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# The Acute Scrotum

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# DDx: Acute Scrotal Pain & Enlargement

## PAIN →

- Inflammatory disorder
- Testicular torsion
- Testicular infarction
- Testicular abscess
- Trauma

## ENLARGMENT →

- Hydroceles
- Hernias
- Hematomas
- Testicular torsion
- Epididymitis
- Abscess
- Trauma

\*In 20% of cases, testicular tumors may present with a painful mass.



# Modes of Scrotal Imaging

- Ultrasound
- Radioisotope Scanning
- Computed Tomography
- Magnetic Resonance Imaging
- Angiography



# Primary Modality: Ultrasound

- Accuracy
- Convenience
- Comfort
- Absence of Ionizing Radiation



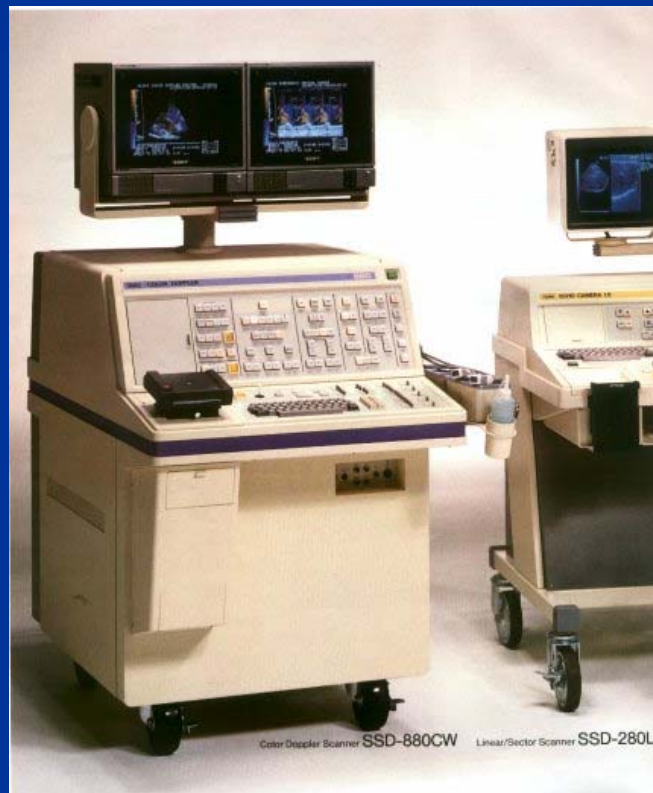
# Best Results

- Short-focused, high-resolution, real time 7.5-10 MHz transducer w/ direct contact scanning
- Images taken in saggital and transverse planes



# Body Imaging

- Ultrasound, Color Doppler, Power Doppler





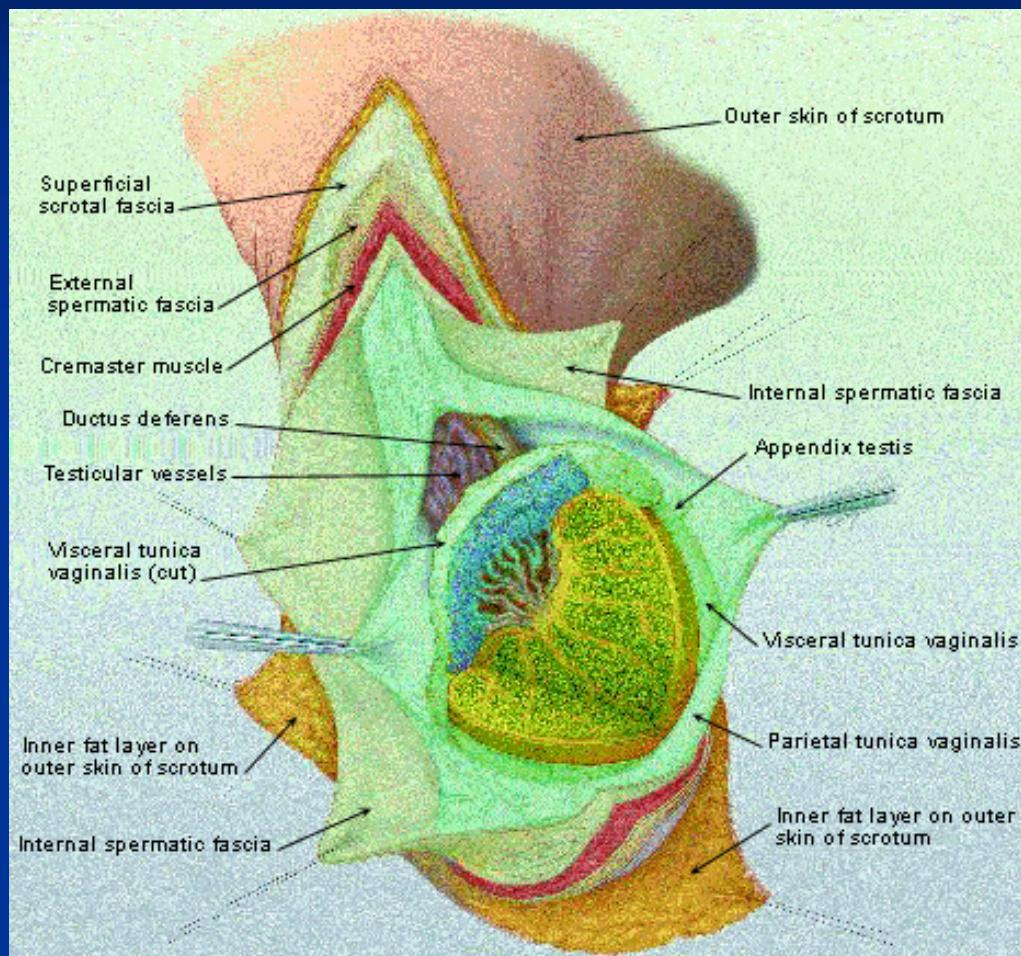
# Acute Scrotum

- Trauma
- Torsion
- Infarction
- Inflammatory
- Abscess





# ANATOMY

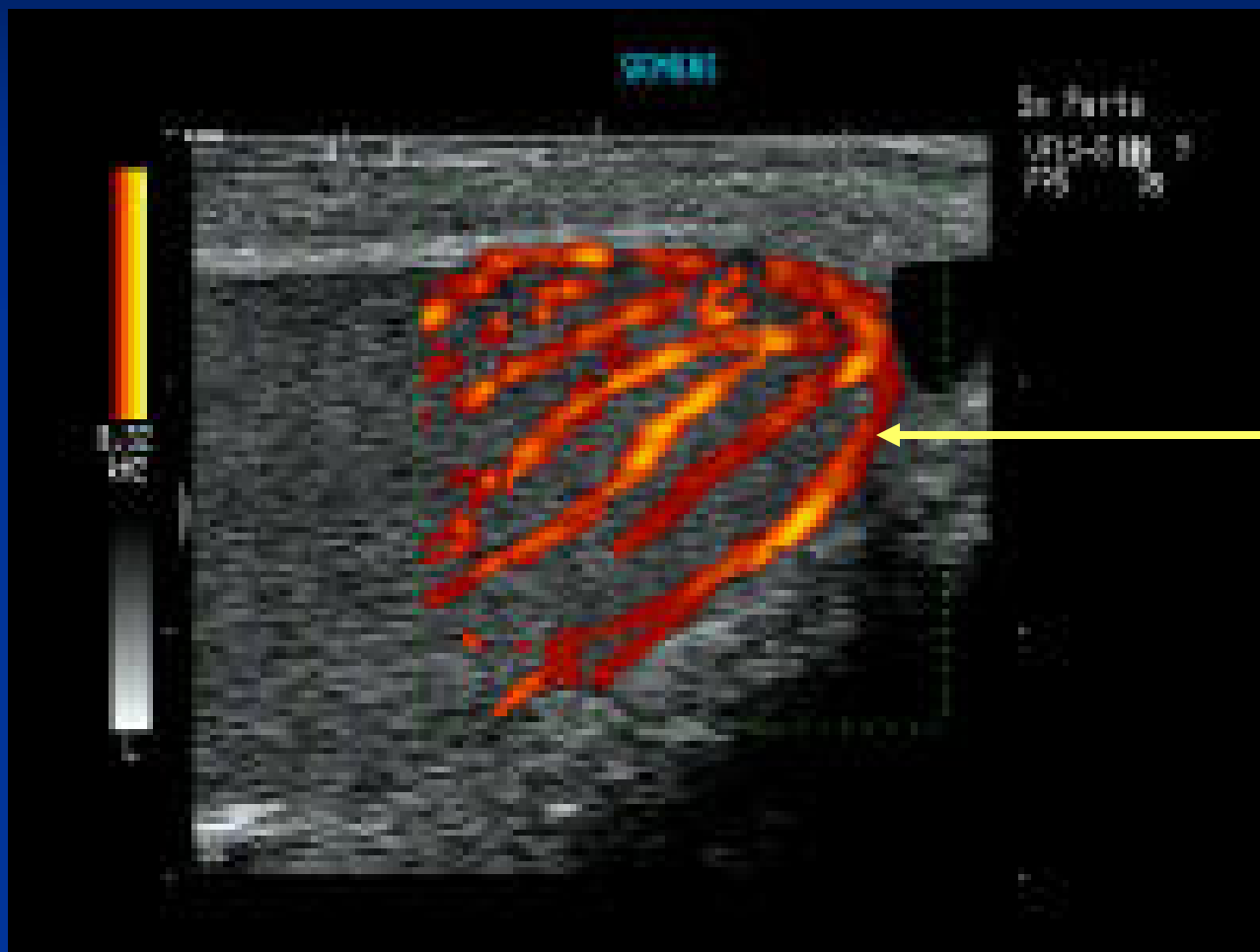


From: [http://matweb.hcuge.ch/Selected\\_images/Testis\\_images/Testis--\\_%20normal\\_diagrams.htm](http://matweb.hcuge.ch/Selected_images/Testis_images/Testis--_%20normal_diagrams.htm) AND  
<http://www.aafp.org/afp/980215ap/junnila.html>





# Power Doppler -Normal Testis



Normal  
Vasculature  
of Testis

From [http://matweb.hcuge.ch/Selected\\_images/Testis\\_images/testis\\_normal\\_imaging.htm](http://matweb.hcuge.ch/Selected_images/Testis_images/testis_normal_imaging.htm).



# Blunt Trauma

Testis →

- Mobility in scrotum
- Elasticity of scrotum

Injury occurs w/:

- Compression against solid object such as pubic bones
- Burst tunica albuginea



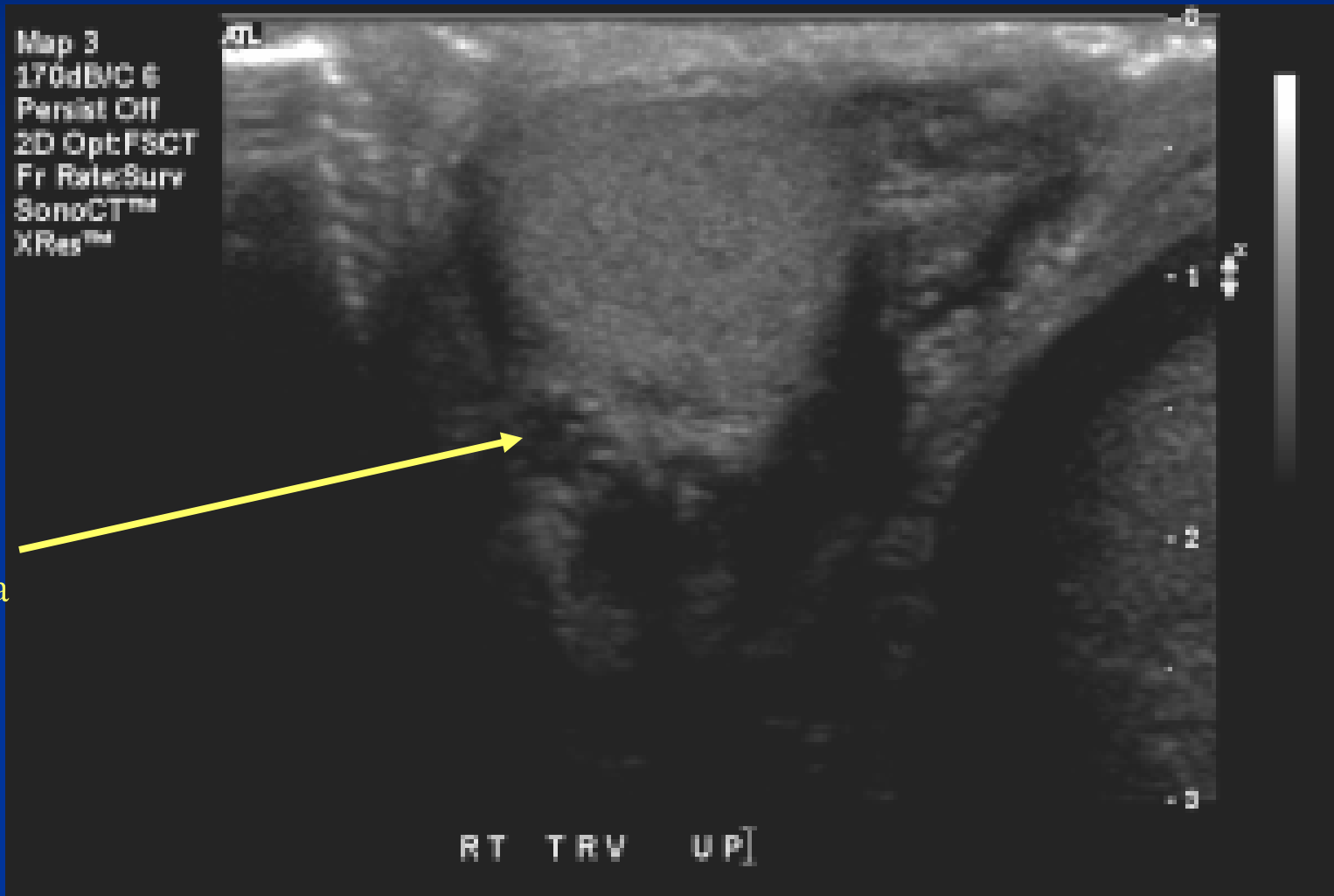


# Why Important to Diagnose

- Rapid surgical intervention within 72 hrs = 90% saved
- Delayed = 55% salvage rate



# Normal Testicle

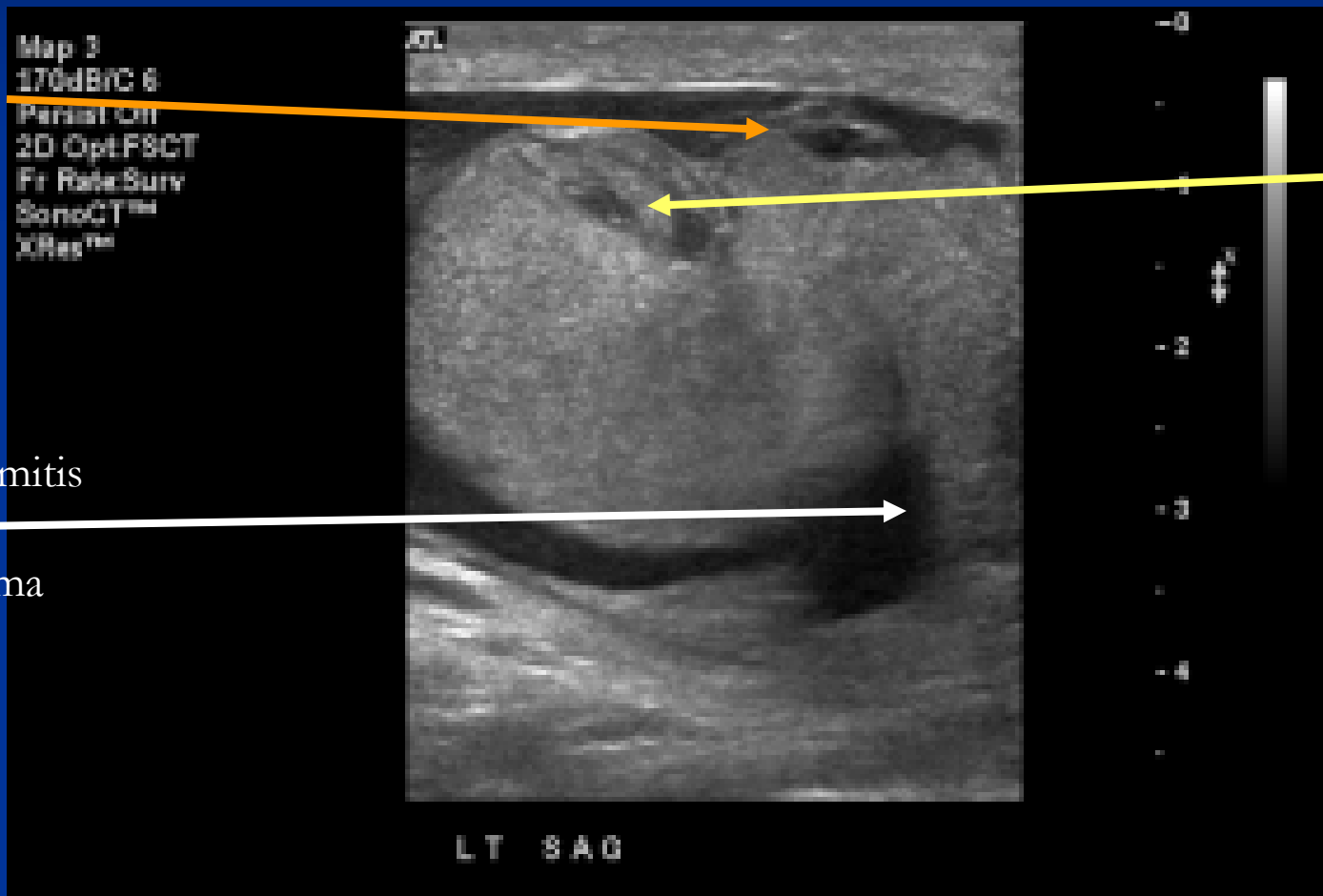




# Testicular Rupture

Tunica  
Albuginea  
Rupture

Epididymitis  
w/  
hematoma



BIDMC ED Sept. 8, 2002: s/p MCC vs car, now p/w scrotal ecchymosis



# Testicular Torsion

- Ischemia & Infarction
- Abnormality in fusion of tunica vaginalis & scrotal wall
- Bell Clapper Anomaly



From: <http://health.discovery.com/diseasesandcond/encyclopedia/2485.html>



# Testicular Torsion

- Children & Adolescents
- Adults: 20% of acute trauma incidence
- Preceded by trauma, sexual intercourse, strenuous activity: forceful contraction of cremaster



# Signs & Symptoms

- Pain @ rest (due to ischemia)
- Enlargement hemiscrotum
- Nausea & vomiting
- Tense & tender testis
- Fever
- Erythema & Edema of scrotal skin





# Epididymitis and/or Orchitis

- Most common
- 75-80% cases of acute scrotal pain
- Epididymitis: 64%  
20-29 y.o.
- Orchitis: viral  
origin



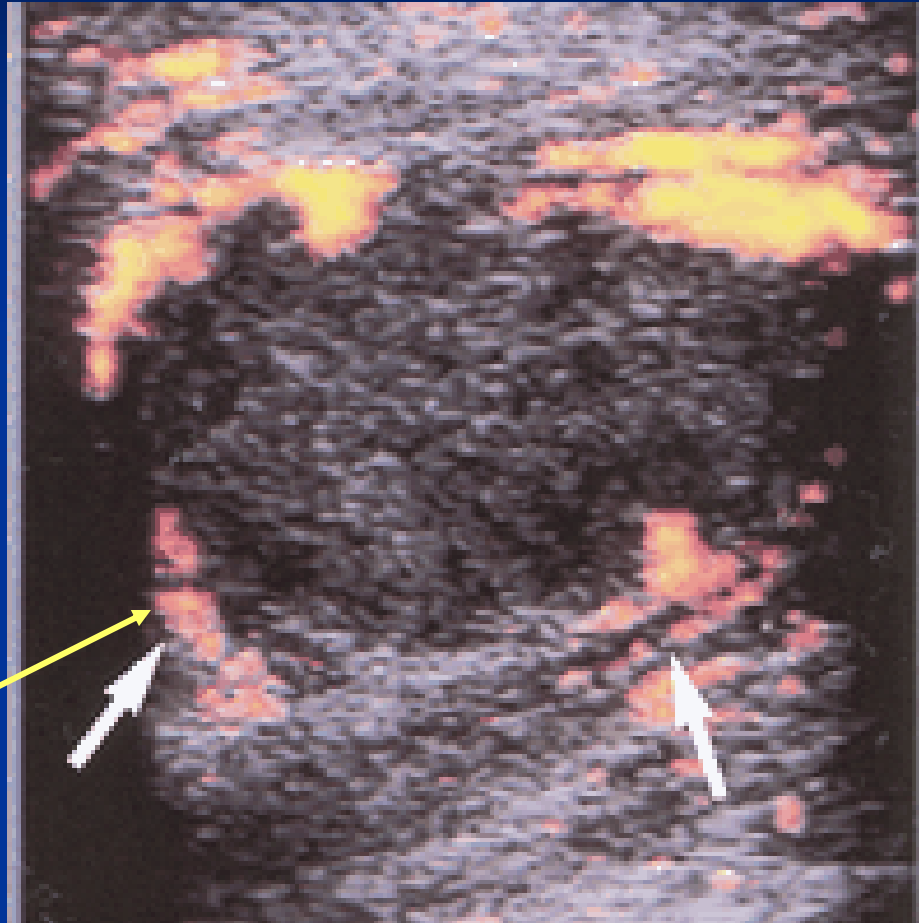


# Color-flow Doppler Examination

- Visualize Testicular Arteries
- Torsion: lack of flow
- Epididymitis: increased flow in epididymis
- Orchitis: increased flow in testes



# Torsion – Power Doppler US

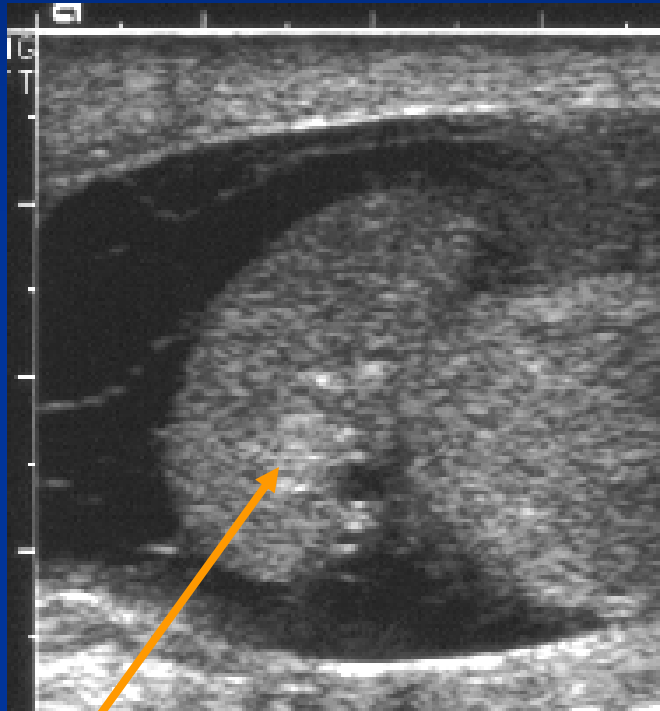


absence of  
perfusion in  
testicle w/  
rim of  
peripheral  
hyperemia

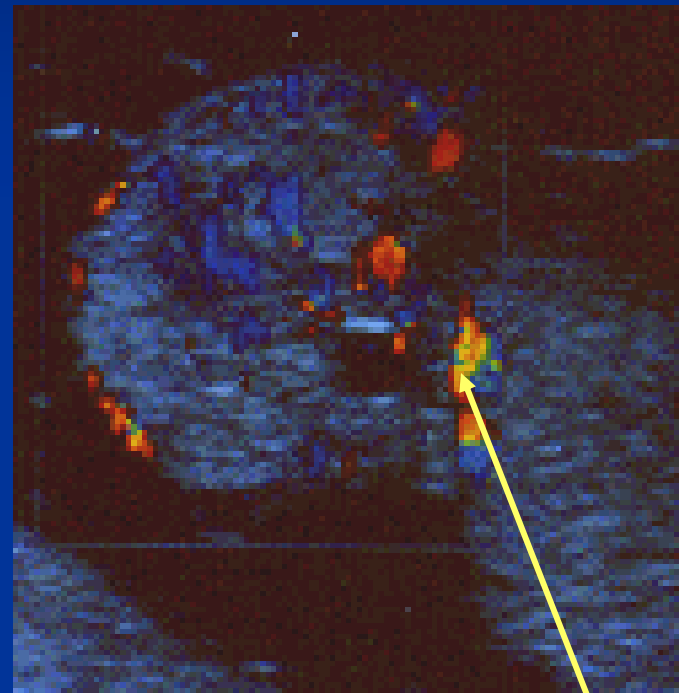
From <http://radiology.rsna.org/cgi/content/full/215/2/313>



# Epididymitis: Color flow doppler US



Increased size of epididymis

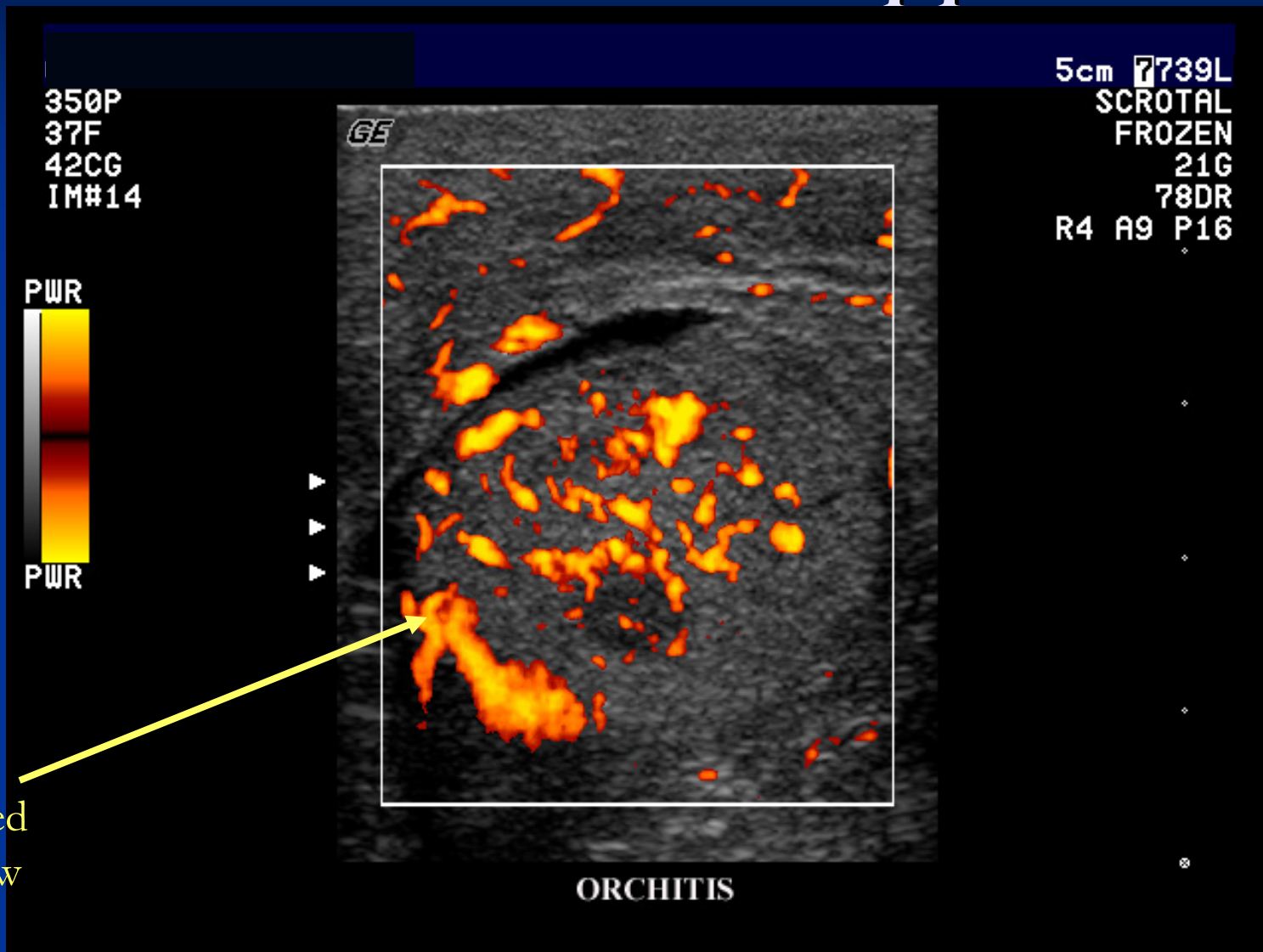


enlarged epididymal head with increased blood flow

From <http://www.med.wayne.edu/diagRadiology/TF/GU/GU03.html>



# Orchitis: Power Doppler US



Increased  
test. flow

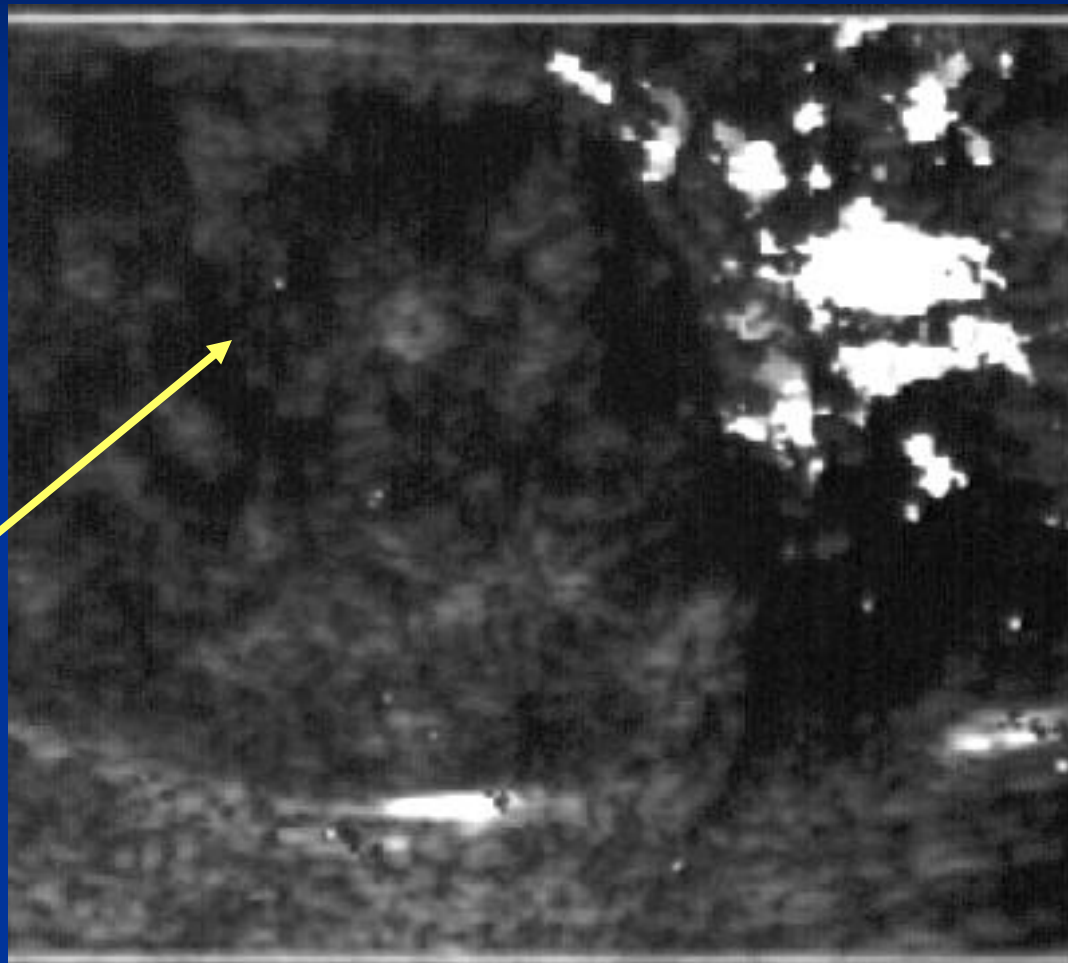


# Testicular Infarction

- US → hypoechoic mass or diffusely heterogenous and smaller hypoechoic testis
- Decrease in size w/ age
- Tumor will increase in size w/ age



# Testicular Infarction - US



Anechoic  
areas of  
necrosis

From <http://www.uhrad.com/ctarc/ct222c2.jpg>



# Testicular Abscess

- Accompany epididymo-orchitis
- Complication of missed torsion
- Necrotic tumor
- Infectious Agents: Mumps, Smallpox, TB, Influenza

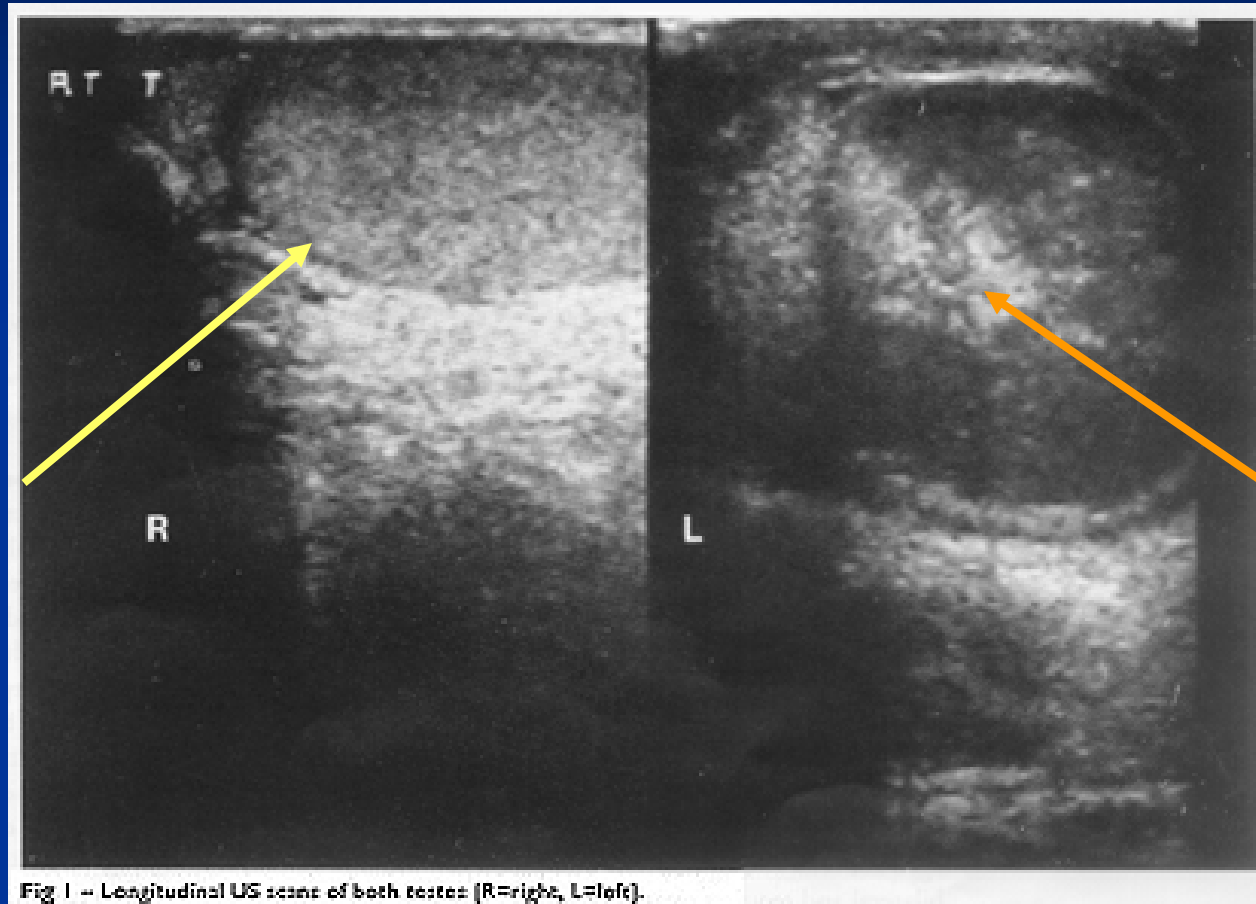






# Testicular Abscess US

Normal



Hyperechoic  
abscess

Fig 1 - Longitudinal US scans of both testes (R=right, L=left).

From <http://www.sma.org.sg/smj/4001/articles/4001me1.html>



# Infarct vs. Abscess

How could you differentiate between  
an infarct and an abscess if you are  
not sure on US?

Power Doppler!!!!





# What's the Diagnosis?



Tunica Albuginea  
Rupture w/ flow to  
testis



*We can never take back yesterday, or prevent those moments in time we wished had never happened; however we can rest assured in that the things we do today will make our tomorrow. And in that, we are the keepers of own destiny.*

*Sept 12, 01*



# What do you see?





# References

- Harris, John H., The Radiology of Emergency Medicine, Williams & Wilkins, 3<sup>rd</sup> edition, 1993, pgs. 896-909.
- Krekau, Doppler Ultrasound: Principles & Instruments, WB Saunders Comp., Philadelphia, 1990.
- [http://www.ob-ultrasound.net/aloka\\_880.html](http://www.ob-ultrasound.net/aloka_880.html)
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- From: <http://health.discovery.com/diseasesandcond/encyclopedia/2485.html>
- <http://radiology.rsnaajnl.org/cgi/content/full/215/2/313>
- <http://www.med.wayne.edu/diagRadiology/TF/GU/GU03.html>
- <http://www.uhrad.com/ctarc/ct222c2.jpg>
- <http://www.sma.org.sg/smj/4001/articles/4001me1.html>
- [http://www.gemedicalsystems.com/rad/us/products/log\\_700pro/msul7or11.html](http://www.gemedicalsystems.com/rad/us/products/log_700pro/msul7or11.html)



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