


# Paediatric Scrotum Ultrasound

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## Presentation Outline

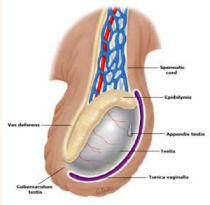
COMMON INDICATIONS

MAIN PATHOLOGIES & INTERESTING CASES

LEARNING OUTCOMES

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## Anatomy



KEY ANATOMY

- Testis
- Appendix testis
- Epididymis
- Spermatic cord
- Blood vessels

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## Common Indications

QUIZ

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## Common Indications

Hemi scrotum pain

Trauma

Unable to palpate testis

Palpable lump in groin/scrotum

Scrotal swelling

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## Role of Ultrasound

<ul style="list-style-type: none"> <li>• What we assess</li> <li>- Testes location</li> <li>- Size and echotexture</li> <li>- Vascularity</li> <li>- Mobility</li> </ul>	<p>Scanning tips</p> <ul style="list-style-type: none"> <li>- High frequency linear transducer</li> <li>- Warm gel to prevent cremaster reflex</li> </ul>
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## Main Pathologies

UNDESCENDED TESTES

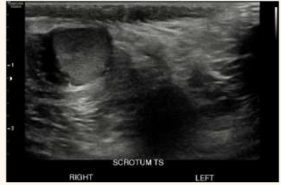
HYDROCELE

TESTICULAR TORSION

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## UNDESCENDED TESTES

- ‘Cryptorchidism’ is the absence of testes in scrotal sac
  - undescended
  - ectopic
  - atrophic
- Implication
  - Increased risk of infertility
  - Increased risk of testicular cancer

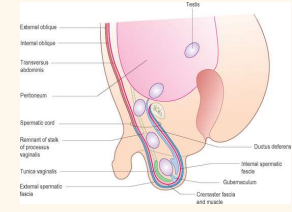


RIGHT SCROTUM TS LEFT  
Absent left testis

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## Normal Testicular Descent

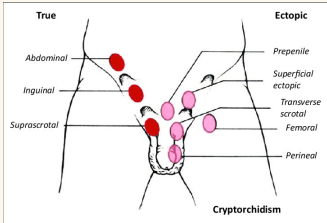
- Normal path of descent
  - kidney to scrotum
- Two stages:
  1. 8-15 weeks gestation  
Enlargement of Gubernaculum
  2. 25-35 weeks gestation  
Extension of Gubernaculum into scrotum  
- more commonly disrupted (more complex)



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## Abnormal Testicular Descent

- Abnormal descent
  - incomplete migration along path
  - ectopic migration from path
- Failure at 8-15/40
  - remain intraabdominal
- Failure at 25-35/40
  - localized between deep inguinal ring and scrotum
- Ectopic location

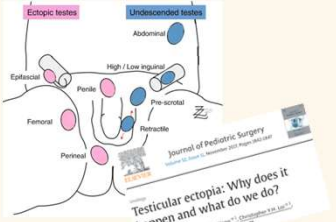


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## Undescended/Ectopic Locations

**Ectopic migration from normal path**

- Abdominal wall/epifascial (2)
- Femoral (1)
- Pubopenile (3)
- Perineal




Journal of Pediatric Surgery  
Testicular ectopia: Why does it happen and what do we do?  
Shenoy R, Purohit S, Jeyaraj S, Wang Y, Chinnappa S, et al. Indian J Urol. 2019;35(1):1-6.

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## Locating the Testes

- Incomplete migration
  - Follow path of descent (kidney to scrotum)
  - Good search of inguinal canal
- Ectopic location
  - second set of eyes
  - state limitations




RIGHT TESTIS LONG  
Right testis in inguinal canal

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## Ultrasound

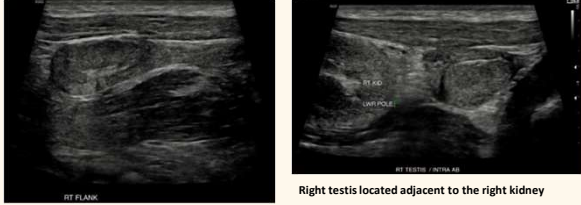
- Mobility/reducibility
  - Massage testes into scrotum
  - Important info for surgeons (informs need for orchidopexy)
- Size/echotexture
  - heterogenous
  - reduced flow
  - atrophic



Both testes in the scrotum

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## Interesting Cases 1



Right testis located anterior to the psoas

Right testis located adjacent to the right kidney


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## HYDROCELE

- Serous fluid collection between the layers of the Tunica Vaginalis
- Congenital or acquired
- Simple or complex
  - infection or haemorrhage

CLINICAL INDICATION

- Painless scrotal swelling

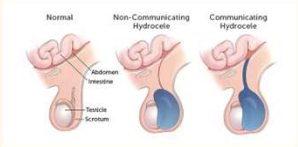


Right sided simple hydrocele

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## Types

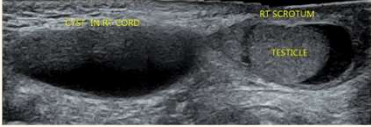
- Non-communicating
  - imbalance between production and absorption of serous fluid
- Communicating
  - 'spermatic cord' hydrocele
  - Patent processus vaginalis
  - Free flow of fluid from peritoneum



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## Spermatic Cord Hydrocele

- Encysted hydrocele
  - no communication with tunica vaginalis or peritoneum
- Funicular hydrocele
  - communication with peritoneum at internal ring




Encysted hydrocele

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## Role of Ultrasound

- Volume of fluid
- Communication with tunica vaginalis/peritoneum
- Mobile echoes
- Size and echotexture of testes
- Vascularity




Large left sided hydrocele

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### Interesting Case 2

- 5 year old male presenting with a palpable lump in the left inguinal canal ?hernia



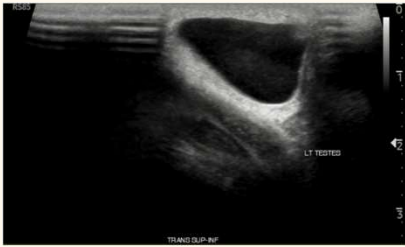
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### Interesting Case 2



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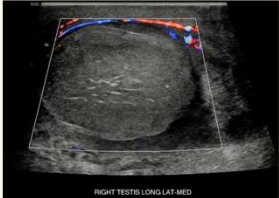
### Interesting Case 2



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### TESTICULAR TORSION

- Twisting of spermatic cord
- Reduced or absent blood flow
- Common cause: Bell-clapper deformity
- high attachment of tunica vaginalis




Absent blood flow in the right testis

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### Types

- Two types:
  1. Extra-vaginal
    - occurs at level of external inguinal ring
    - entire contents of inguinal canal rotate
    - neonates
  2. Intra-vaginal
    - more commonly due to Bell-clapper deformity
    - adults/young adults

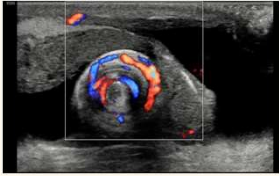


Comparison of blood flow in testes

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### Clinical Presentation

- Majority spontaneous or due to minor trauma
- Sudden onset of severe pain
- Nausea/vomiting
- Absence of fever/urethral discharge
- Symptoms may be intermittent
- torsion/de-torsion

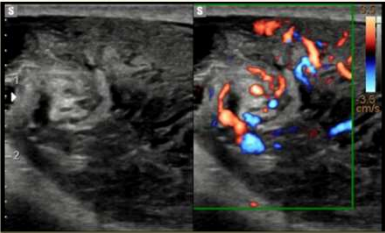


The 'whirlpool' sign

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### Role of Ultrasound

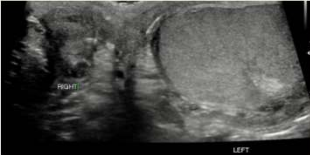
- 'Whirlpool sign'
- coiled spermatic cord
- Altered blood flow
  - reduced/absent (in testis + epididymis)
- Increased testis size
- Echotexture
  - homogenous = early
  - heterogenous = necrotic



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### Treatment

- Early detection and intervention is essential
- Salvage of testis is directly related to time
  - <6 hours = 100%
  - 6-12 hours = 50%
  - 12-24 hours = 20%
- Orchiectomy if necrotic

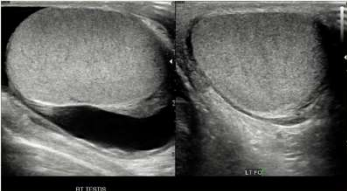


Necrotic right testis

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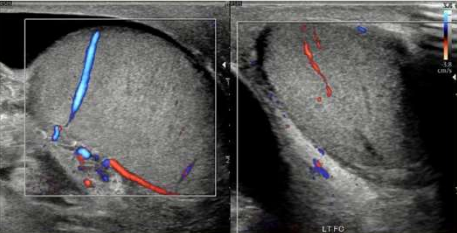
### Interesting Case 3

- 10 year old male presents to ED with right sided testicular swelling and pain




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### Interesting Case 3



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### Interesting Case 3



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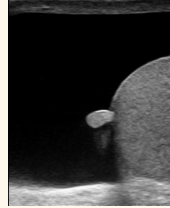
### Interesting Case 3



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## Torsion of the Appendix Testis

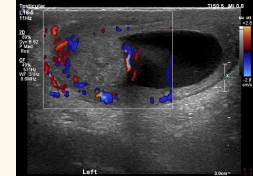
- Most common cause of acute hemiscrotum pain in children
- Classic finding 'blue dot sign'



- Ultrasound features
  - size >6mm
  - spherical shape
  - peripheral but no internal vascularity
  - scrotal wall thickening
  - hydrocele

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## Torsion of the Appendix Testis



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## LEARNING OUTCOMES

### COMMON INDICATIONS

- Unable to palpate testis
- Palpable lump in groin/scrotum
- Hemi scrotum pain
- Scrotal swelling
- Trauma

### MAIN PATHOLOGIES & INTERESTING CASES

- Undescended Testes
- Hydrocele
- Testicular Torsion

### KEY TAKEAWAYS

- Understand testicular anatomy
- Remember key indications
- Careful scanning
- Good look along the canal

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