

Inguinal Hernia Anatomy - Laparoscopic Revisited

Dr Harshad Soni, MS, FIAGES

Fellowship Colorectal & HPB Surgery (UK, S.Korea)

Kaizen Hospital

Institute of gastro enterology & research centre.

Ahmedabad

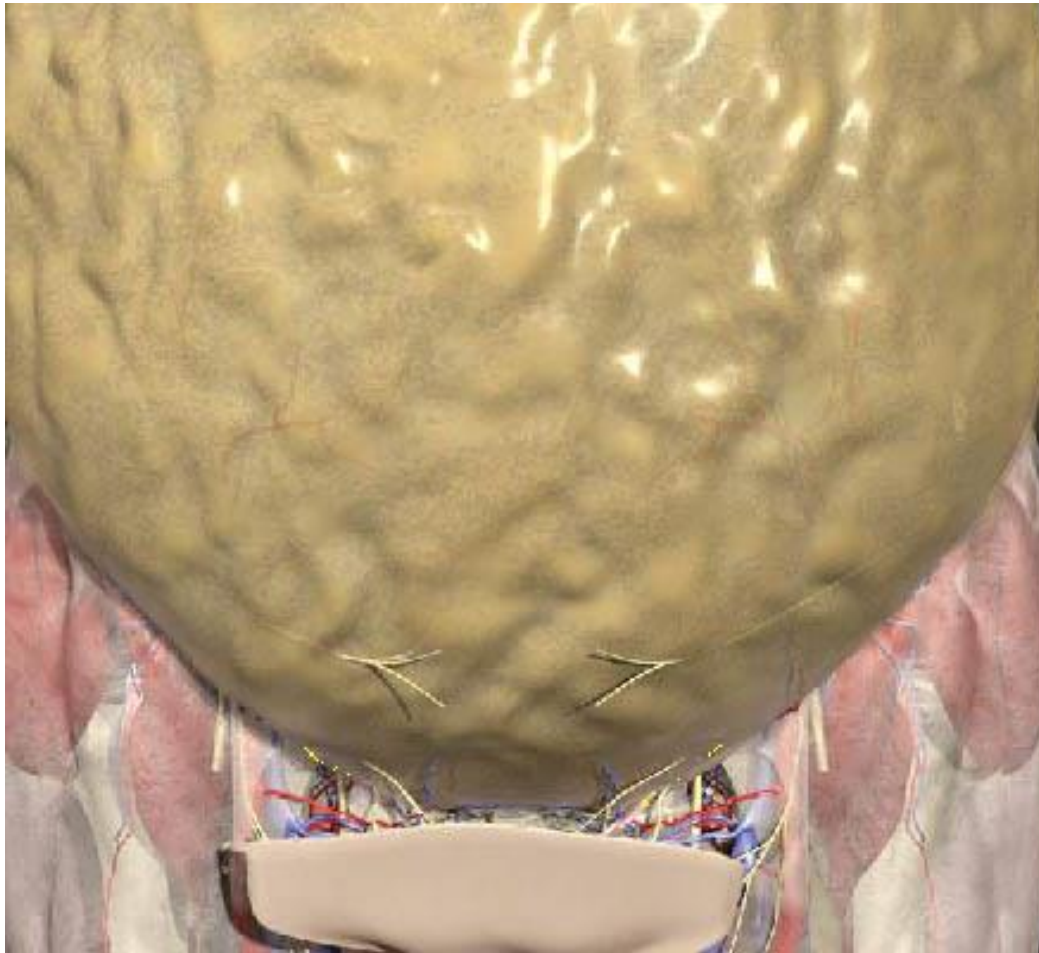
- “No disease of human body, belonging to the province of the general surgeon, requires in its treatment a greater combination of accurate anatomical knowledge with surgical skill, than hernia in its all varieties”

> Sir Astley Cooper

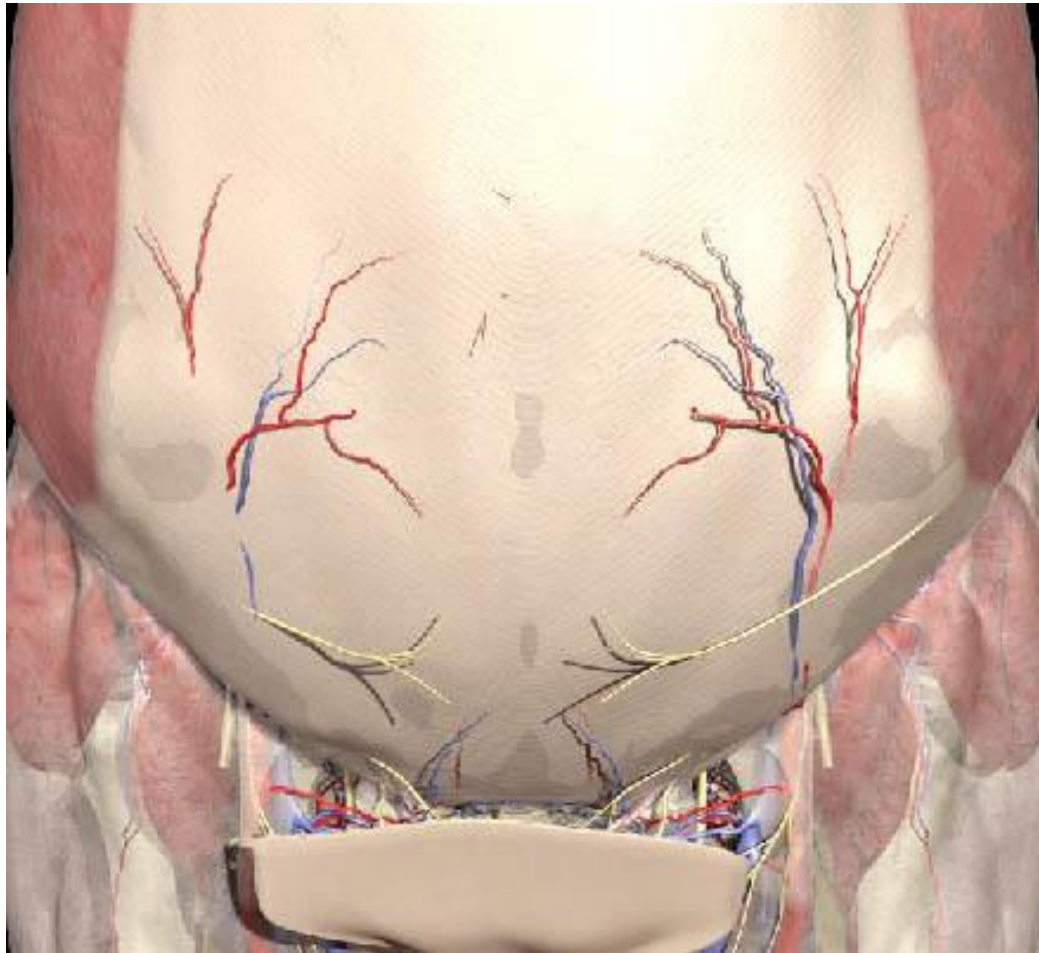
Anatomic Considerations

- The inguinal region must be understood with regard to its three-dimensional configuration
- A knowledge of the convergence of tissue planes is essential
- If repairing the hernia laparoscopically, the anatomy must be well understood from the peritoneal surface outward
- There is a considerable amount of anatomic variability with regard to:
 - Size and location of the hernia
 - Degree of adipose tissue

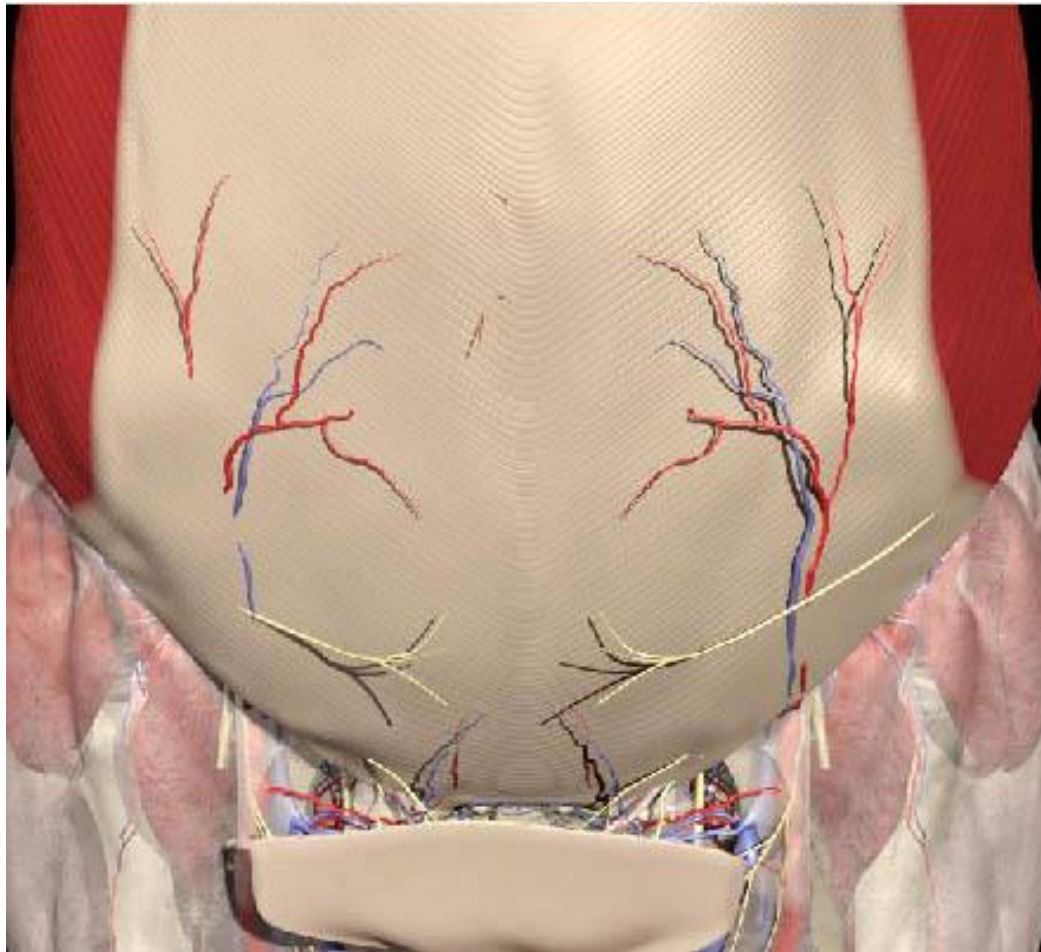
Subcutaneous tissue



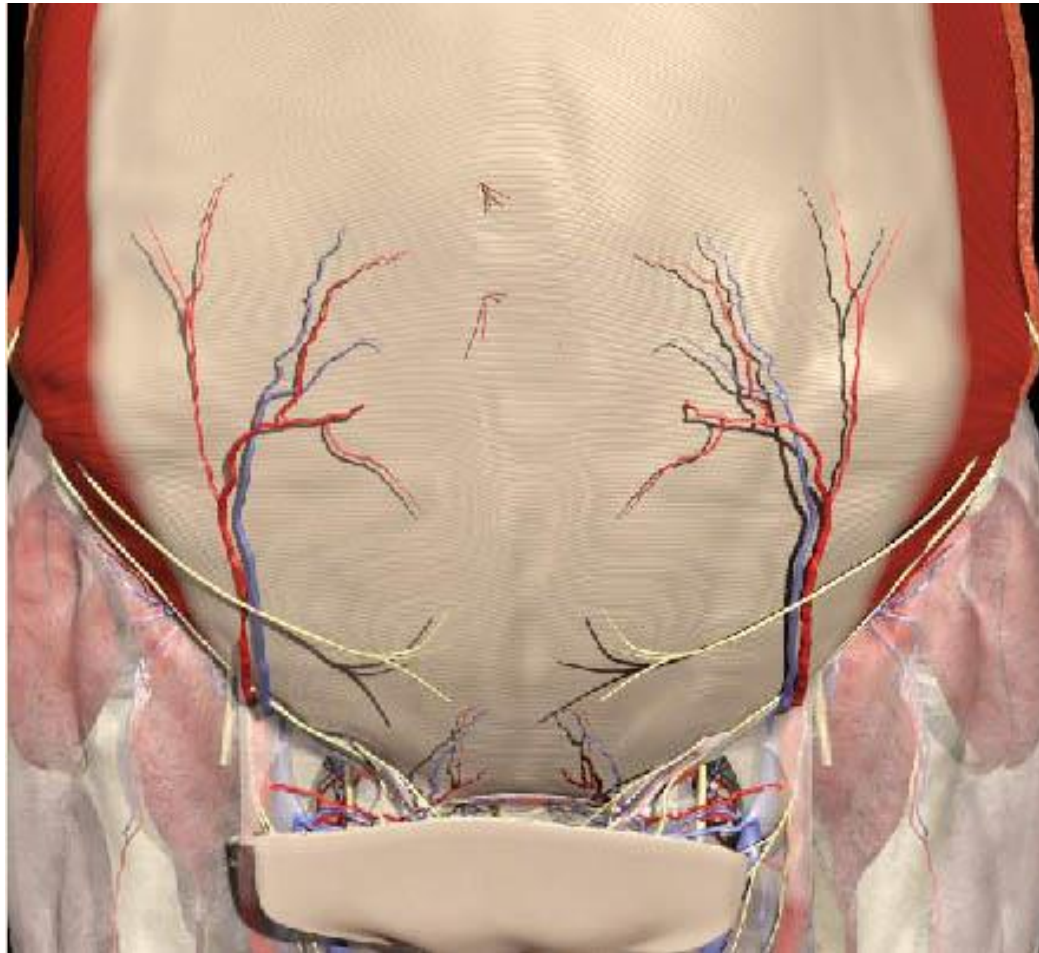
Fascia Scarpa



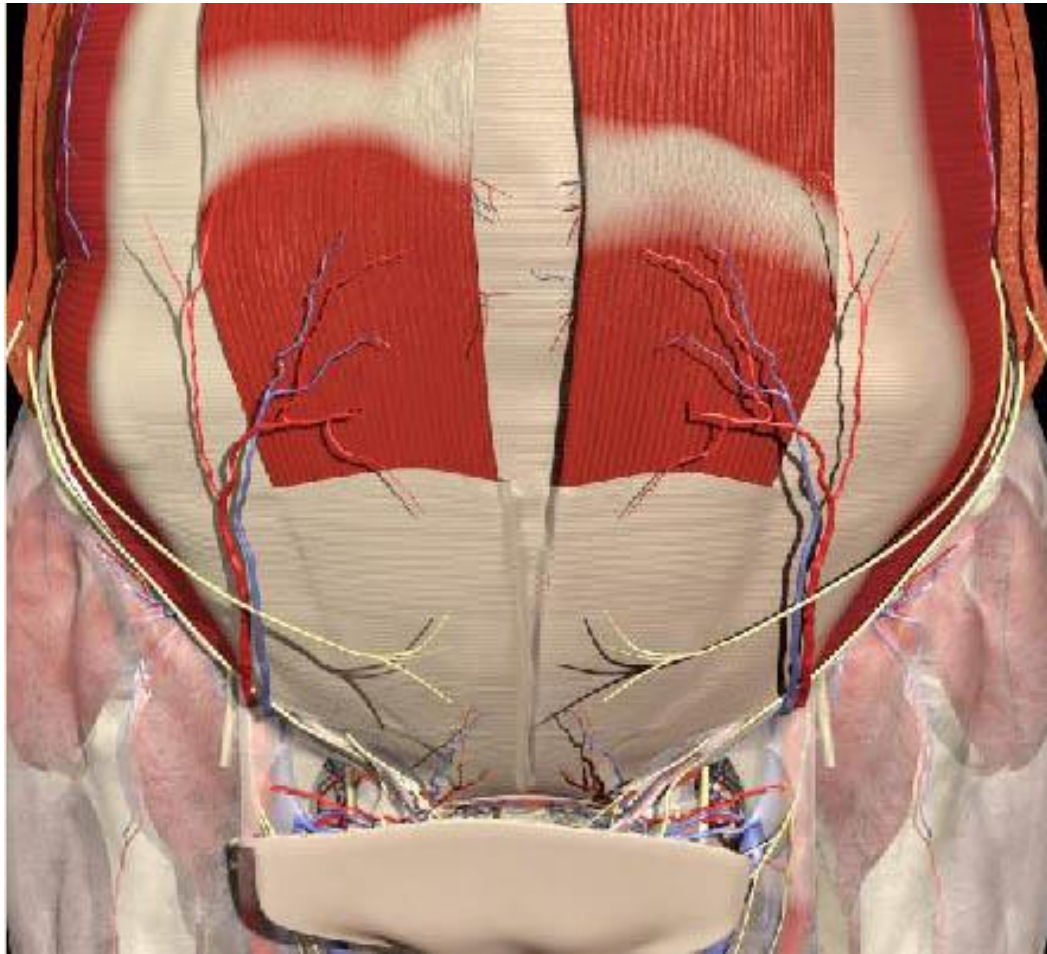
External Oblique Muscle



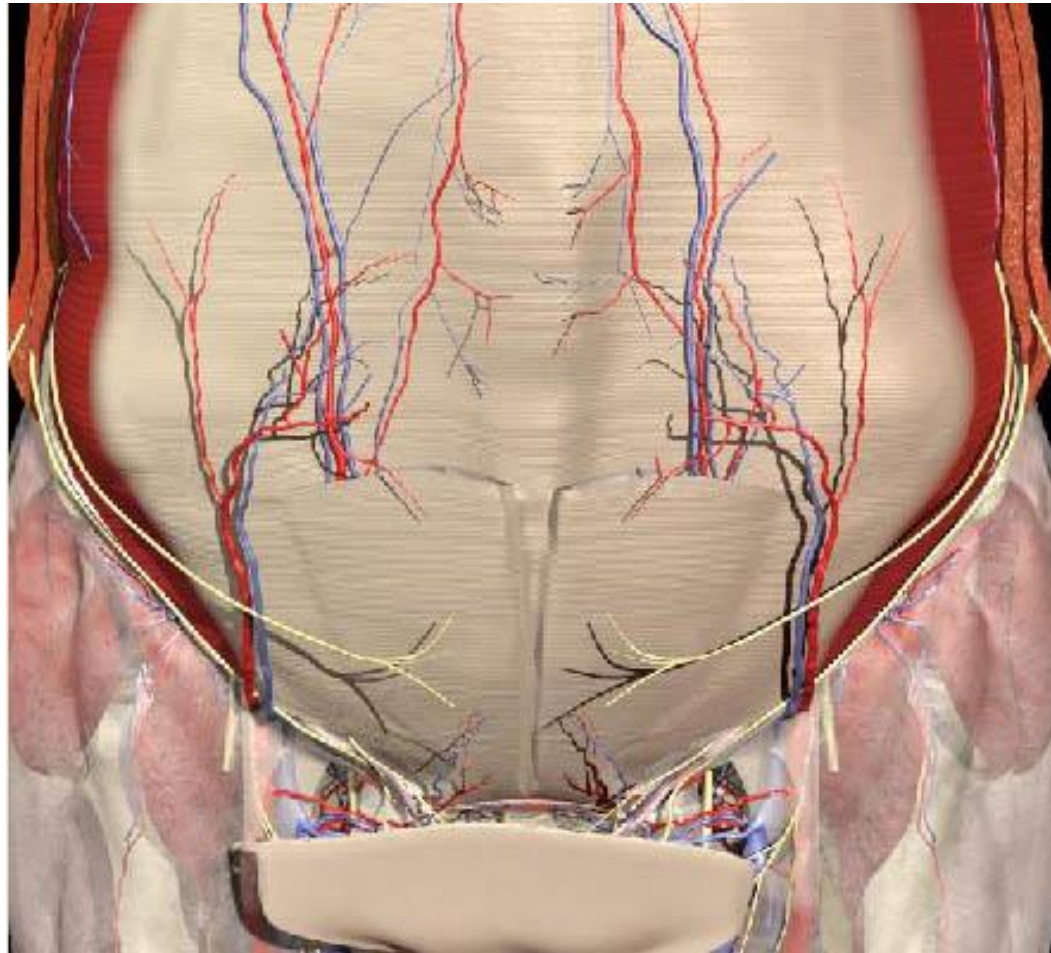
Internal oblique Muscle



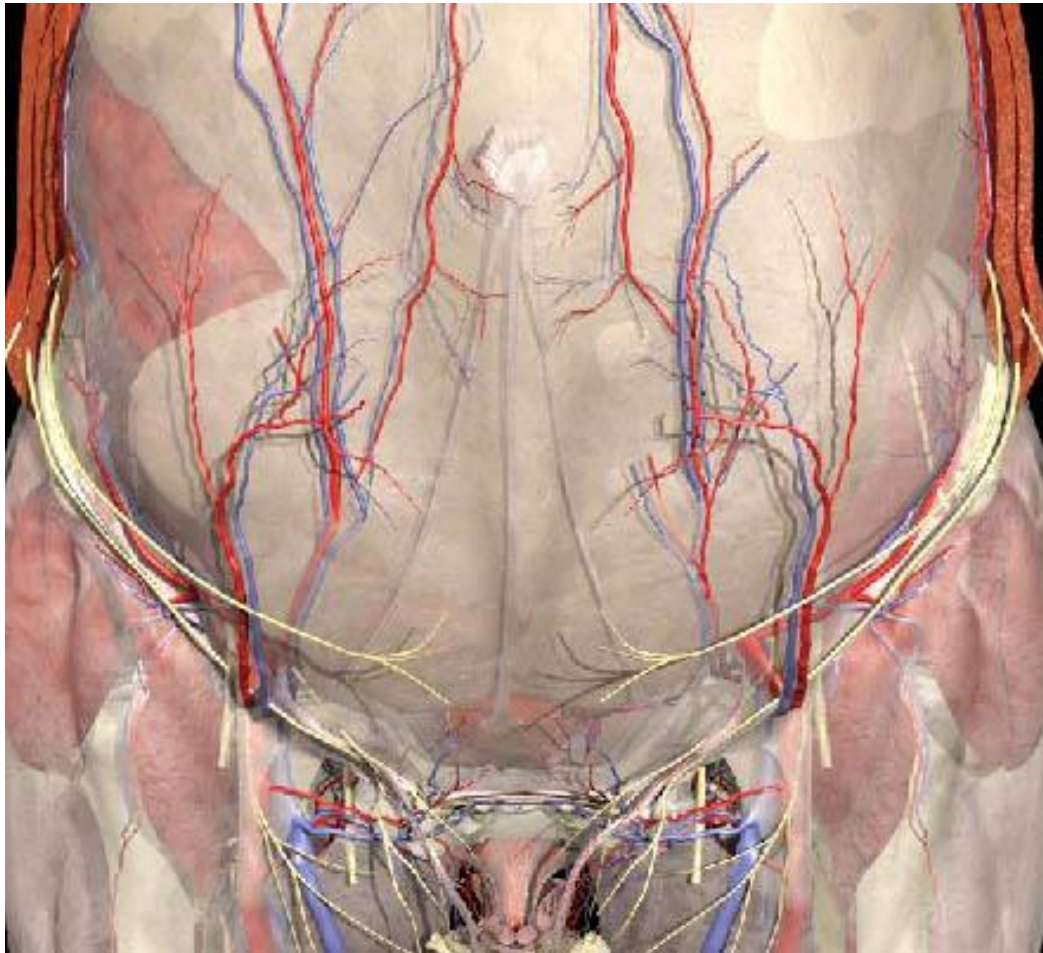
Rectus muscles



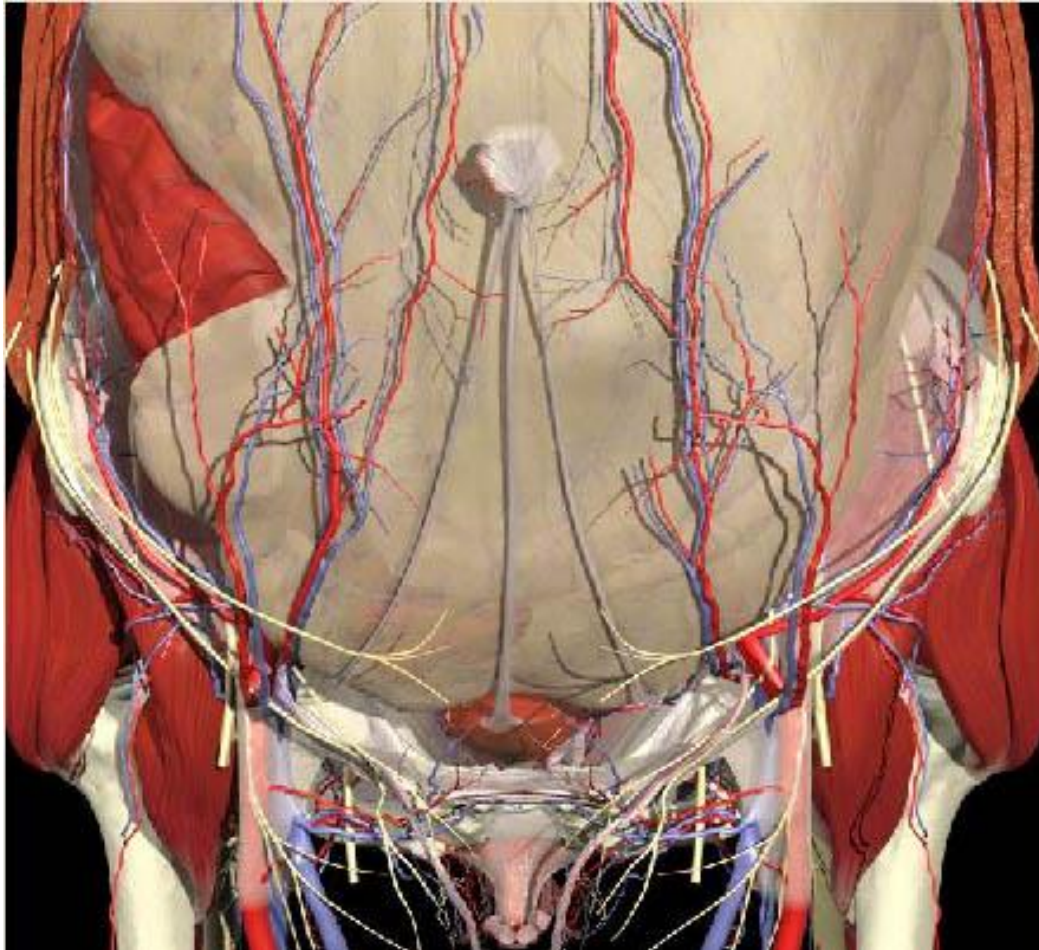
Transversus abdominis muscle



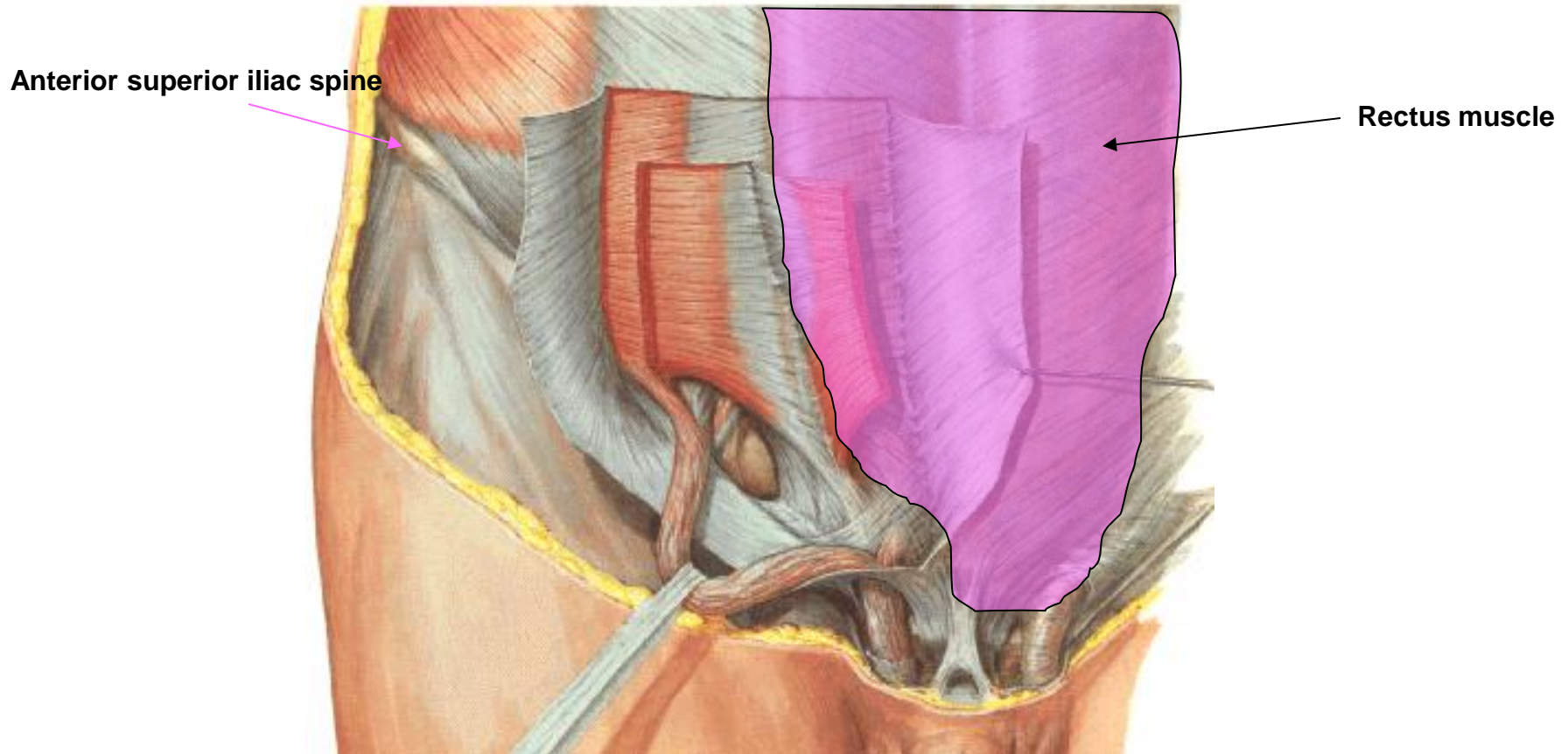
Fascia Transversalis



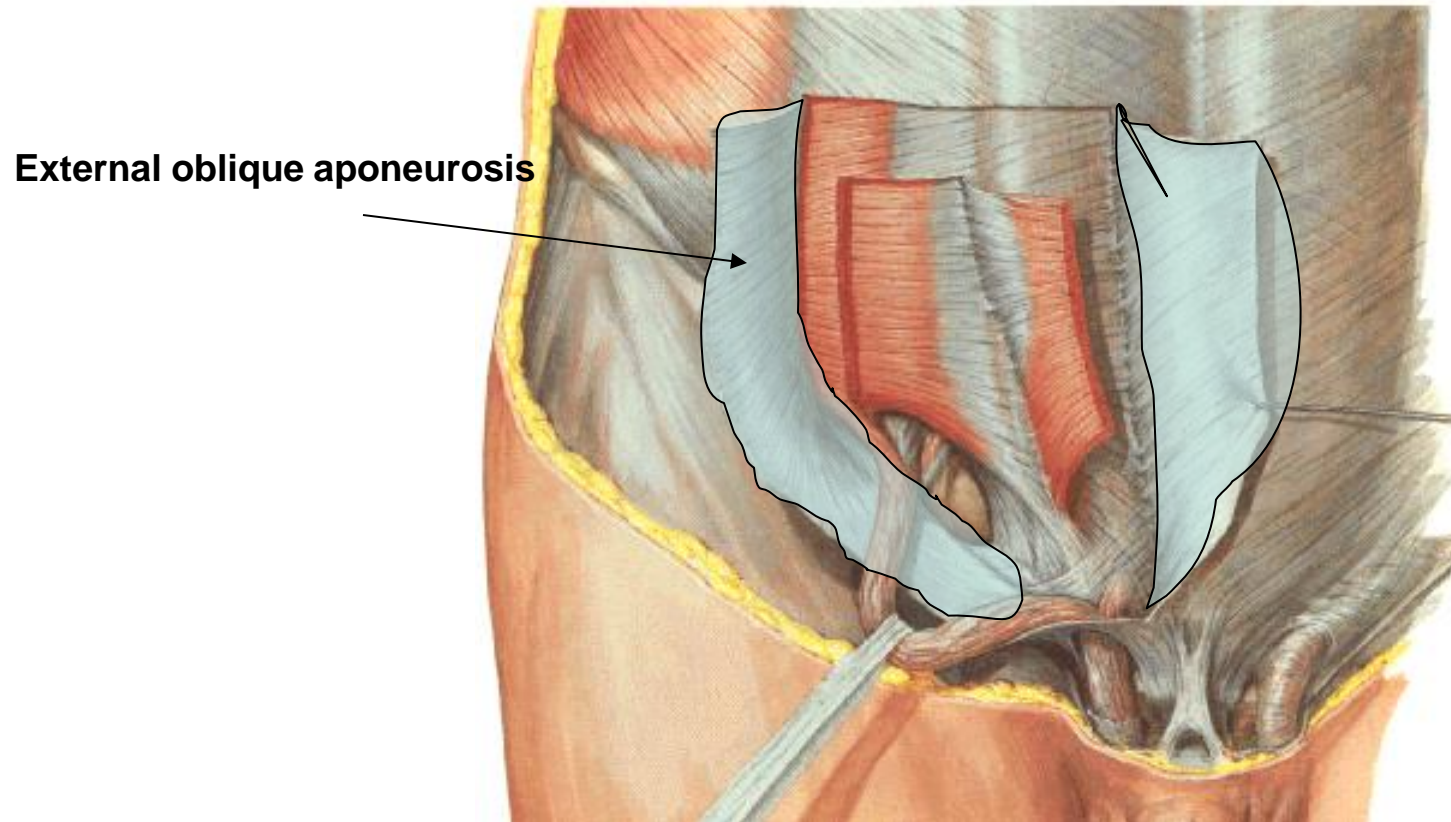
Parietal Peritoneum



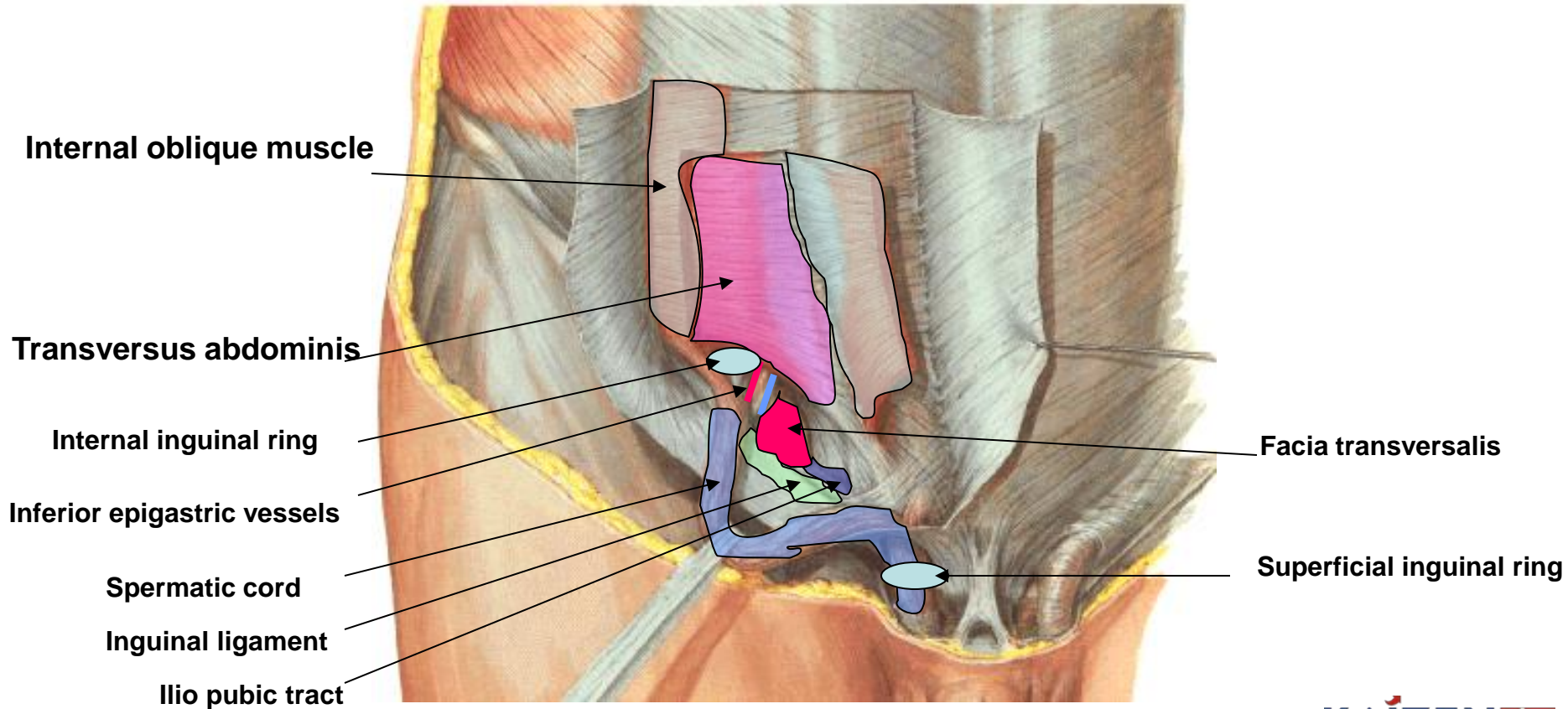
Abdominal wall Anatomy



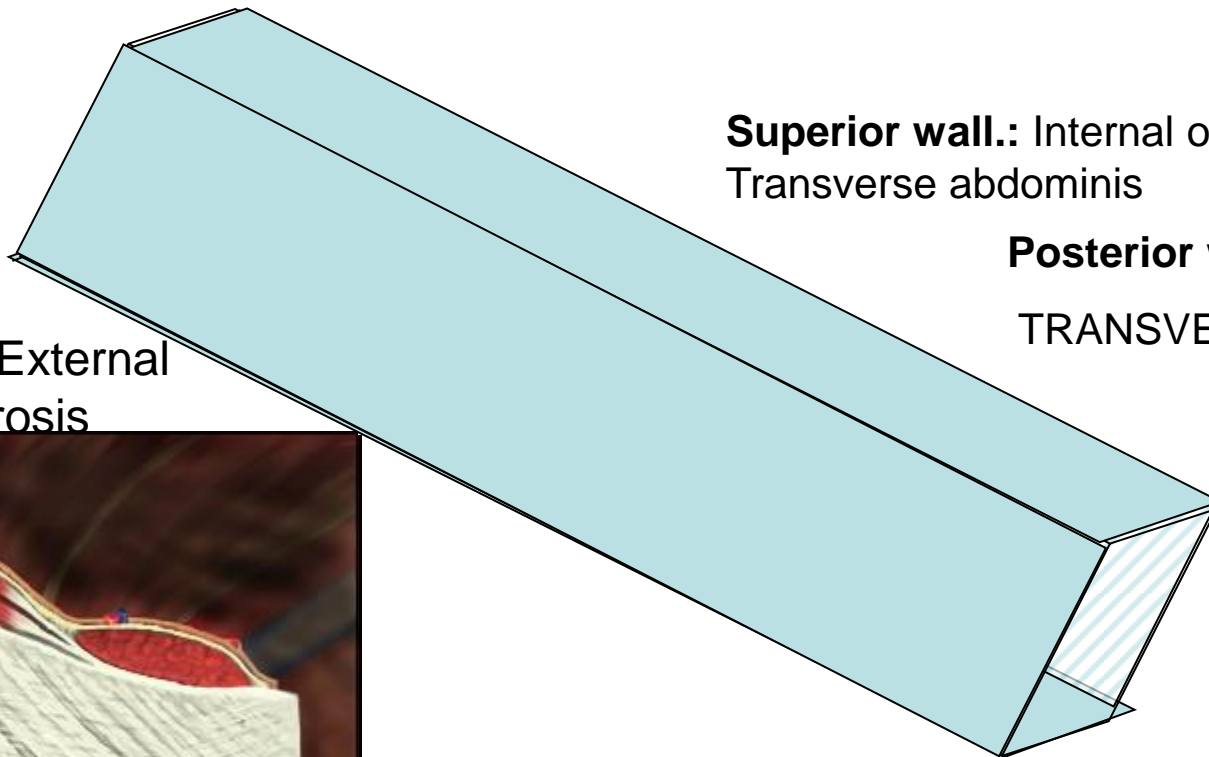
Abdominal wall Anatomy



Abdominal wall Anatomy



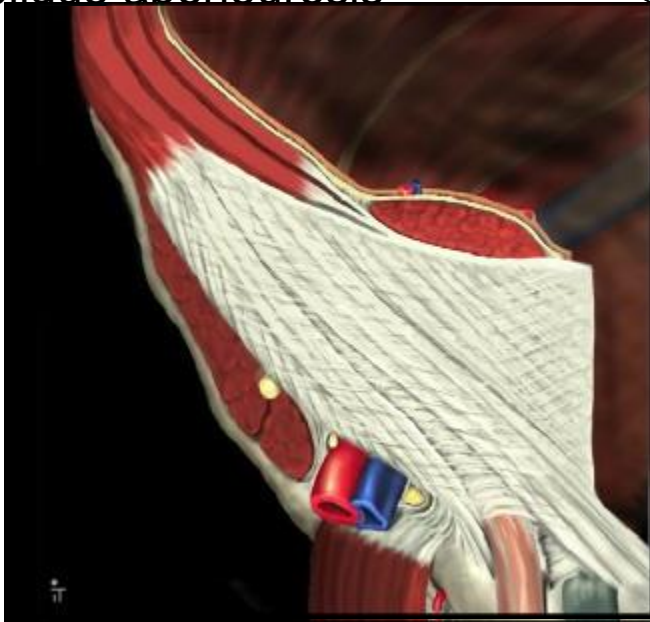
Anatomy of Inguinal canal



Superior wall.: Internal oblique & Transverse abdominis

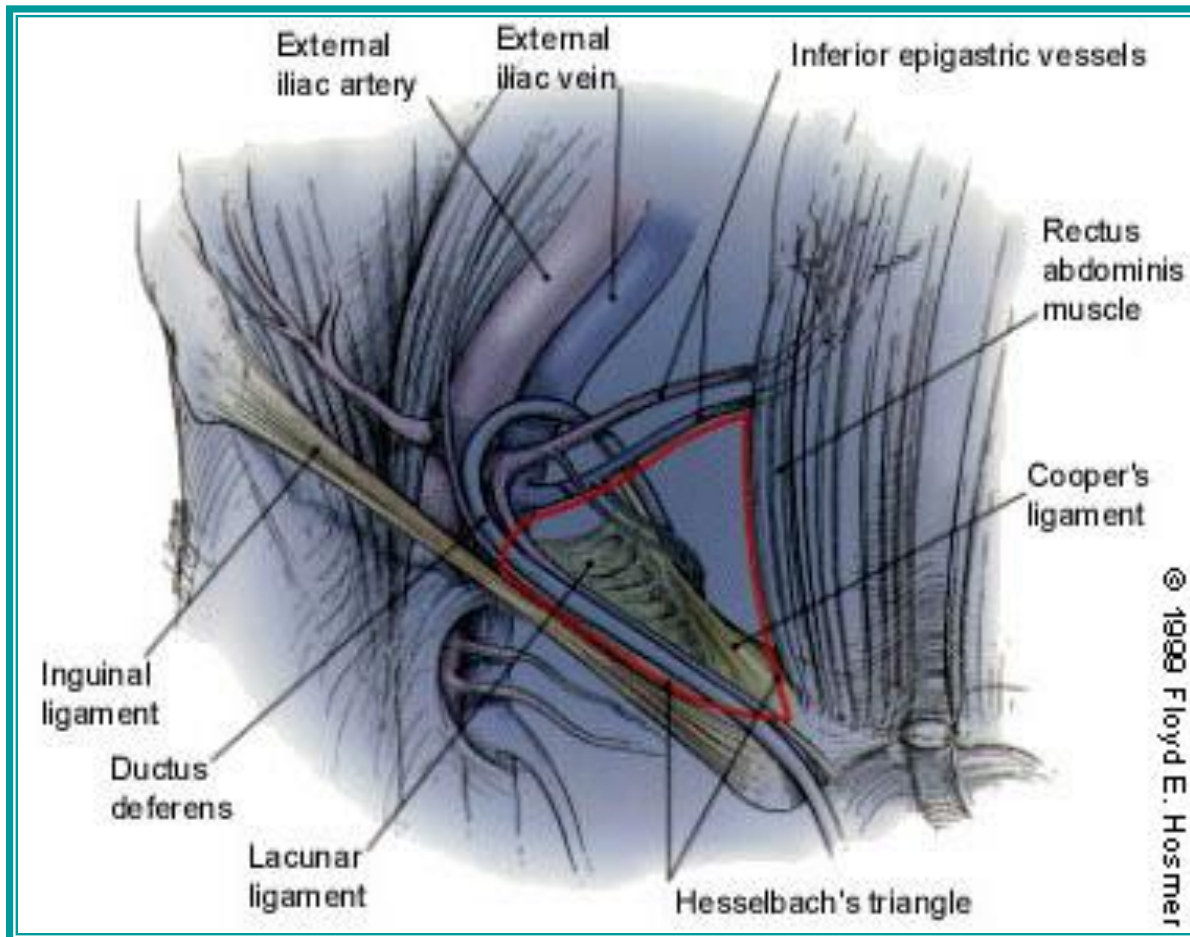
Posterior wall : FASCIA TRANSVERSALIS

Anterior wall : External oblique aponeurosis



Inferior wall: Inguinal Ligament

Hesselbach's triangle



Boundaries:

Medial:

Rectus abdominis muscle medially,

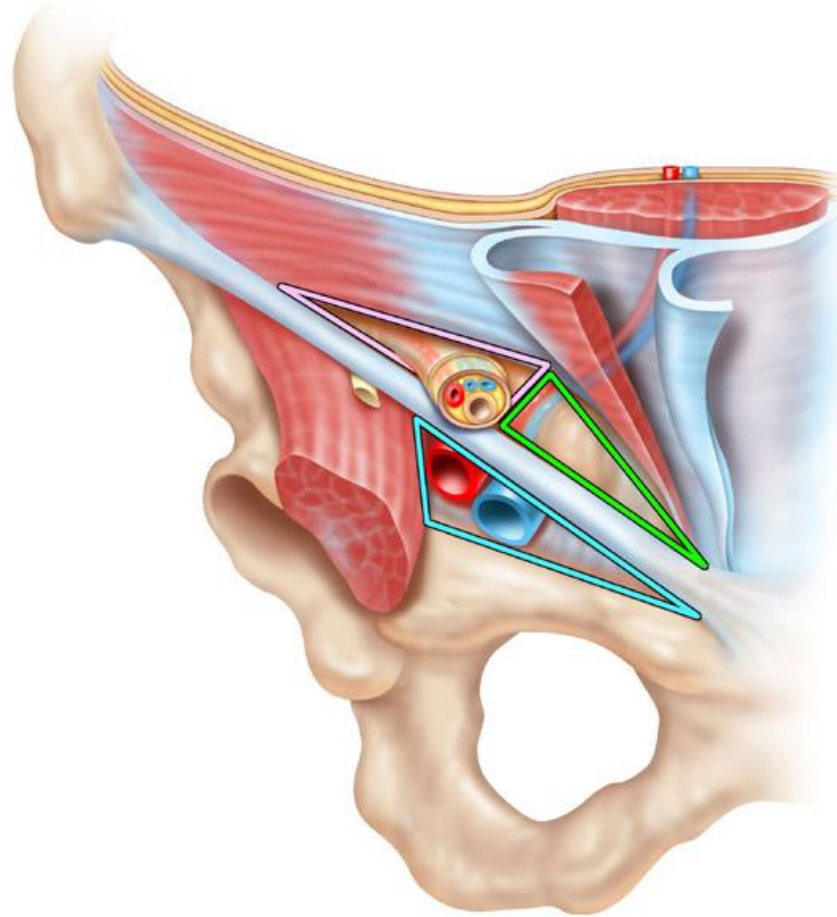
Inferiorly:

Inguinal ligament

Laterally:

Inf. Epigastrics

Myopectineal orifice



SPERMATIC CORD

VIA THE DEEP INGUINAL RING

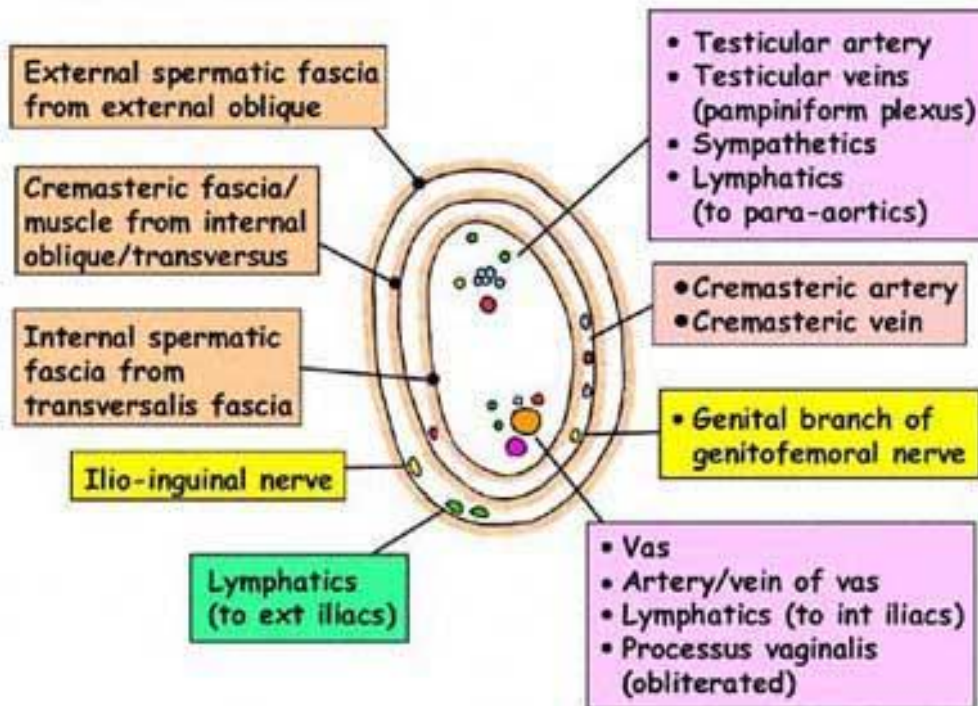
- Vas
- Artery to vas (inferior vesical)
- Testicular artery (aorta)
- Cremasteric artery (inferior epigastric)
- Cremasteric vein (inferior epigastric)
- Testicular vein (IVC/left renal)
- Obliterated processus vaginalis
- Lymphatics
- Sympathetics
- Genital branch of genitofemoral nerve (L2) Supplies motor to cremaster, sensory to fascia, tunica, scrotal skin, round ligament & labia majus

IN CANAL

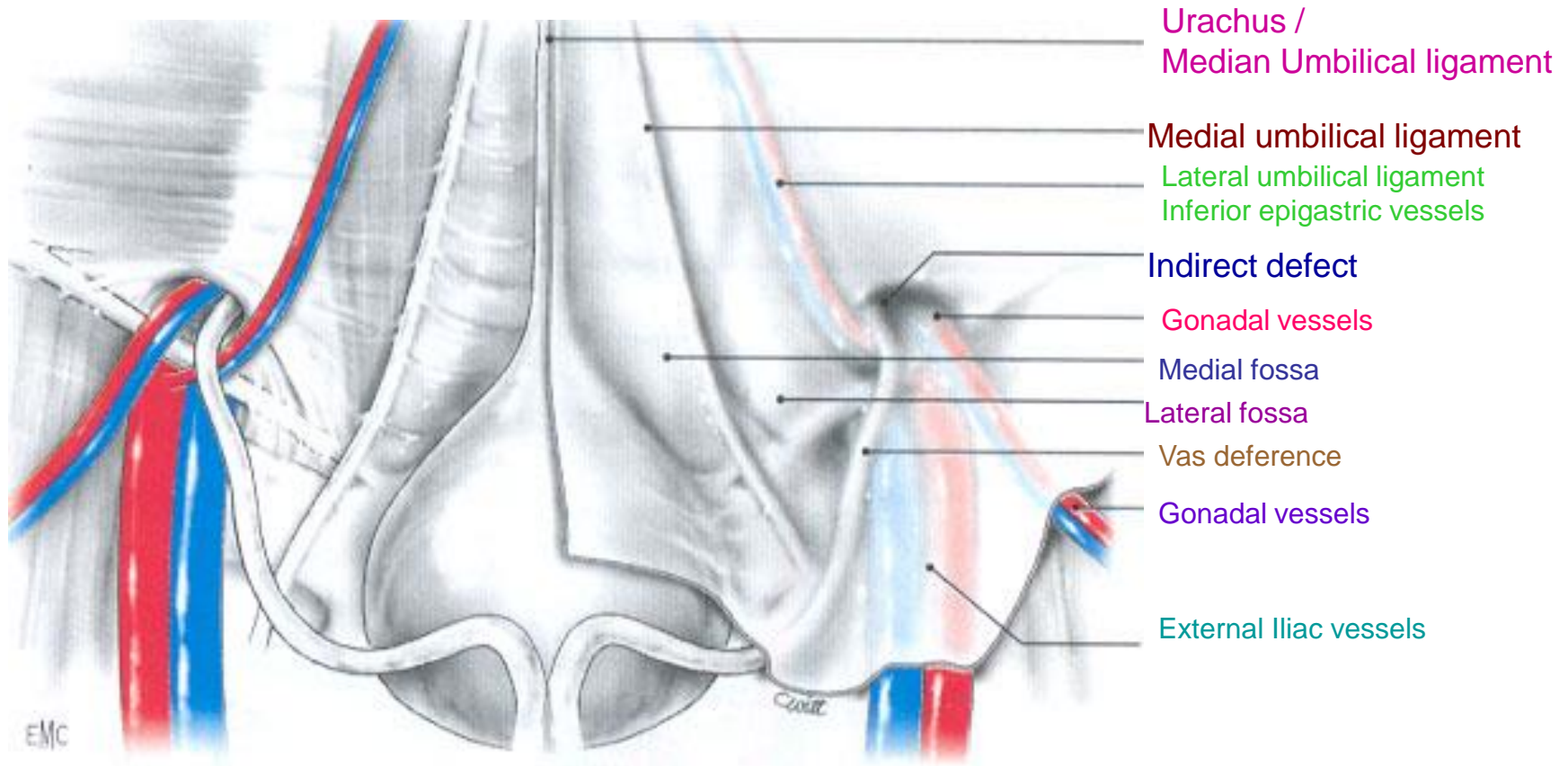
- All these
- Internal spermatic fascia
- Cremasteric fascia
- Cremaster muscle
- Ilio-inguinal nerve

OUTSIDE SUPERFICIAL RING

- All these
- External spermatic fascia



Lower anterior abdomen - Peritoneal surface



Right Inguinal region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

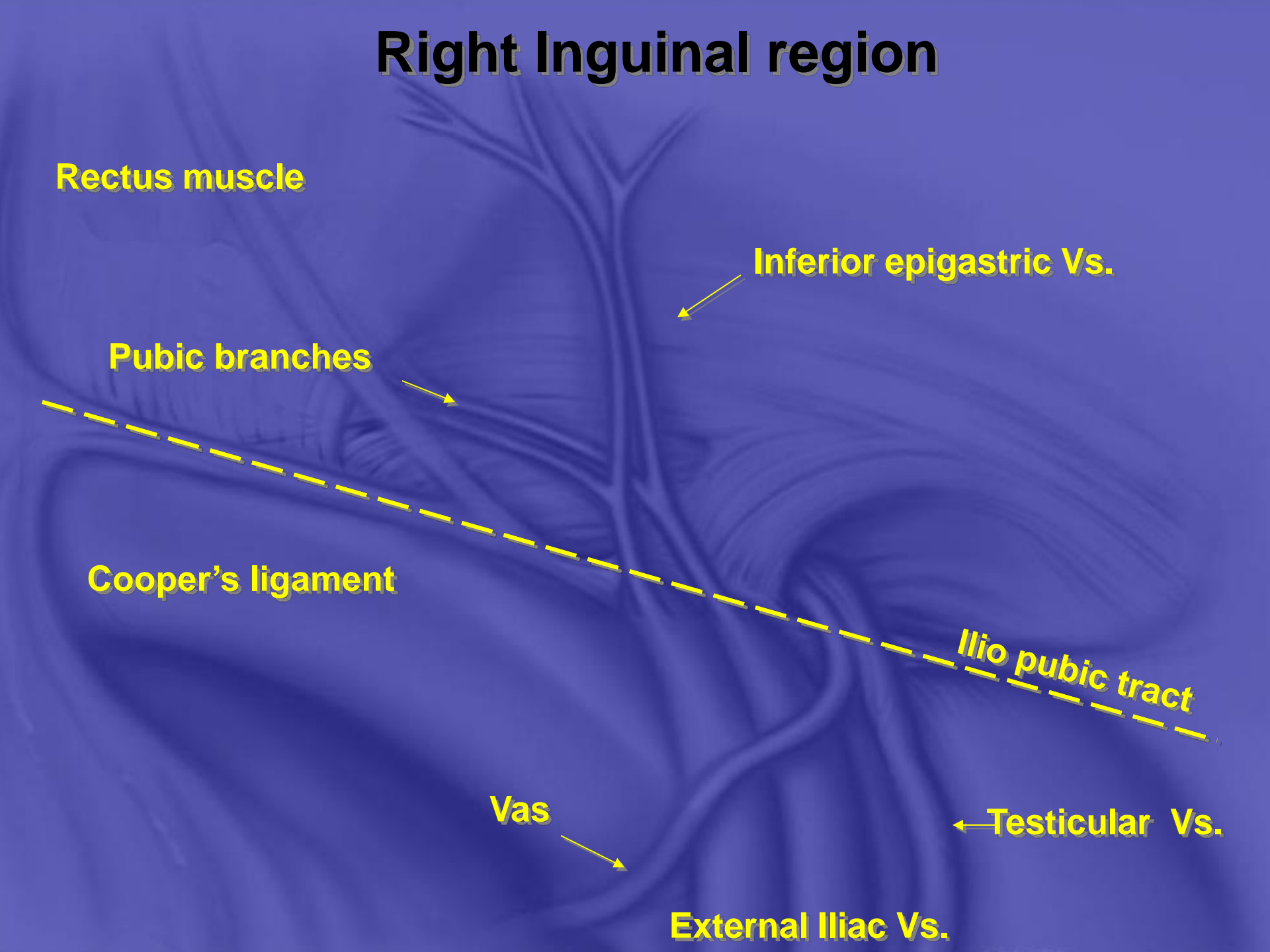
Cooper's ligament

Ilio pubic tract

Vas

← Testicular Vs.

External Iliac Vs.



Right Inguinal Region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

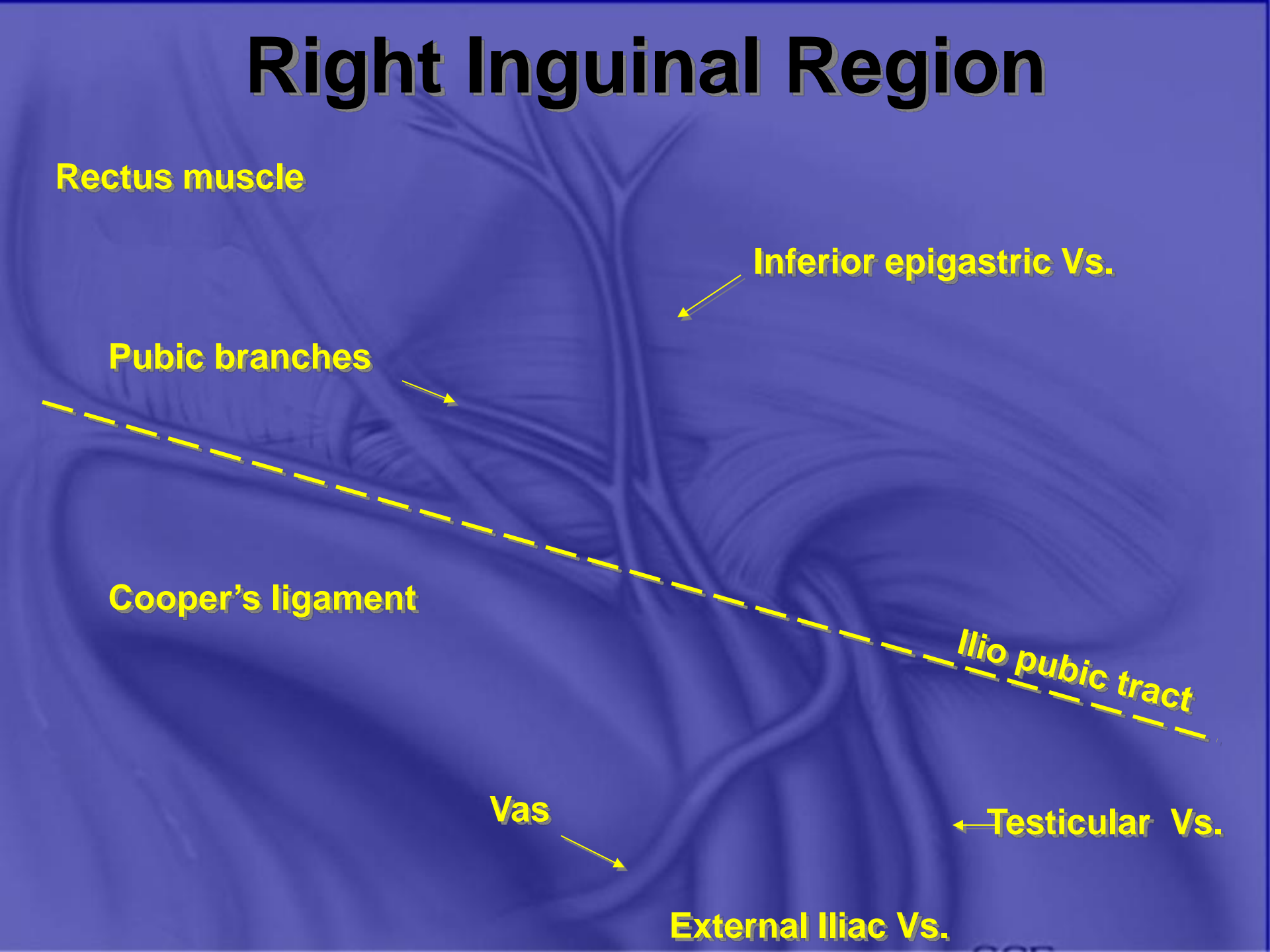
Cooper's ligament

Ilio pubic tract

Vas

← Testicular Vs.

External Iliac Vs.



Right Inguinal Region

“Triple Triangles” theory

Rectus muscle

Inferior epigastric Vs.

Medial Triangle

Lateral Triangle

Cooper's ligament

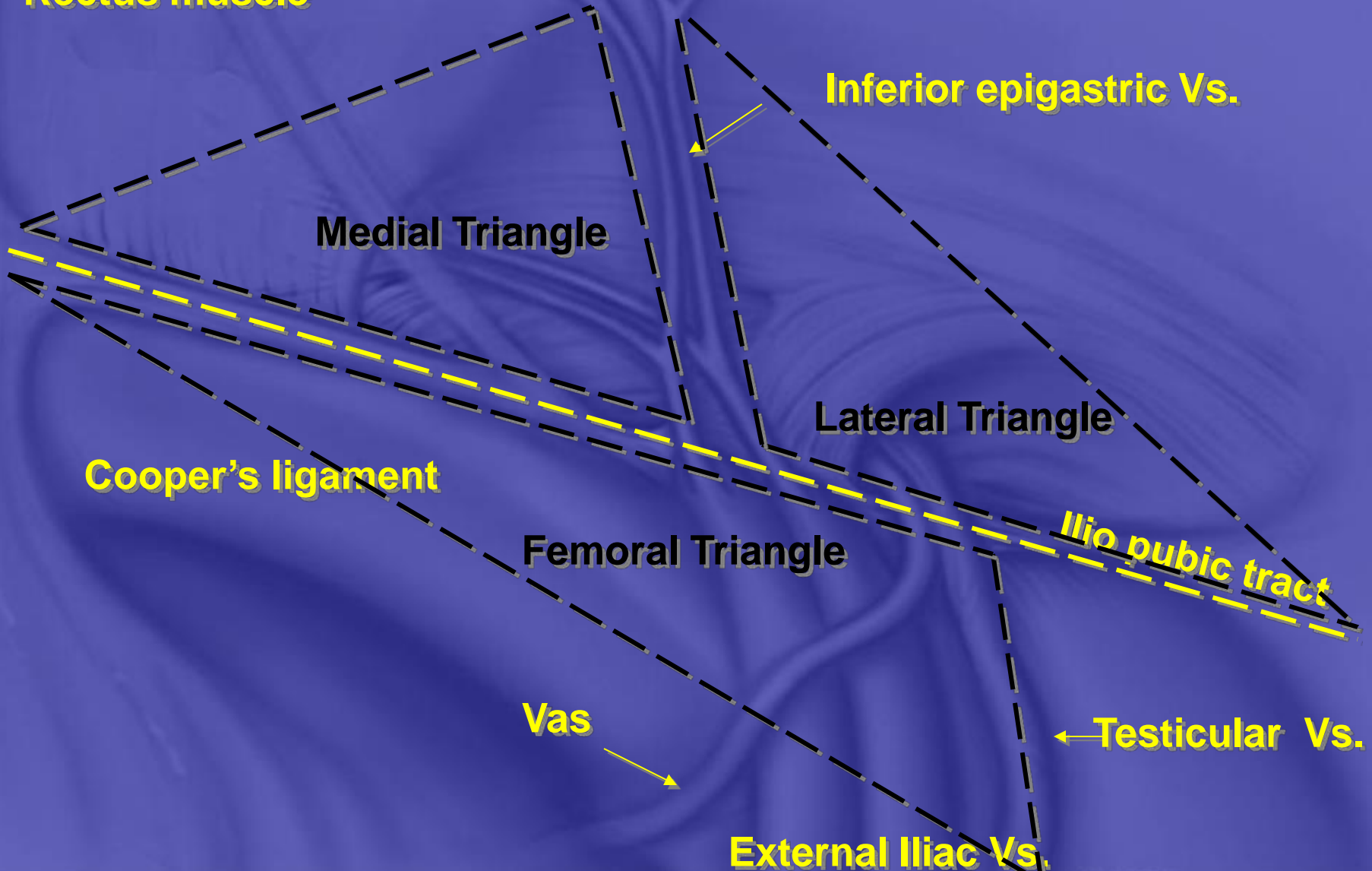
Femoral Triangle

Ilio pubic tract

Vas

← Testicular Vs.

External Iliac Vs.



Right Inguinal Region

“Triple vs five Triangles” theory

Rectus muscle

Inferior epigastric Vs.

Medial Triangle

Lateral Triangle

Cooper's ligament

Ilio pubic tract

Rectus canal

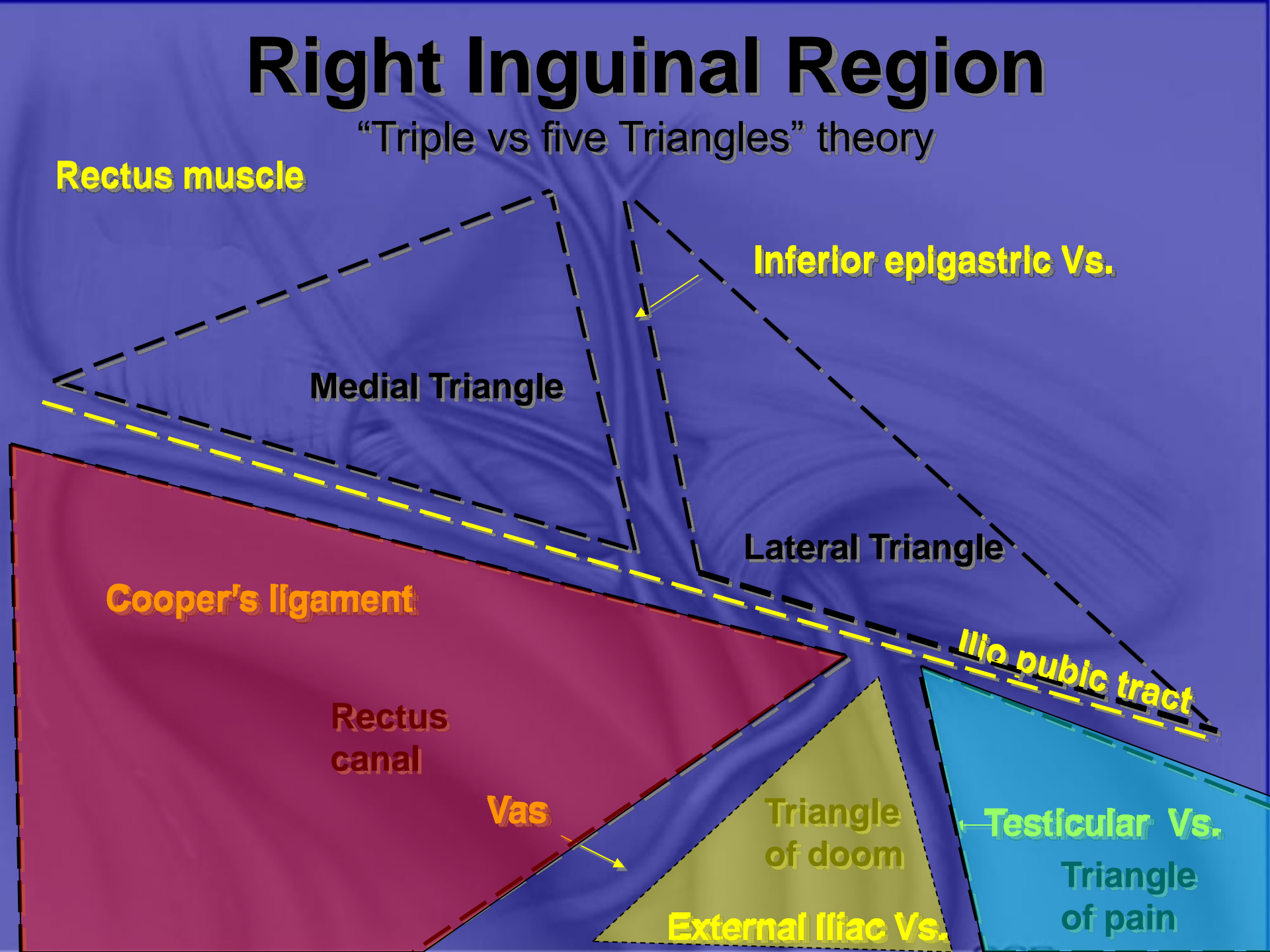
Vas

Triangle of doom

Testicular Vs.

Triangle of pain

External Iliac Vs.



Endoscopic Anatomy

A. Defects

B. Neural

C. Vascular

D. Muscles & Ligaments

**E. Angles, Triangles &
Trapezoids**

Right Inguinal region

Rectus muscle

Pubic branches

Direct defect

Inferior epigastric Vs.

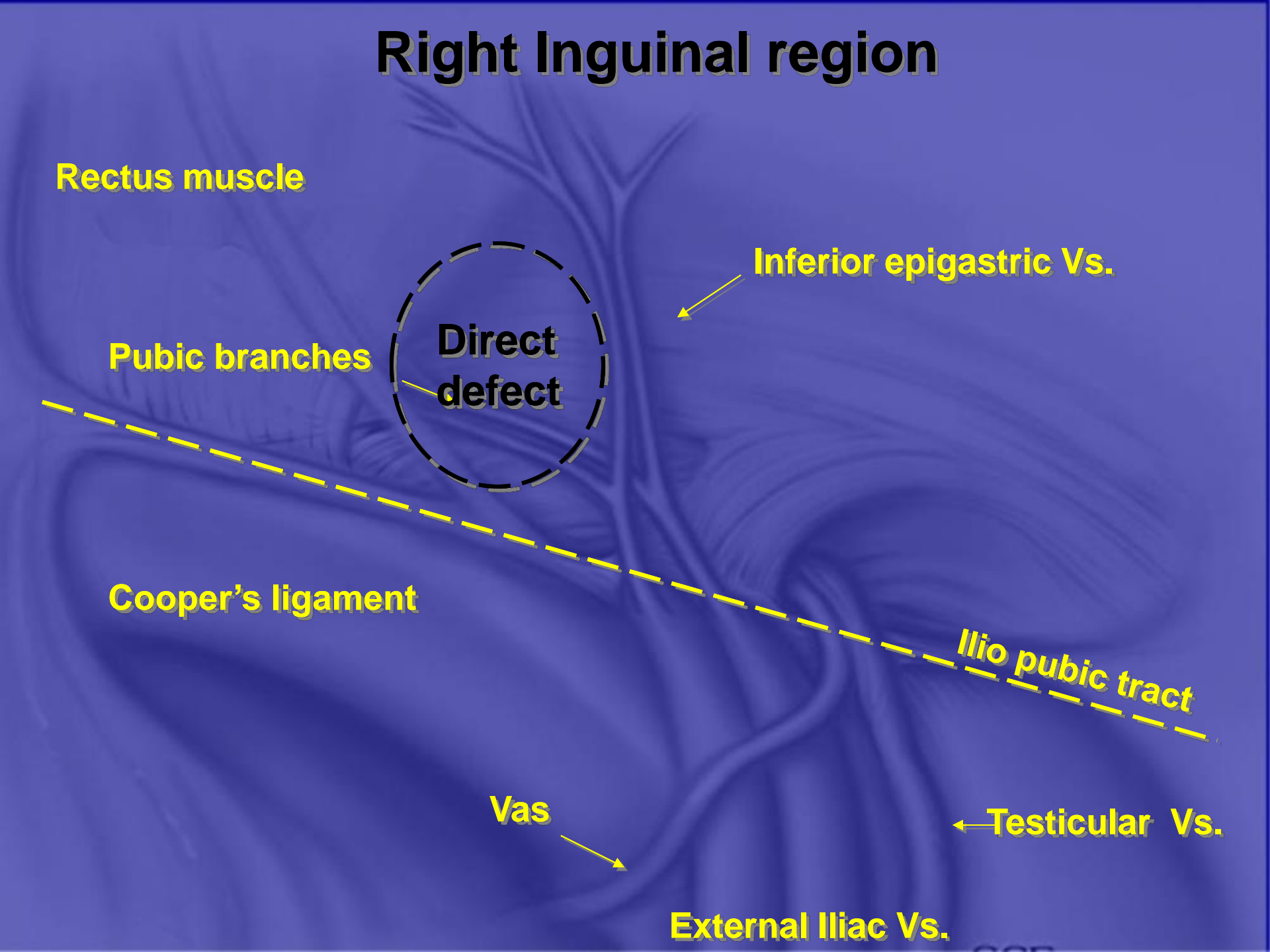
Cooper's ligament

Ilio pubic tract

Vas

← Testicular Vs.

External Iliac Vs.



Right Inguinal region

Rectus muscle

Inferior epigastric Vs.

Pubic branches



Indirect defect

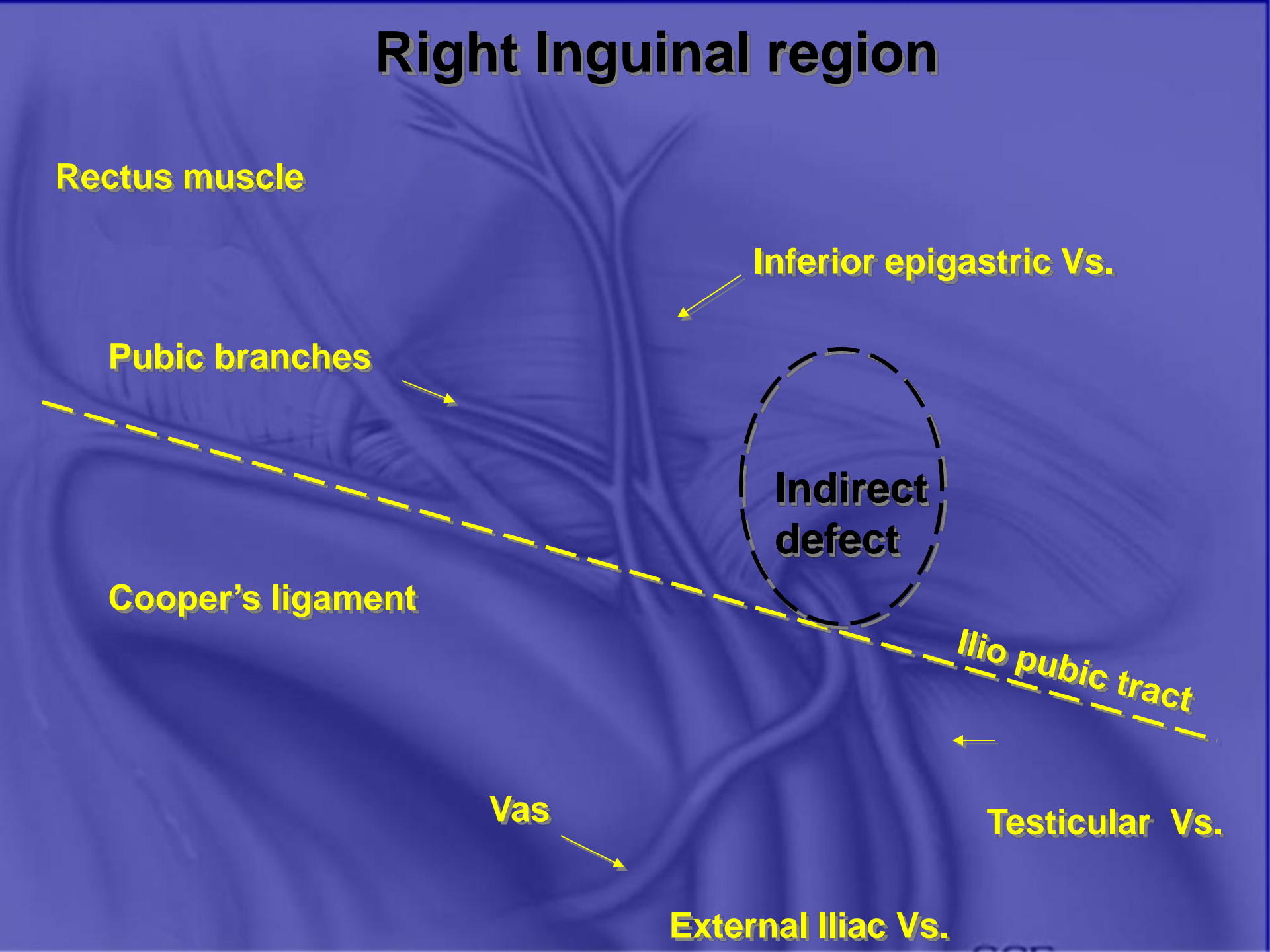
Cooper's ligament

Ilio pubic tract

Vas

Testicular Vs.

External Iliac Vs.



Right Inguinal region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

Cooper's ligament

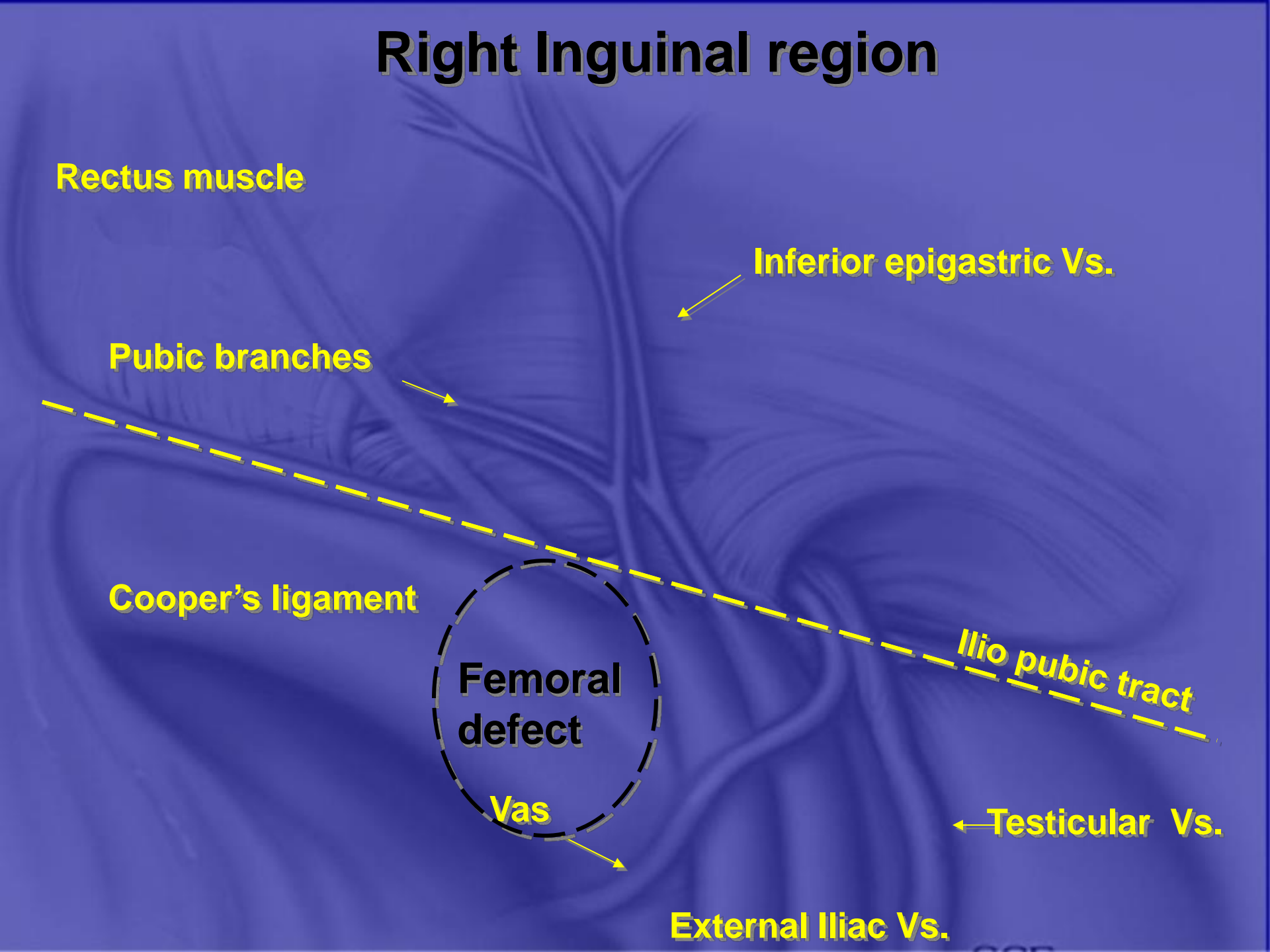
Femoral defect

Vas

Ilio pubic tract

← Testicular Vs.

External Iliac Vs.



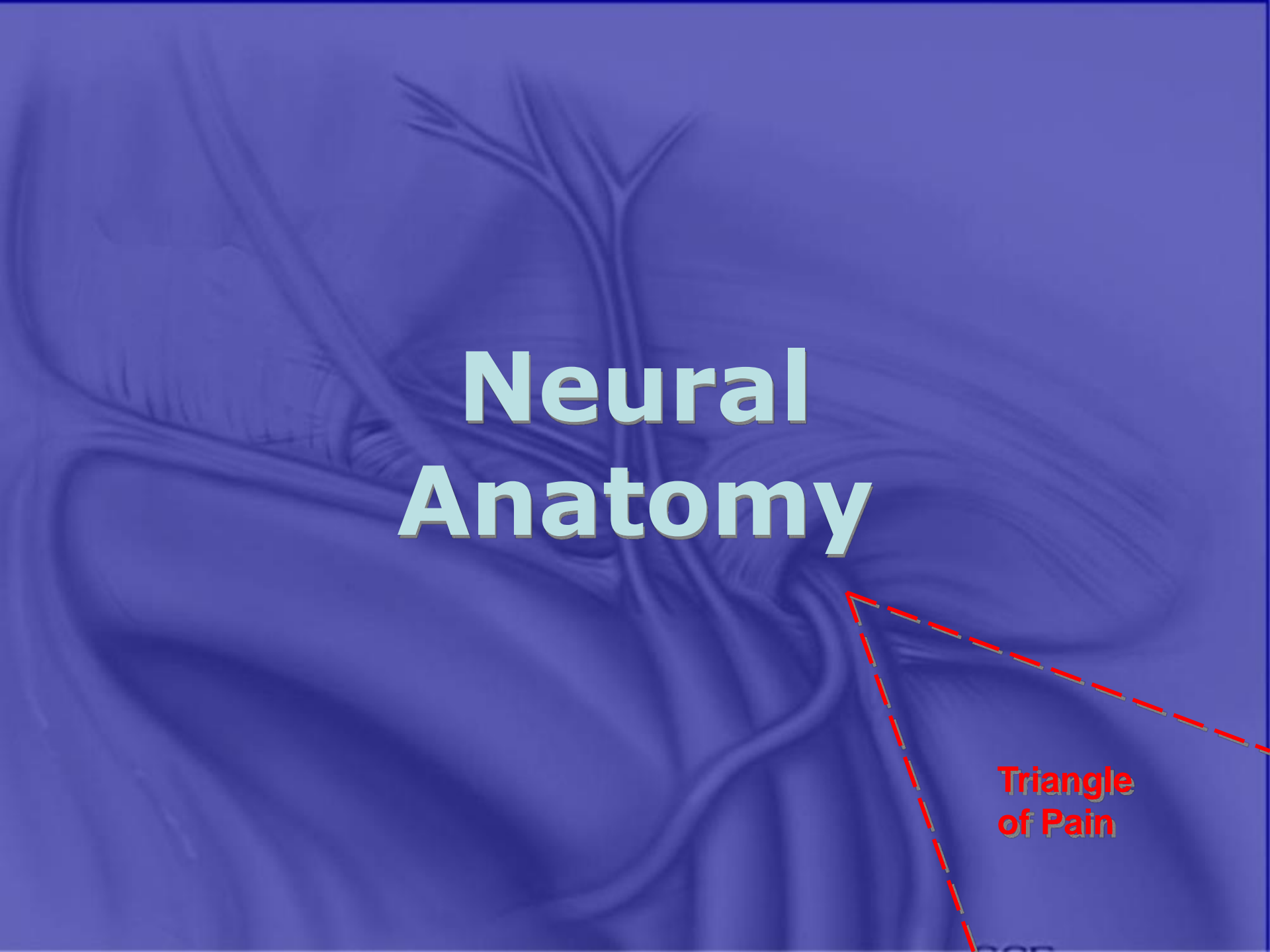
Endoscopic Anatomy

**Direct
defect**

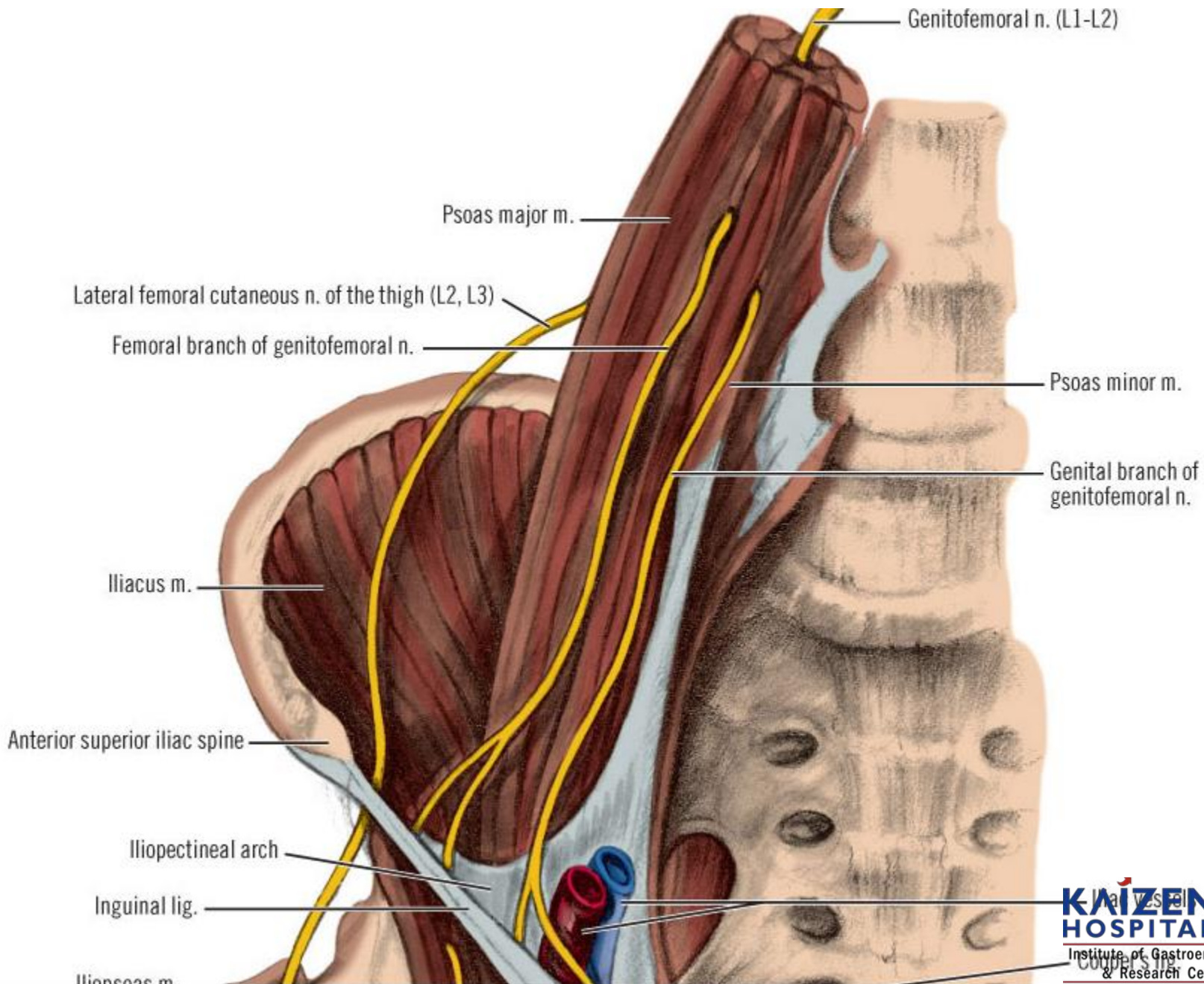
**Indirect
defect**

**Femoral
defect**

Neural Anatomy

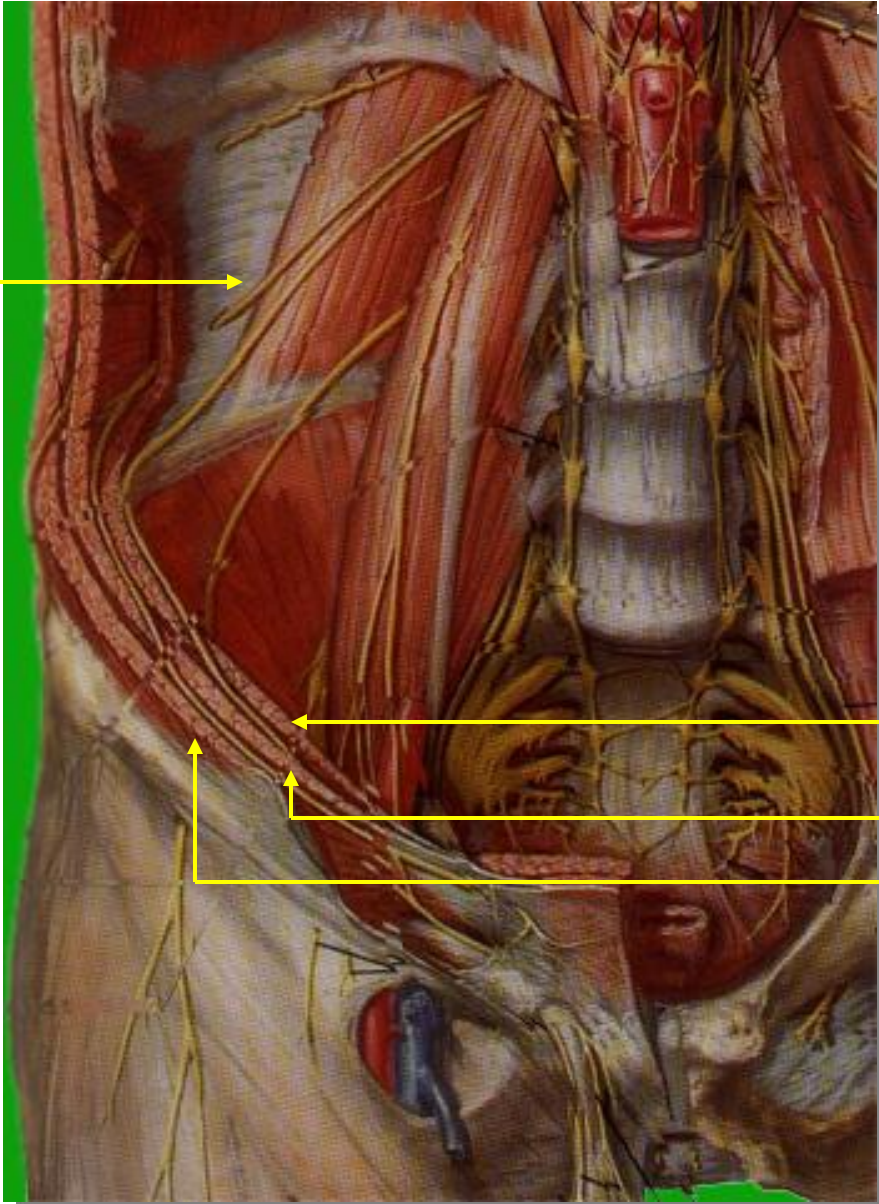
The background of the slide is a detailed anatomical illustration of a neural plexus, likely the brachial plexus, rendered in a light blue color against a darker blue background. The illustration shows a complex network of nerves branching out. A red dashed line forms a triangle on the right side of the image, highlighting a specific anatomical region. The text 'Neural Anatomy' is centered in the upper half of the slide in a large, white, sans-serif font.

**Triangle
of Pain**



Nerves

Ilio Hypogastric



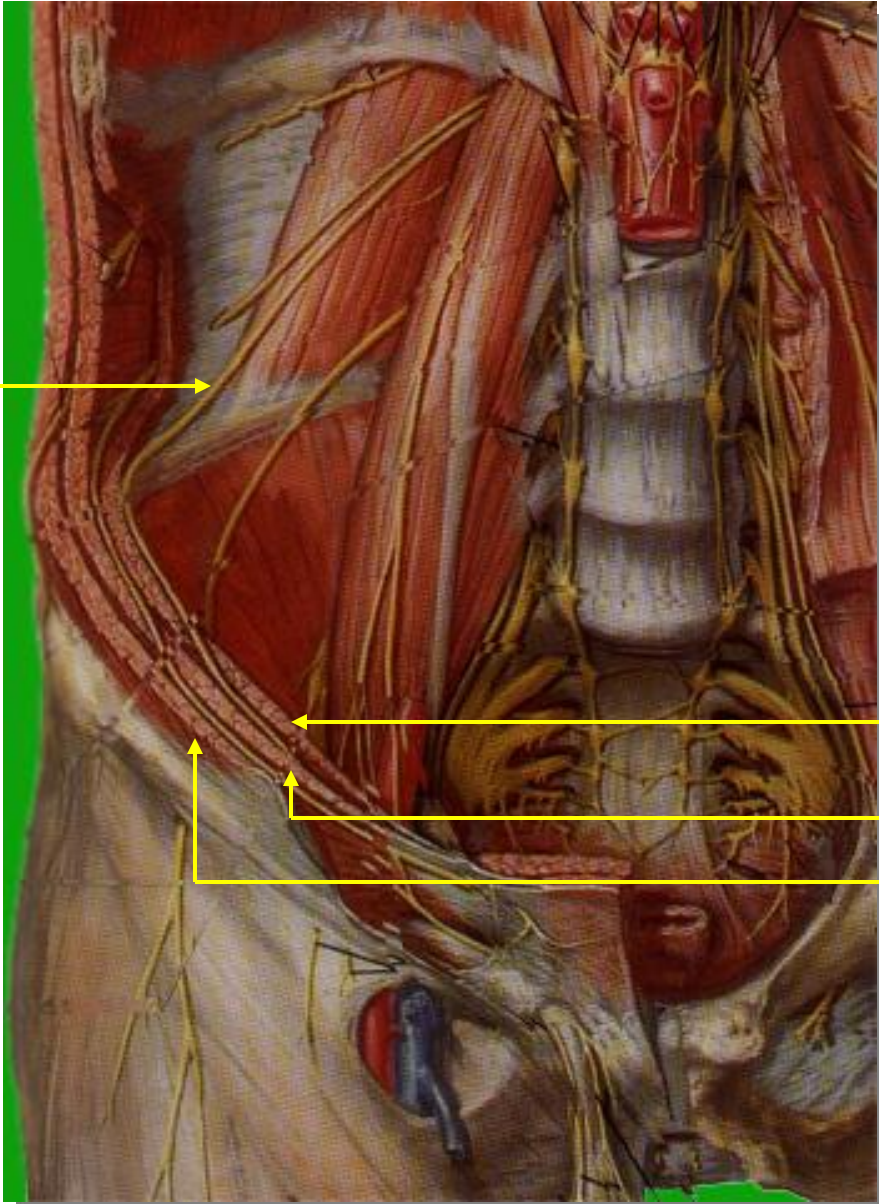
Transversus Abd.

Internal Oblique

External Oblique

Nerves

Ilio Inguinal



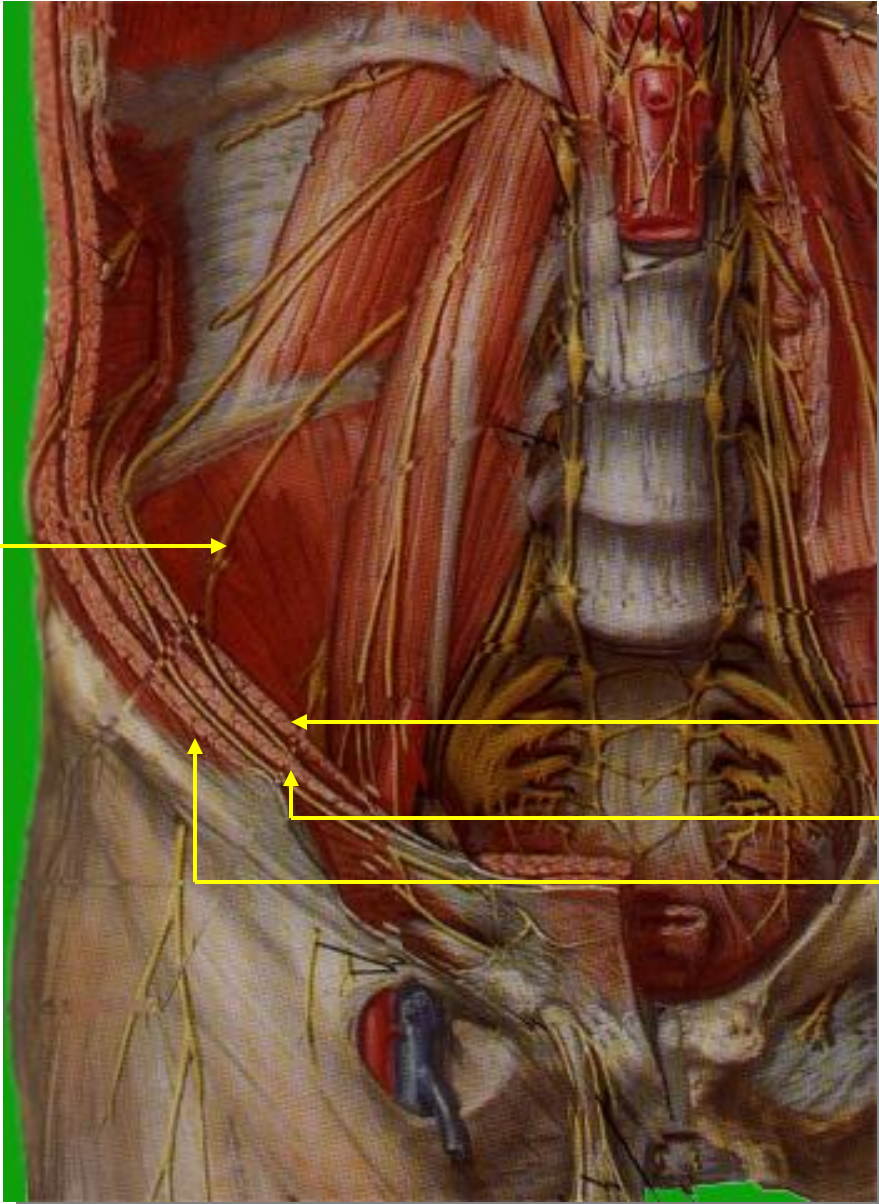
Transversus Abd.

Internal Oblique

External Oblique

Nerves

**Lateral Cutaneous
Nerve of Thigh**

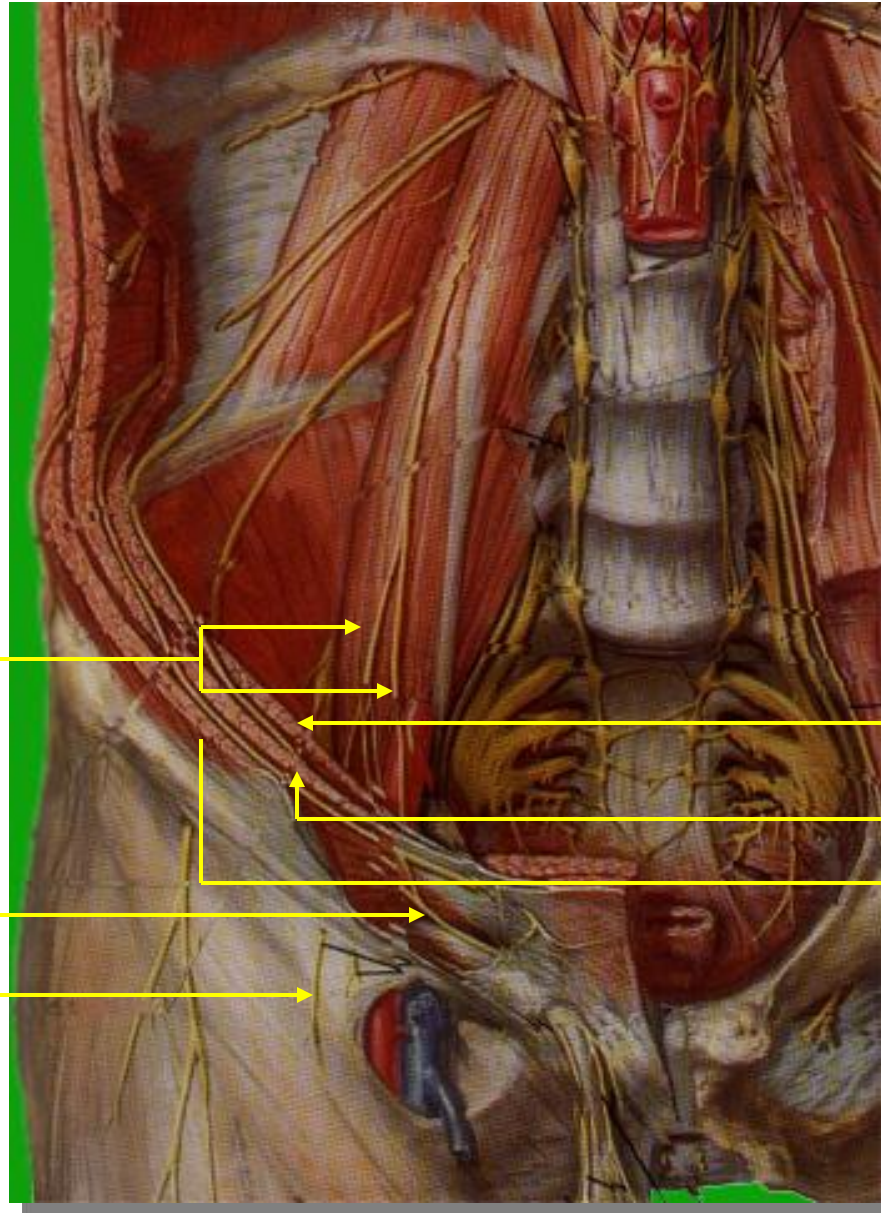


Transversus Abd.

Internal Oblique

External Oblique

Nerves



**Genito-Femoral
Nerve**

Genital Branch

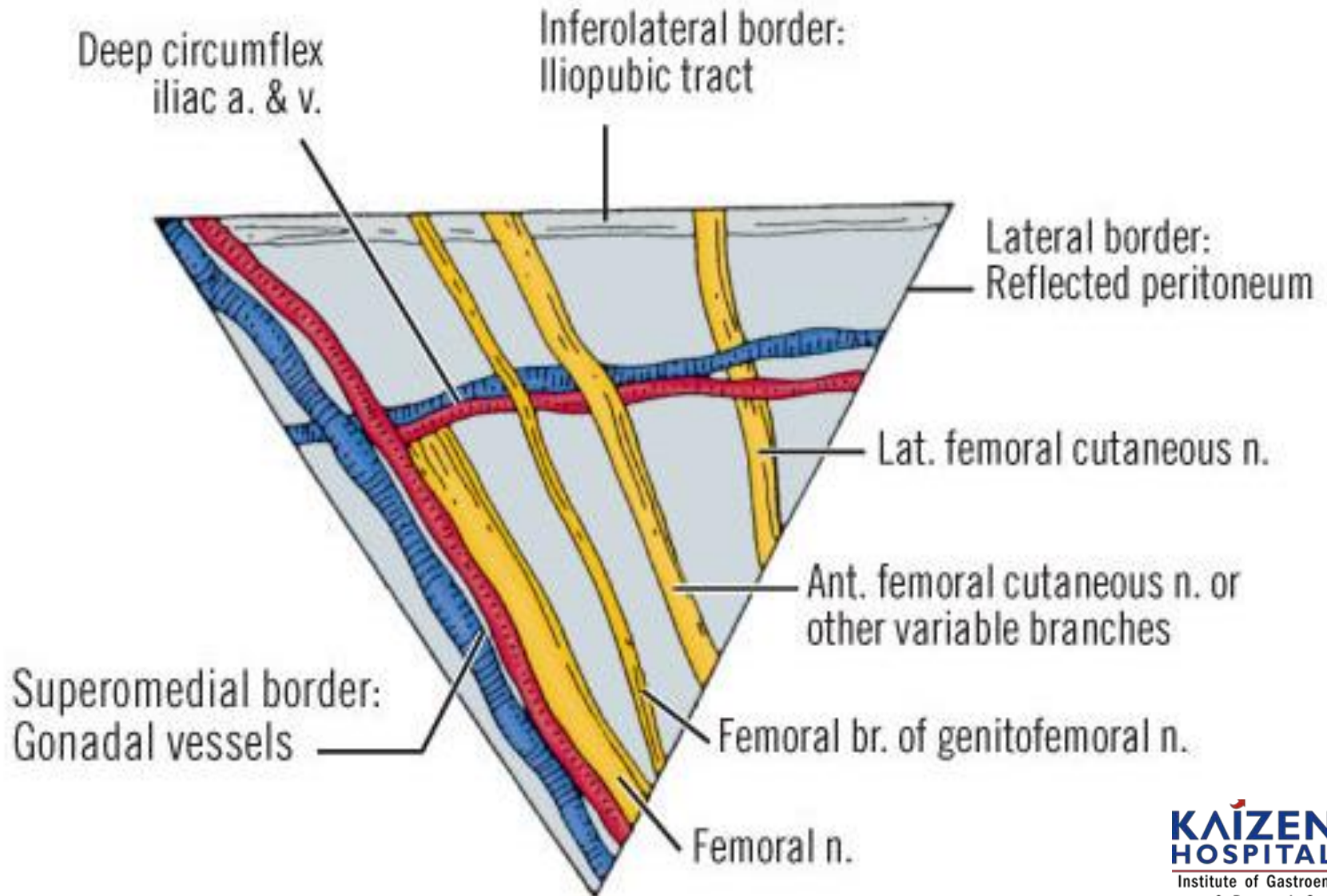
Femoral Branch

Transversus Abd.

Internal Oblique

External Oblique

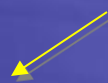
Triangle of Pain



Pubic branches

Vascular Anatomy

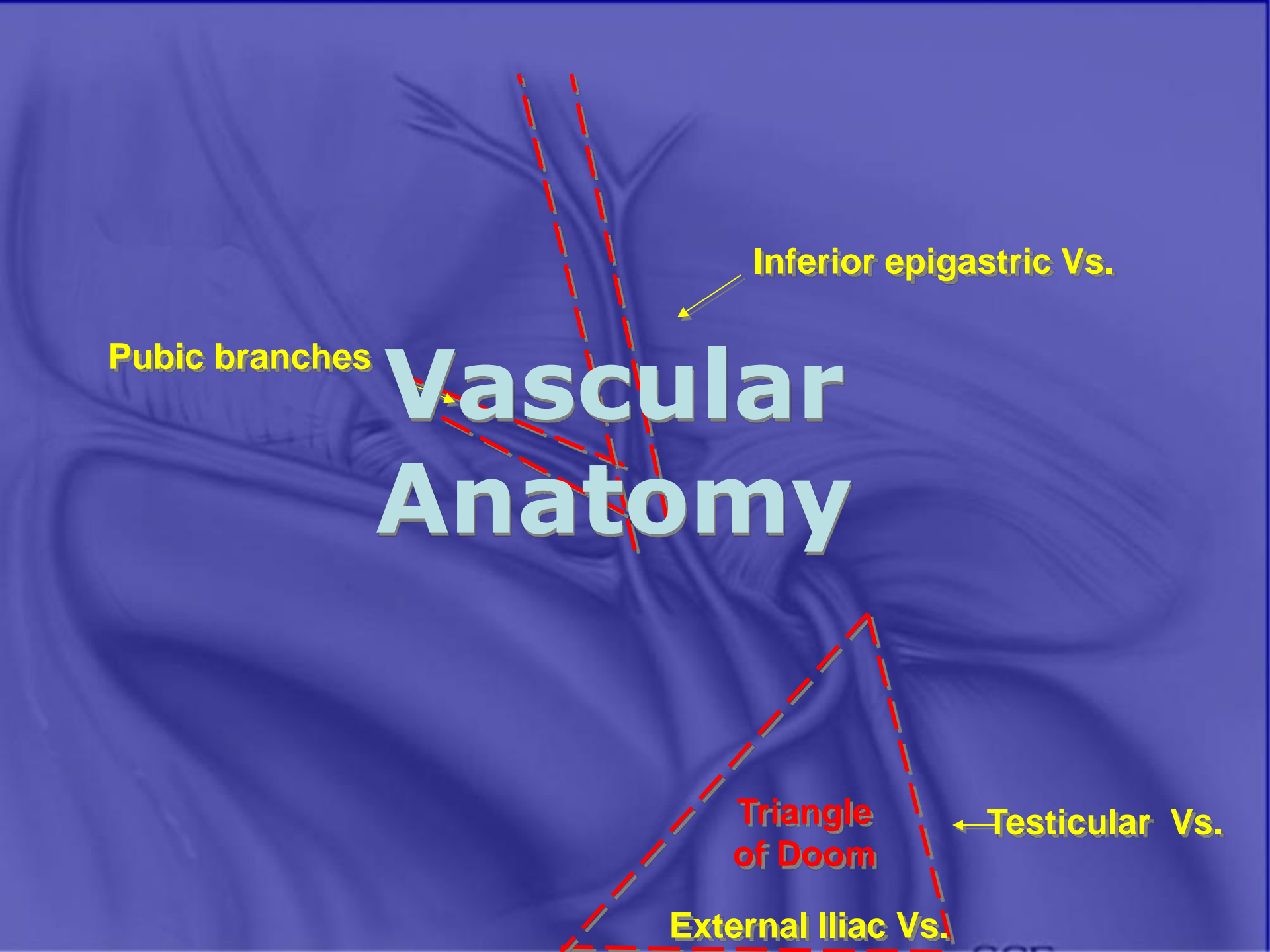
Inferior epigastric Vs.



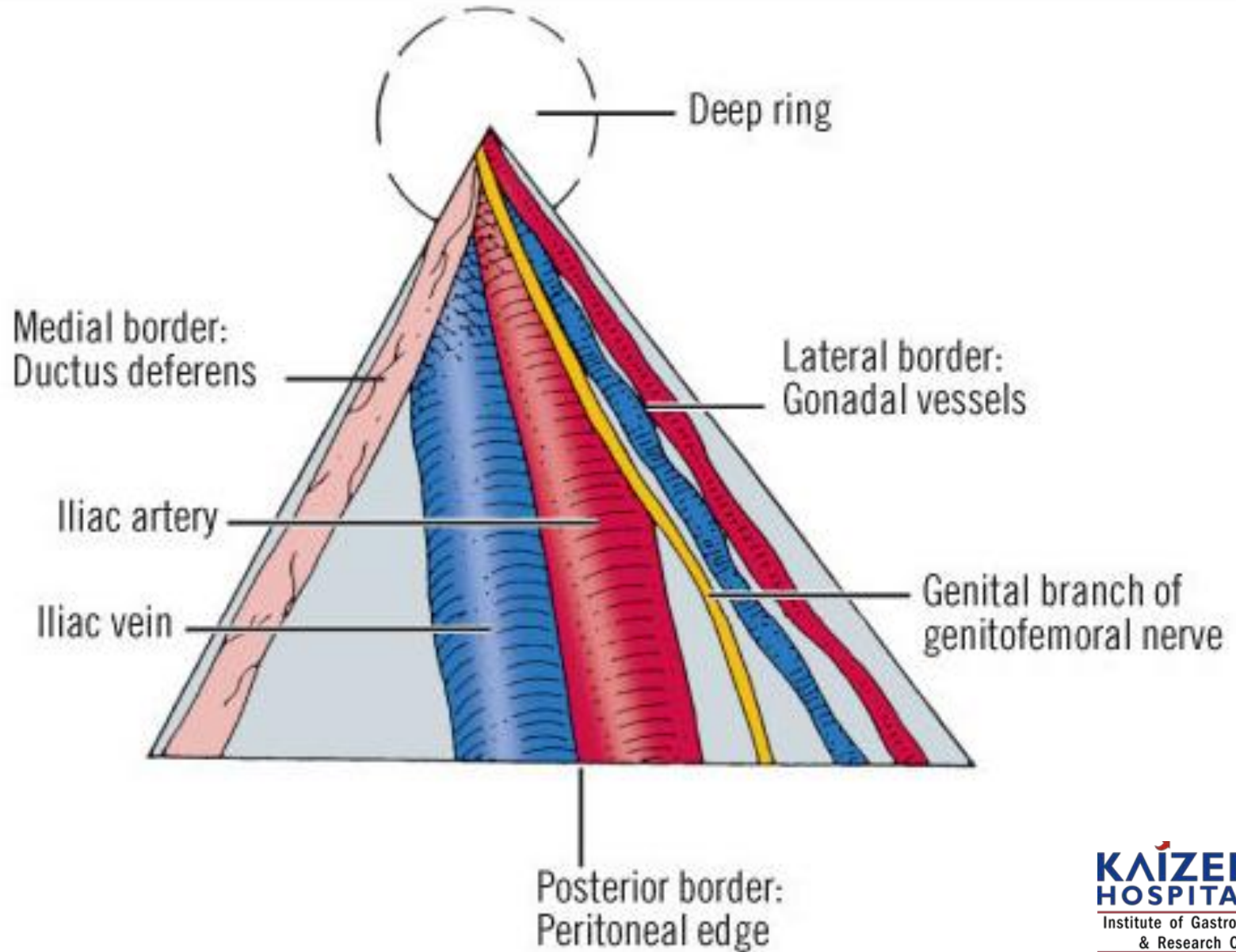
← Testicular Vs.

Triangle
of Doom

External Iliac Vs.

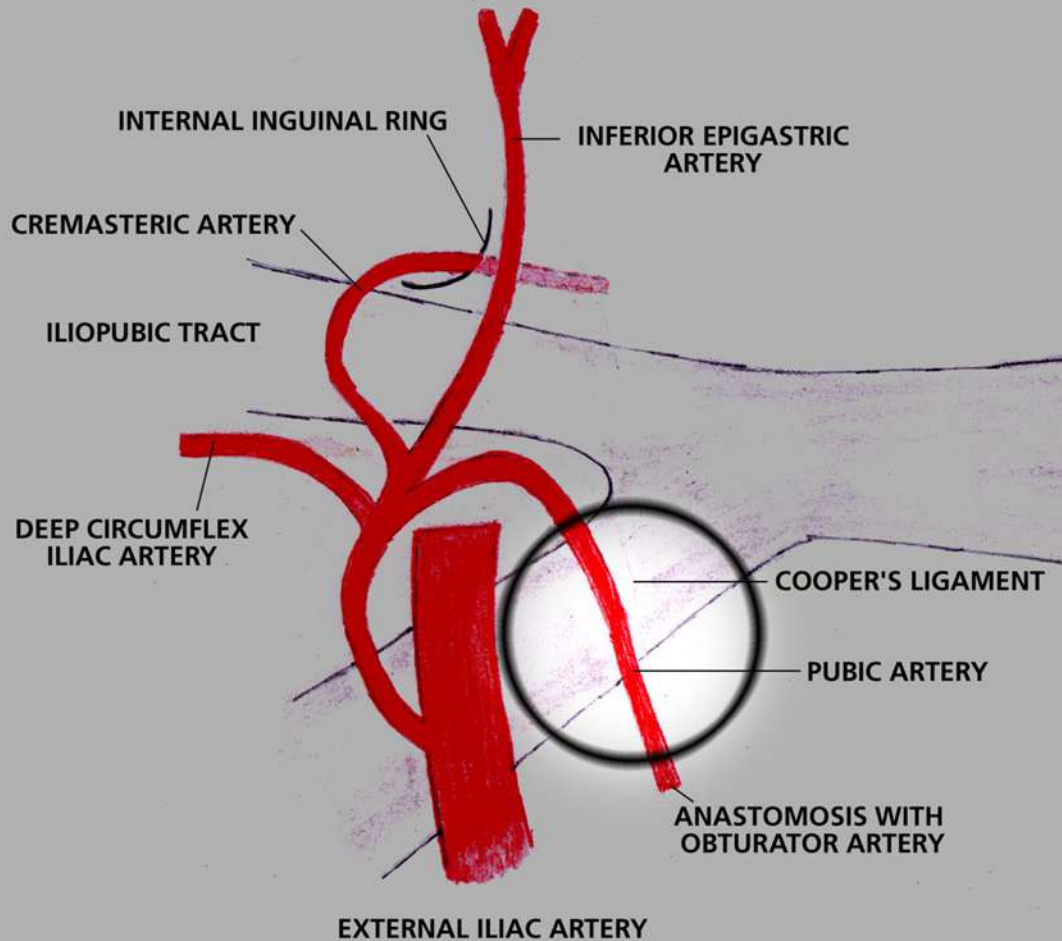


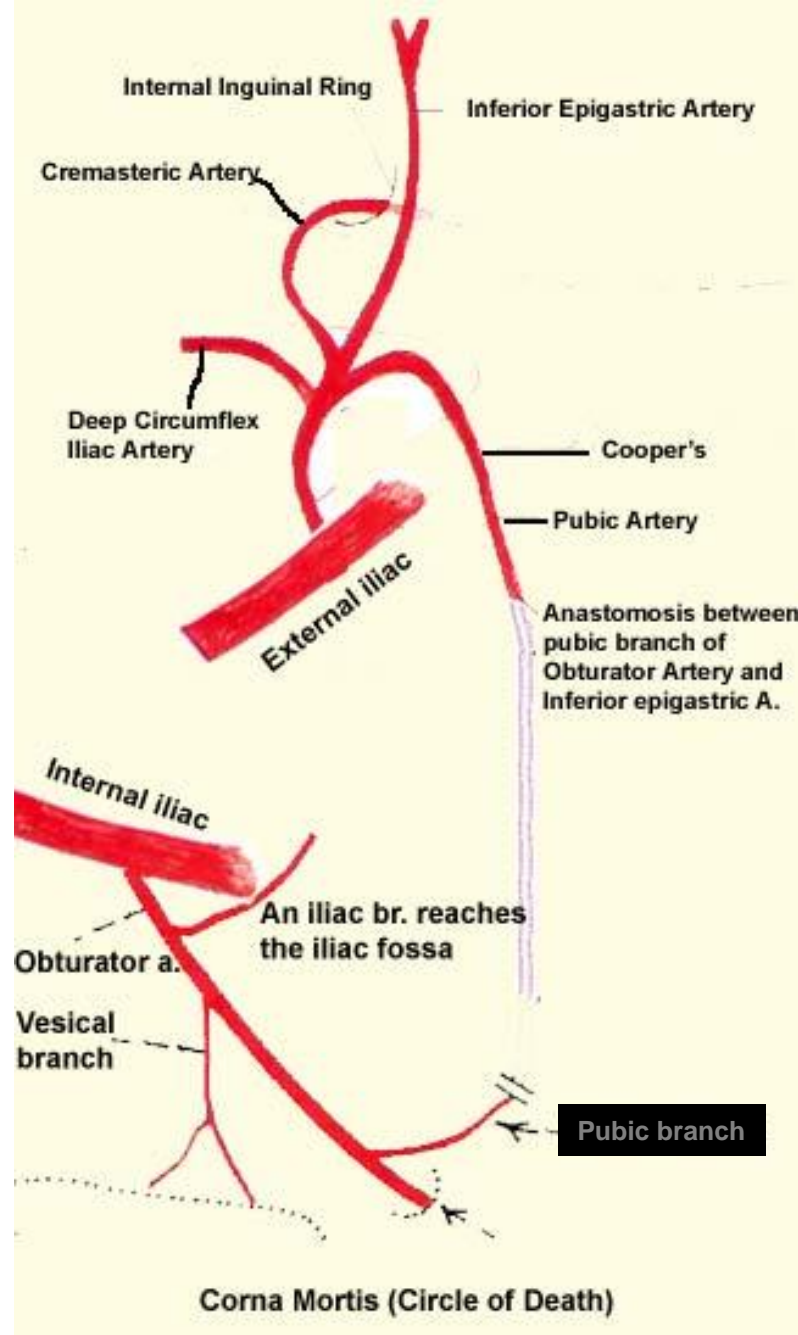
Triangle of Doom



Described by Hesselbach

CORONA MORTIS



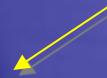


“Circle of Death” – Corona mortis

Medial umbilical ligament



Inferior epigastric Vs. forming lateral umbilical ligament

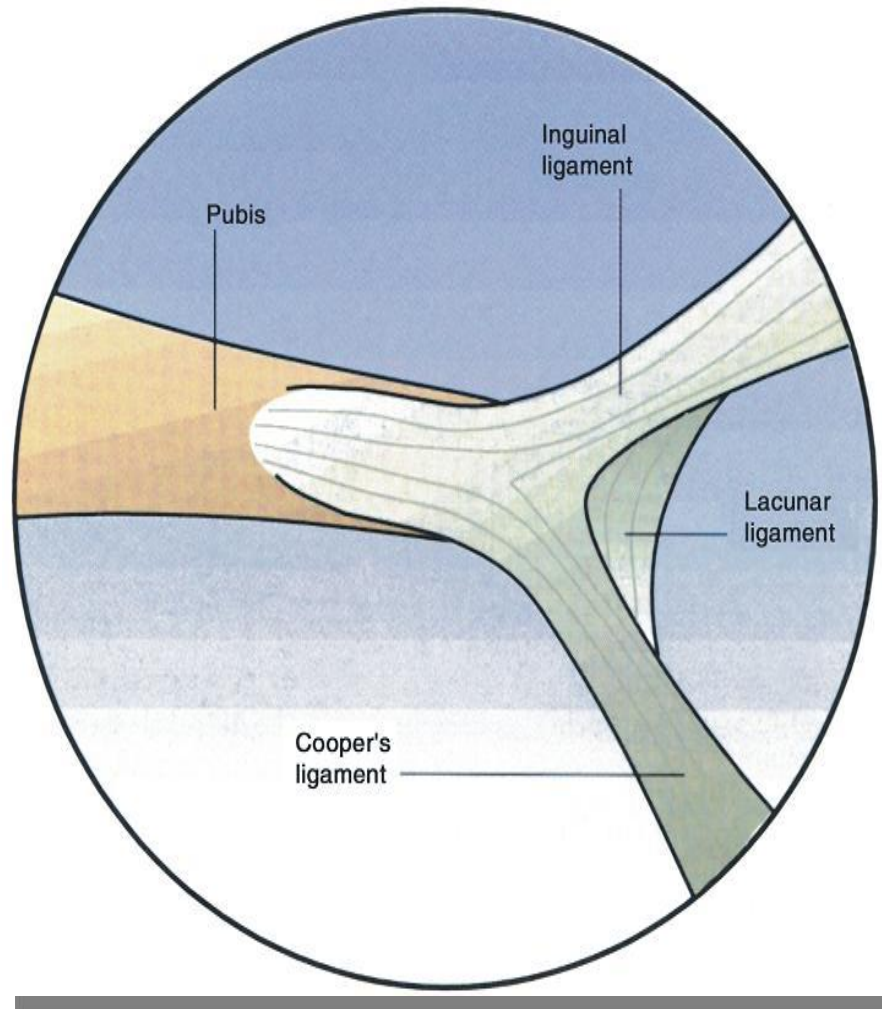


Ligaments

Cooper's ligament

Ilio pubic tract

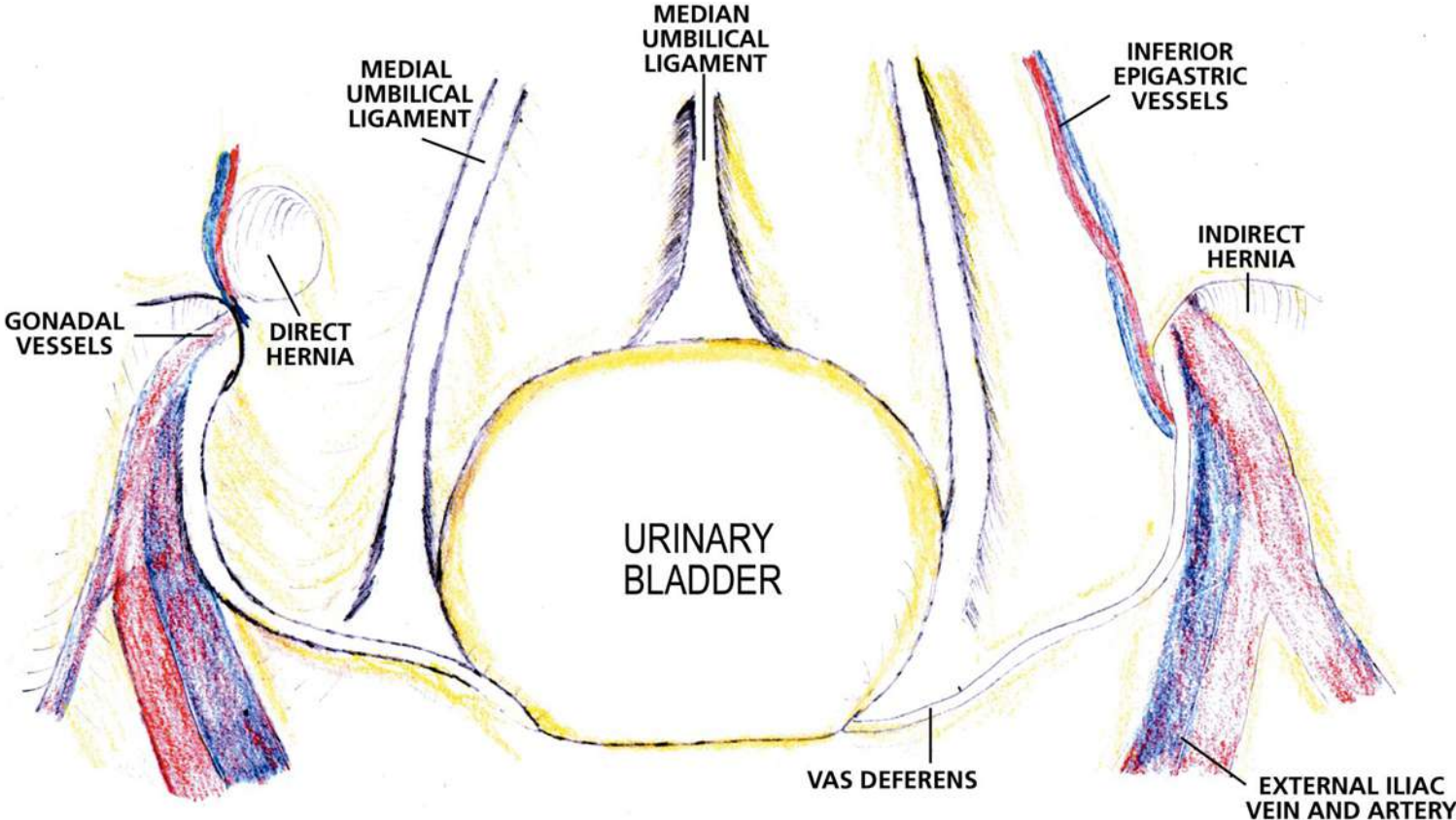
Ligaments



MERCEDES SIGN (left side)

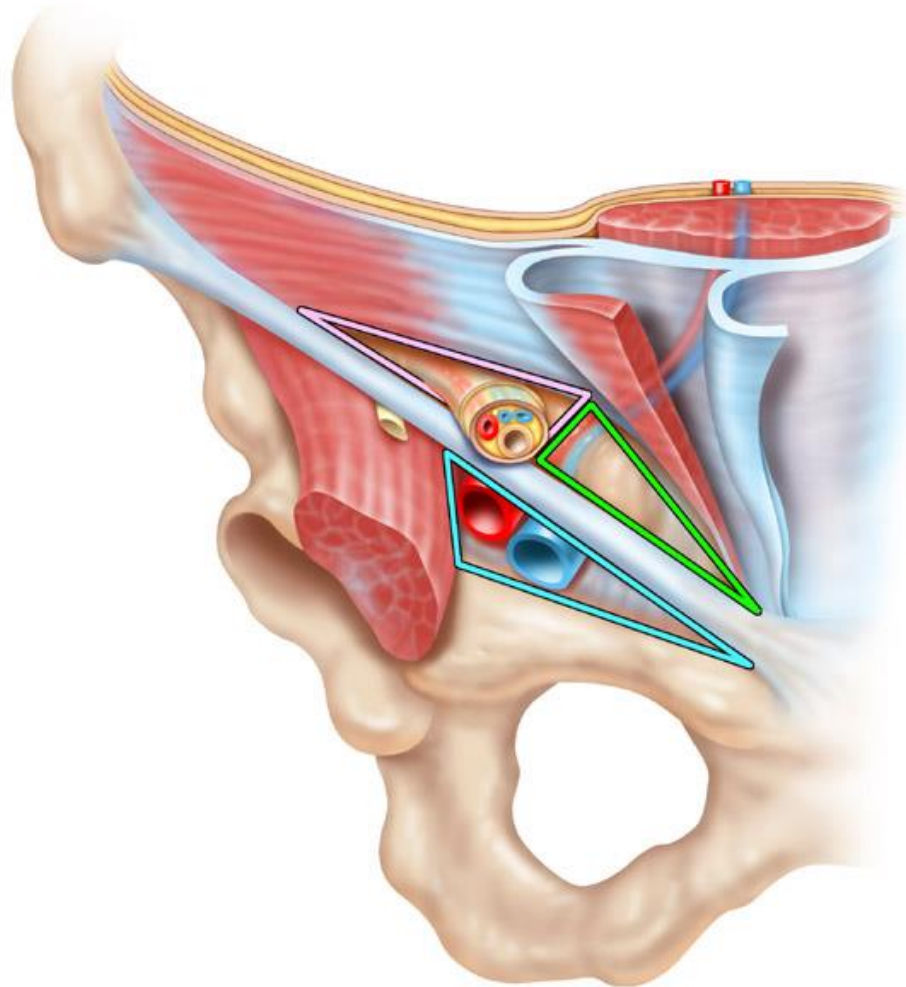
Ligaments

INFRAUMBILICAL REGION



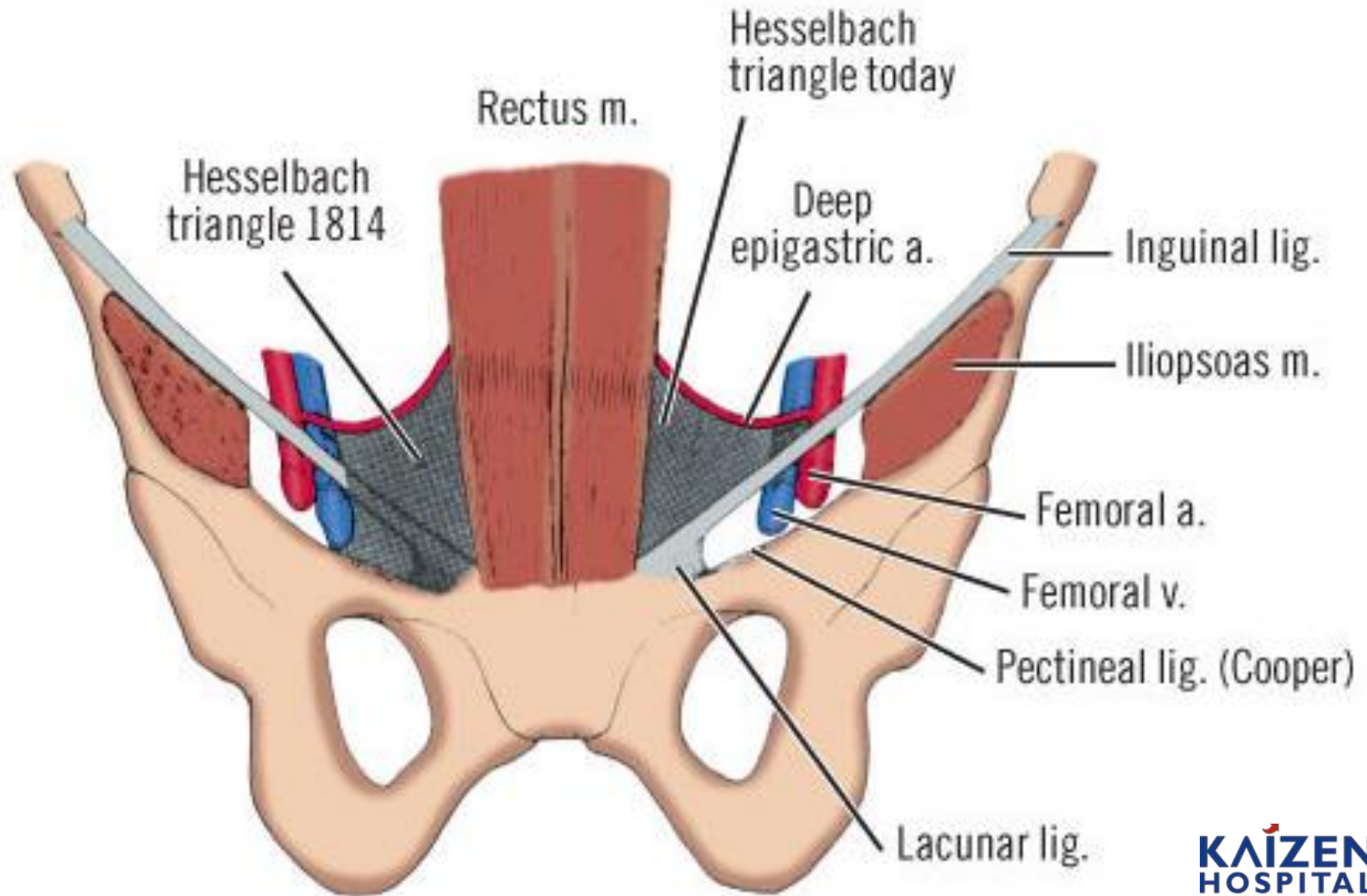
Angles, Triangles & Trapezoids

Myopectineal Orifice



Right side

Hesselbach's Triangle



Right Inguinal region

Edge of Rectus
Abdominis muscle

Inferior epigastric Vs.

Hesselbach's
Triangle

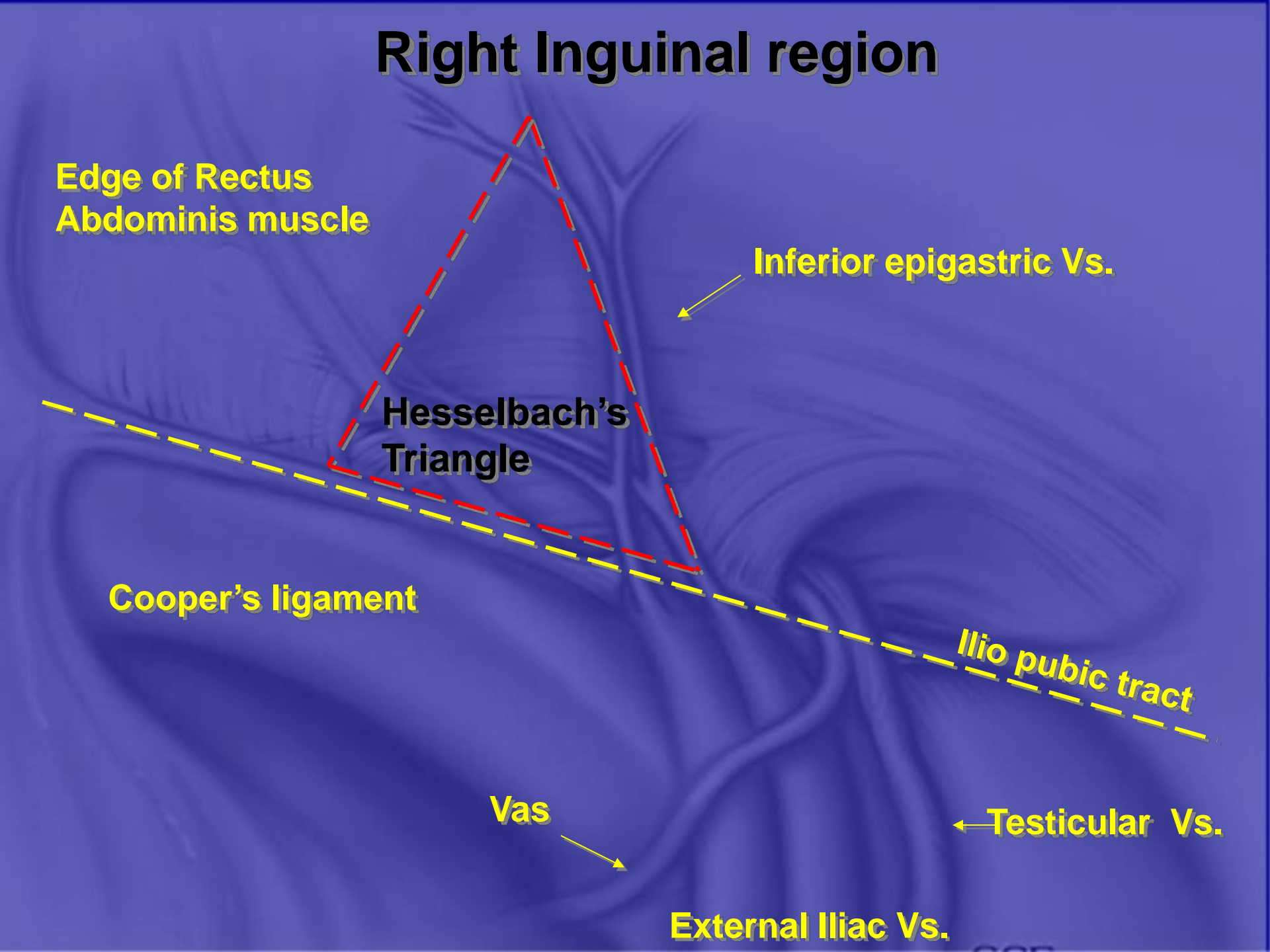
Cooper's ligament

Ilio pubic tract

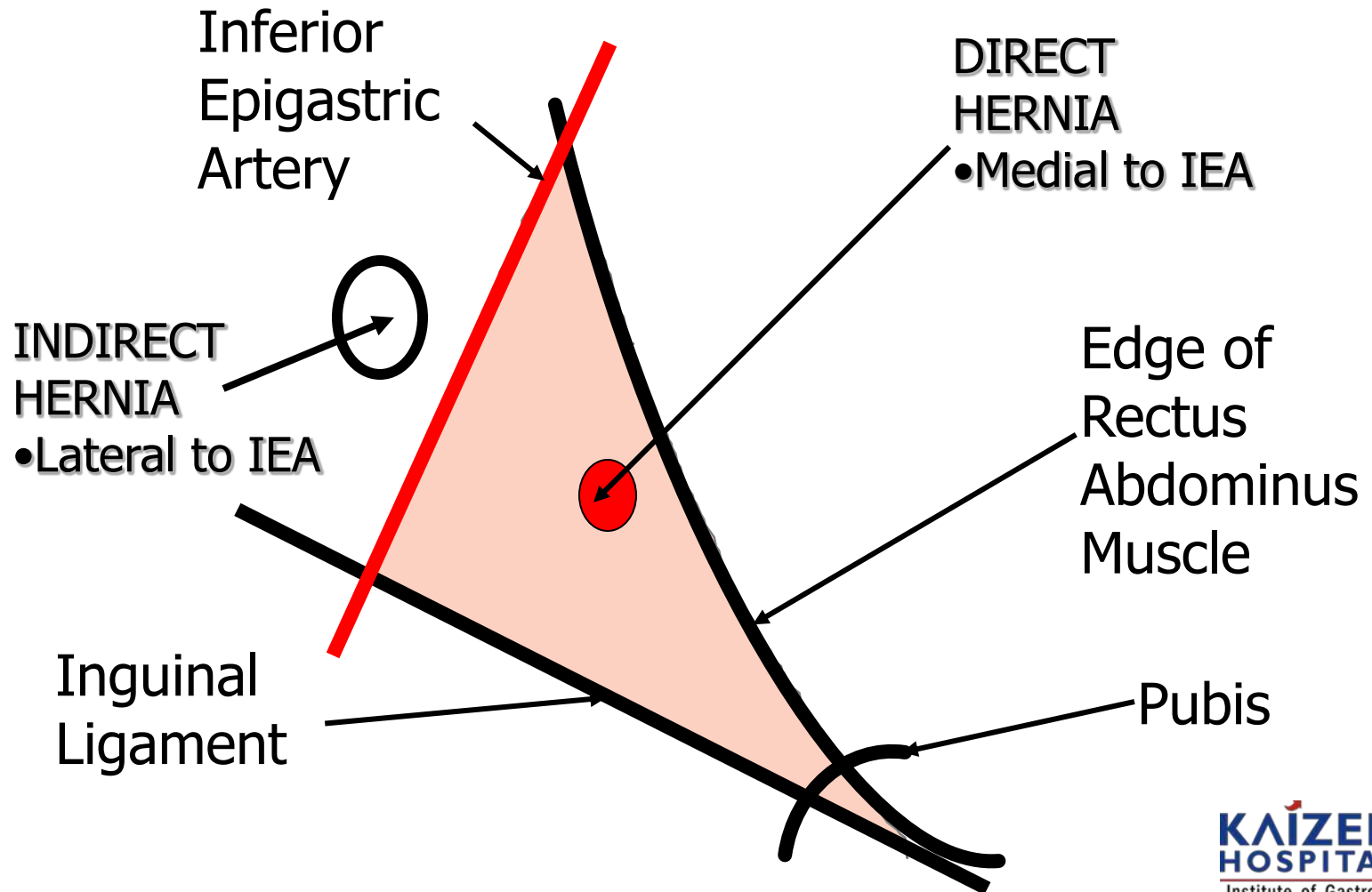
Vas

← Testicular Vs.

External Iliac Vs.



Hesselbach's Triangle



"Triangles"

TRIANGLE OF DOOM

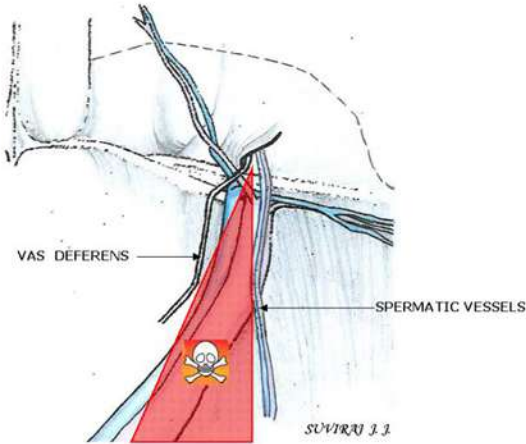


FIGURE 8

TRIANGLE OF PAIN

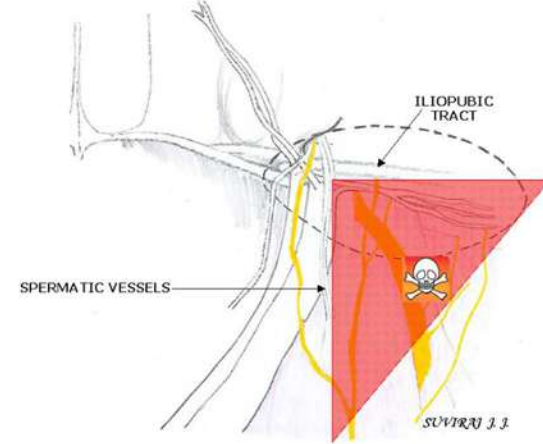


FIGURE 9

TRAPEZOID OF DISASTER!

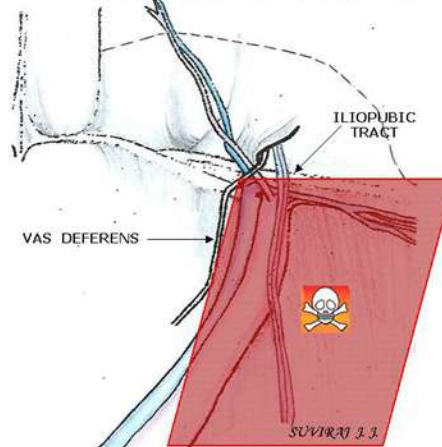


FIGURE 7

Right Inguinal region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

Cooper's ligament

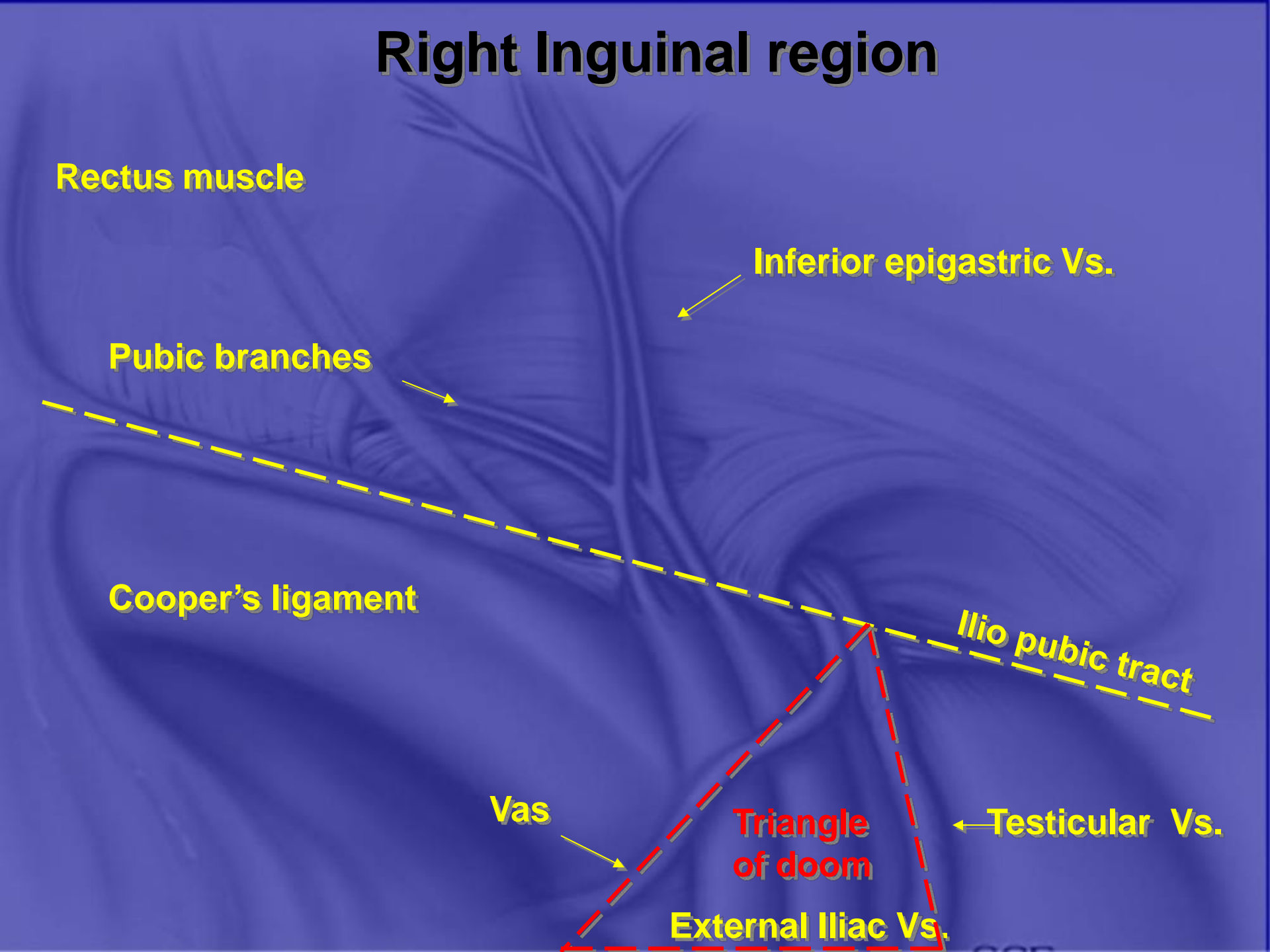
Ilio pubic tract

Vas

Triangle of doom

Testicular Vs.

External Iliac Vs.



Right Inguinal Region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

Cooper's ligament

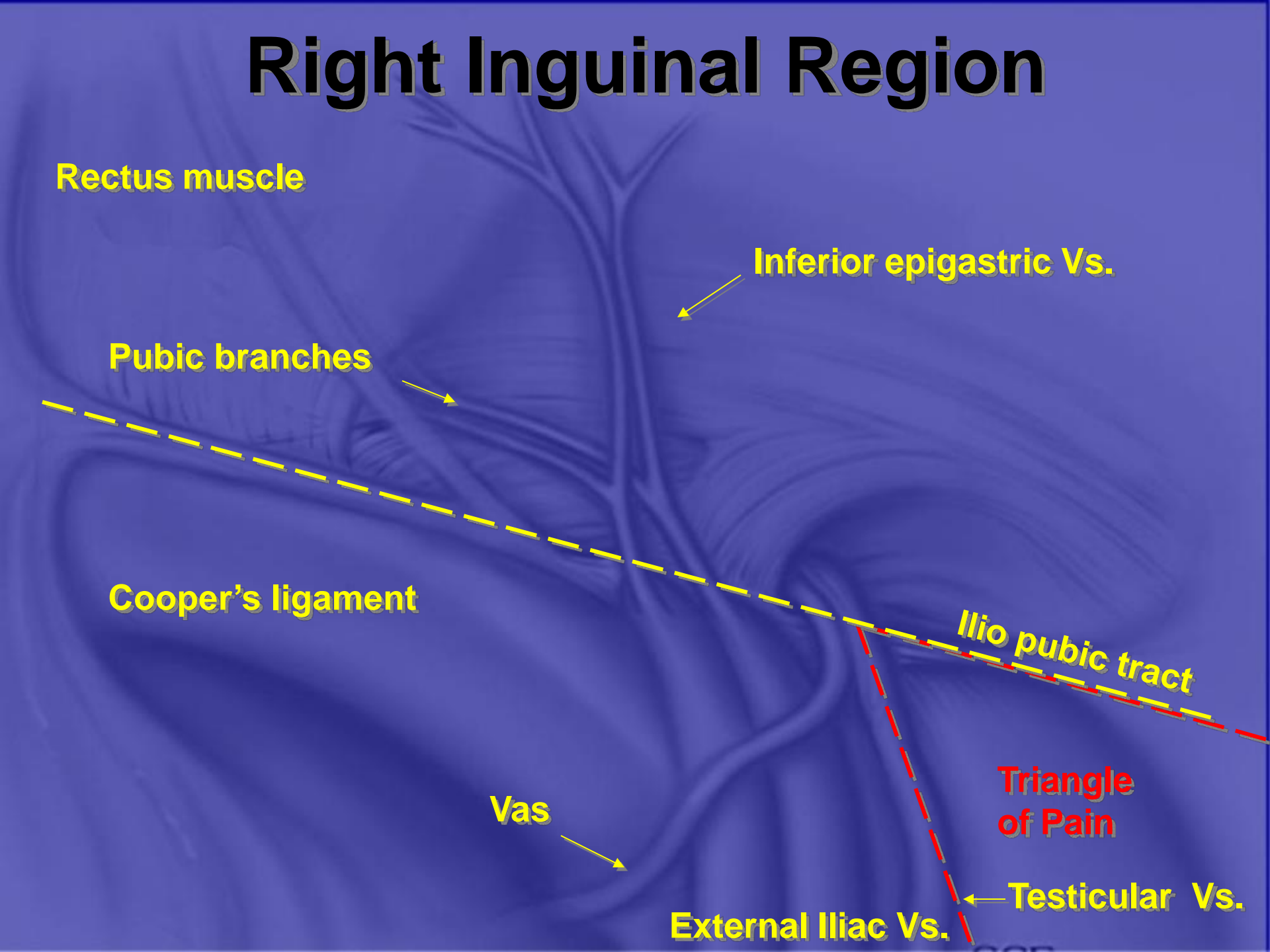
Ilio pubic tract

Vas

Triangle of Pain

Testicular Vs.

External Iliac Vs.



Right Inguinal Region

Rectus muscle

Inferior epigastric Vs.

Pubic branches

Cooper's ligament

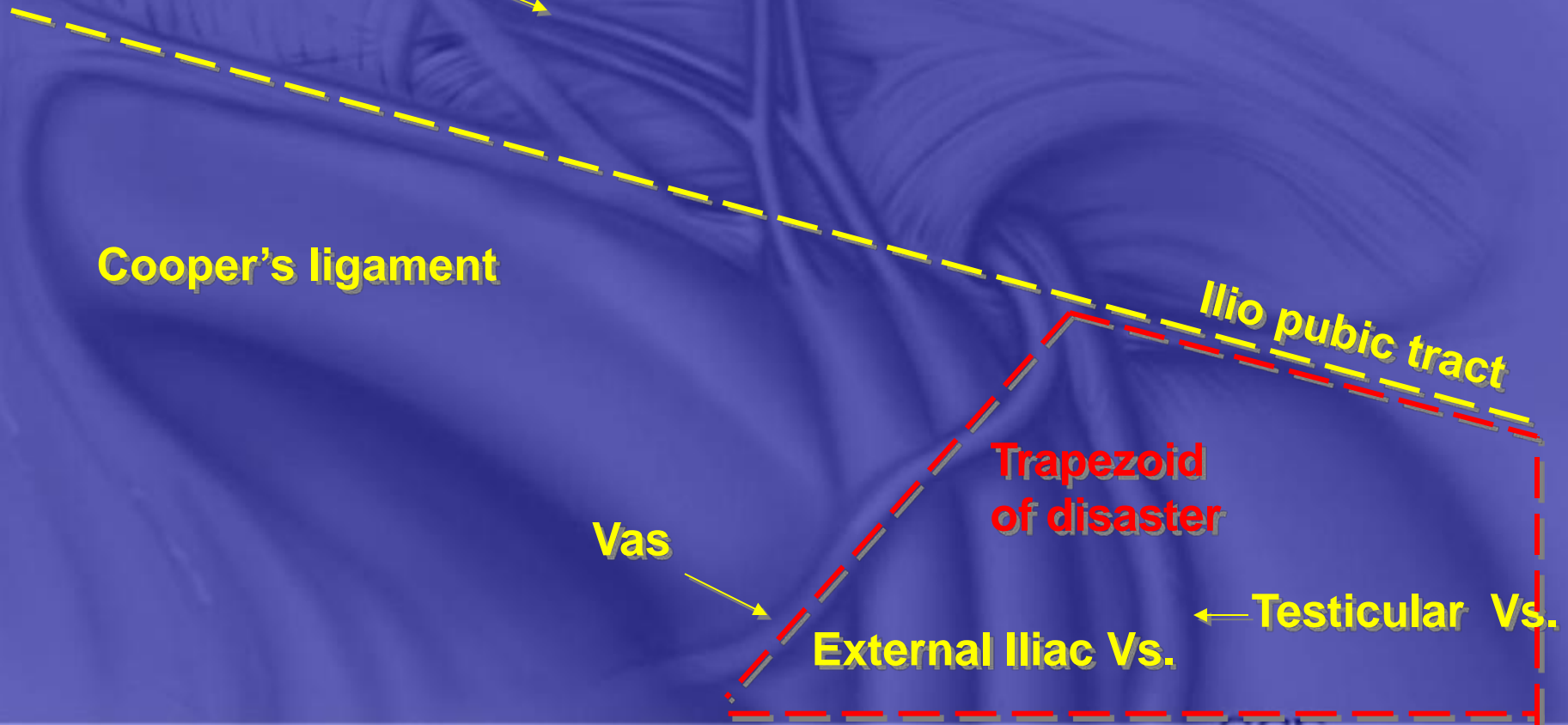
Ilio pubic tract

Trapezoid
of disaster

Vas

External Iliac Vs.

Testicular Vs.





- Thank you