

**Clinical Correlation: Pelvis and Kidney**  
**September 2004**

- I. A 23 y.o.f. presents with complaints of lower abdominal pain. It began less than 72 hours ago. It is sharp in nature, 6 out of 10 in severity, constant, and non-radiating. She has noted no change with food but has anorexia and over the last few hours persistent nausea and vomiting. She has felt warm but has not checked her temperature. In general the patient appears in moderate distress. Her exam is unremarkable except for bilateral lower quadrant tenderness to palpation. She has some rebound in the right lower quadrant only. There was no CVA tenderness.

What is your differential diagnosis?

What part of the exam has been left out that would be essential for this patient?

What might be some complications of this patient's illness?

- II. A 38 y.o.m. comes to your office complaining of right scrotal swelling. He denies any heavy lifting or trauma to the area. There is no pain associated with the swelling. Your exam shows a distended left testicle with a fluctuant mass at the superior pole. It is nontender to palpation. You are unable to completely reduce it. There is no obvious inguinal bulge or discoloration. Transillumination does not reveal any solid components to the mass.

What is the differential diagnosis for this mass?

What would the next step be in diagnosing the etiology of this patient's complaint?

- III. A 36 y.o.f. comes to your office with complaints of severe low back pain and episodes of urinary incontinence. She is 22 weeks gestation and had developed low back pain over the last few weeks. Concerned about exposing her fetus to analgesics she sought treatment from an alternative health provider. Since then the pain has been severe, constant, and it to the point that she is having difficulty walking. On exam, she is in obvious distress. Her pelvic exam displayed poor rectal sphincter tone and “saddle anesthesia.”

What is the mechanism of this patient’s complaints?

What must be done for this patient?

- IV. A 77 y.o.m. is brought to the Emergency Department from his nursing care facility with a change in mental status. The nursing staff who knows him well noted that he had decreased appetite and low grade temperatures over the last 24 hours. The on-call physician was concerned about a UTI and the staff was supposed to send a urinalysis but have been unable to get an adequate sample. Currently, the patient is unresponsive to verbal stimuli. He is mildly tachycardic. His lungs and cardiovascular exam are otherwise unremarkable. His abdomen has decreased bowel sounds and there is a suprapubic mass that is soft and non pulsatile.

What is the likely scenario for this patient’s altered mental status?

What would be your initial treatment for this patient? What would be your long term recommendation for this condition?

- v. An 18 y.o.m is sitting in your office looking *very* anxious! He states he has an erection for the last 8 hours. At first, he was not concerned but now it is becoming painful.

What is his diagnosis? Do you want to inquire further about this patient’s HPI (history of present illness)?

Describe, anatomically, the mechanism of an erection and what has malfunctioned to cause this condition?

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- I. Differential Diagnosis for lower quadrant pain in a young female: ovarian cyst, pregnancy (ectopic, threatened abortion), PID, appendicitis, cystitis, endometriosis, inflammatory bowel disease.

Pelvic exam, including a rectal exam: evaluate for cervical motion tenderness, adnexal masses, rectal pain, abnormalities in the pouch of Douglas.

This patient has pelvic inflammatory disease (PID) that is characterized by the ascending intraluminal spread of infection from the lower genital tract: cervicitis to endometritis to salpingitis. Causative organisms are mainly chlamydia and gonococcus (STD).

Peritonitis, abscess formation, perihepatitis (Fitz-Hugh-Curtis disease, subcapsular infection of the liver), infertility, ectopic pregnancy, recurrent PID.

**Anatomically, how is it possible that a fertilized egg may result in an abdominal ectopic pregnancy?**

- II. The differential diagnosis of cystic masses of the scrotum includes: varicocele (engorgement of the pampiniform plexus and the testicular veins), hydrocele (collection of fluid between the two layers of the tunica vaginalis, testicular tumors (10% have an associated hydrocele), spermatocele (retention cyst of the rete testis or the head of the epididymis), direct and indirect hernias.

Put the patient in the supine position. If it reduces, then it is likely benign in nature. An ultrasound will then confirm this and rule out any solid structures.

If it does not reduce, a CT scan should be performed to evaluate for an obstructive process in the retroperitoneum.

**Review the structures and boundaries of the inguinal canal and describe the differences between a direct and indirect hernia.**

- III. The patient has signs and symptoms of a cauda equina syndrome. There has been compression of the distal nerve roots below the termination of the spinal cord. The decreased sphincter tone and “saddle anesthesia” are classic for this diagnosis (not always that common). This involves the *pudendal nerve (ventral rami of sacral nerves 2,3,4)* which innervates the skin and skeletal muscle of the female perineum and external genitalia. The urinary dysfunction is mainly under control of the parasympathetic nervous system (**pelvic splanchnic nerves from S 2,3,4 to the hypogastric plexus to the inferior hypogastric plexus to the bladder**).

This is difficult given the patient’s pregnant status. An MRI (not CT scan given exposure to radiation and dye) will identify the lesion. Surgical decompression is usually warranted.

- IV. The patient likely has urinary retention due to an enlarged (BPH or benign prostatic hypertrophy, prostatitis, malignancy) prostate. This has led to a urinary tract infection, fevers and mental status changes. The patient may also be bacteremic and in acute renal failure given the obstruction.

He needs a foley catheter to assess for the obstruction and drain the bladder. A urine culture should be sent, blood cultures taken and antibiotics started to cover the common organisms. A rectal exam will also reveal the size of the prostate and any signs of infection or malignancy). BPH usually involves the median lobes whereas the posterior lobes are most often involved with malignant changes.

A transurethral resection of the prostate will relieve the obstruction. Medical therapy may also be tried to shrink or relax the gland.

**Review the relationship of the prostate to the portions of the urethra and the seminal vesicles.**

**What if the patient elects to have the prostate gland removed, what vascular and neurologic structures may be damaged?**

- V. Priapism: a persistent painful erection. Since this is not usually related to conventional intercourse you should explore other etiologies, including: sickle cell disease, spinal cord trauma, CML, injections of vasodilatory agents into the penis (treatment for impotence).

This young man was African/American and was known to have sickle cell disease. This is caused by infarction of the venous outflow tracts.

Penile tumescence, which leads to erection, depends on the flow of blood into the corpora. Stimulation via the parasympathetic division of the cavernous nerves (*nervi erigentes*) cause relaxation of the penile arteries and the terminal helicine arteries which allow blood to pour into the cavernous sinuses faster than it can be removed from the cavernous veins. This leads to trabeculae within the corpora to compress the fibroelastic tunica albuginea leading to passive closure of the emissary veins; therefore, continuing the accumulation of blood in the corpora.

Detumescence occurs when norepinephrine is released from the sympathetic fibers causing contraction of the vascular smooth muscle in the arteries and therefore vasoconstriction/decreased flow of blood.

**Anatomically, trace the path of sperm from its production in the testis to its exit from the body. Review the anatomy of the testis its relationship to the inguinal canal.**