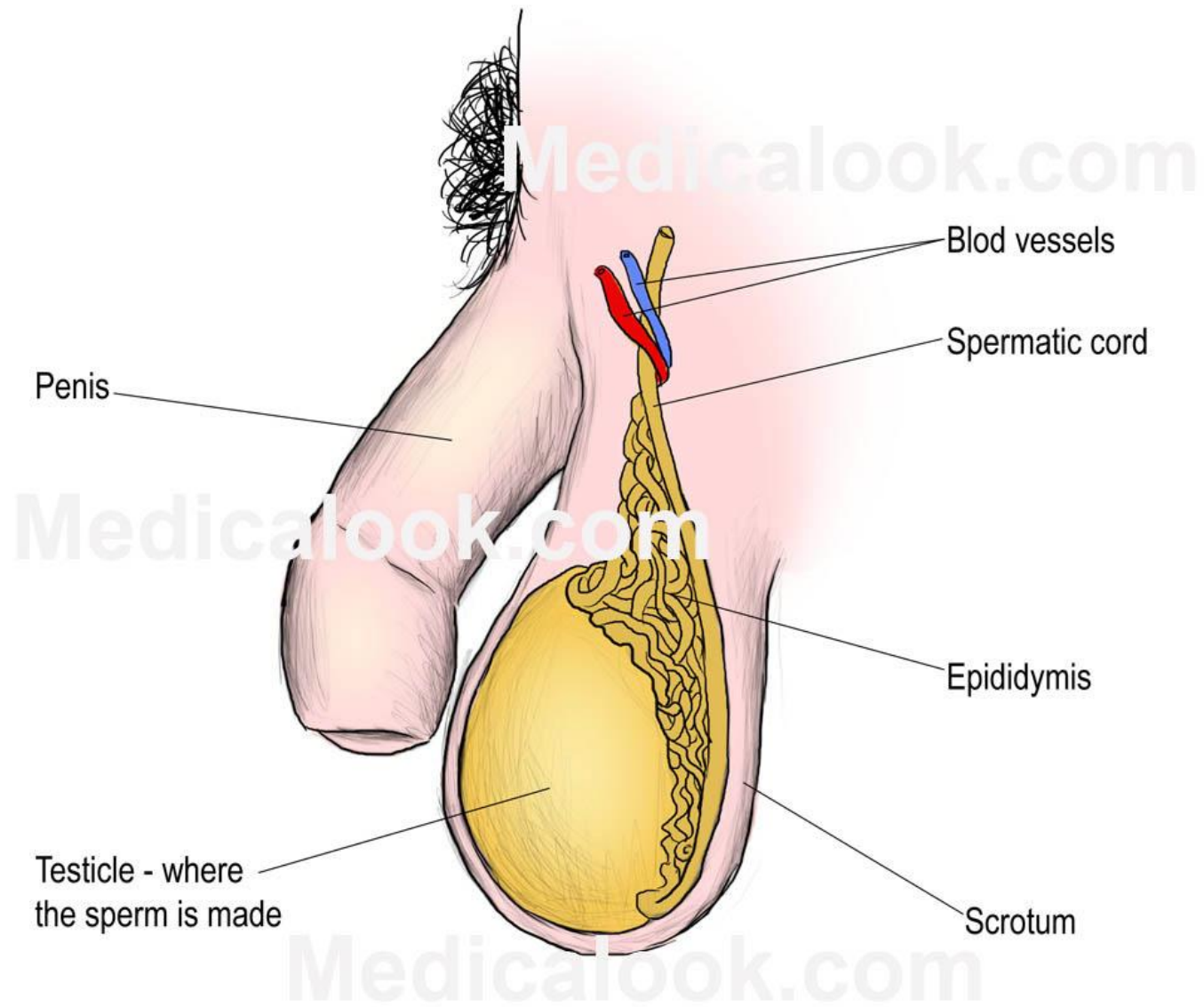


Benign Scrotal pathologies

Introduction:

Scrotum:

- A thin external skin, contains the two testes, the epididymis and part of the spermatic cord.
- A cutaneous pouch divided into two lateral portions which are usually not fully symmetrical.
- Embryological: it is derived from the labioscrotal folds.

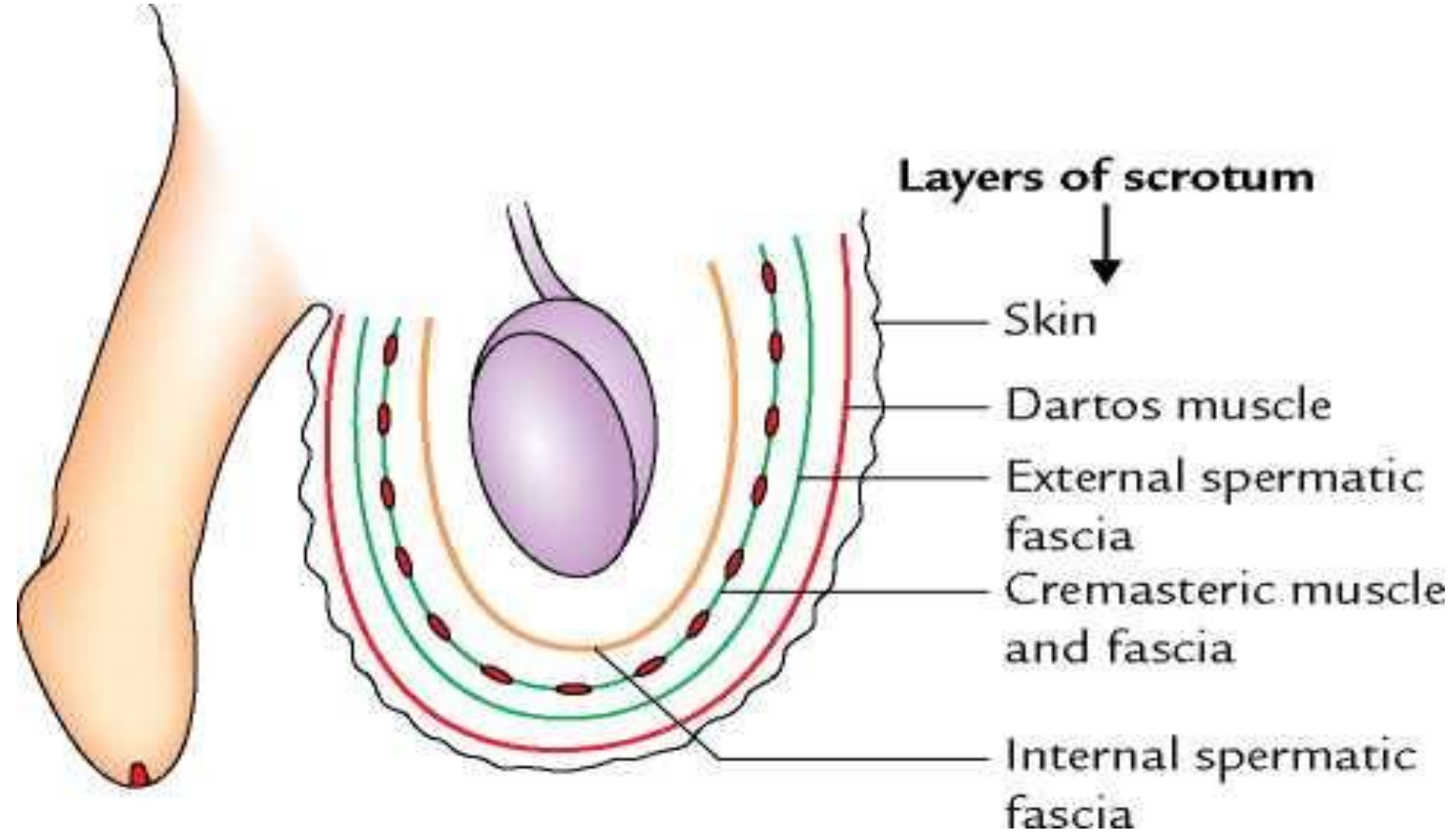


Anatomy of the Scrotum

1- **Scrotal wall:** (from superficial to the deep layers)

Rugated skin → Superficial fascia → Dartos tunica (*which divides the scrotum into two cavities and regulate temperature of the testicles to promote spermatogenesis*) → **External spermatic fascia → cremasteric fascia → Internal spermatic fascia.**

- These layers avoid testes from being injured.
- Regulate intra scrotal temperature.



Anatomy of the Scrotum

2- **Testes:**

- Ovoid glandular organ, produce the sperm cells and testosterone.
- Wrapped by the tunica vaginalis and tunica albugenia.
- Invaginations of tunica albugenia devide the testis into hundreds of small segments.
- These small segments are called lobules and contain several tightly coiled tubes called seminiferous tubules.

Anatomy of the Scrotum

3- **Epididymis:**

- Firm tube lies on the back surface of each testicle, act as a storage space for the sperm. Has three regions: the head, body and tail.

Anatomy of the Scrotum

Arterial supply :

- Scrotal wall: The scrotum receives arterial supply from the anterior and posterior scrotal arteries.
 - The anterior scrotal artery arises from the external pudendal artery
 - The posterior is derived from the internal pudendal artery.
- Testes: testicular arteries (spermatic arteries) which divide into two main branches; testicular and epididymal artery.
- Epididymis: Same as that of the testes and deferential artery (artery to the ductus deferens) a branch of superior vesicle artery.

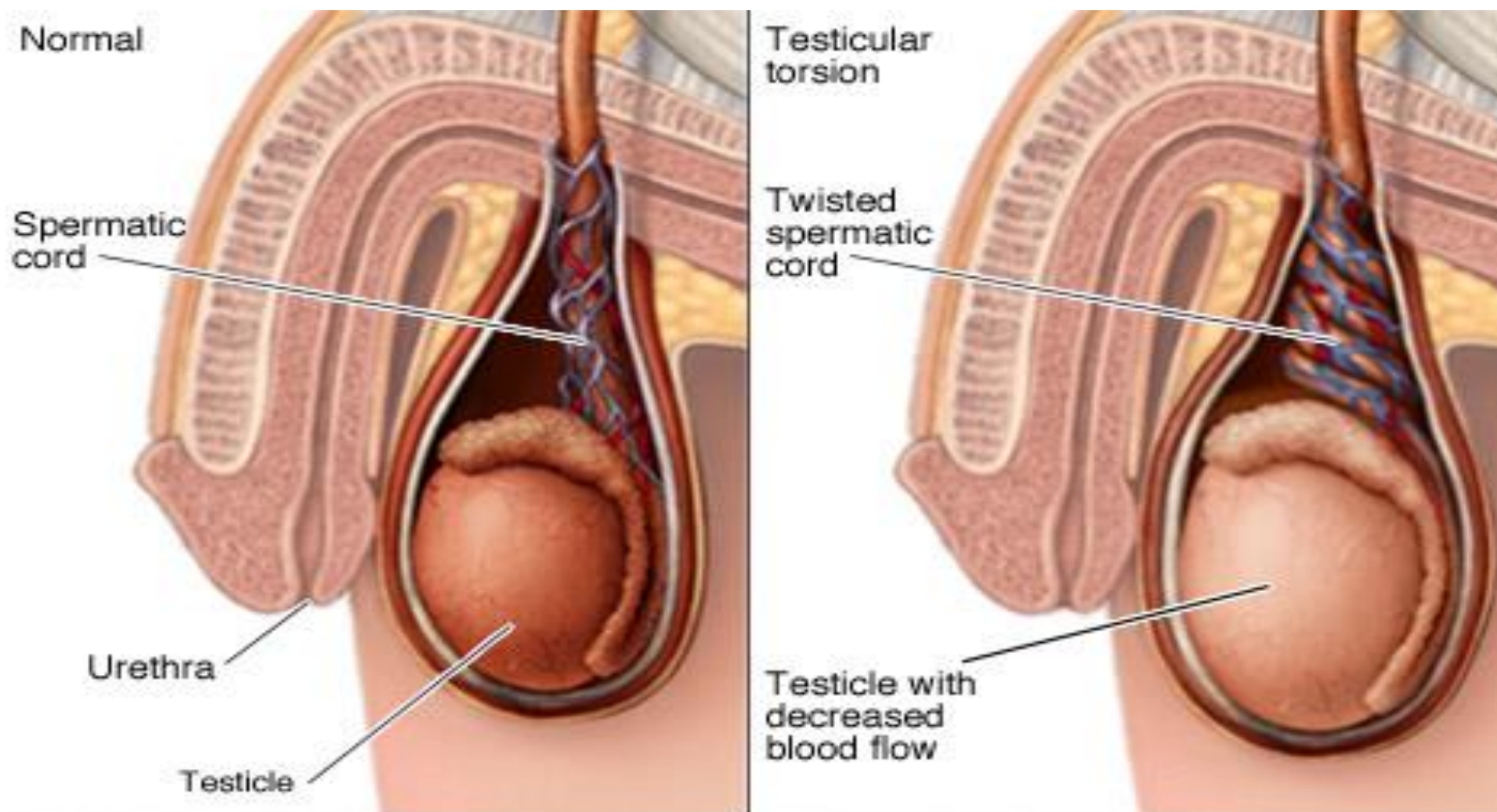
Venous supply:

- Pampiniform plexus a network of small veins

Scrotal pathologies:

- 1- Testicular torsion.
- 2- Epididymo-orchitis.
- 3- Spermatocele.
- 4- Hydrocele.
- 5- Varicocele.
- 6- Penile fracture.

Testicular torsion



Testicular torsion:

- Torsion of the spermatic cord structures and subsequent loss of the blood supply to the ipsilateral testicle .
- Urological emergency: early diagnosis and treatment are vital to save the testicle and preserving future fertility.
- The rate of testicular viability decreases after 6 hours from onset of symptoms.
- Primarily disease of adolescent and neonates and the most common cause of testicular loss in these age groups.
- No age is immune!

Theories?

1- High attachment of the tunica vaginalis

The tunica vaginalis is attached securely to the posterior lateral aspect of the testicle, and, within it, the spermatic cord is not very mobile. If the attachment of the tunica vaginalis to the testicle is inappropriately high, the spermatic cord can rotate within it

2- Testicular torsion often occurs several hours after vigorous activity, a minor injury to the testicles.

Cold temperature or rapid growth of the testicle during puberty also might play a role.

3- Redundant mesorchium

Risk factors:

- **Age:**
 - Testicular torsion is most common between ages 12 and 16.
- **Previous testicular torsion:**
- **Family history of testicular torsion**

Symptoms of testicular torsion:

- Sudden, severe pain in the scrotum.
- Swelling
- Abdominal pain
- Nausea and vomiting
- Fever
- A testicle that's positioned higher than normal or at an unusual angle

Physical examination:

Tenderness on affected testis and swelling.

Diagnosis:

History and physical examination/ scrotal ultrasound/ Raadioisotope scan (most sensitive but not practical)/ CBC and UA to rule out other causes.

Differential diagnosis:

Torsion of testicular appendages.

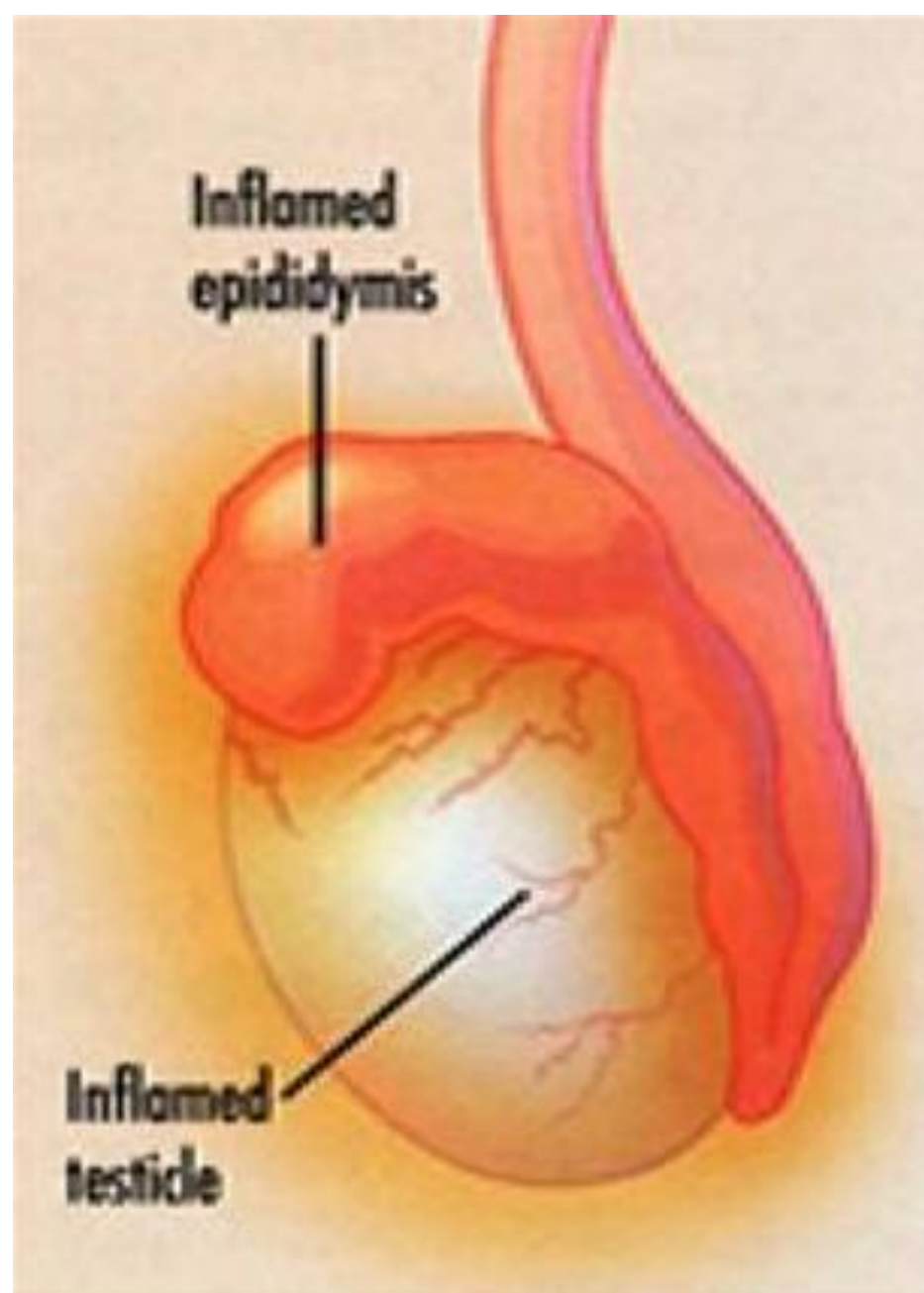
Epididymoorchitis

Treatment:

Scrotal exploration, detorsion and fixing the other testis.

Epididymo-orchitis:

- Inflammation of the epididymis and testes.
- Epididymo-orchitis is usually caused by an infection.
- Infection can occur after inserting a **catheter** into the bladder, or the spread of infections from elsewhere in the **urinary tract** .
- In young men (<35 y), the cause is a **sexually transmitted disease**.
- Rare causes include infection by certain viruses or fungi.



Manifestations:

- Swelling and tenderness of the affected area
- Fever (sometimes).

Diagnosis:

Clinical, urinalysis, and Doppler ultrasonography.

Treatment: according to the general condition

- * Low grade fever → oral antibiotics
- * High grade fever & co-morbidities → IV antibiotics

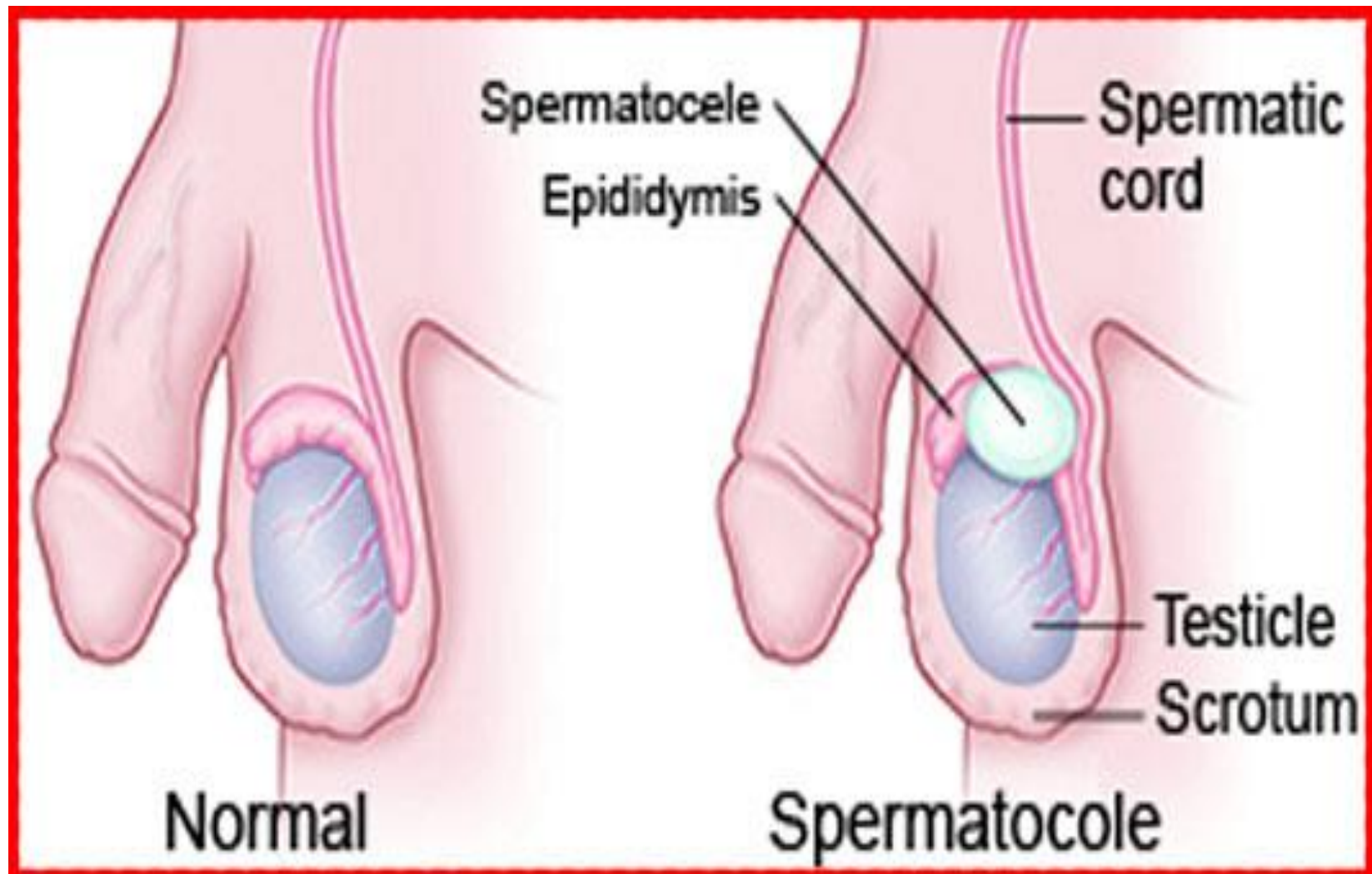
Scrotal elevation and analgesics.

Comparison between epididymitis and torsion

	Epididymitis	Torsion
Age	rare Befor puberty	Peak age (15-20) Can occur at any age.
Onset	Acute or gradual	Sudden
Nausea	Absent	Ferquent and vomiting.
Pain	Marked	Severe
Tempreture	Febrile	Normal
Urine	Bacteria	Normal
Leukocytosis	Usual	Rare
Manual elevation of scrotum	Decrease the pain	Increase with pain
Position of the testis	normal	elevated

Spermatocele:

- A benign cystic accumulation of sperm that arises from the head of the epididymis.
- The differential diagnoses include **hydrocele**, **varicocele**, **hernia**, simple epididymal **cyst**, and **neoplasm**.
- History, examination, and ultrasonography can aid in the differentiation.
- Spermatoceles are typically **asymptomatic** and do not require treatment. Intervention may be considered for uncomfortable, painful, or progressively enlarging spermatoceles.
- **Diagnosed by** : Physical examination (torch light) and ultrasound.
- **Treatment**: spermatocelectomy.



Hydrocele

A fluid collection within the tunica vaginalis of the scrotum or along the spermatic cord.

These collections may represent persistent developmental connections along the spermatic cord or an imbalance of fluid production versus absorption.

Although hydroceles are common in newborns, they can also occur at **any age** in later life.

Causes:

- Inflammation/ tumor/ trauma.
- Defective absorption.
- Congenital (patent connection with abdominal cavity)

Types:

- Communicating in infantile due to patent processus vaginalis.
- Encysted.

Symptoms?

- Often a hydrocele does not cause symptoms.
- Swelling
- pain

Diagnosis?

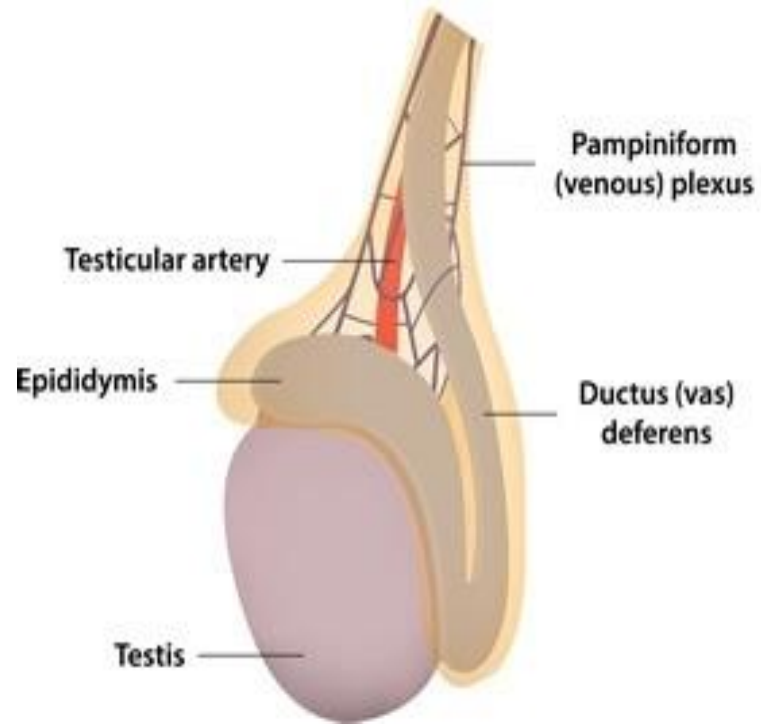
- Hx and physical examination.
- **transillumination test.**
- An **ultrasound** confirm the diagnosis of a hydrocele.

DDX: Hernia.

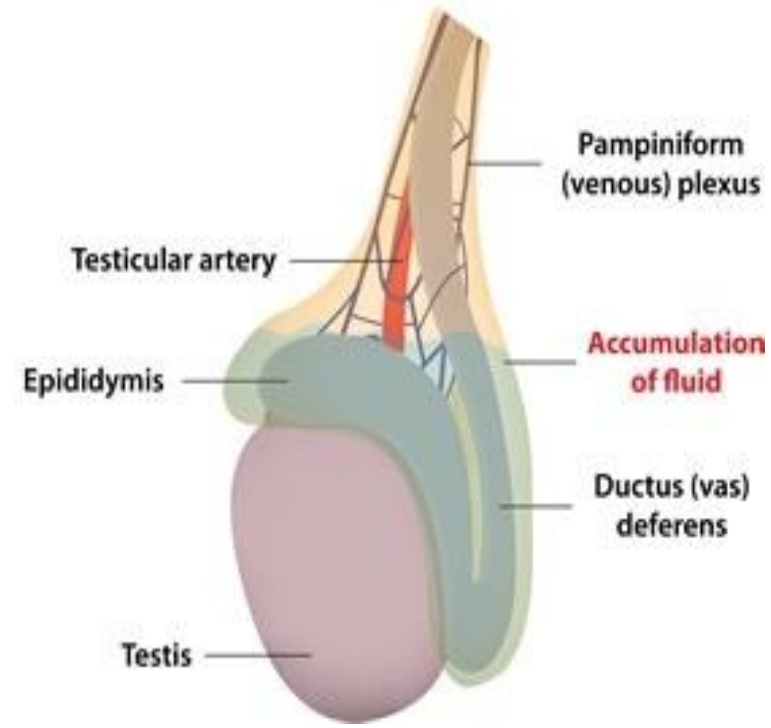
Treatment: hydrocelectomy.

Hydrocele

Healthy Testicle



Hydrocele



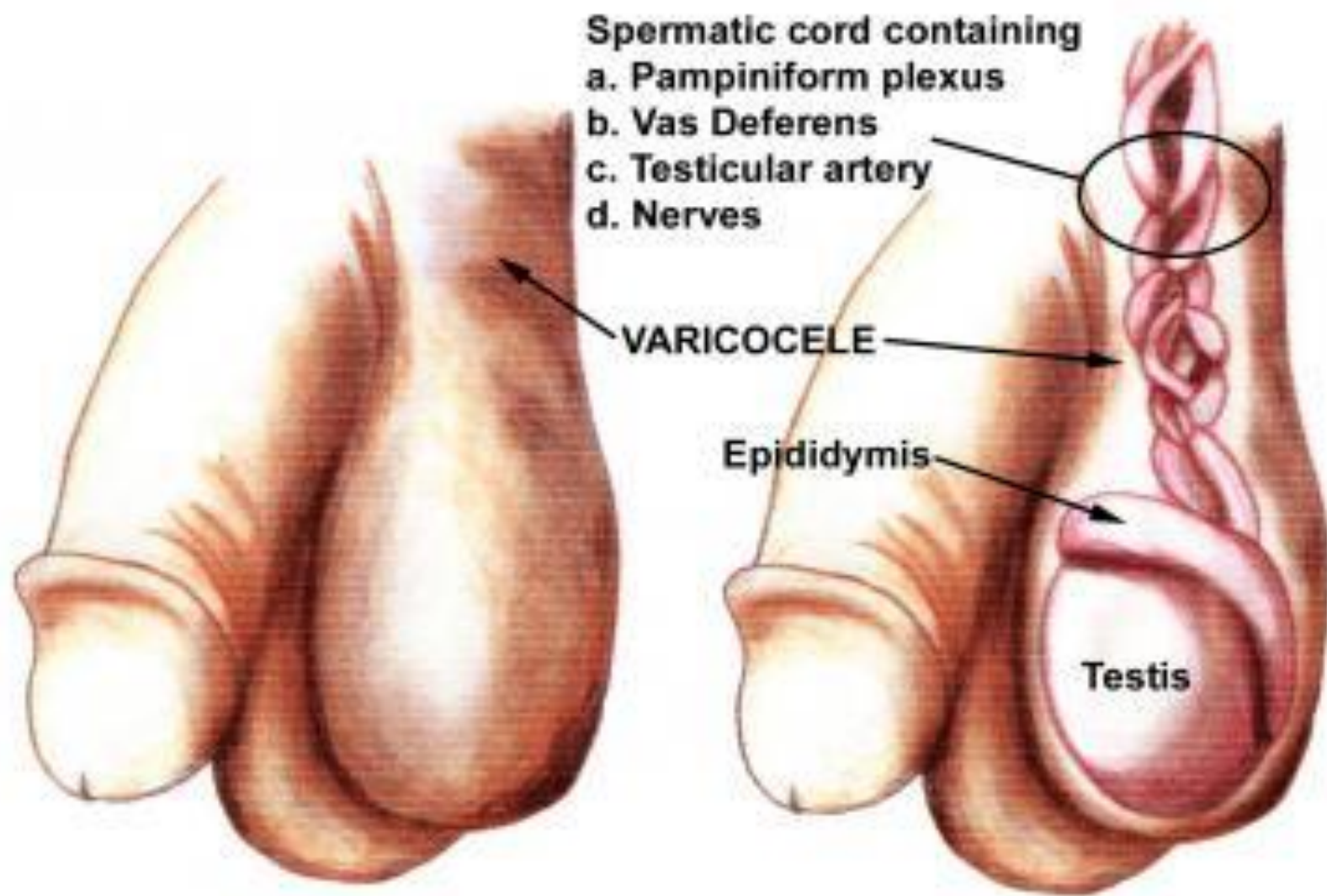
Varicocele:

- Dilatation of the pampiniform venous plexus and the internal spermatic vein.
- Occurs in approximately 15-20% of all males and in 40% of infertile males.
- **Much more common (approximately 80-90%) in the left testicle than in the right because of several anatomic factors:**
 - 1- The angle at which the left testicular vein enters the left renal vein (runs vertically).
 - 2- The lack of effective antireflux valves at the junction of the testicular vein and renal vein.
 - 3- The increased renal vein pressure due to its compression between the superior mesenteric artery and the aorta.

Symptoms:

Heavy dull aching pain.

Higher temperature may inhibits normal sperm function and lead to sub-fertility.



Grading:

- 1: Palpable only with vasalva.
- 2: Palpable on standing without vasalva.
- 3: Visible through the scrotum skin.

Diagnosis:

Ultrasound/ Doppler.

Treatment:

Surgical ligation, when? In severe pain/ infertility/ large varicocele with smaller testis on the side of varicocele especially in adolescents.

Hematocele

The accumulation of blood in the space between the parietal and visceral tunica vaginalis.

Often associated with a hydrocele.

Blood-filled cavitory cyst that may be calcified with long duration.

Pathology

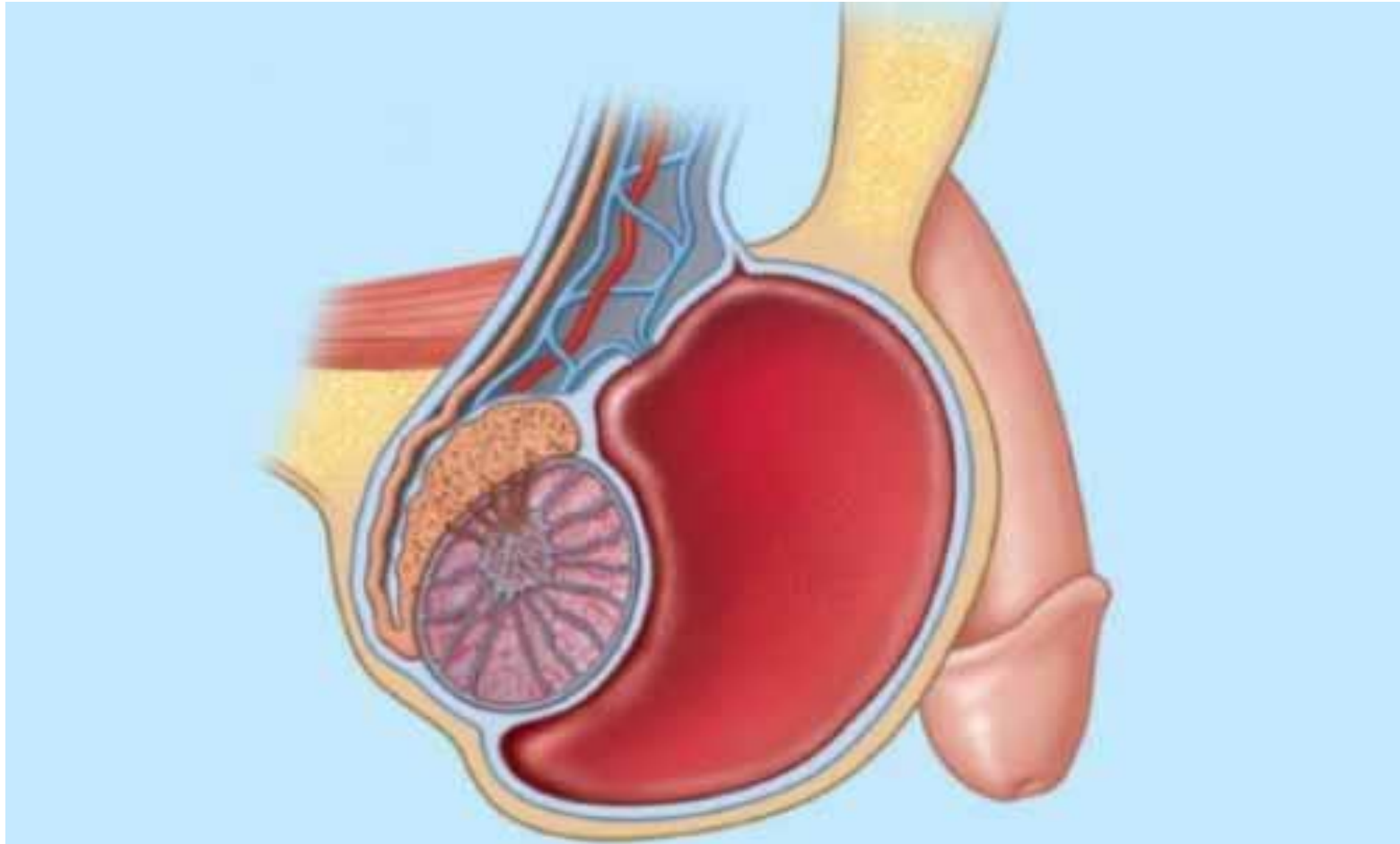
A haematocele occurs following **trauma** to the scrotum, or on occasion following surgery.

Diagnosis

Ultrasound is usually the sole imaging modality used.

Differential diagnosis

Testicular rupture



Penile fracture

Penile fracture is the traumatic rupture of the corpus cavernosum.

relatively uncommon.

A urologic emergency.

- Sudden blunt [trauma](#) or abrupt lateral

bending of the penis in an erect state can break the markedly thinned and stiff tunica albuginea, resulting in a fractured penis.

One or both corpora may be involved, and concomitant injury to the penile urethra may occur.

* Penile rupture can usually be diagnosed based solely on history and physical examination findings.

