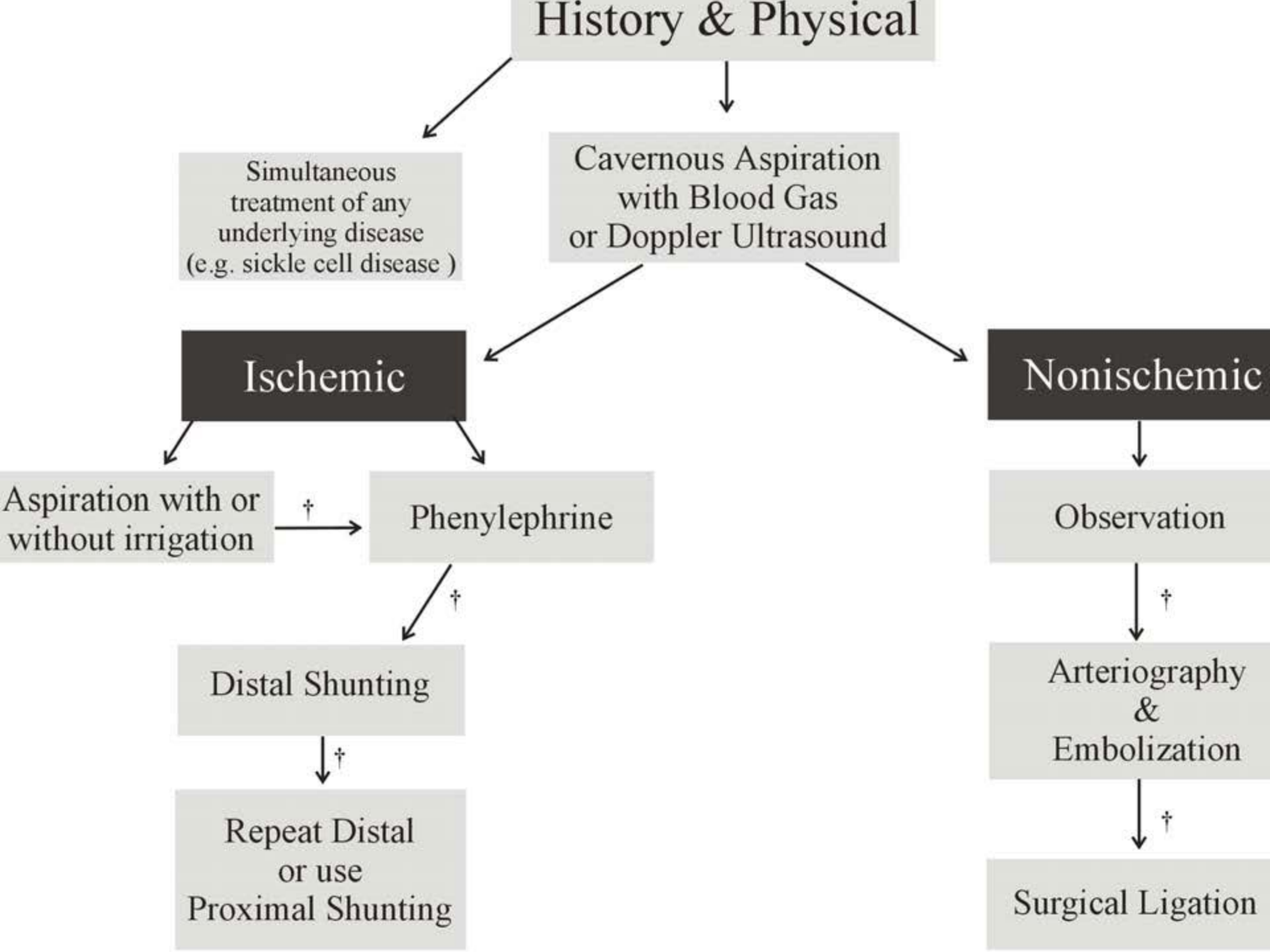
Priapism
Evaluation

- Erectness
- Perineal bruising/lymphadenopathy
- Neurological evaluation
- Aspiration (ischemic, low pH & O_2, high CO_2)
- CBC, electrolytes, sickle cell prep
- Urine tox

Priapism
Management

- Aim at primary cause of priapism
- Relieve pain and prevent damage
- Step wise approach
- Non ischemic vs ischemic


Top side
DO NOT
INJECT NEAR
THESE AREAS
90°
Corpora
Cavernosa
Underside


History & Physical
Simultaneous treatment of any underlying disease (e.g. sickle cell disease)
Cavernous Aspiration with Blood Gas or Doppler Ultrasound
Ischemic
Nonischemic
Aspiration with or without irrigation
†
Phenylephrine
†
Distal Shunting
†
Repeat Distal or use Proximal Shunting
Observation
†
Arteriography & Embolization
†
Surgical Ligation

Priapism
sickle cell anemia

- Recurrent (stuttering priapism)-20-35% incidence
- Alkalinazation
- Analgesia
- Hydration
- Oxygenation
- Tranfusion
- Irrigation if needed

Priapism
summary

- Determine if ischemic or non-ischemic
- Treat underlying disorder concurrently
- If greater than 4 hours, call GU consultation

Phimosis

- Stenosis, adhesions of distal aspect of foreskin
- Difficulty/Inability for retraction over glans
- Balanitis
- Dermatitis
- Poor hygeine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Phimosis

- Rarely urologic emergency
- Urinary retention
- Treatment:
- Good Hygiene
- Hemostatic dilation of stenotic foreskin
- Triamcinolone/topical steroids
- Circumcision

Paraphimosis

- Foreskin retracted proximal to glans and cannot be returned
- Impaired venous/lymphatic drainage
- Edema and worsening constriction
- Pain
- Urologic emergency

Paraphimosis

- Urgent reduction of foreskin
- Squeezing forekin technique
- +/- sedation
- Dorsal slit
- Elective circumcision


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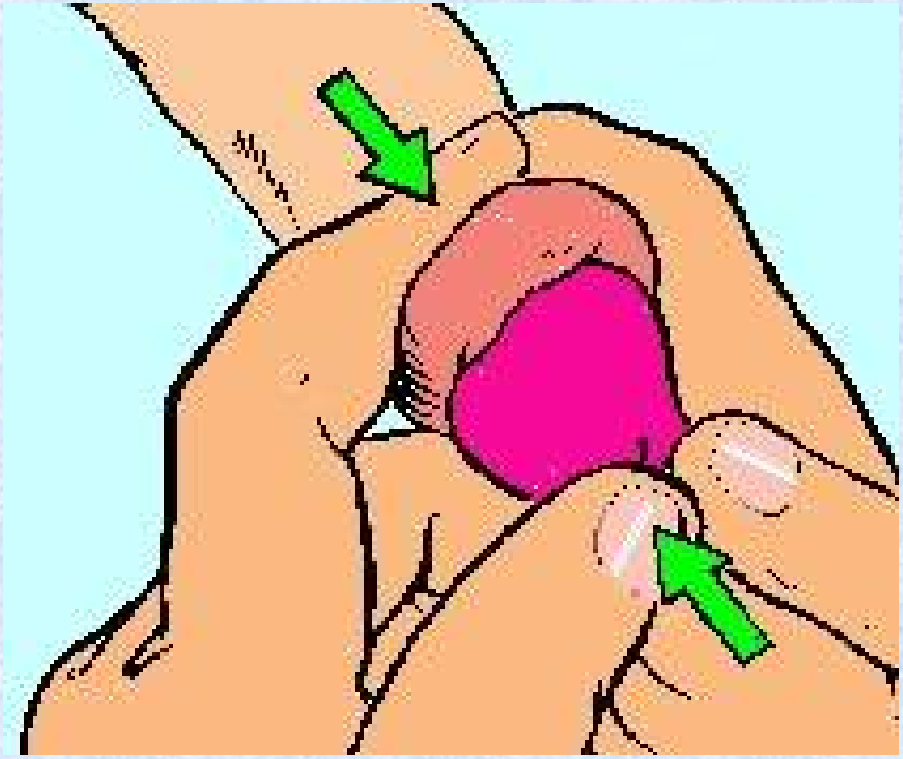
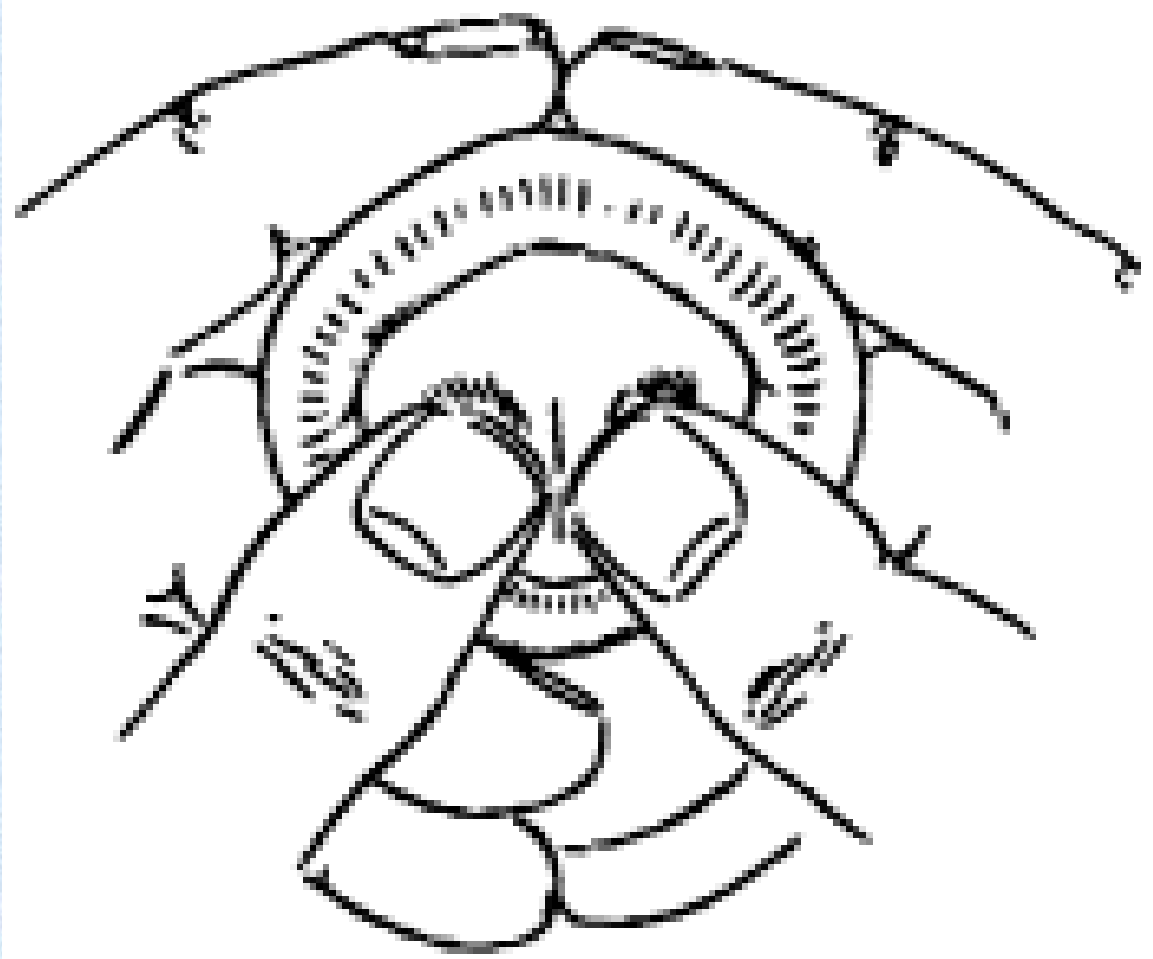
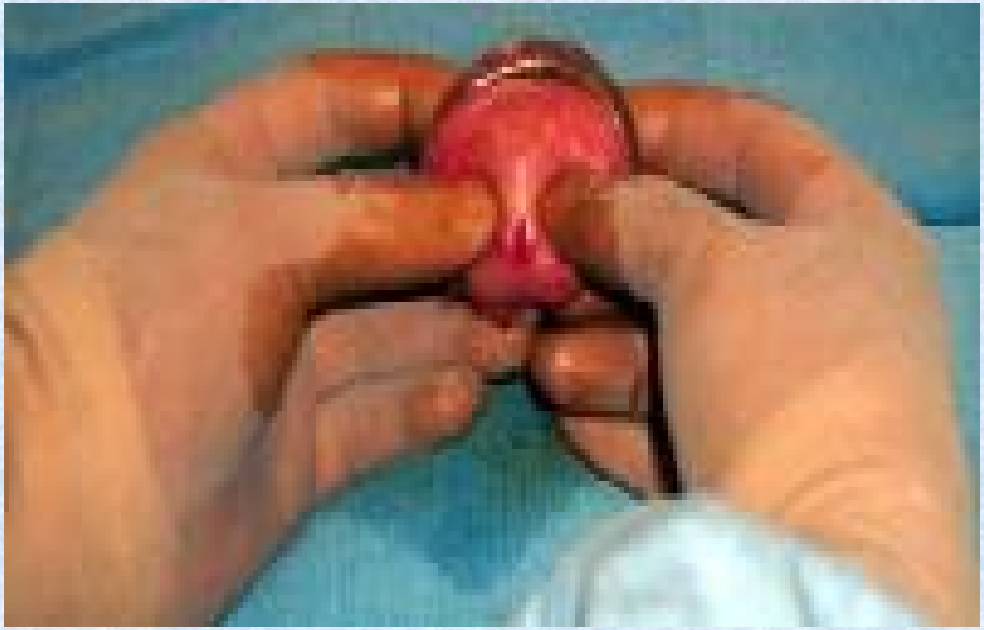




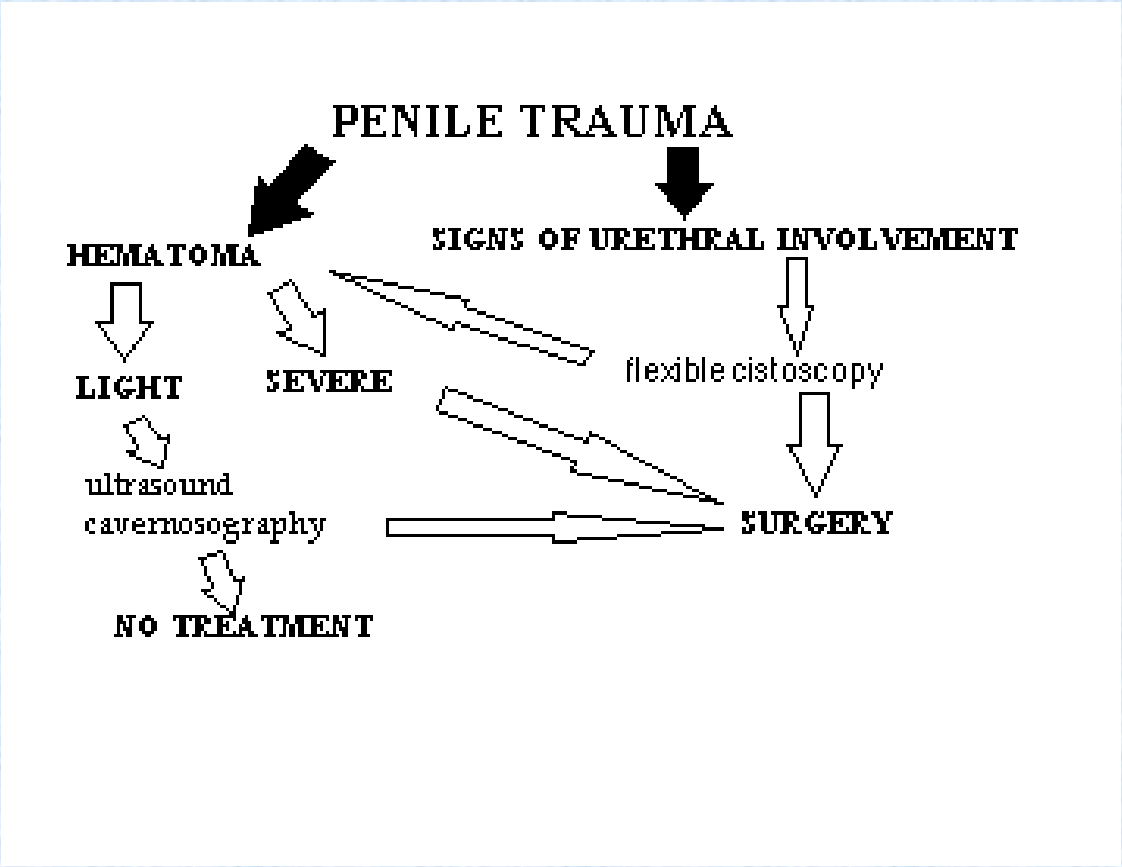


Penile Fracture

- Disruption of tunical albigenia
- Urological emergency
- Increase in impotence if not treated
- Vigorous intercourse
- Popping sound (tunica tear), pain, swelling, and rapid detumscence

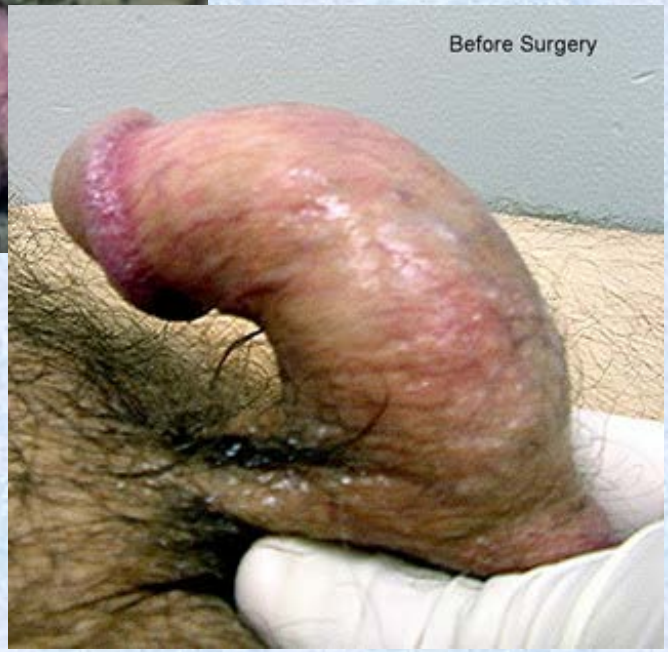
Penile Fracture

- Swollen, ecchymotic penis
- Clot and tear sometimes palpable
- Urethral injury 1/3 of cases
- Surgical exploration

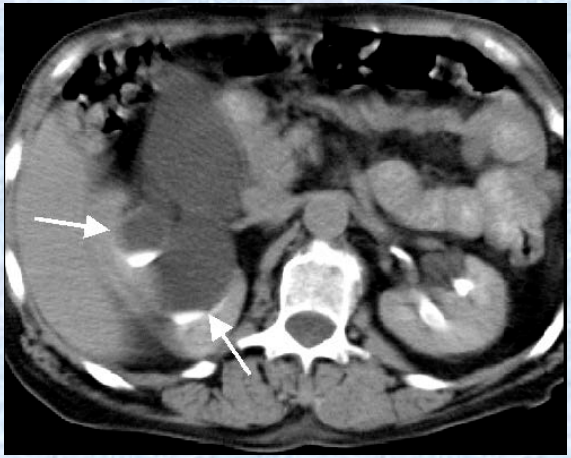

PENILE TRAUMA
HEMATOMA
SIGNS OF URETHRAL INVOLVEMENT
LIGHT
SEVERE
flexible cistoscopy
ultrasound
cavernosography
SURGERY
NO TREATMENT

PEYRONIES

- ETIOLOGY
- COURSE
- TX
- XIAFLEX



Ureteral Obstruction

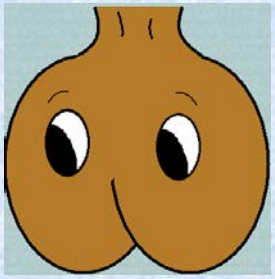


- Calculi
- Radiation
- TB, Fungus Balls
- Stricture
- Prior Surgery (Gyn, Urological, Colo-rectal)
- Renal Status (Solitary Unit physical vs functional)
- Cancer (Bladder, Ureteral, Other…)

Ureteral Obstruction

- Evaluation
  - Pain level
  - Renal Function
  - UA
  - Reliability
  - UO
  - General Health Status
  - Antibiotic Status
  - Temp…Temp…Temp…Sepsis
    - Percutaneous Nephrosotomy, stenting if unsuccessful

Thank You



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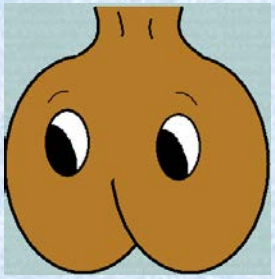
STONE DISEASE

Thank You



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