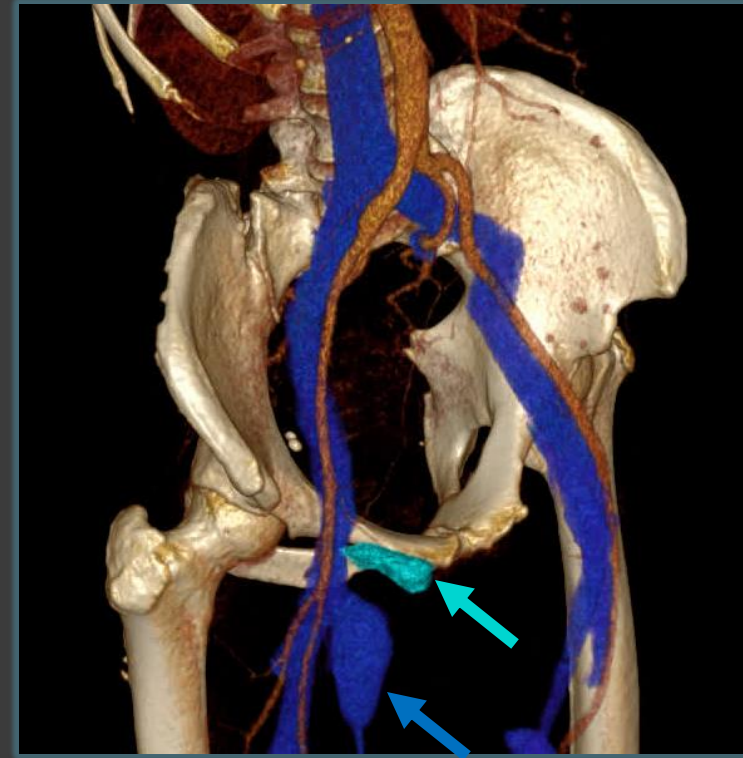
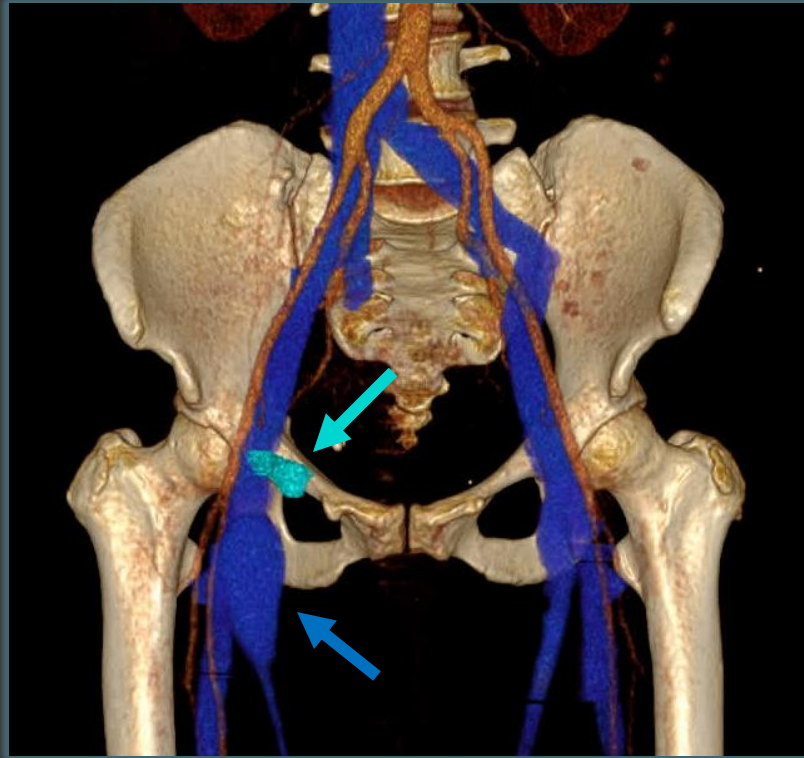


# NAVIGATING THE CANAL:

## COMMON INGUINAL PATHOLOGY AND THEIR MIMICS



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University of California, Los Angeles  
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# Objectives

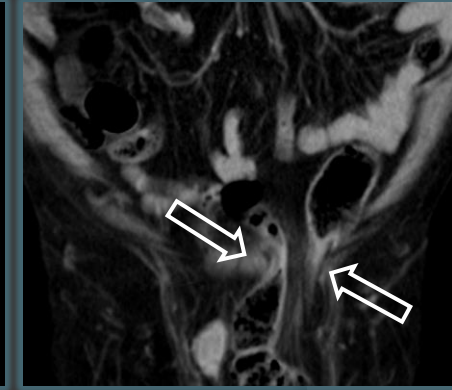
- Review common and uncommon inguinal pathology
- Differentiate inguinal canal pathology mimics
- Multimodality case examples with differential diagnosis

Inguinal Pathology		Inguinal Mimics	
<ul style="list-style-type: none"><li>• Hernias<ul style="list-style-type: none"><li>- Fat, bowel, bladder</li></ul></li><li>• Hydroceles<ul style="list-style-type: none"><li>- Simple, encysted, Canal of Nuck</li></ul></li><li>• Varicocele/lymphocele</li></ul>	<ul style="list-style-type: none"><li>• Lipomatous lesions<ul style="list-style-type: none"><li>- Low grade, liposarcoma</li></ul></li><li>• Ectopic gonads<ul style="list-style-type: none"><li>- Cryptorchidism, torsion</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Soft tissue infections</li><li>• Hip bursitis/osteochondromatosis</li><li>• Aneurysms/ varices</li></ul>	<ul style="list-style-type: none"><li>• Hematoma/seroma</li><li>• Drop metastases</li><li>• Endometrioma</li><li>• Adenopathy</li></ul>

# Hernias

- Examples
  - Direct or indirect
  - Fat or bowel containing
  - Complicated (incarcerated, Amyand, etc.)
- Etiology:
  - Persistent patency of the inguinal canal
- DDx:
  - Hydrocele
  - Lipomatous lesions (liposarcoma, lipomatosis of the spermatic cord)

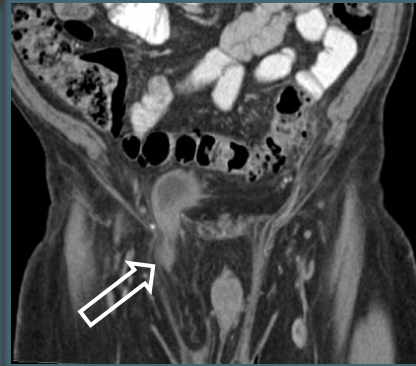
## BILATERAL INGUINAL HERNIAS WITH BOWEL OBSTRUCTION



Axial and coronal CECT images demonstrate large bilateral hernias (open arrows) containing cecum, ileum and ascites on the right with upstream small bowel dilation and fecalization (filled arrow), bowel wall thickening, stranding, and fluid, compatible with bowel obstruction.

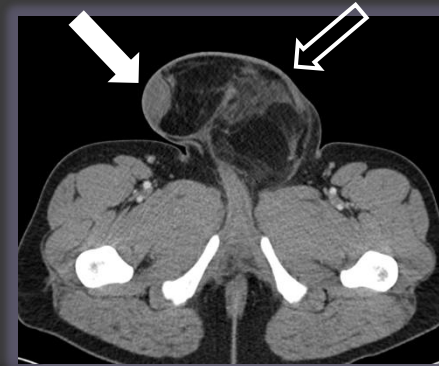
Coronal 3D VR images of the pelvis demonstrates course of colon (yellow) extending into and out of the left inguinal hernia (dashed arrows)

## BLADDER HERNIATION WITH CYSTITIS



Axial and coronal CECT images demonstrate right inguinal hernia with herniation of a portion of the urinary bladder (arrow) with associated bladder wall thickening and mild fat stranding..

## MIMIC: LIPOSARCOMA



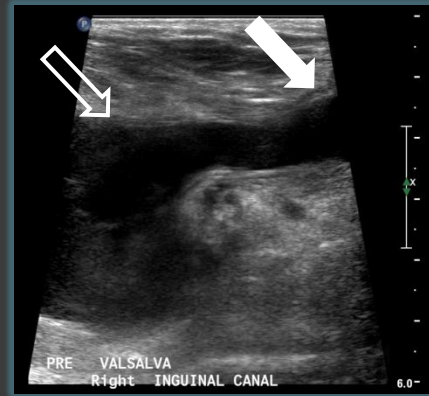
Axial and coronal CECT images demonstrate a large complex fatty mass (open arrow) with areas of soft tissue within the left inguinal canal, displacing the left testicle (filled arrow). Lesion was resected and pathology proven poorly differentiated liposarcoma.



# Hydroceles

- Examples:
  - Simple
  - Encysted
  - Congenital/ acquired
- Etiology:
  - Patency of processus vaginalis with fluid
- DDx:
  - Hernia
  - Pseudo-aneurysm
  - Varicocele
  - Lymphocele
  - Soft tissue infection

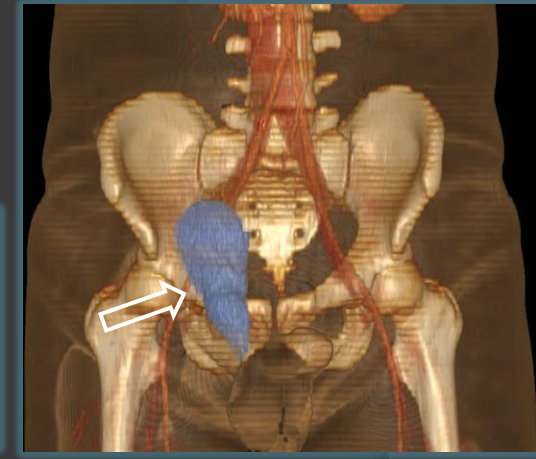
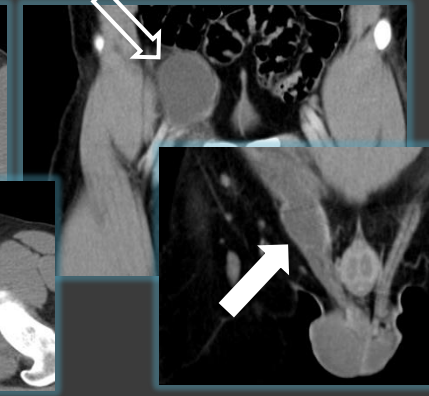
## REMNANT OF PATENT PROCESSUS VAGINALIS



Grayscale US image of the right inguinal canal demonstrates a cystic structure extending from the deep inguinal ring (open arrow) into the scrotal sac (arrow).

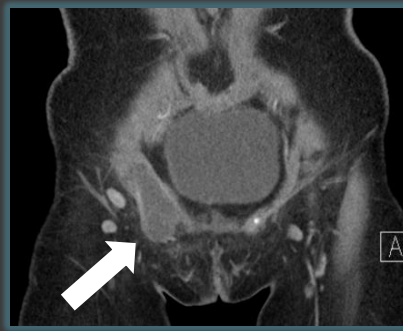
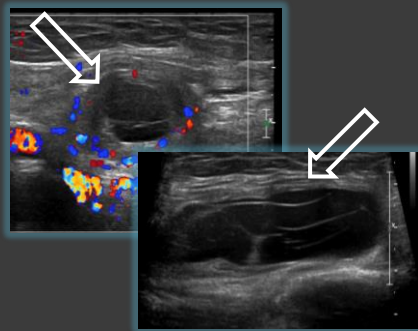


Axial and coronal CECT images demonstrate a thin-walled cystic structure within the right pelvis (open arrow) extending into the right inguinal canal (arrow) which is separate from adjacent bowel loops, the appendix and the urinary bladder.



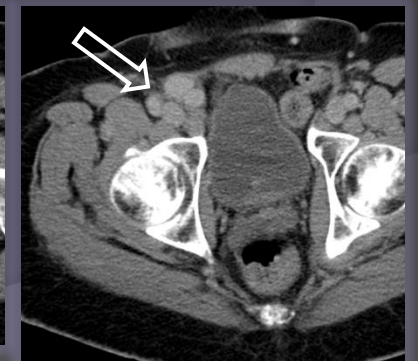
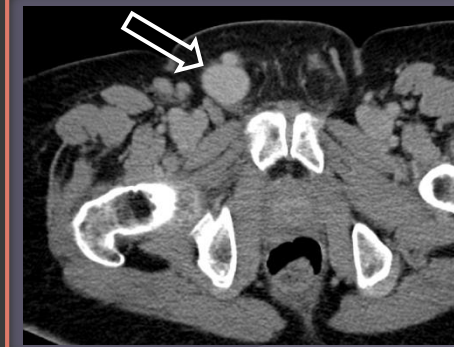
Coronal 3D VR image of the pelvis on the same patient demonstrates extent of patent processus vaginalis (blue) extending into the inguinal canal

## INFLAMED ENCYSTED HYDROCELE WITHIN PATENT CANAL OF NUCK



Doppler and grayscale US images demonstrate a septated cystic structure within the inguinal canal (open arrow) with increased Doppler flow. Coronal CECT image demonstrates a fluid-filled tubular structure with wall thickening within the right inguinal canal (closed arrow).

## MIMIC: SPERMATIC CORD VARICOCELE

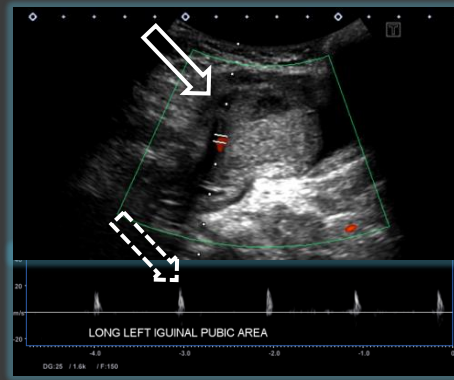


Axial and coronal CECT images demonstrate tubular enhancing structure within the right inguinal region, which demonstrates continuity with retroperitoneal venous structures, compatible with spermatic cord varicocele.

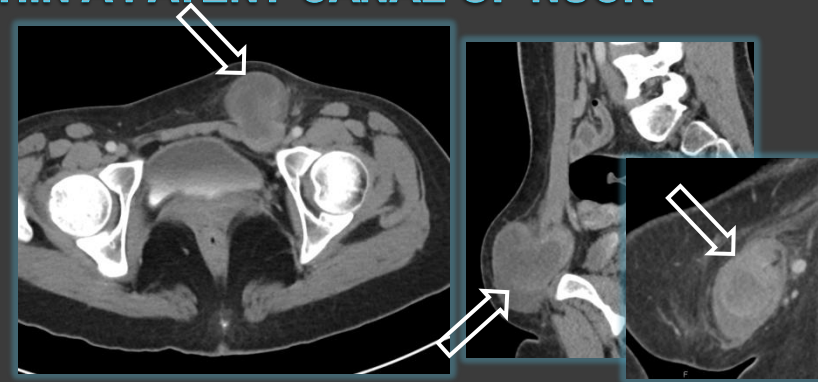
# Masses

- Examples:
  - Ectopic gonad
  - Spermatic cord lipoma
- Etiology:
  - Abnormal migration or ectopic location
  - Congenital or acquired
- DDx:
  - Sarcoma
  - Endometrioma
  - Metastatic implant
  - Hematoma

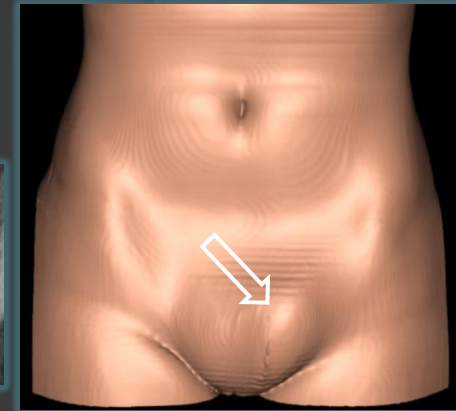
## OVARIAN TORSION WITHIN A PATENT CANAL OF NUCK



Grayscale and spectral Doppler US images of the demonstrate a solid mass in the left inguinal canal (open arrow) with small peripheral follicles, and a high resistance arterial waveform (dashed arrow), No venous flow identified.

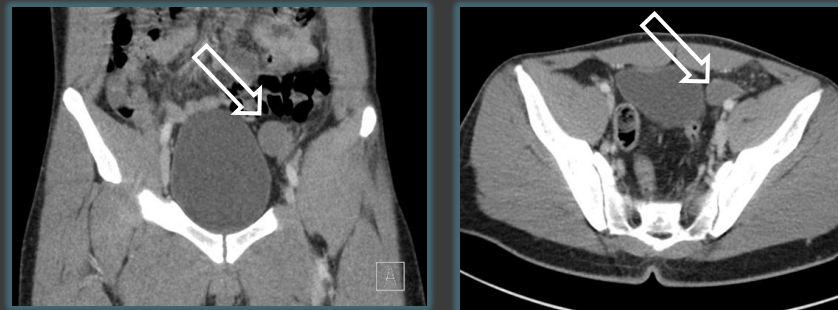


Axial, sagittal and coronal CECT images demonstrate a cystic structure within the left inguinal canal with herniation of left ovary (open arrow) which appears enlarged, heterogeneous and hypoenhancing concerning for ovarian torsion within the canal of Nuck.



Coronal 3D VR images demonstrates cystic and solid mass within left inguinal canal (open arrow) and skin rendering of the mass

## CRYPTORCHIDISM



Coronal and axial CECT images demonstrate a 3 cm well-circumscribed ovoid solid lesion (open arrow) along the left distal external iliac vessels with the left gonadal vessels coursing to it. The left testicle is not visualized within the scrotal sac (not visualized).

## MIMIC: C-SECTION SCAR ENDOMETRIOMA



Axial and coronal CECT images demonstrate an irregular lobulated mass (open arrow) along the left lateral aspect of Pfannenstiel C-section scar (filled arrow). Patient had a history of endometriosis with enlarging mass above inguinal canal (dashed arrow).



# Other mimics

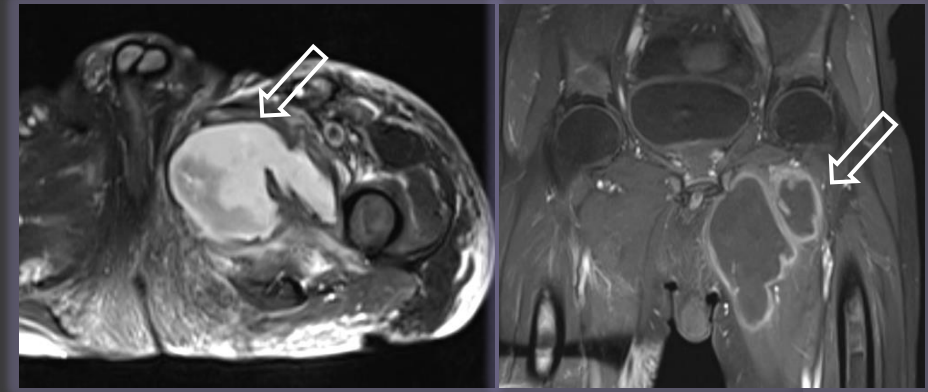
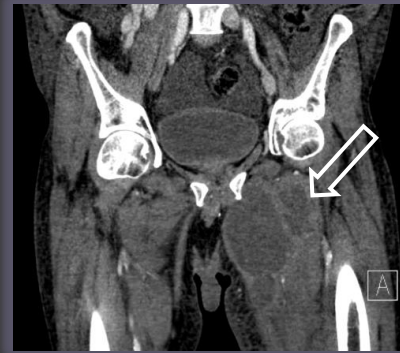
- Examples:
  - Soft tissue infection
  - Musculoskeletal
  - Vascular
  - Metastatic

- Etiology:
  - Infection
  - Inflammation
  - Iatrogenic
  - Metastatic
- DDx:
  - Varies

## MIMIC: COMPLICATED SOFT TISSUE COLLECTION

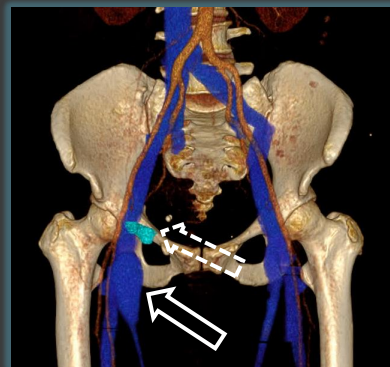


Grayscale US image of the upper medial left thigh demonstrates large heterogeneous mixed echogenicity intramuscular soft tissue collection (open arrow). Coronal CECT image demonstrates large intramuscular multiloculated low-density collection in the medial compartment of the left thigh extending to the pubic symphysis.

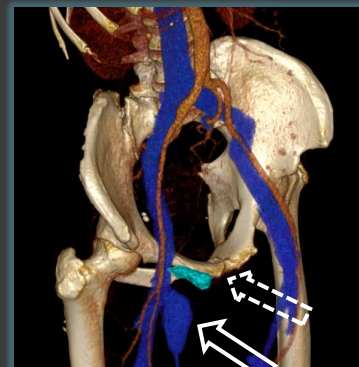


Axial T2 and coronal T1FS postcontrast MR images demonstrate thick-walled peripherally enhancing cystic appearing mass in left proximal thigh (open arrow) involving the left adductor musculature with surrounding edema. The inguinal canal and scrotum were unremarkable.

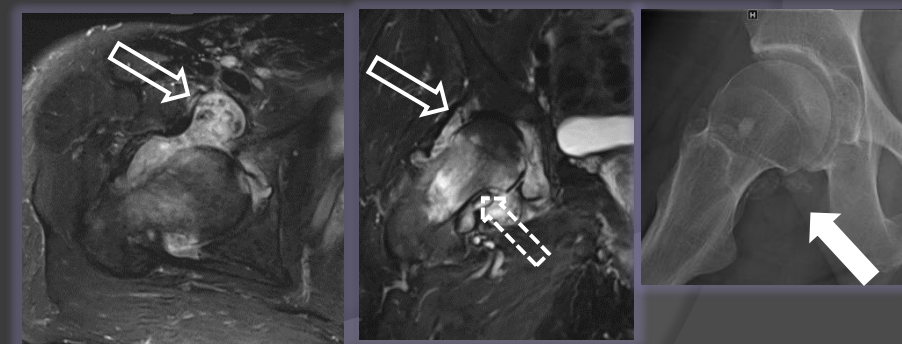
## MIMIC: VARICOELE AND HYDOCELE



Coronal 3D VR images demonstrate a dilated venous structure abutting the left inguinal region compatible with a femoral varicocele (open arrow) and a lobular cystic structure within the left inguinal canal (dashed arrow) compatible with a hydrocele.



## MIMIC: HIP OSTEOCHONDROMATOSIS



Axial and coronal T1FS postcontrast MR images of the right hip demonstrate markedly thickened and hyperenhancing synovium (open arrow) with associated bone marrow edema (dashed arrow). Plain radiograph demonstrates several ossified interarticular bodies (closed arrow).