e TEP for Inguinal Hernias

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Inguinal Hernia Surgery

- Commonest general surgical operation
- Open Hernioplasty – Easiest, safest operation
- Laparoscopic Hernioplasty – advanced skills
- Adoption of Lap. Surgery – Low, Globally

Lap. Inguinal Hernioplasty

- Constant Struggle
- Long Learning curve
- Increased risk of complications, Recurrence
- TEP or TAPP
- Frustrating, and stop Lap. Hernia Surgery

Our Own Journey

- 18 years of Lap. Inguinal Hernia since 2000
- 95% Lap, 5% Open
- Long struggle with TEP
- Most cases TAPP

- Since 2017 March – Lap. e TEP
- No Looking back

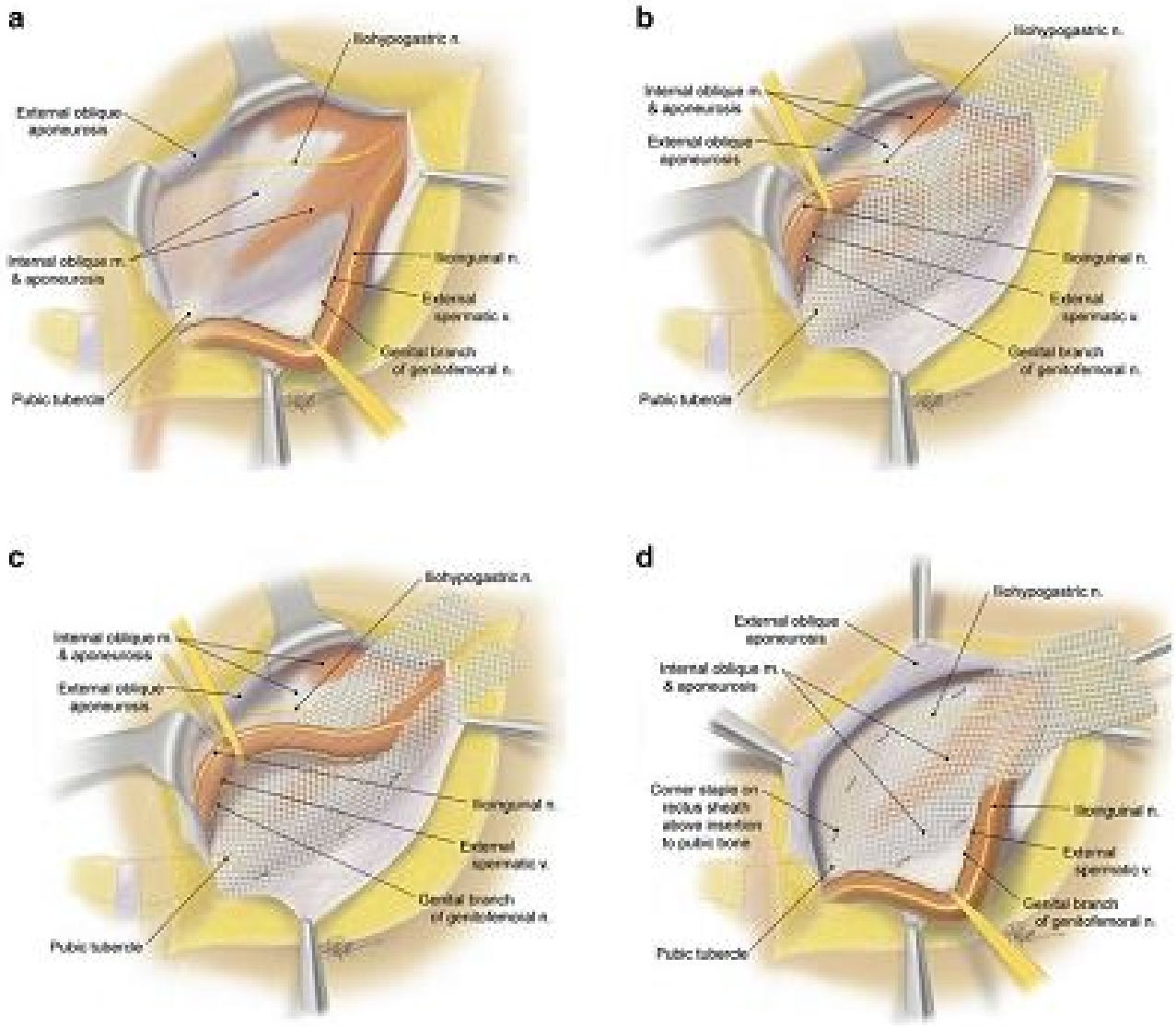
Choice of Operations

- Open
  - Lichtenstein's repair
  - Preperitoneal – McVay/Stoppa
  - Plug / Dual mesh - PHS
  - Shouldice repair
- Laparoscopic
  - TEP
  - TAPP
  - IPOM
  - e TEP

What I am going to talk?

1. Open - Lichtenstein's repair in era of Lap. repair
2. Salient Anatomy
3. Lap. TEP & Lap. TAPP
4. Lap. e TEP
5. Video – Lap. E TEP

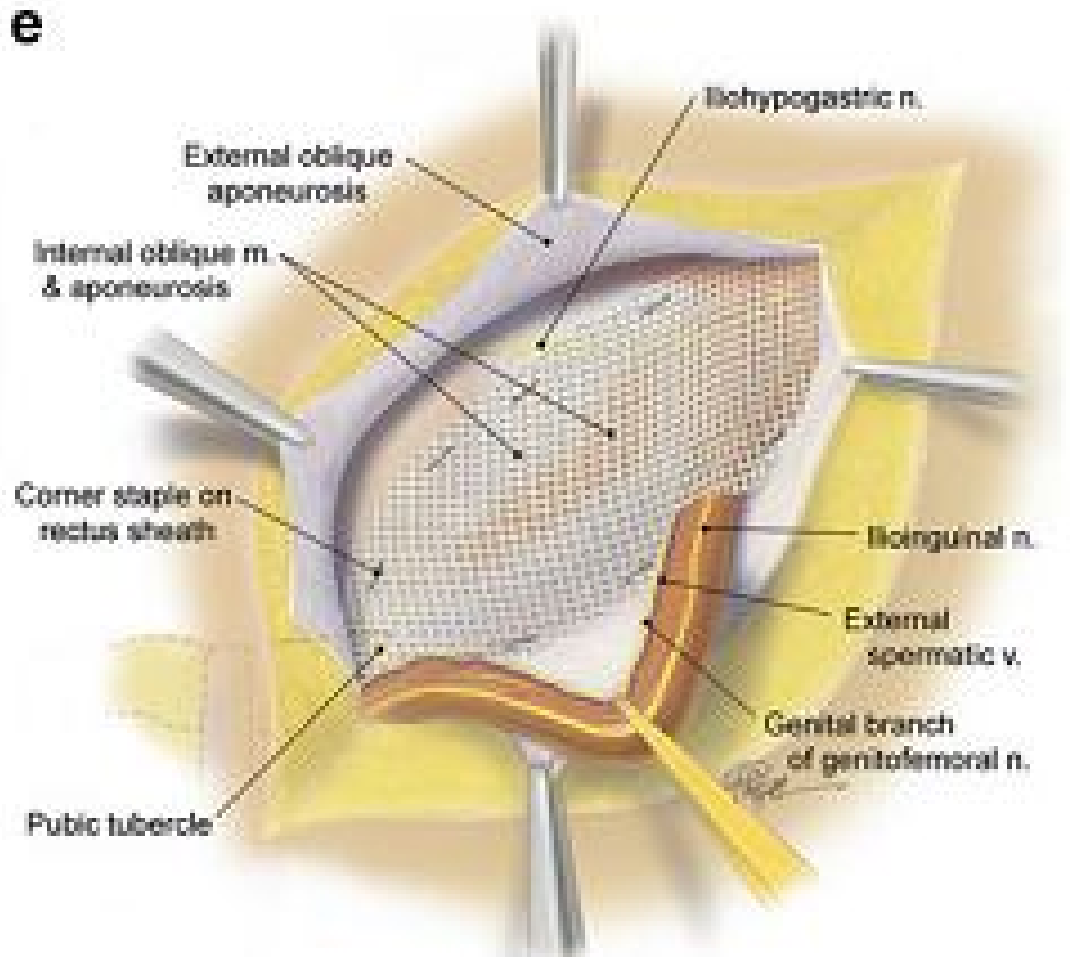
Lichtenstein's repair



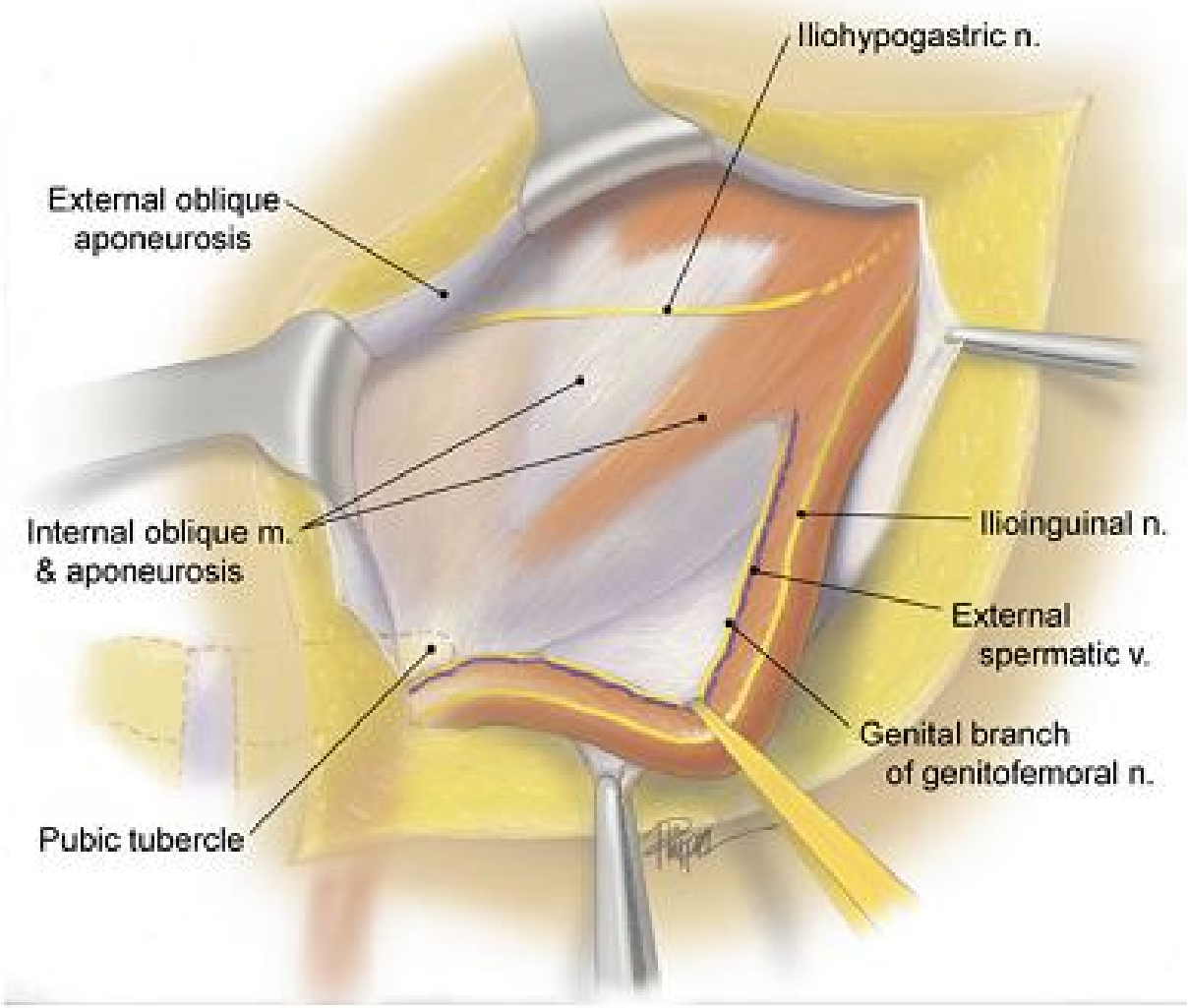
Five concepts fundamental to Lichtenstein repair

1. Using a large sheet of mesh 15*7 cm that extends 2 cm medially beyond the pubic tubercle, 3-4 cm above Hesselbach's triangle, and 5-6 cm lateral to the internal ring.
2. Crossing the tails of the mesh to avoid lateral recurrence.
3. Securing the upper edge of the mesh to the rectus sheath and internal oblique aponeurosis (avoiding the internal oblique muscle to prevent injury to the intramuscular segment of the iliohypogastric nerve) with two interrupted sutures, and the lower edge of the mesh to the inguinal ligament with one continuous suture.
4. Keeping the mesh in a slightly relaxed configuration to counteract the forward protrusion of the transversalis fascia when the patient stands up and, more importantly, to compensate for contraction of the mesh.
5. Visualizing and protecting the ilioinguinal, iliohypogastric, and genital nerves

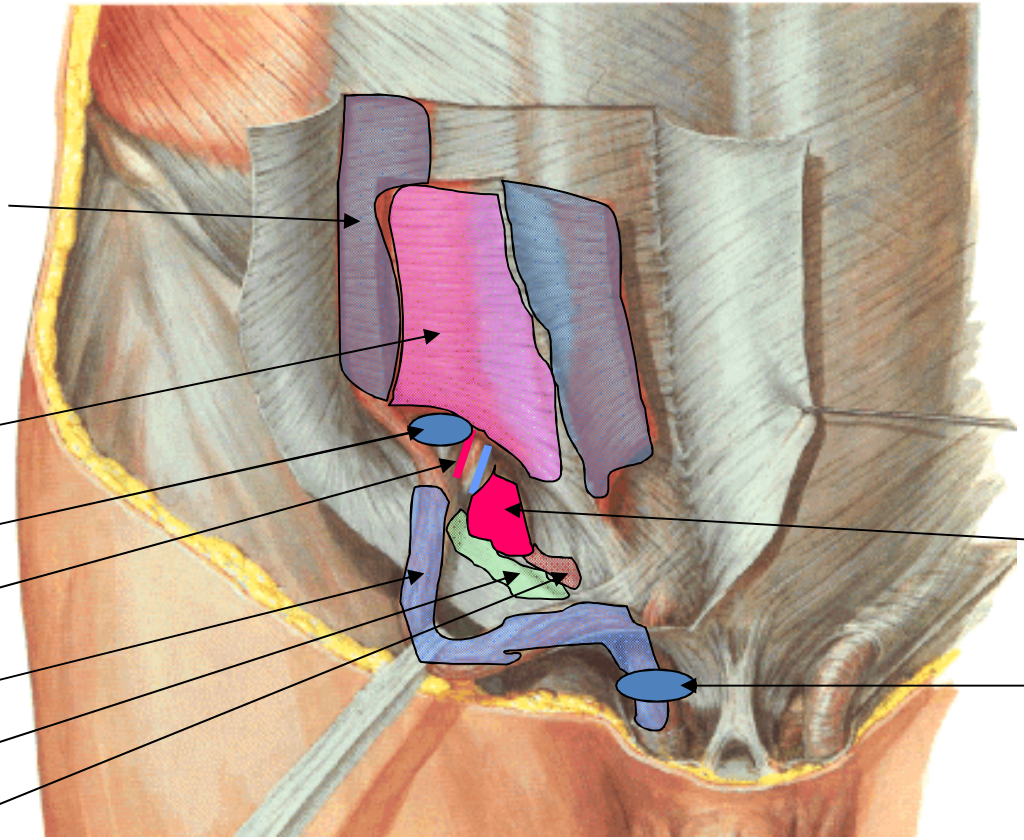
Lichtenstein's repair



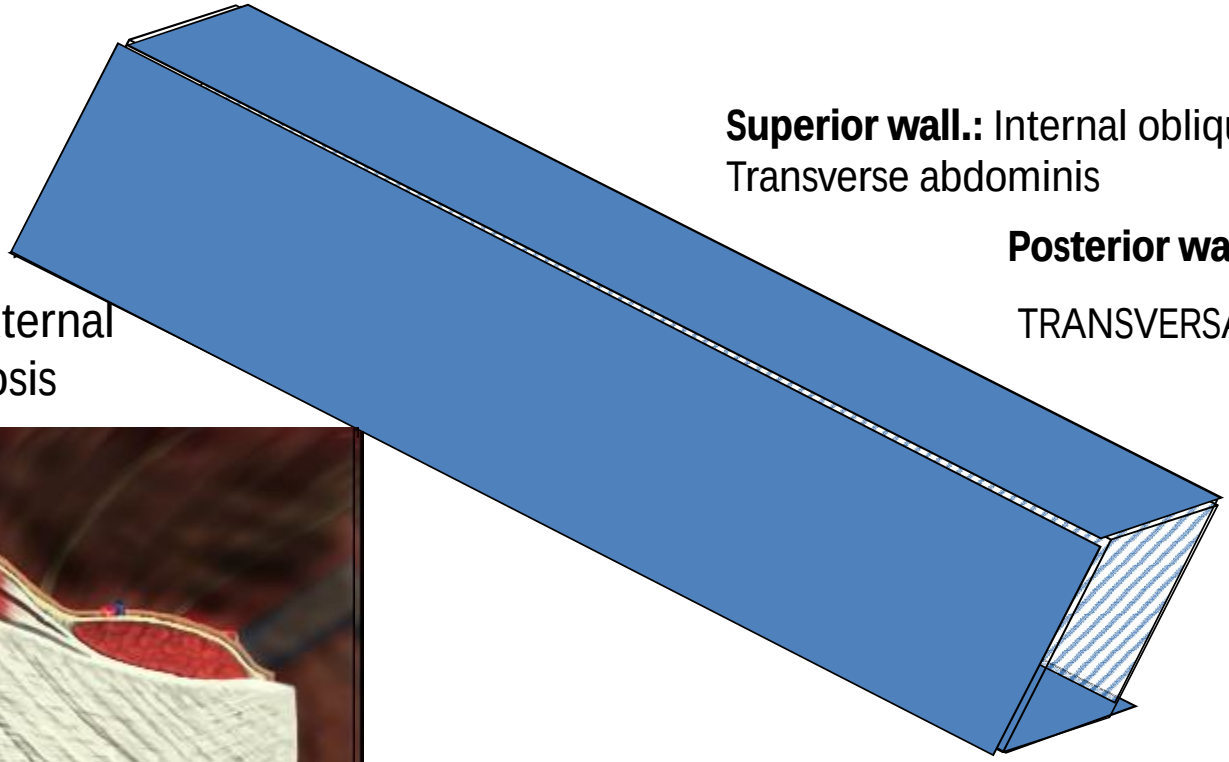
Inguinal Neural anatomy



Abdominal wall Anatomy



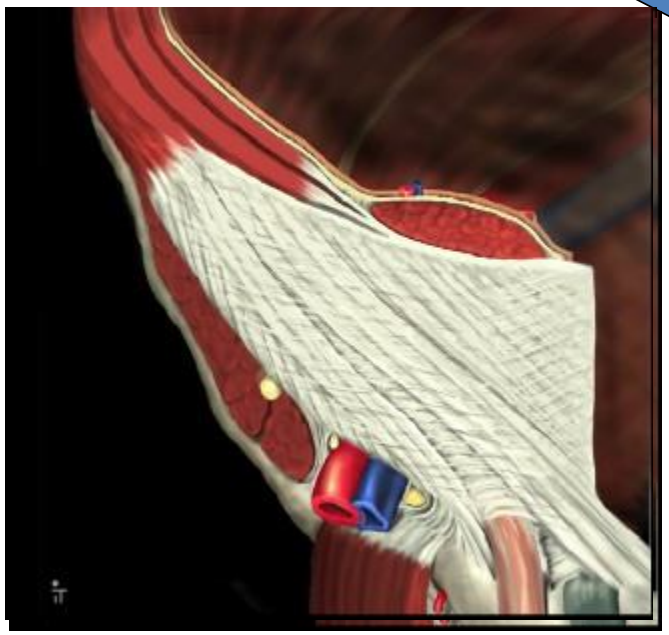
Anatomy of Inguinal canal



Superior wall.: Internal oblique & Transverse abdominis

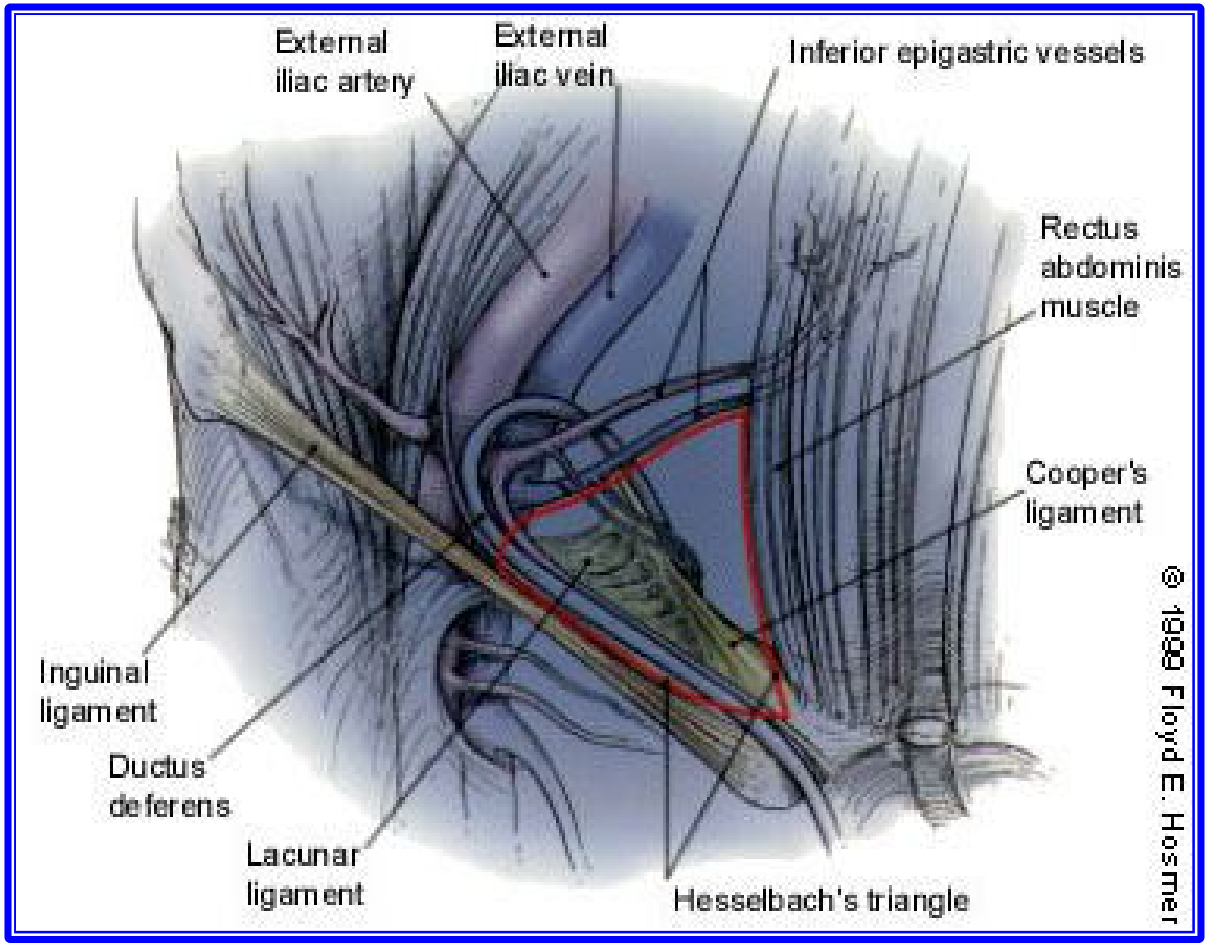
Posterior wall : FASCIA TRANSVERSALIS

Anterior wall : External oblique aponeurosis



Inferior wall: Inguinal Ligament

Hesselbach's triangle



Boundaries:

Medial:

Rectus abdominis muscle medially

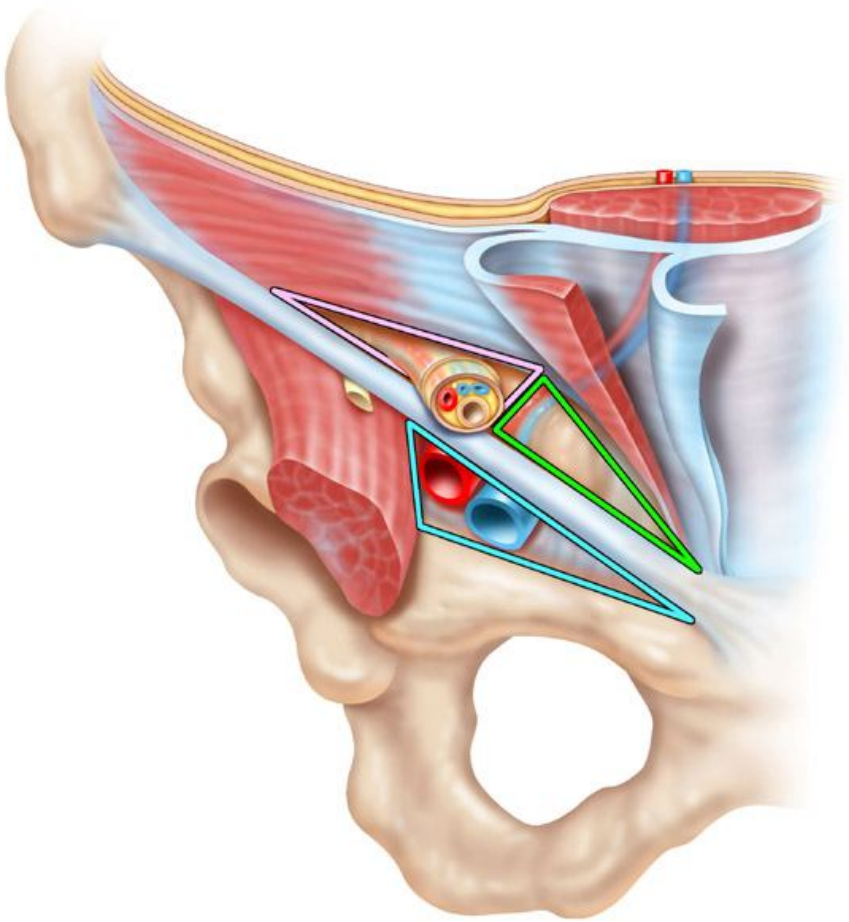
Inferiorly:

Inguinal ligament

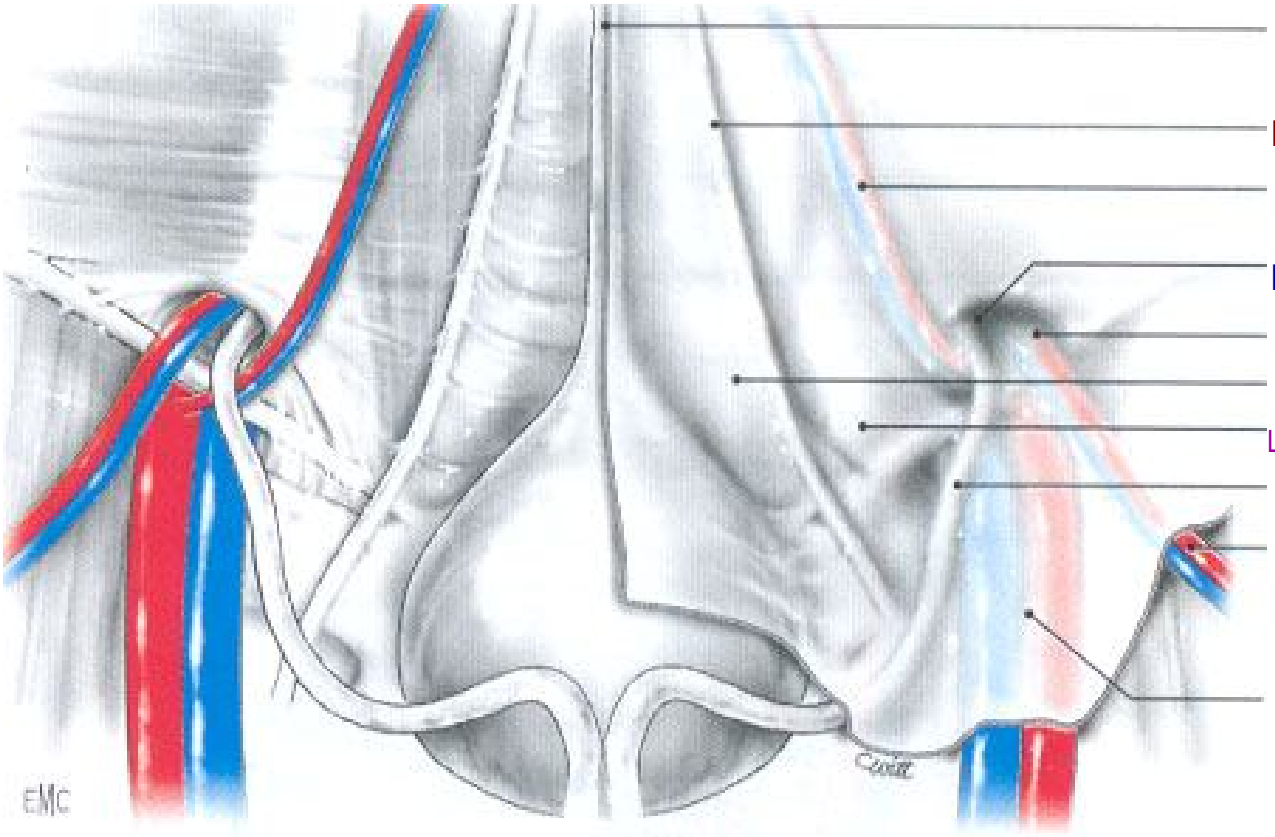
Laterally:

Inf. Epigastrics

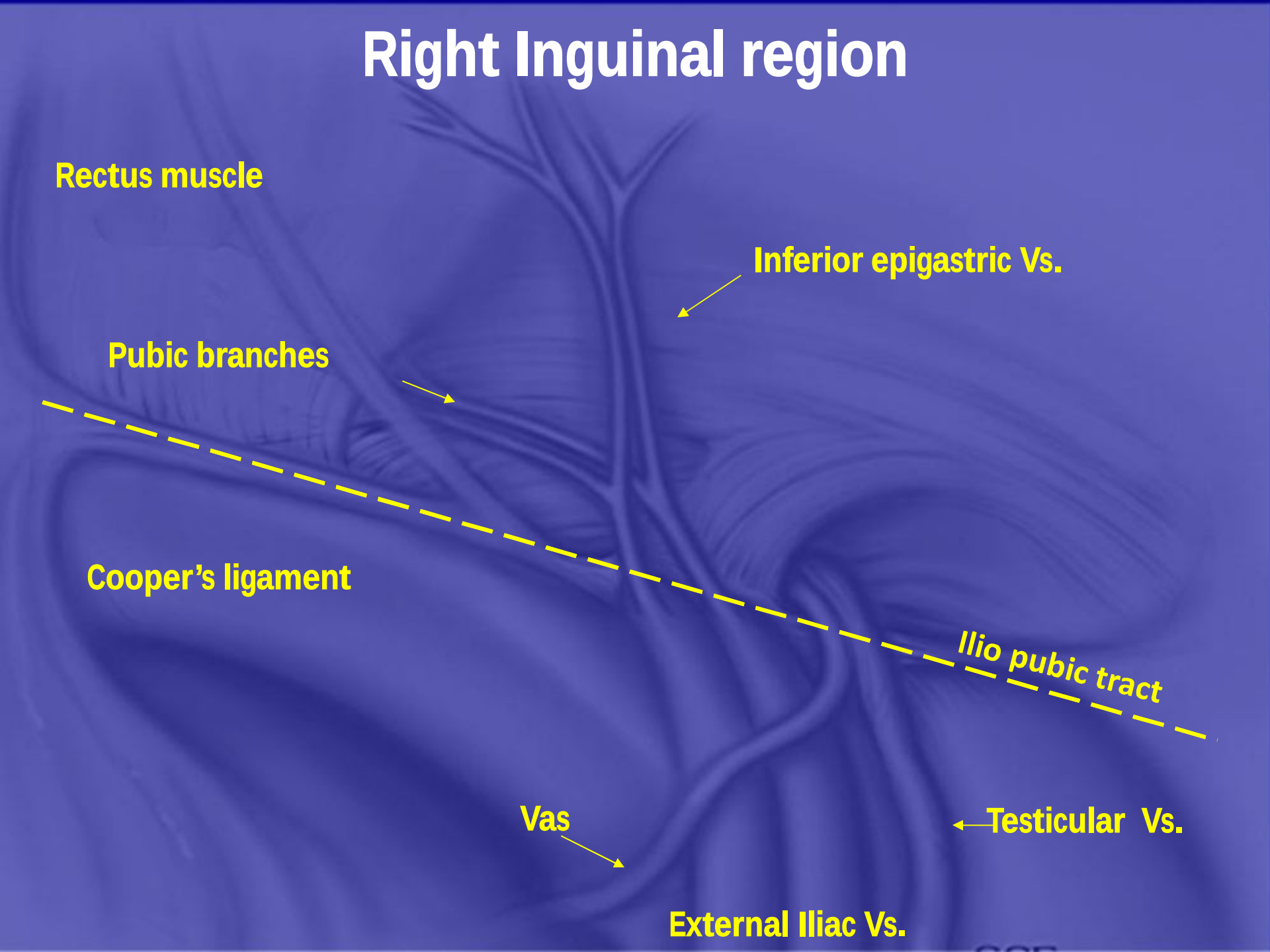
Myopectineal orifice



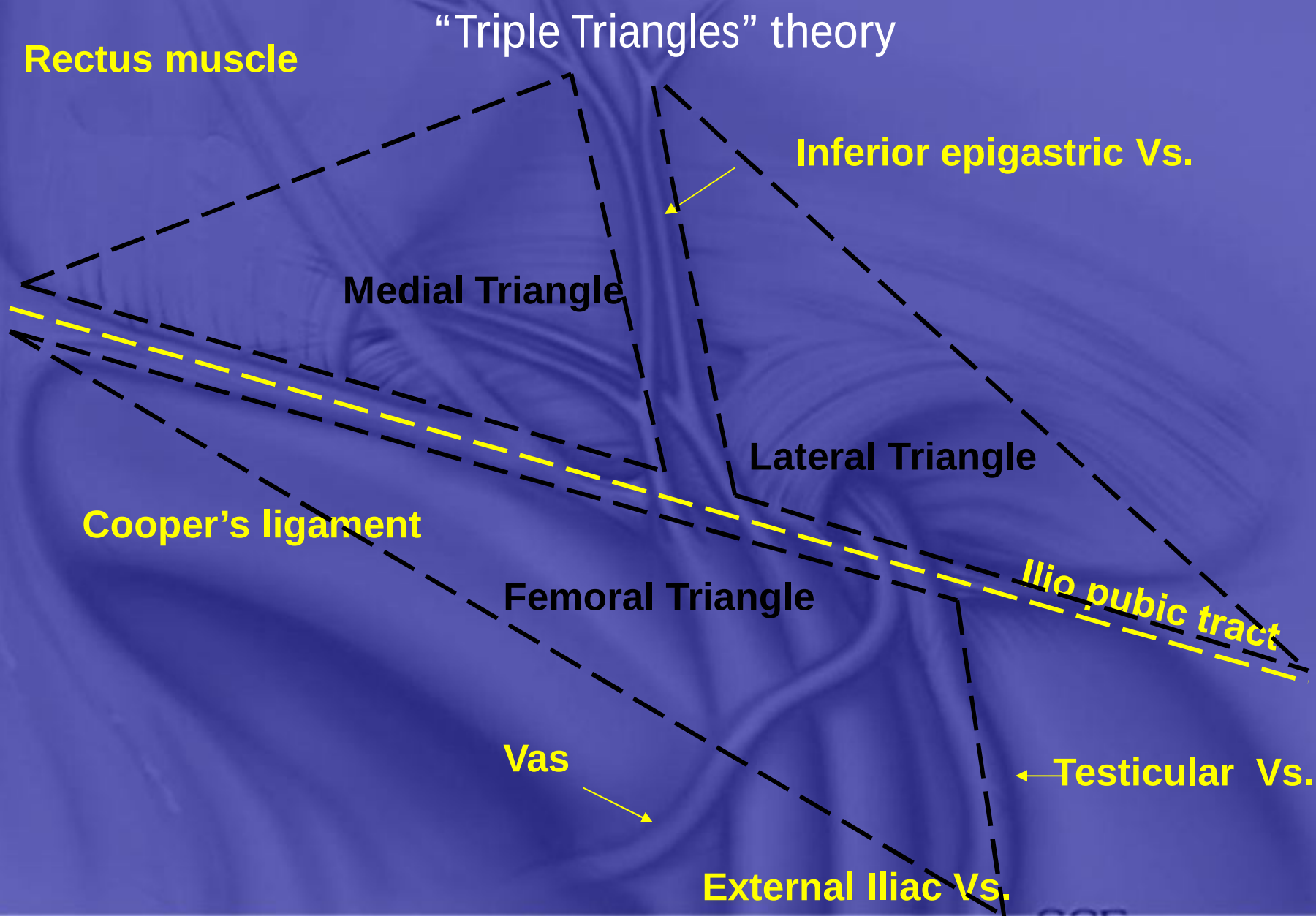
Lap. Posterior Anatomy - Peritoneal surface



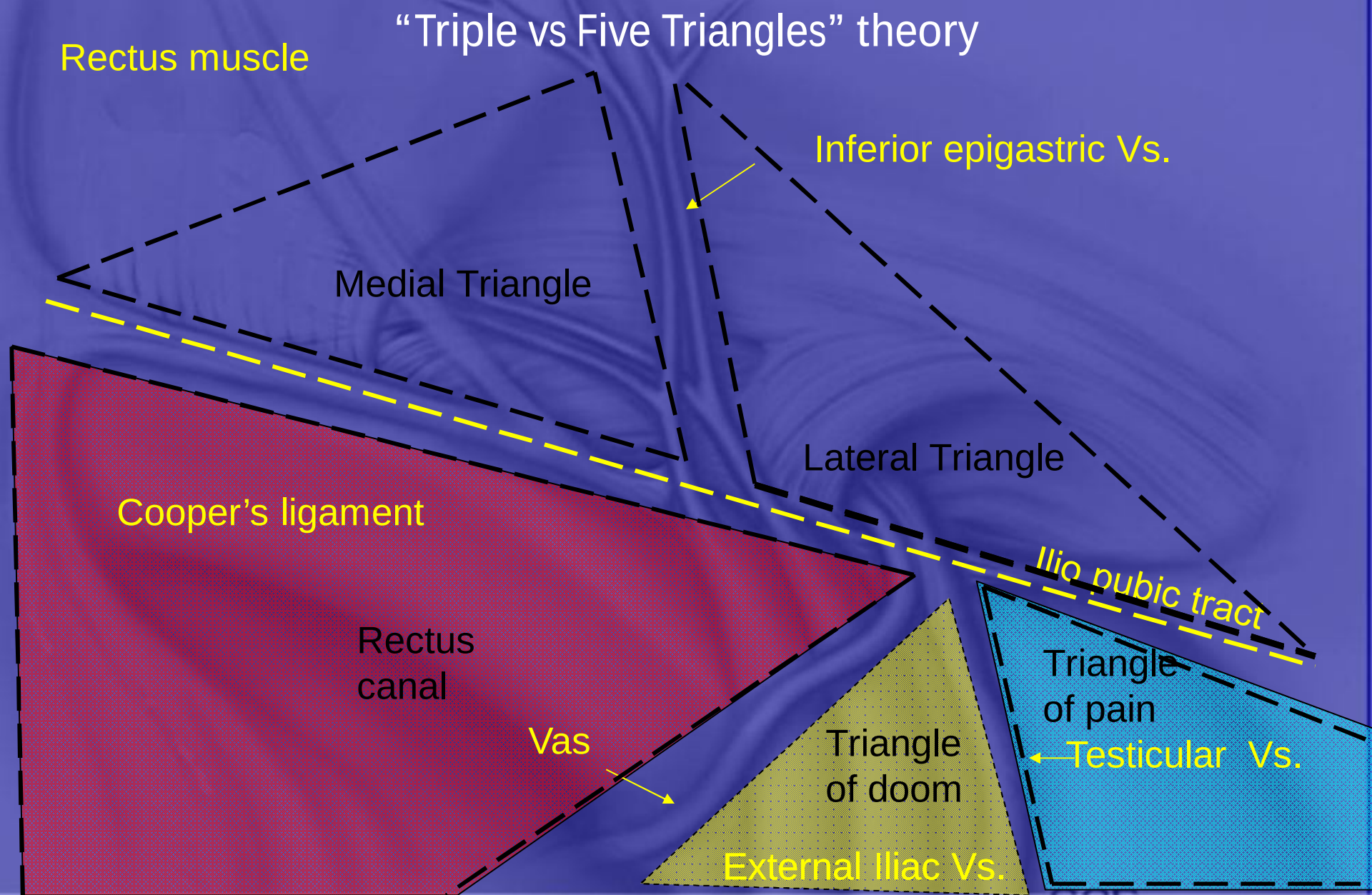
Right Inguinal region



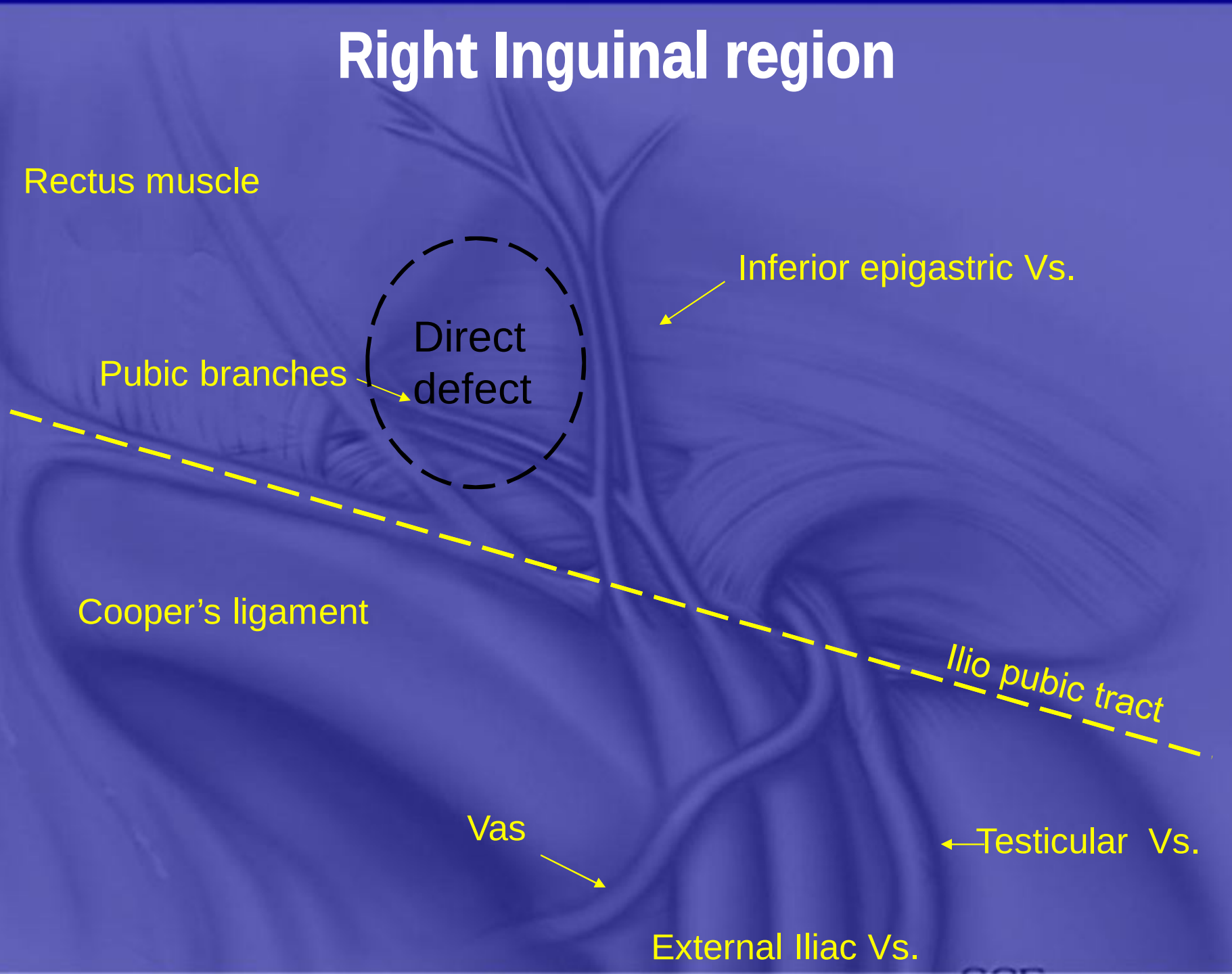
Right Inguinal Region



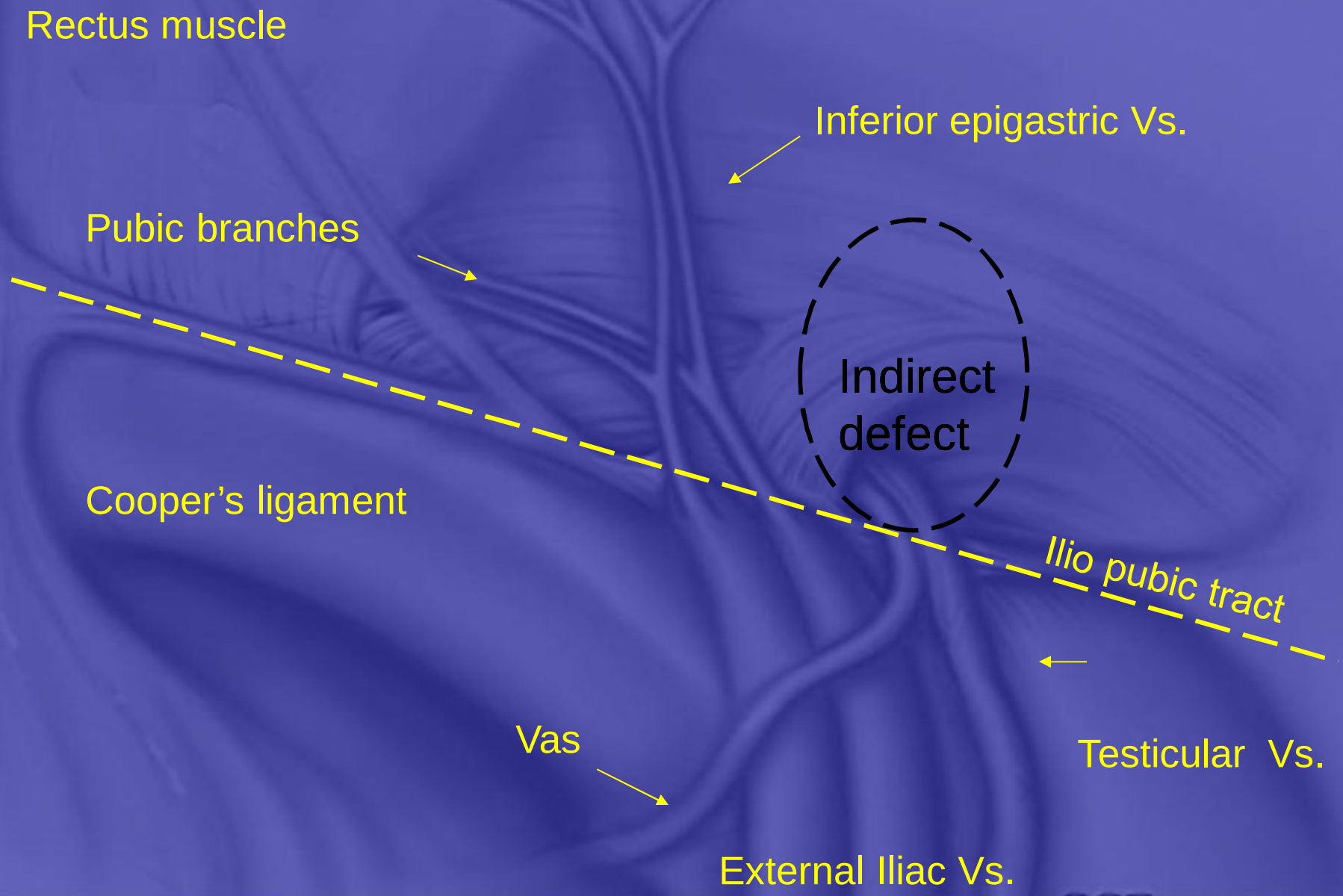
Right Inguinal Region



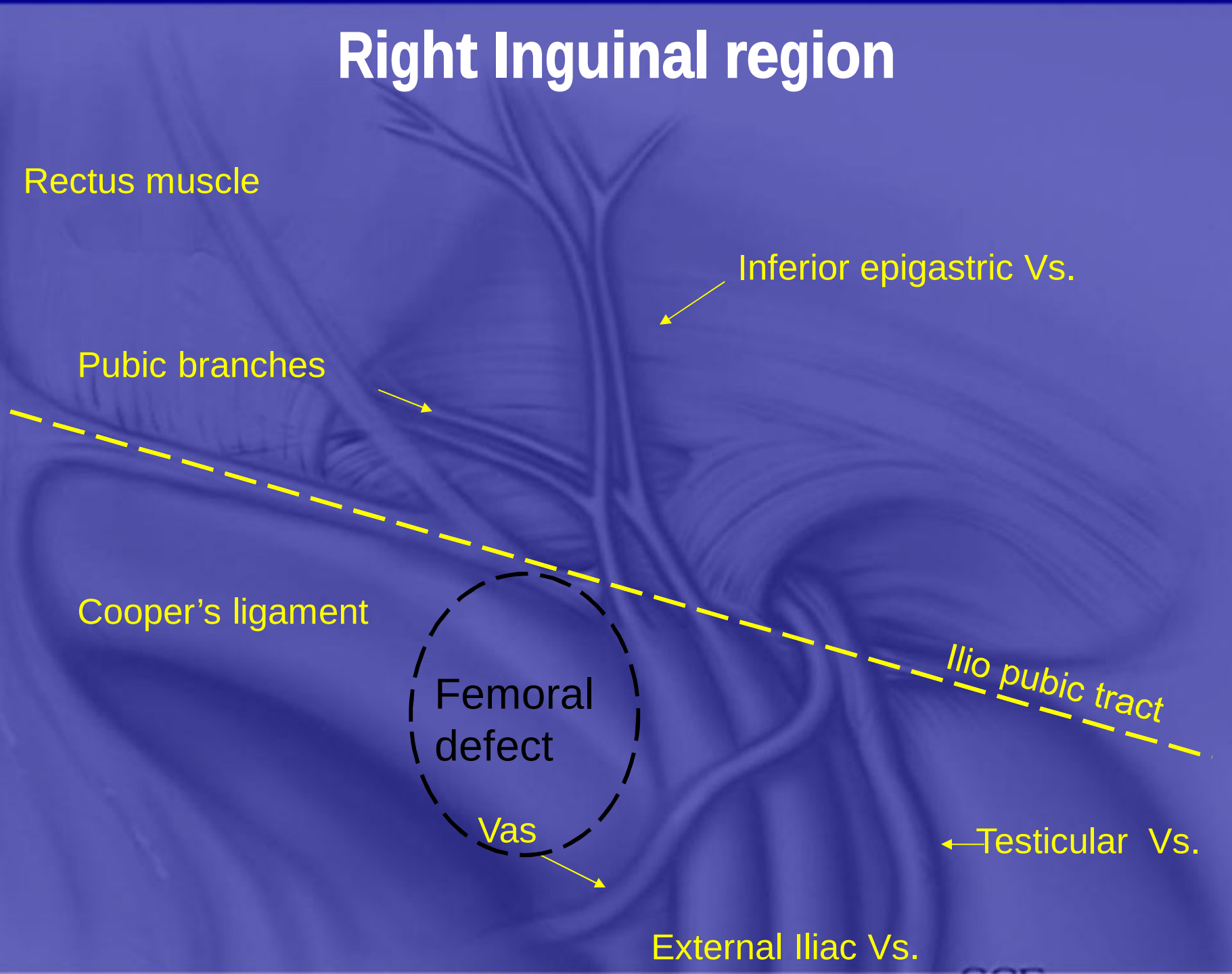
Right Inguinal region



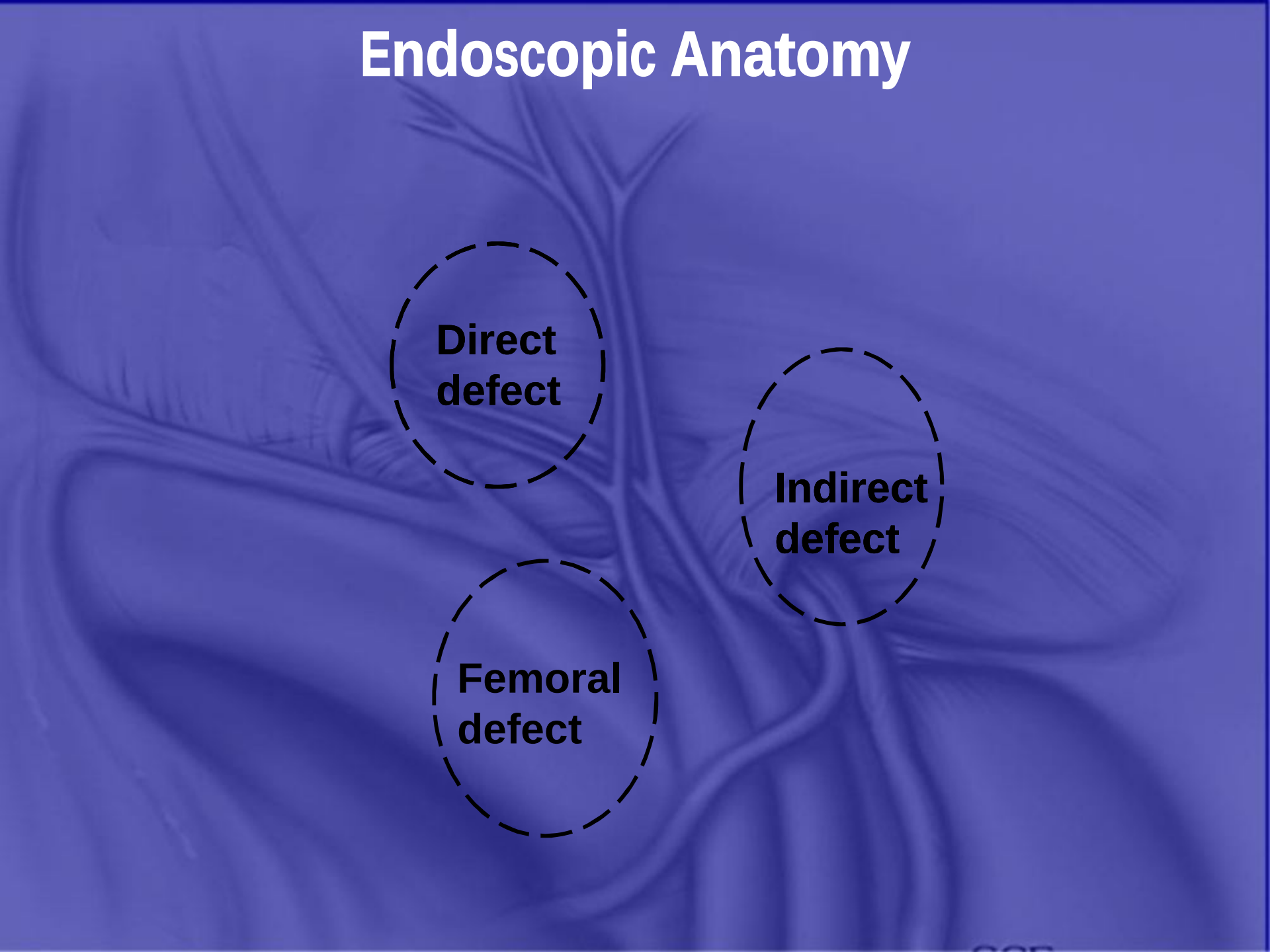
Right Inguinal region



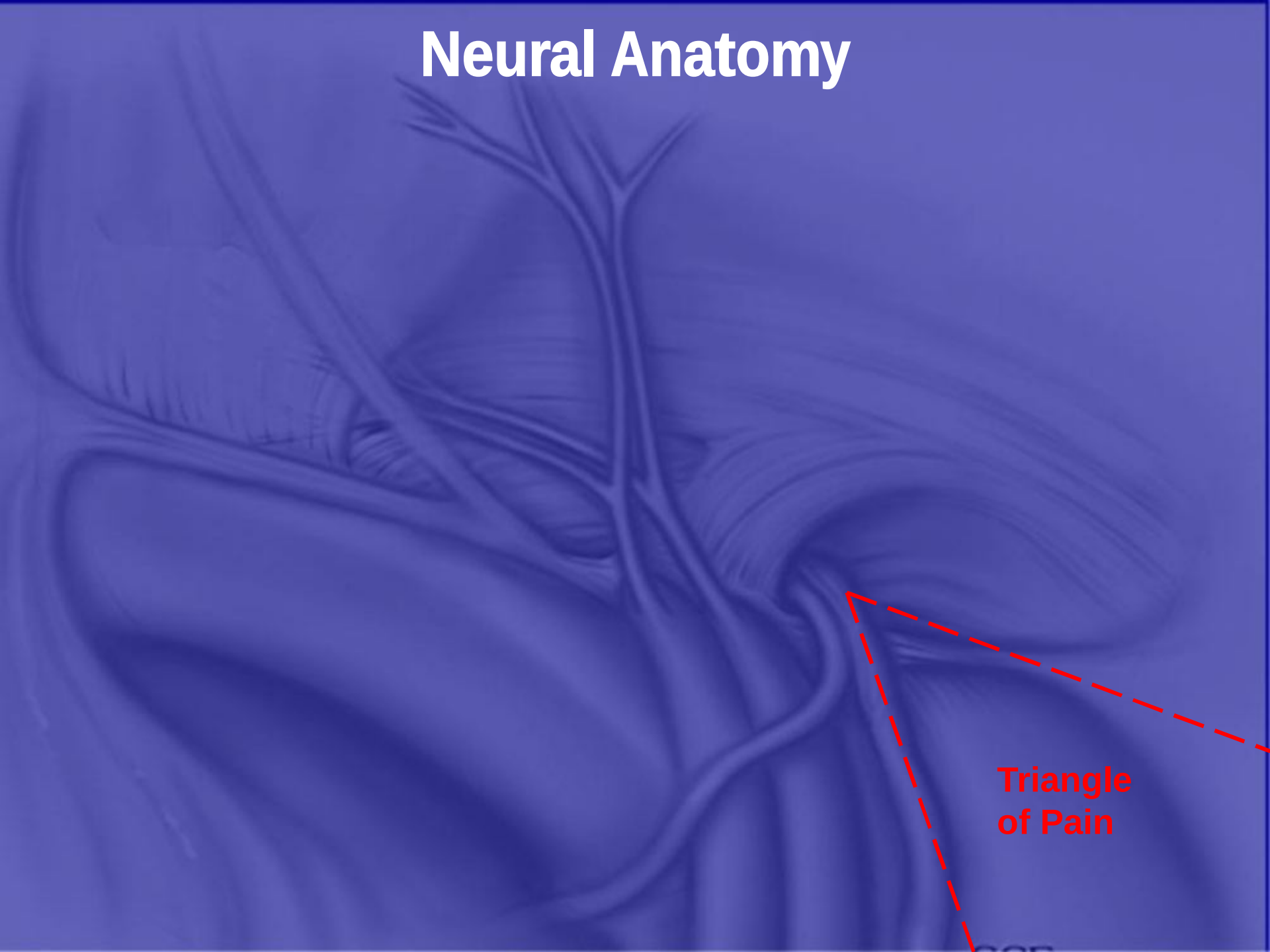
Right Inguinal region



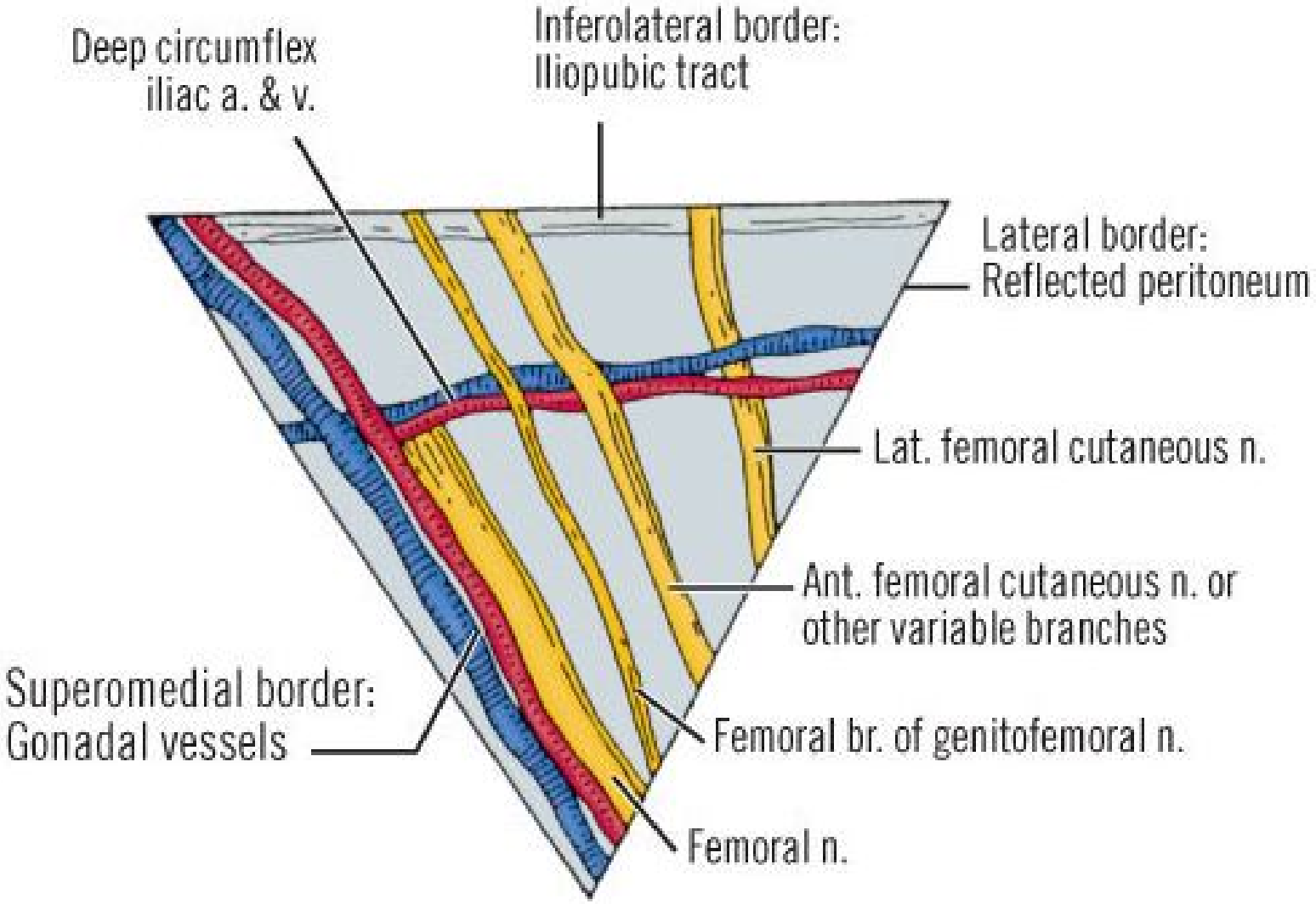
Endoscopic Anatomy

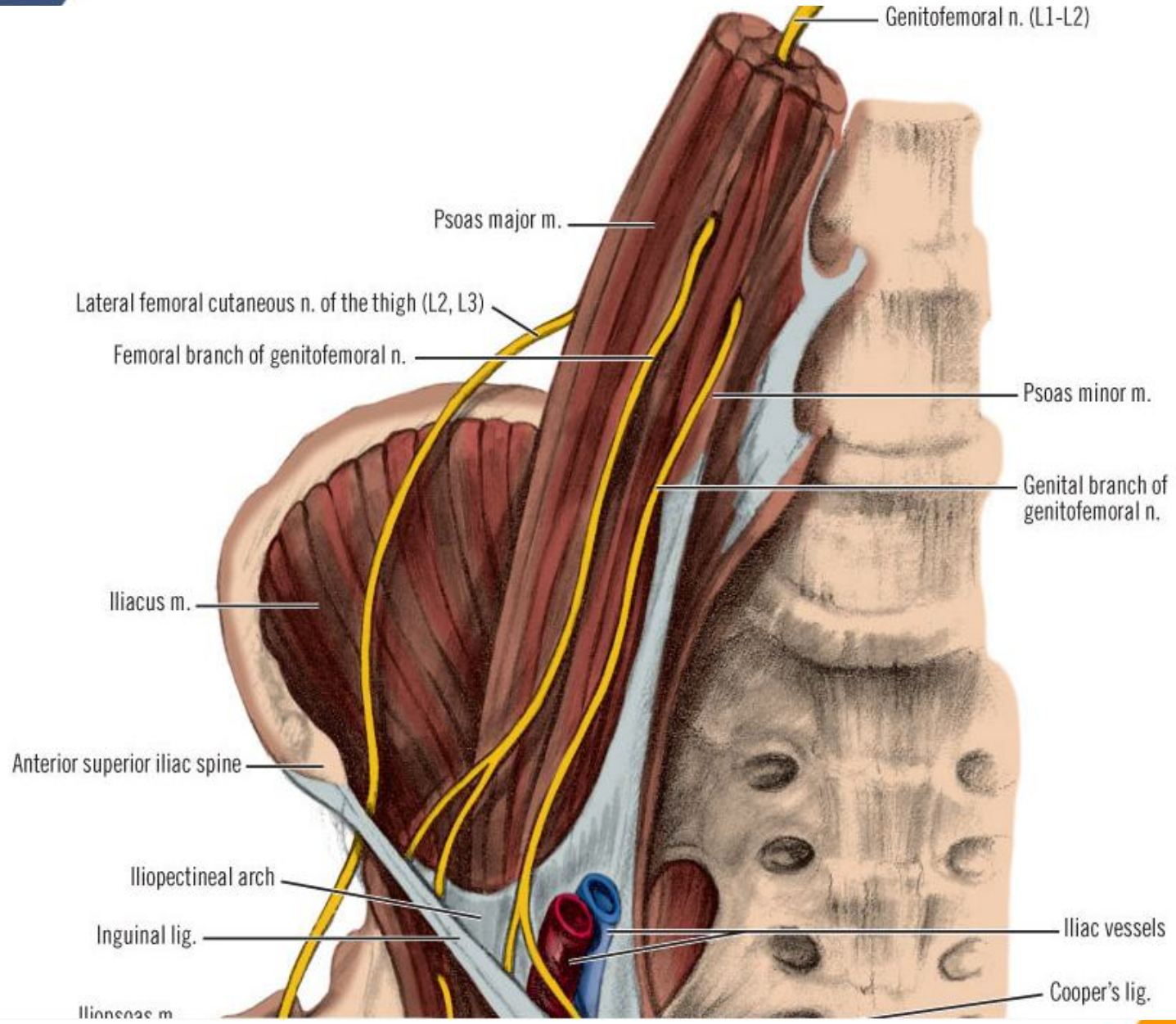


Neural Anatomy

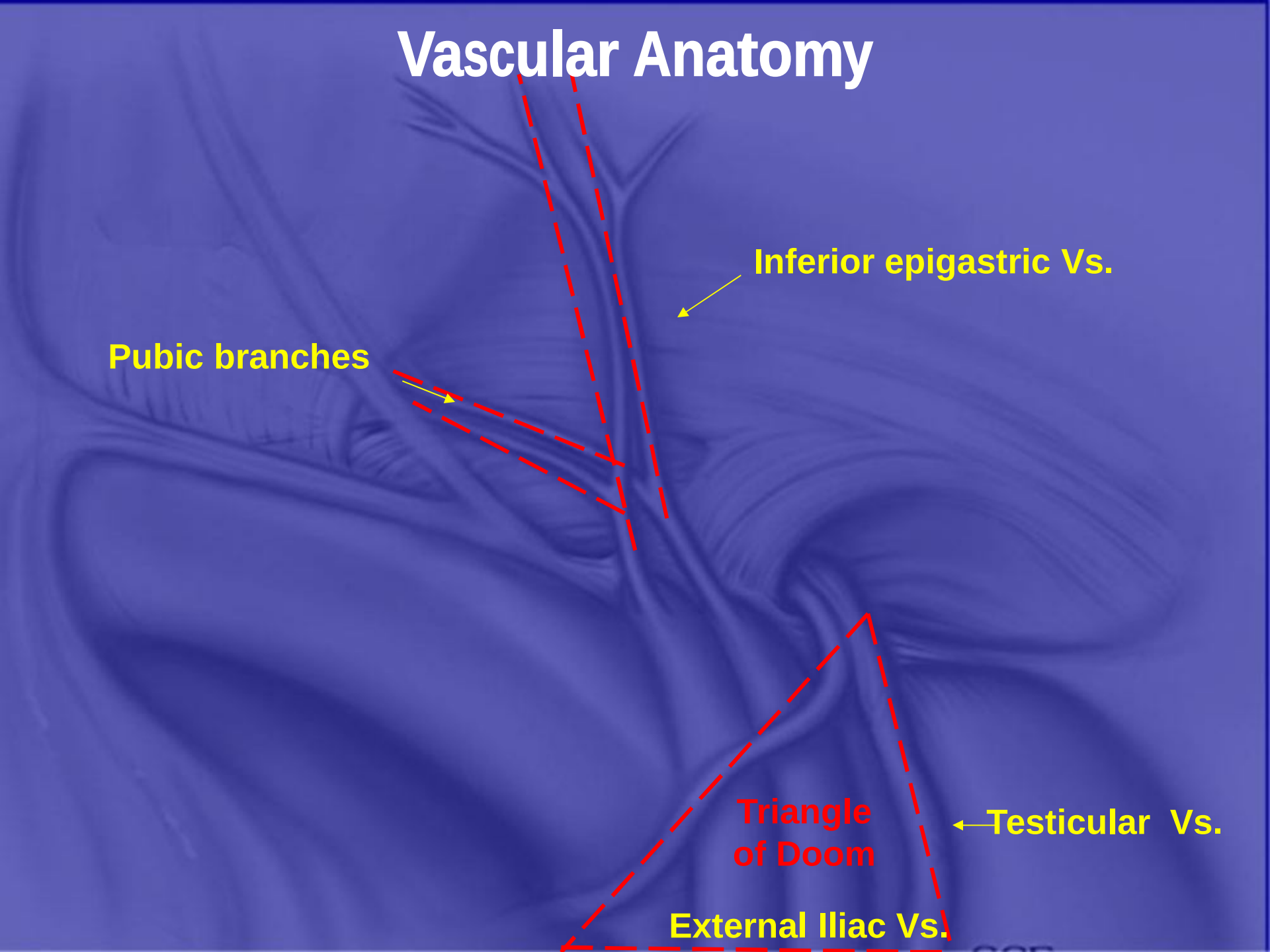


Triangle of Pain

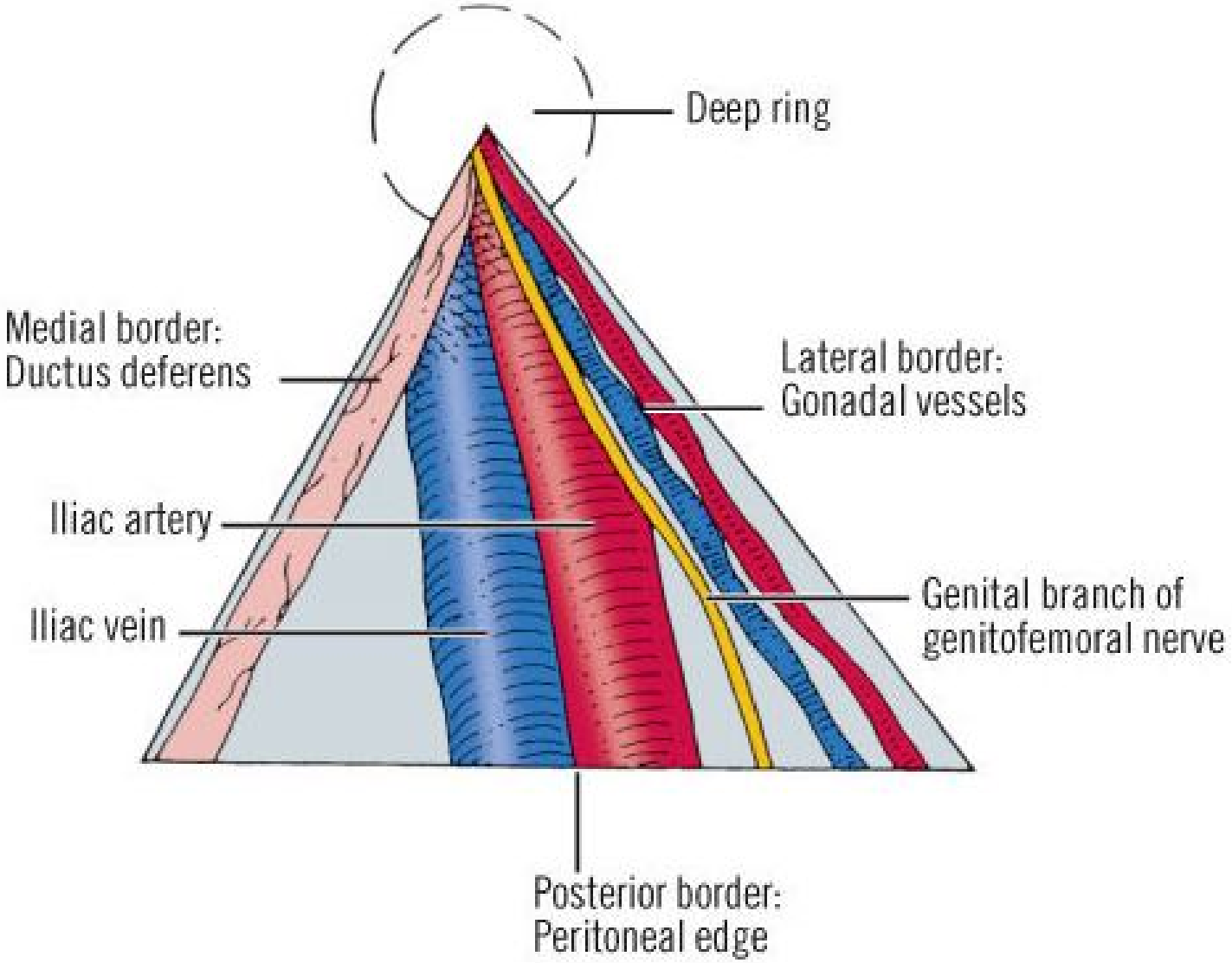



Genitofemoral n. (L1-L2)
Psoas major m.
Lateral femoral cutaneous n. of the thigh (L2, L3)
Femoral branch of genitofemoral n.
Psoas minor m.
Genital branch of genitofemoral n.
Iliacus m.
Anterior superior iliac spine
Iliopectineal arch
Inguinal lig.
Iliac vessels
Cooper's lig.
Iliopsoas m.

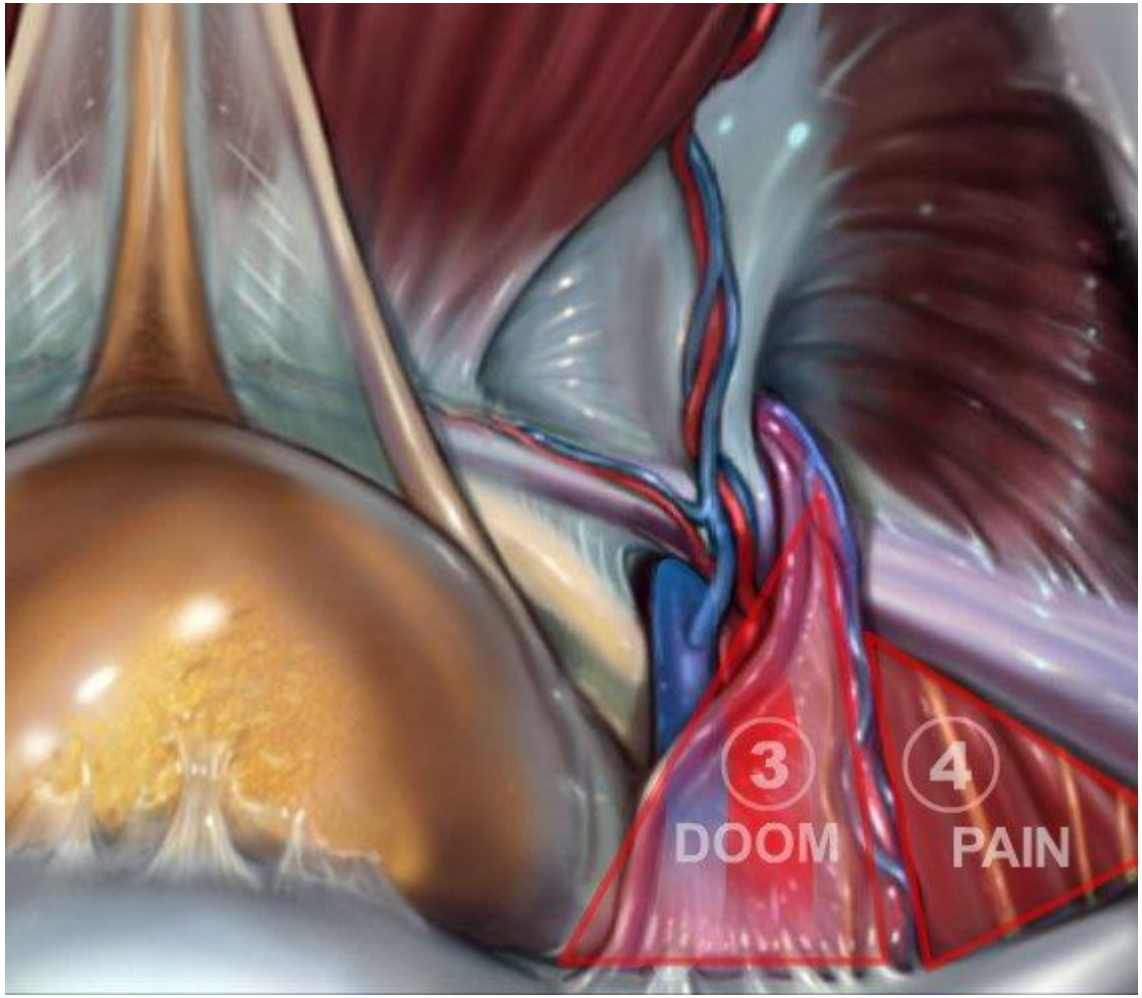
Vascular Anatomy



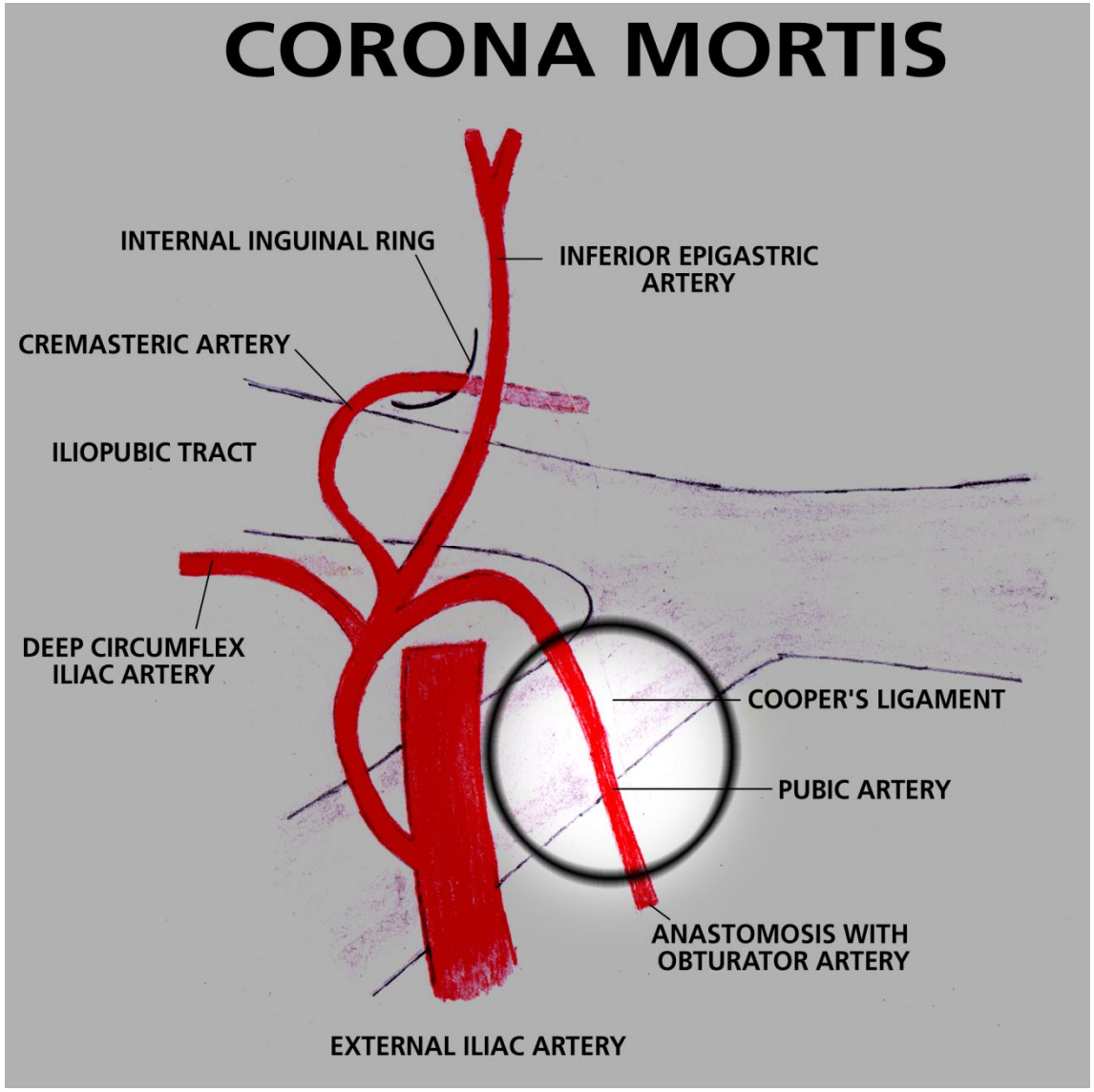
Triangle of Doom

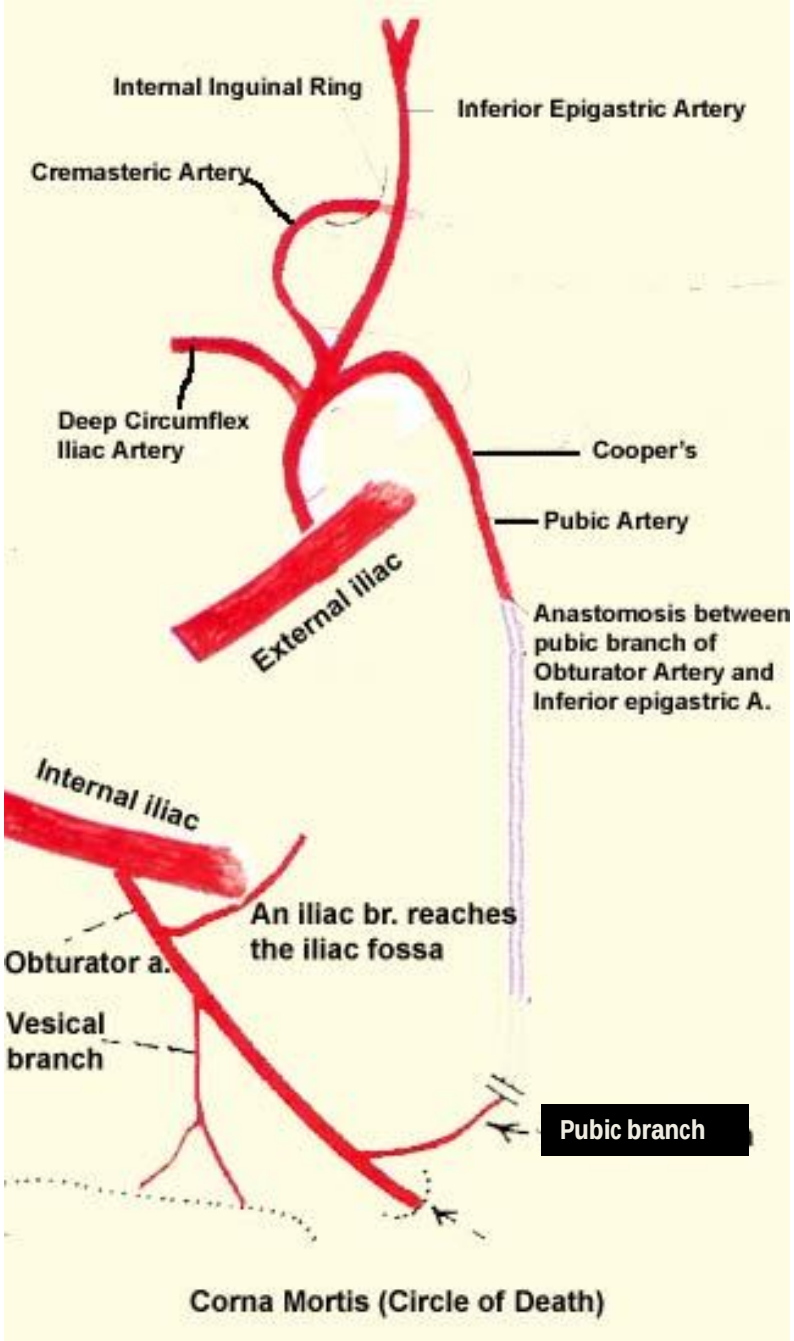


Triangle of Doom & Pain



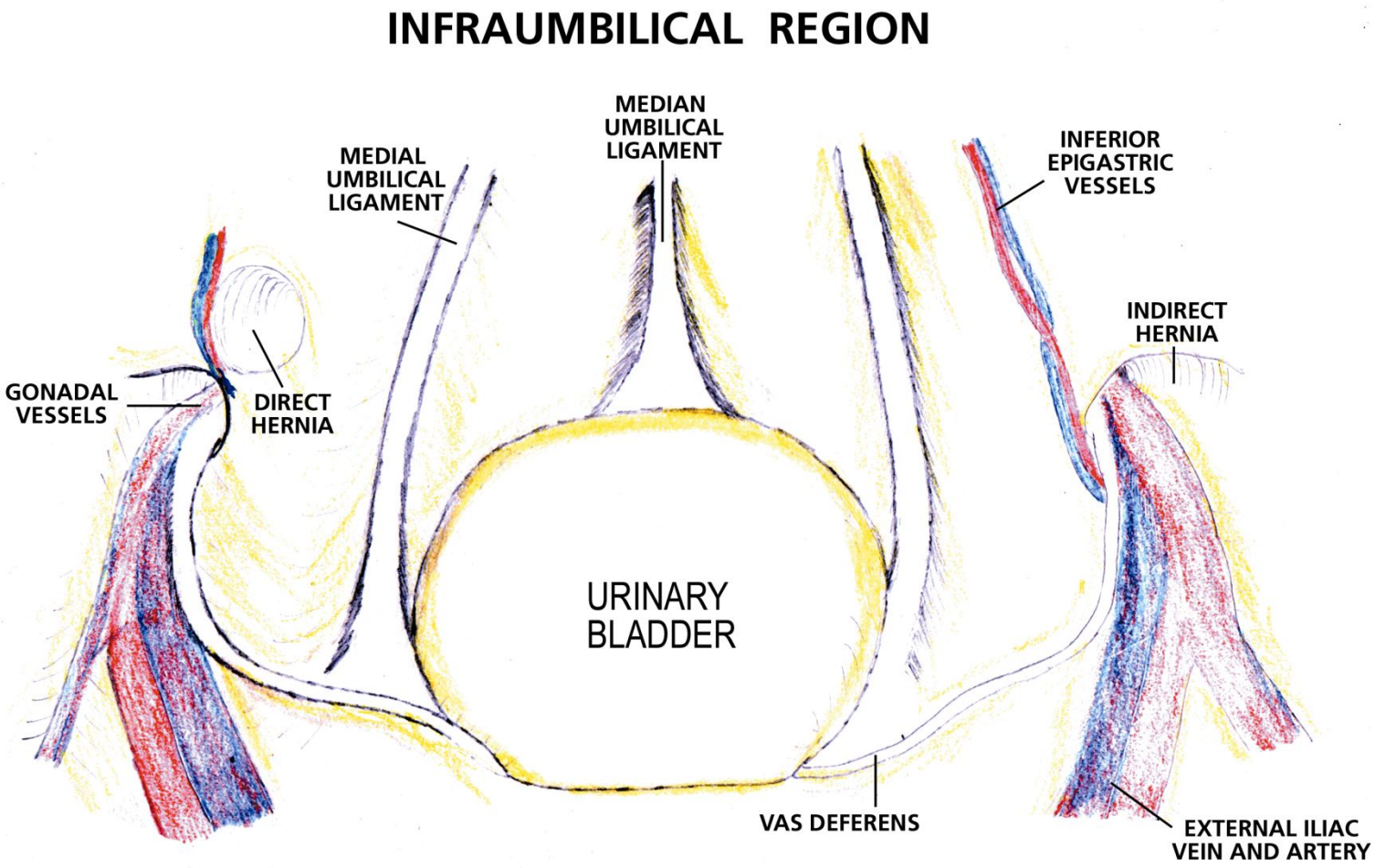
Described by Hesselbach

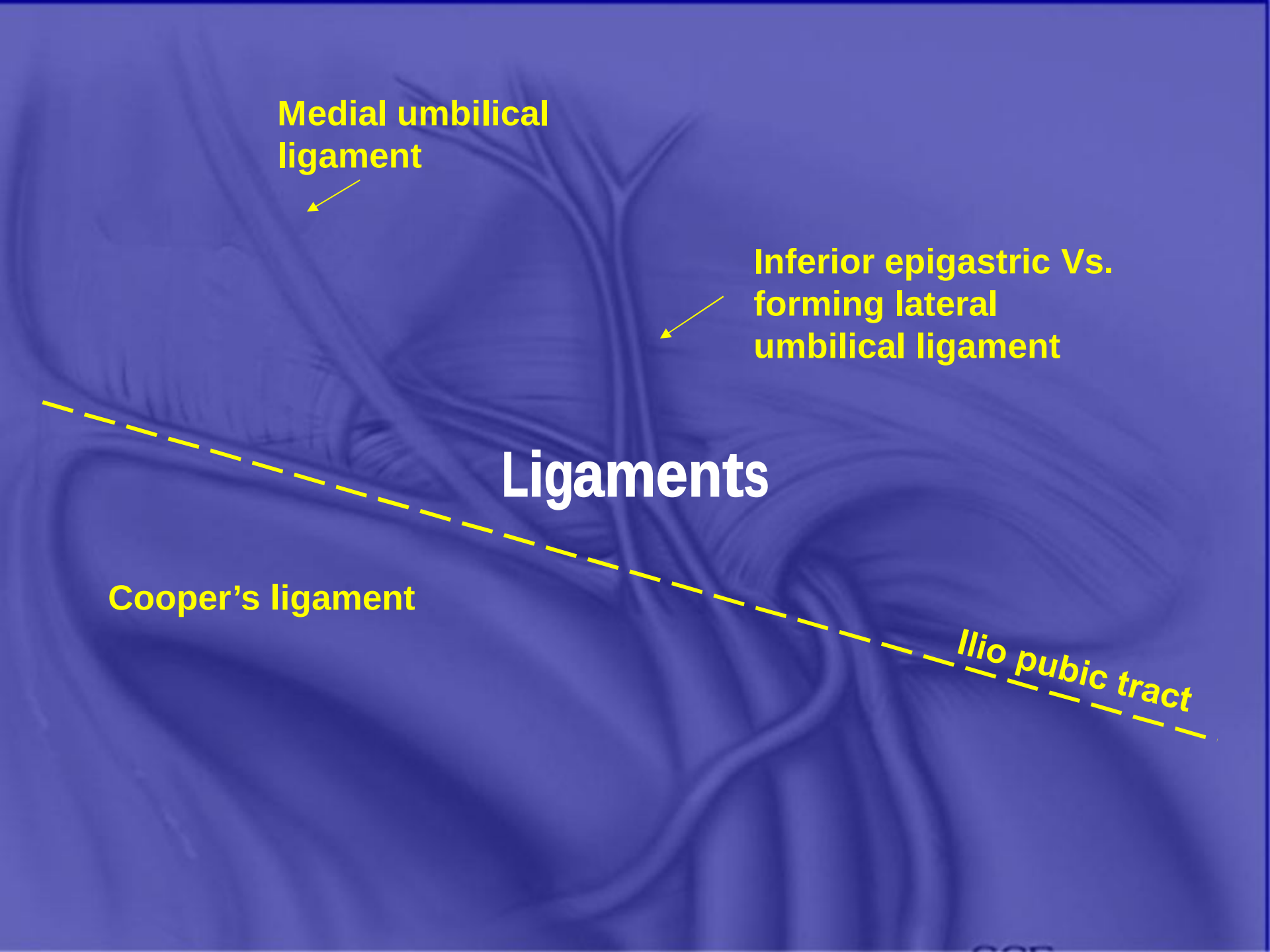




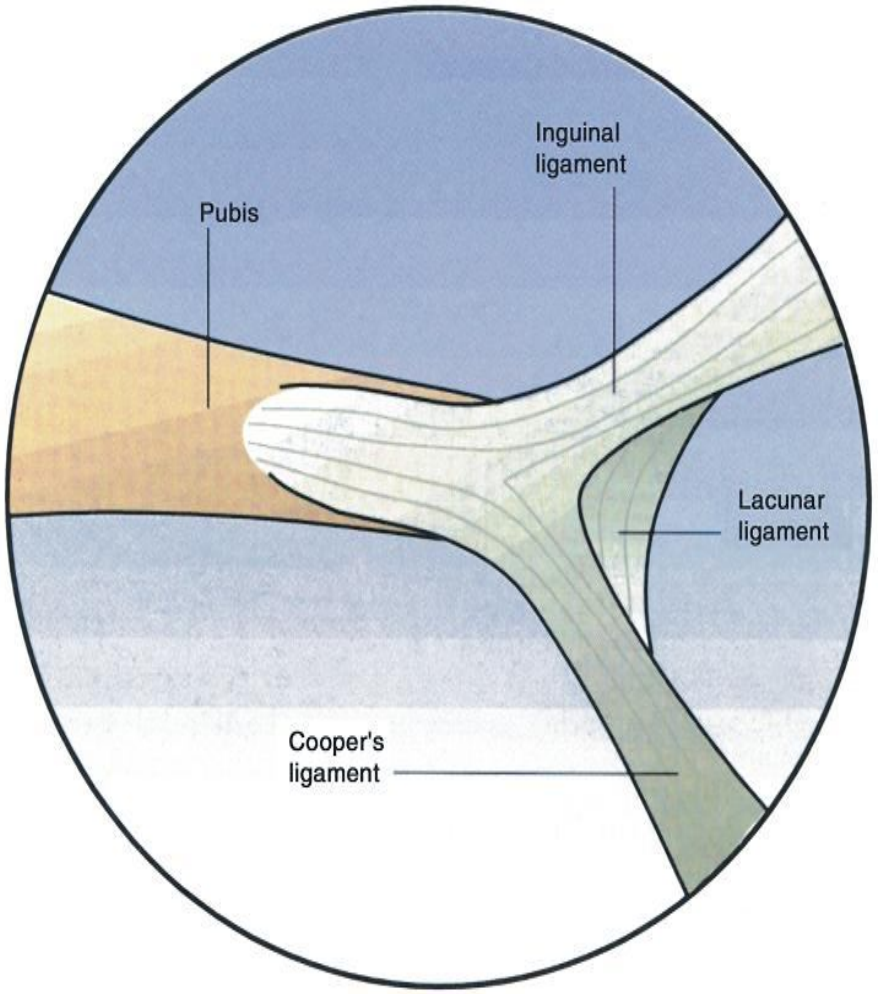
"Circle of Death" – Corona mortis

Ligaments



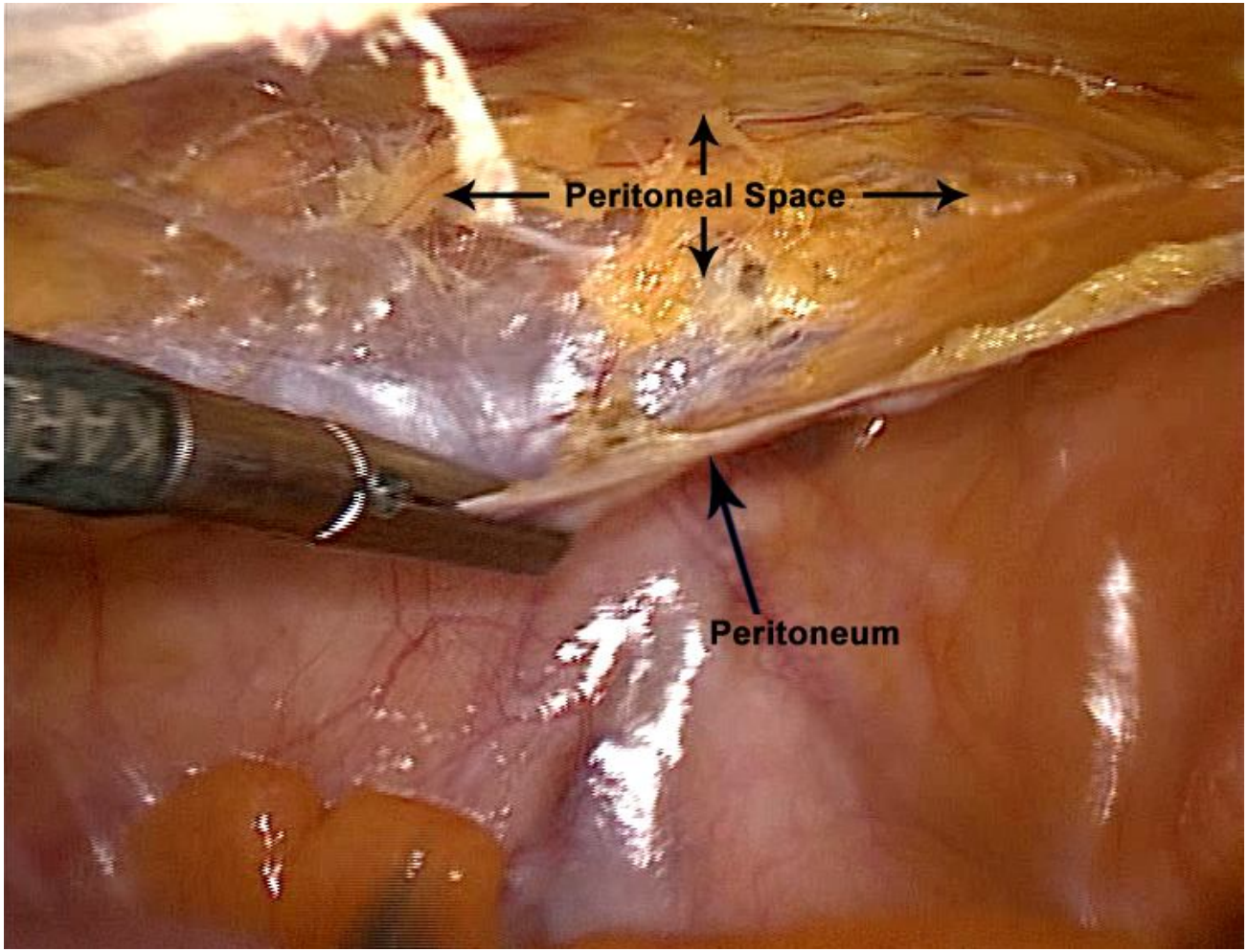

Medial umbilical ligament
Inferior epigastric Vs. forming lateral umbilical ligament
Ligaments
Cooper's ligament
Ilio pubic tract

Ligaments



MERCEDES SIGN (left side)

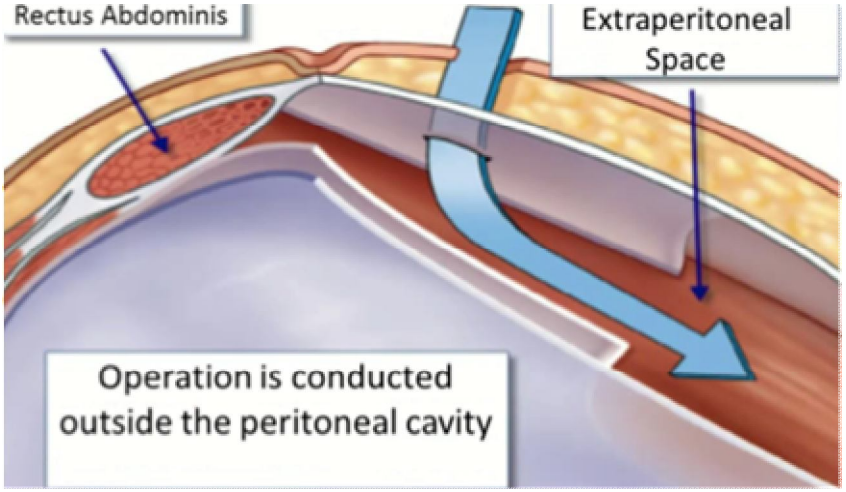
Lap. TAPP

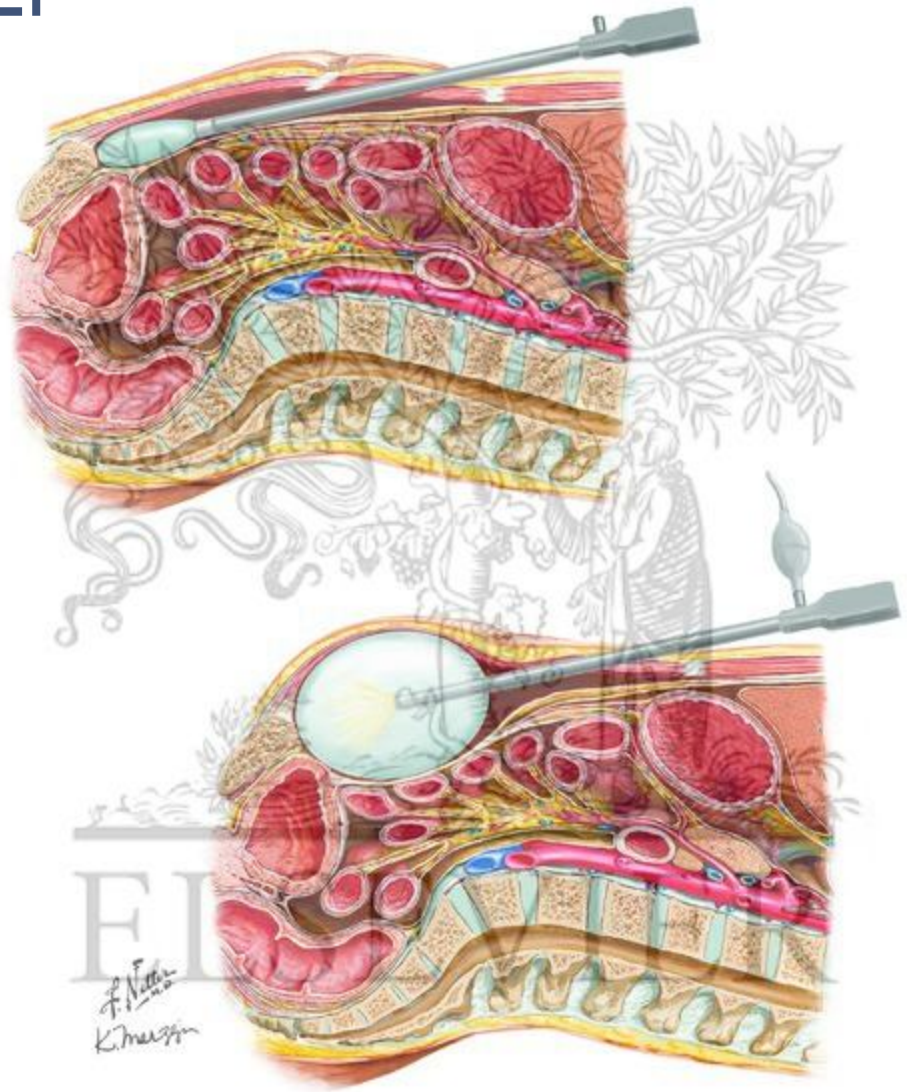


Why Choose Lap. TAPP ?

1. Enables a thorough intra-abdominal examination
2. Provides visualization of both inguinal regions for Occult hernias
3 Even without dissecting peritoneum-you can see the anatomy
4. Permits thorough exploration of the entire myopectineal orifice
5. Allows visualization of incarcerated hernias & strangulated tissue
6. Prior pelvic
7. Easier in females with indirect inguinal hernia, because the sac is frequently more intimately attached to the round ligament
8. Is easily taught and learned

TEP





Lap. TEP

Advantages

1. Extraperitoneal approach
2. Less Visceral and vascular injuries
3. No suturing of peritoneal flap as in TAPP

Disadvantages

1. Limited space for dissection and mesh placement
2. Restricted port placement
3. No Triangulation
4. Not reproducible in every case and thus
5. Difficulty in teaching and learning the technique
6. Poor tolerance to pneumoperitoneum

These disadvantages may explain the low implementation of the technique outside the circle of experts

Lap. TAPP or TEP ?

	TAPP	TEP
Routine		✓
Prior Abdominal Surgery		✓
Bilateral Hernia		✓
Inguinoscrotal Hernia	✓	
Incarcerated Hernia	✓	
Hernia & Diagnosis	✓	
Recurrent Hernia	✓	
Hernia and Cholecystectomy		✓
Prior Preperitoneal Surgery	✓	
Contraindication - General Anesthesia		✓

Lap. e TEP - Principle

- The preperitoneal space can be reached from virtually anywhere in the anterior abdominal wall.
- Preperitoneal space in lower abdomen is continous with the retrorectus space beyond the arcuate line.

"e" stands for "extended view."

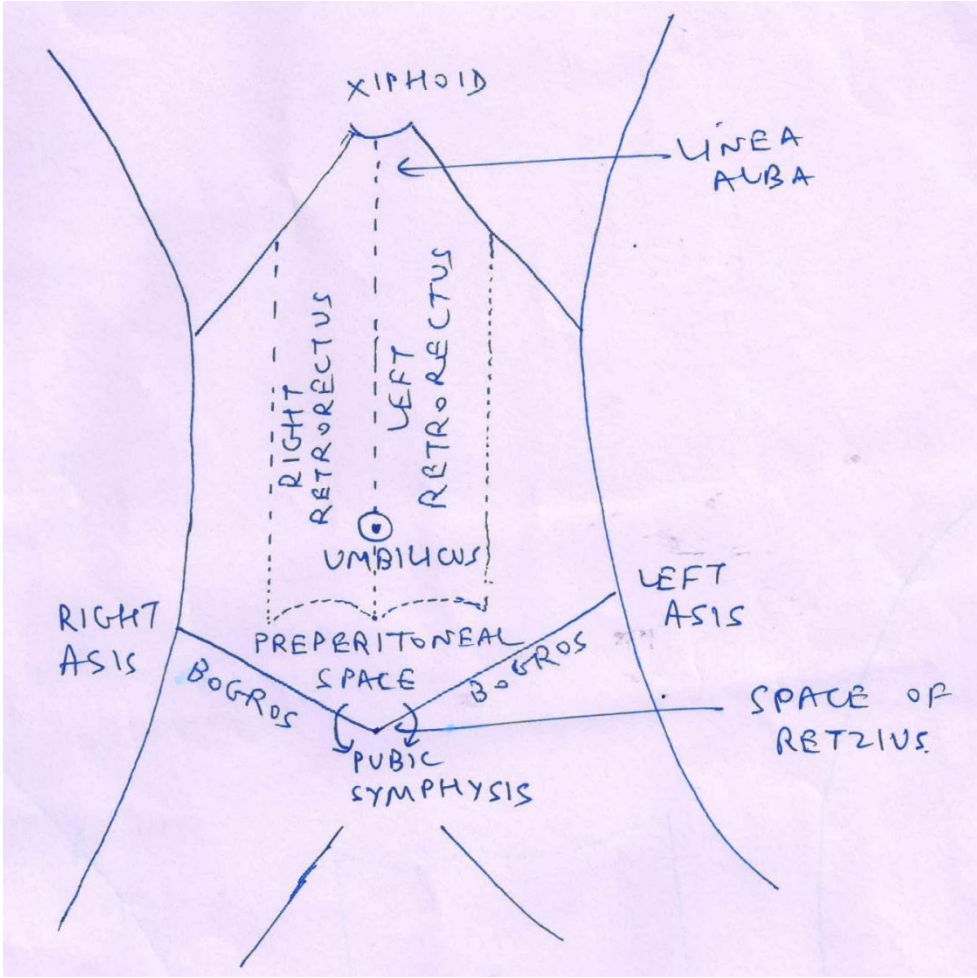
Salient features of eTEP technique

1. Fast and easy creation of the extraperitoneal space.
2. A large surgical field.
3. A flexible port setup adaptable to many situations.
4. Easy parietalization of the cord structures
5. Easier management of the distal sac in cases of large inguinoscrotal hernias.
6. Improved tolerance of pneumoperitoneum

Anatomical concept

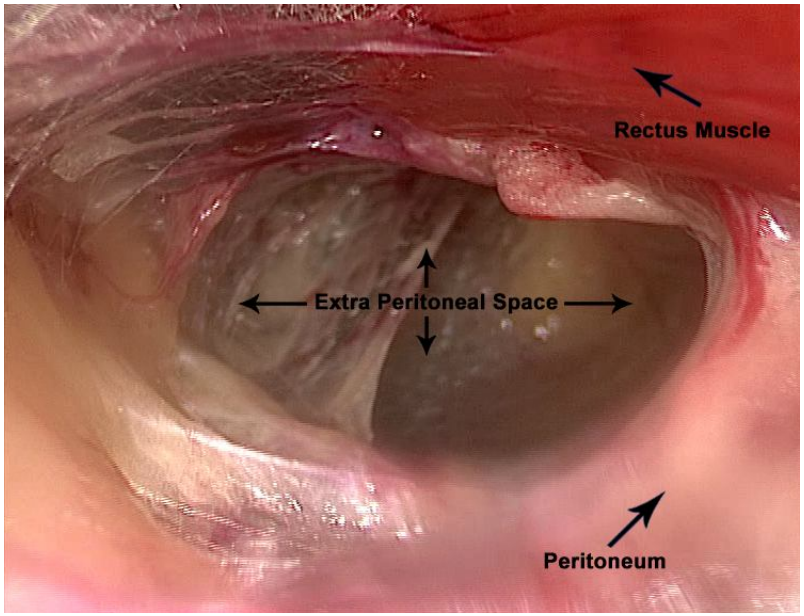
Ten Steps of Lap. E TEP

1. Retrorectus Space
2. Preperitoneal space
3. Space of Retzius
4. Space of Bogros
5. Direct Hernia Sac
6. Indirect Hernia Sac
7. Parietalisation of Cord
8. Lateral space dissection
9. Mesh placement 15 * 15
10. Mesh Fixation

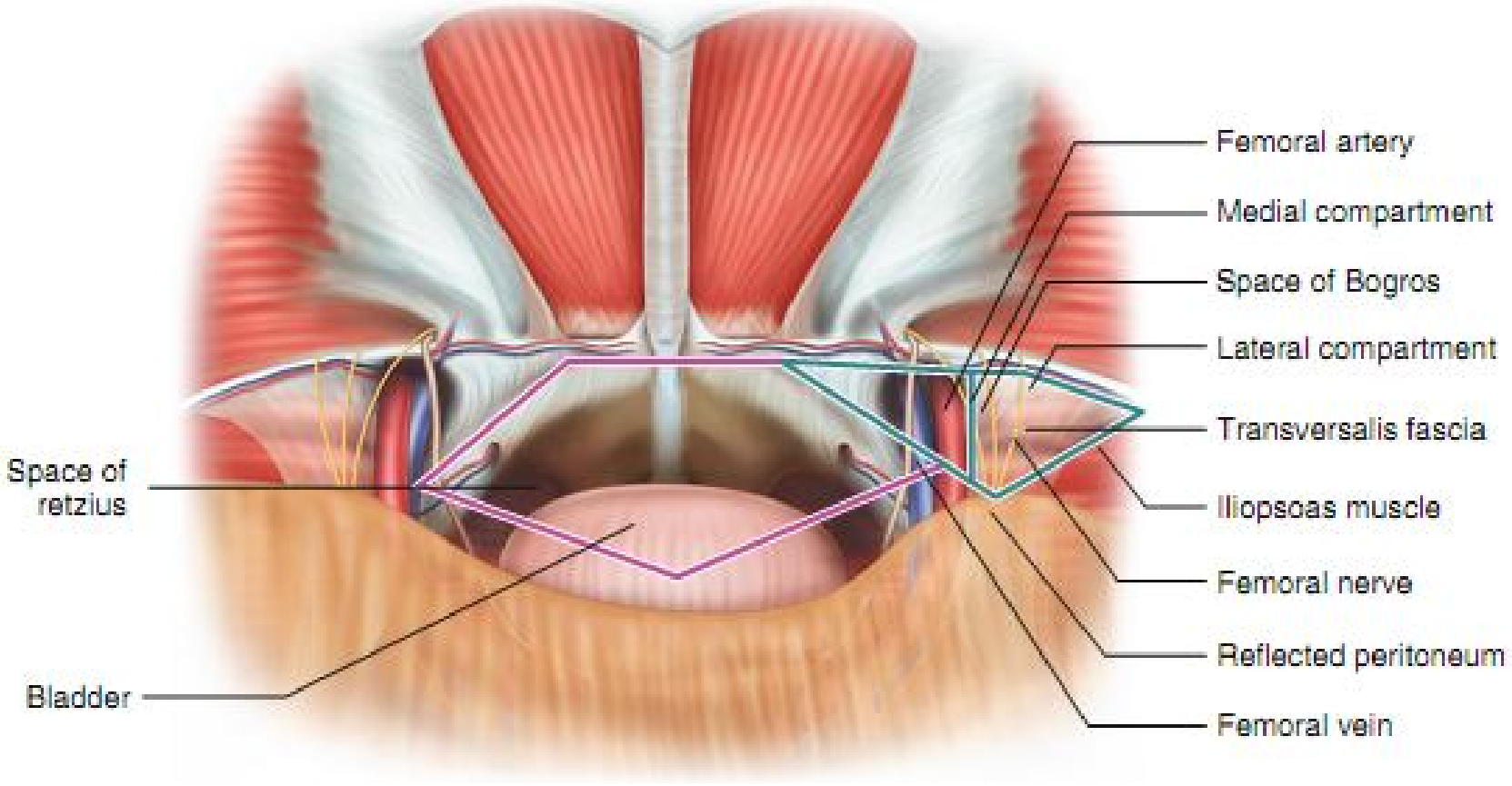


Arcuate Line of Douglas

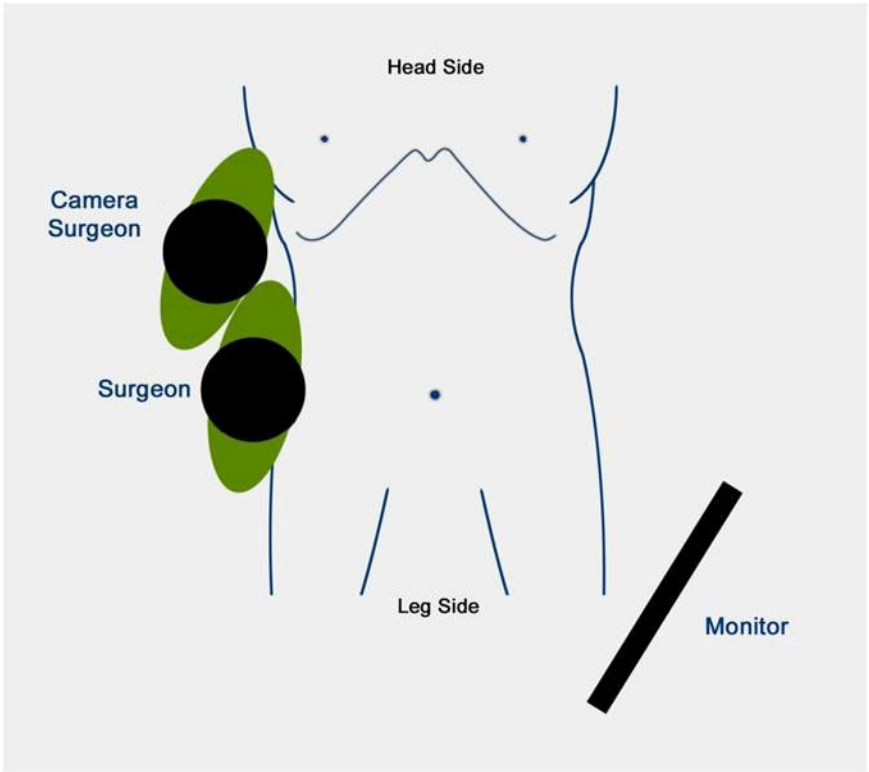
- Posterior rectus sheath ends
- Midway between umbilicus & pubic symphysis
- Below the Arcuate line, Rectus muscle is covered by Fascia Transversalis & Peritoneum
- Inf. Epigastric vessels pierce RA
- Can be cut lateraly to gain access to lateral spaces

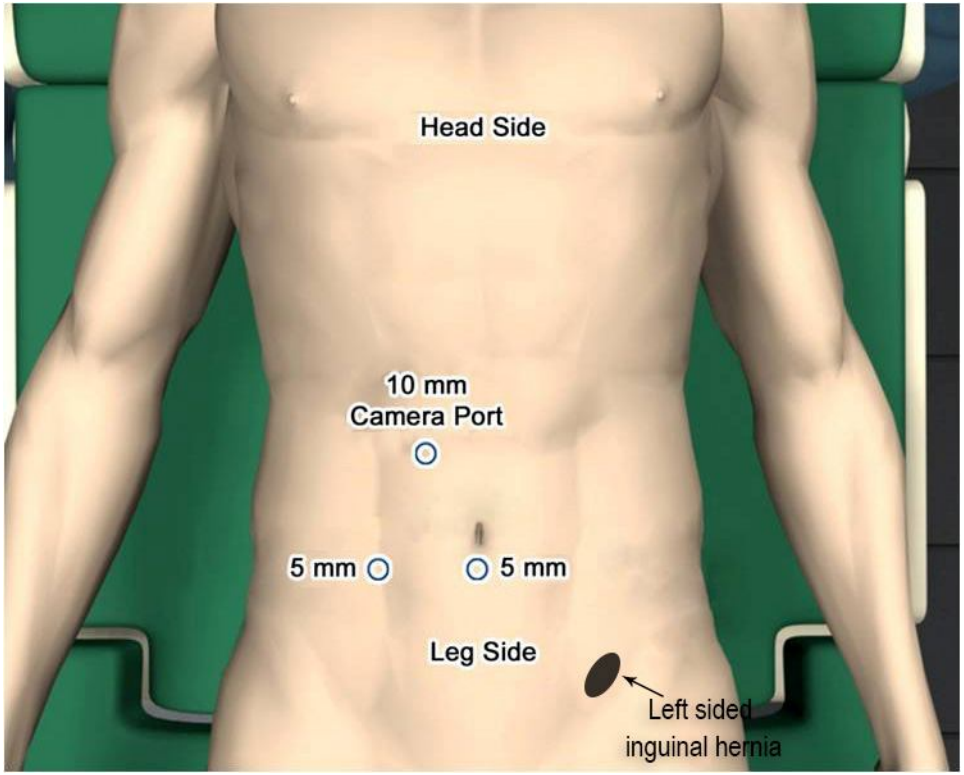


EP Spaces of Retzius & Bogros

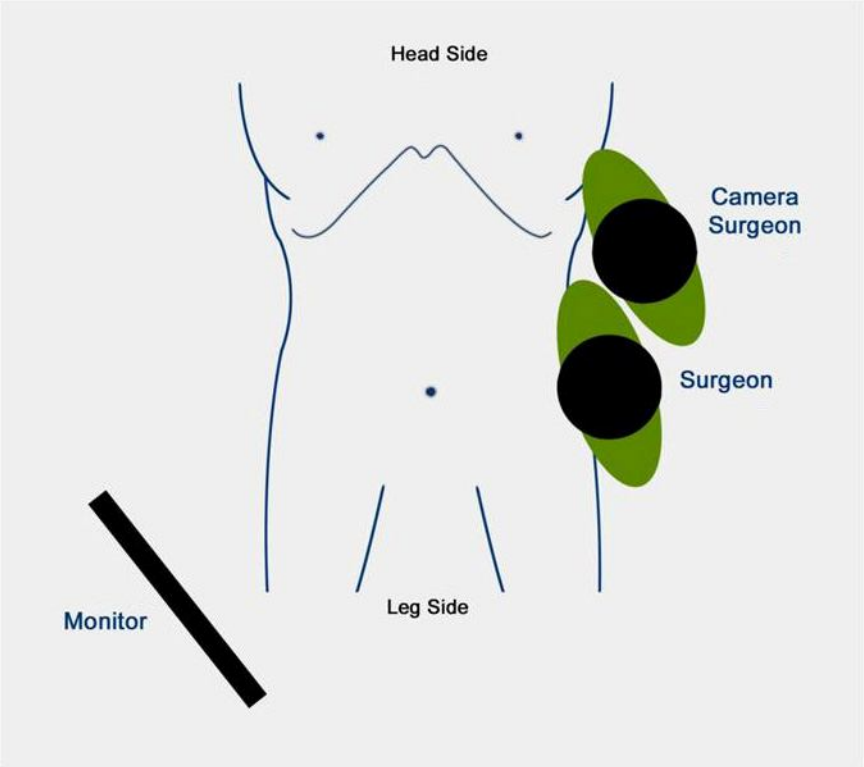


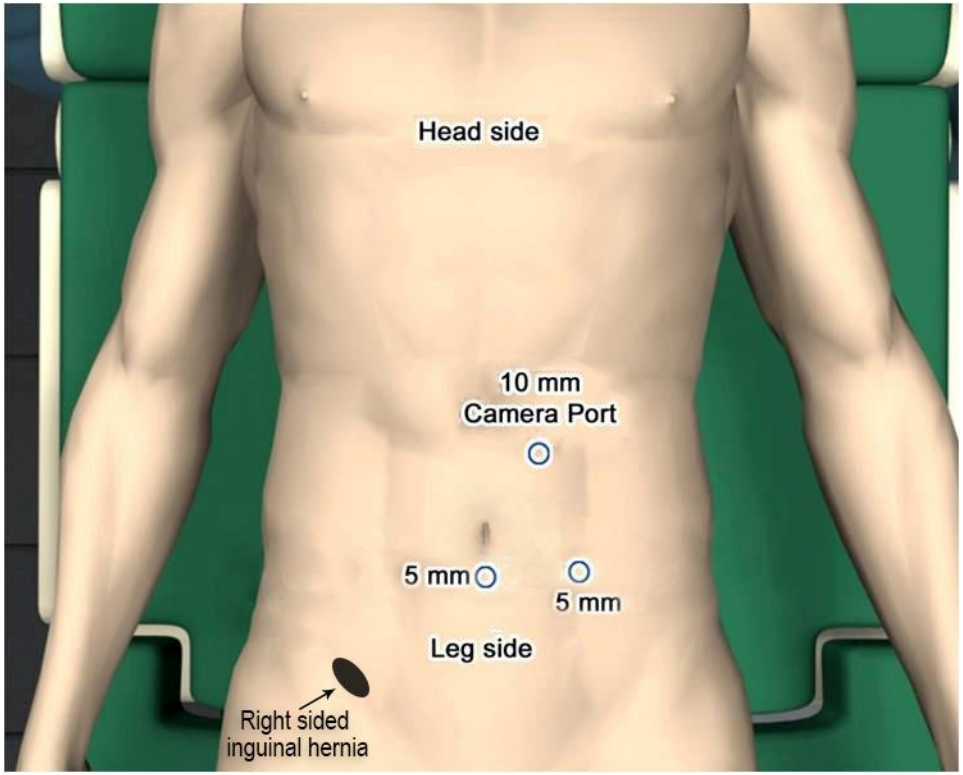
eTEP – Port & Surgeon Position for Left Side



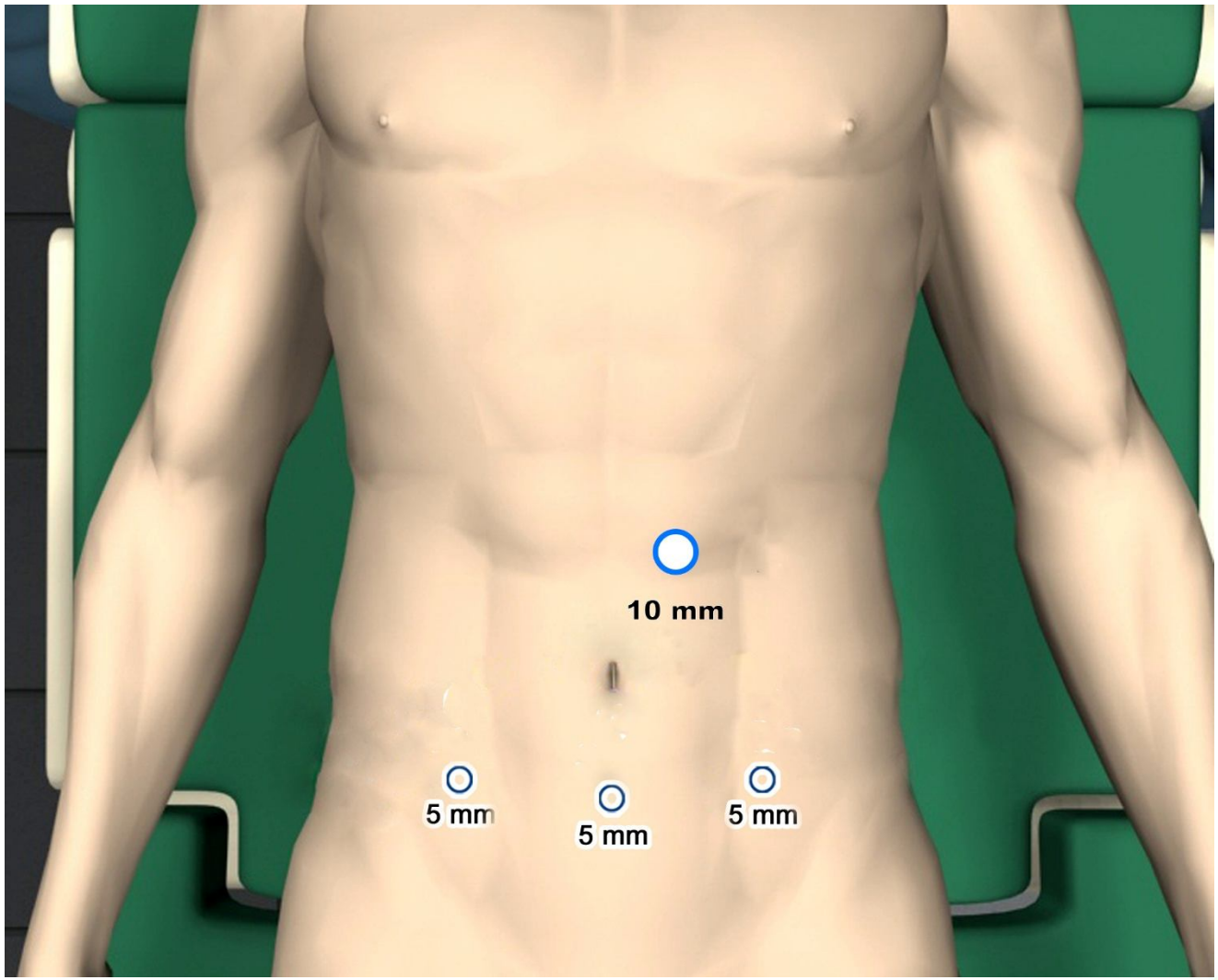


eTEP – Port & Surgeon Position for Right Side





Port placement for bilateral hernia

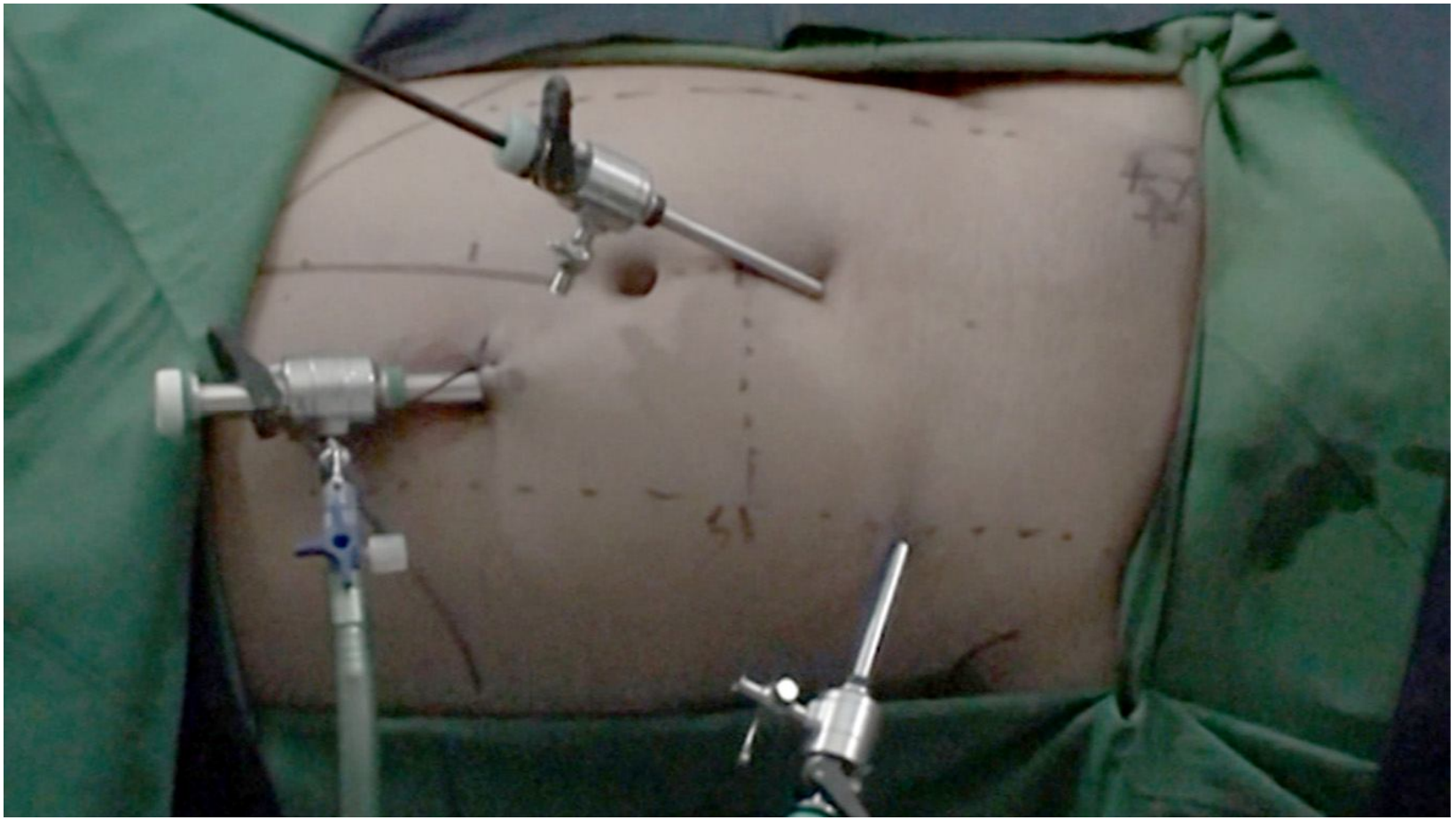


Indications of e TEP

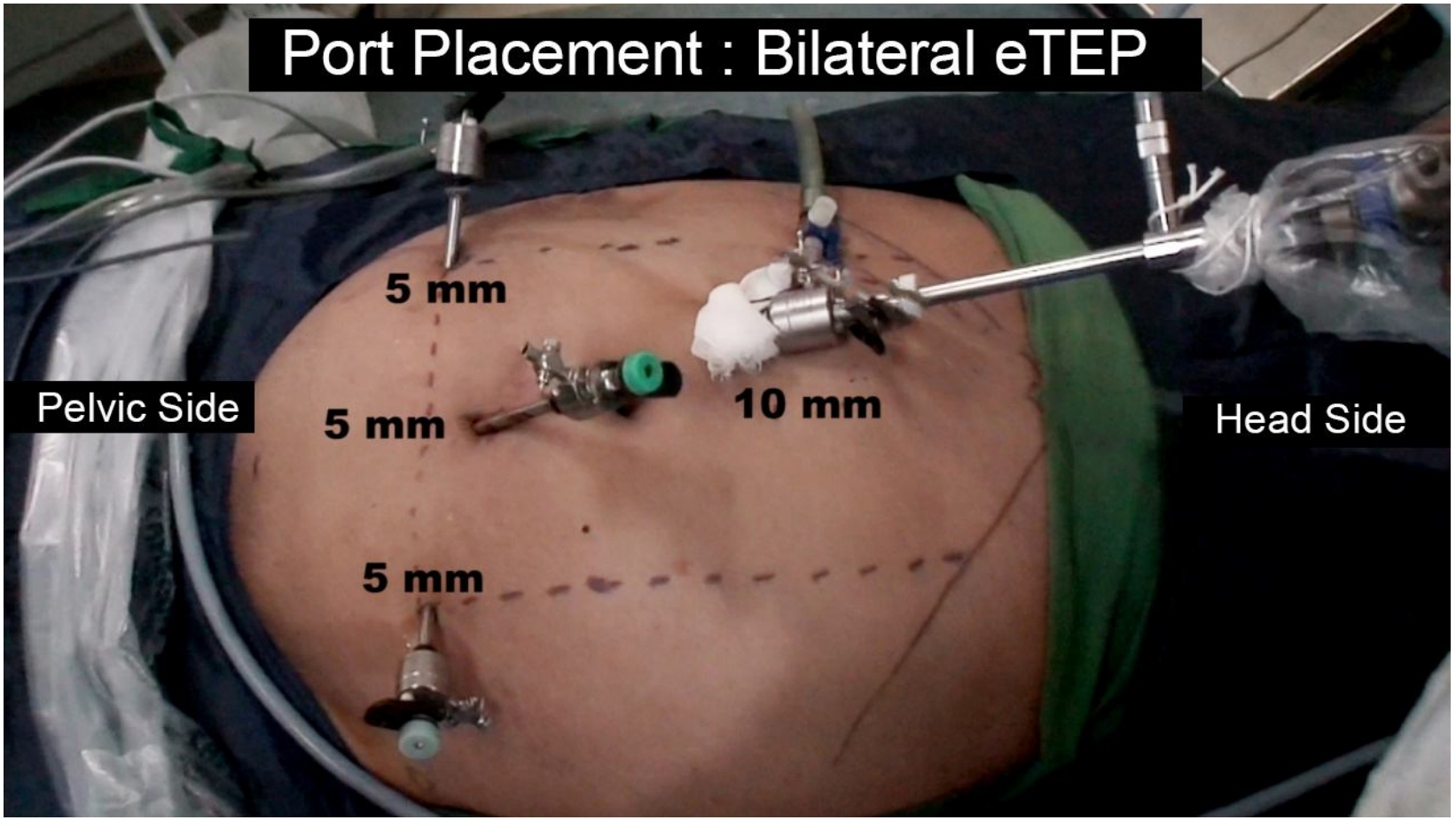
We use eTEP technique to repair most cases of inguinal hernias; however, there are cases for which eTEP is especially useful:

1. For the new surgeon: eTEP is easier to learn & master
2. Large inguinoscrotal, sliding, or incarcerated hernias
3. Obese or post-bariatric patients
4. When distance between umbilicus and pubic tubercle is short
5. In patients with previous pelvic surgeries.

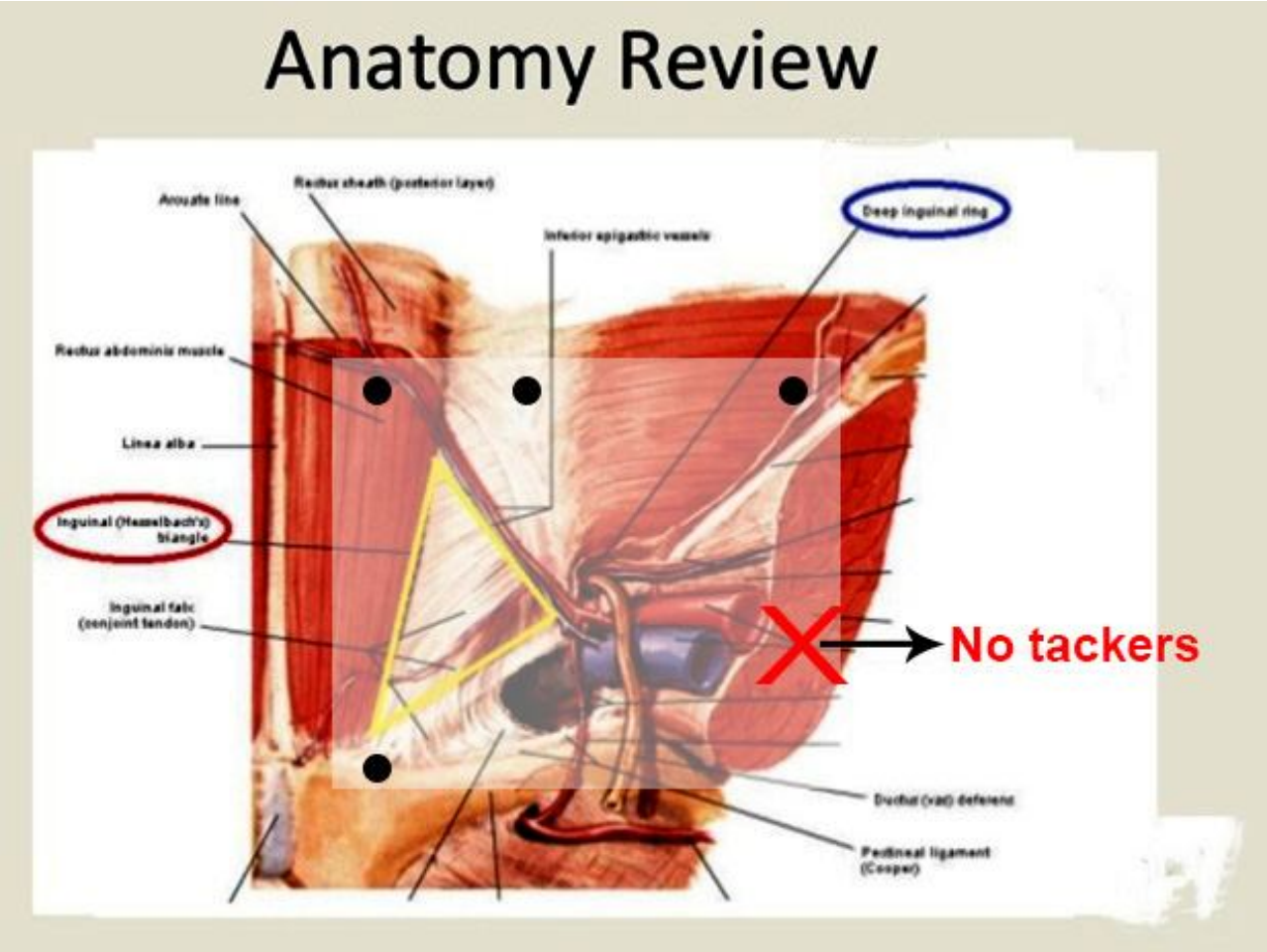
Key Technical Aspects of eTEP
High Camera Port Placement



Key Technical Aspects of eTEP
High Camera Port Placement



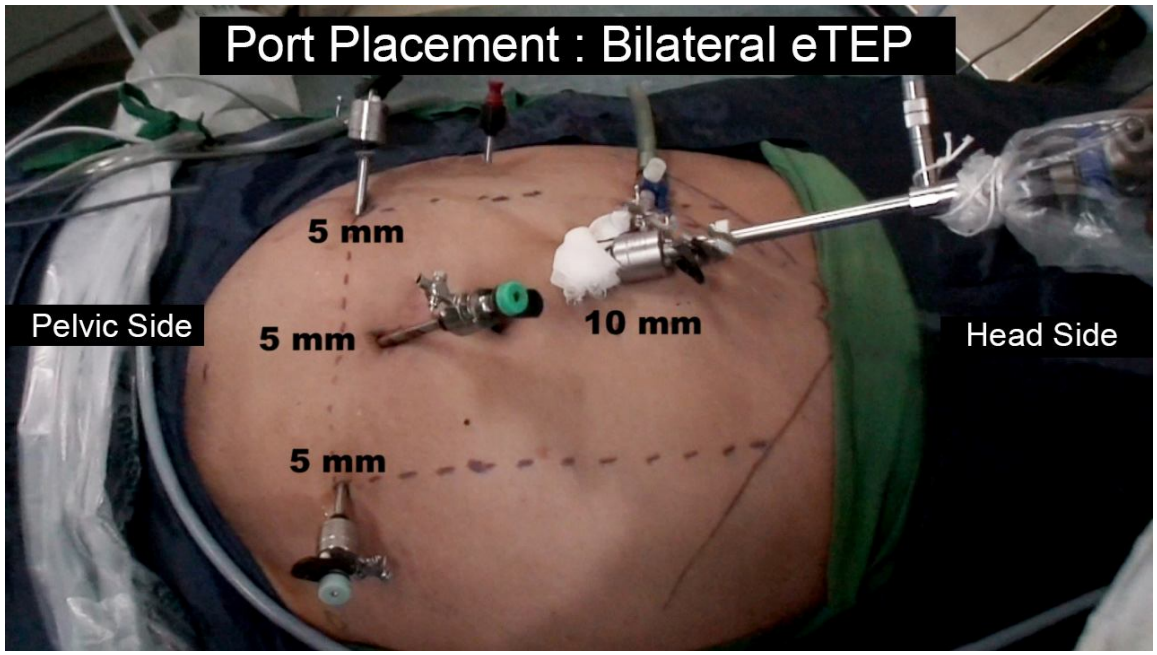
Mesh Fixation - Tackers



Troubleshooting

1. Pneumoperitoneum - 3 mm trocar / verres

2. Lateral Space creation - Division of Douglas line



Special situations

- Large inguinoscrotal hernia
- Incarcareted or strangulated hernia
- Morbid Obesity
- Previous Pfannensteil incision
- Prior lower abdominal surgery
- Recurrent hernias
- Bilateral hernias

Mx of Recurrence

- After Open hernia surgery - Lap. TEP / TAPP
- After Lap. Surgery - Lap. TAPP / Open

Bilateral Hernias

- Laparoscopy is better than bilateral open surgery
- For open - stoppa repair may be preferable

Postop. Groin Pain

- Preoperative groin pain must be evaluated
- Nerve entrapment is a major cause
- Analgesics, Anti-inflammatory
- Neural blocks or Neuroablative procedures
- Lap TAPP exploration and removal of tackers
- Triple Neurectomy as a last option

The enhanced view–totally extraperitoneal technique for repair of inguinal hernia

Jorge Daes

Surg Endosc (2012) 26:1187–1189

36 pts

Conclusions

Our initial experience with the e-TEP technique has been satisfactory. We have had no conversions in spite of the difficult cases selected. There were no major complica- tions, and functional results were excellent. We believe this modification has a place in the armamentarium for hernia repair. It is especially useful for repair of large inguinal hernias, inguinoscrotal hernias, incarcerated hernias, bilateral hernias, in obese patients, and in patients with a short distance between the umbilicus and the pubic tubercle.

eTEP – Our experience

- From March 17 to August 18 – total 40 pts
- 24 bilateral , 16 unilateral
- 15*15 mesh on one side
- Single 30*15 mesh for bilateral in 8 cases
- Op. time – 50 mts(1), 85 mts(2)
- No major morbidity or mortality
- 2 conversions to TAPP
- 6 pts. developed Seroma self resolving
- 1 recurrence

eTEP – Our experience

- Very good space, easy to learn
- Good triangulation and suturing
- Large inguinoscrotal hernias
- Time taken for surgery comparable to TEP/TAPP
- Large lightweight mesh, fixed with tackers
- Rare conversion to TAPP
- No major complication
- One recurrence till date , needs longer follow up

eTEP – The future?

- The 3rd Alternative
- Potential to become Gold standard for Lap. Hernia surgery due to
  - Ease of surgery
  - Good space
  - Extraperitoneal
  - Large Mesh
  - Reproducible
  - Easier to Teach and Learn
  - Tackle Large Hernias

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