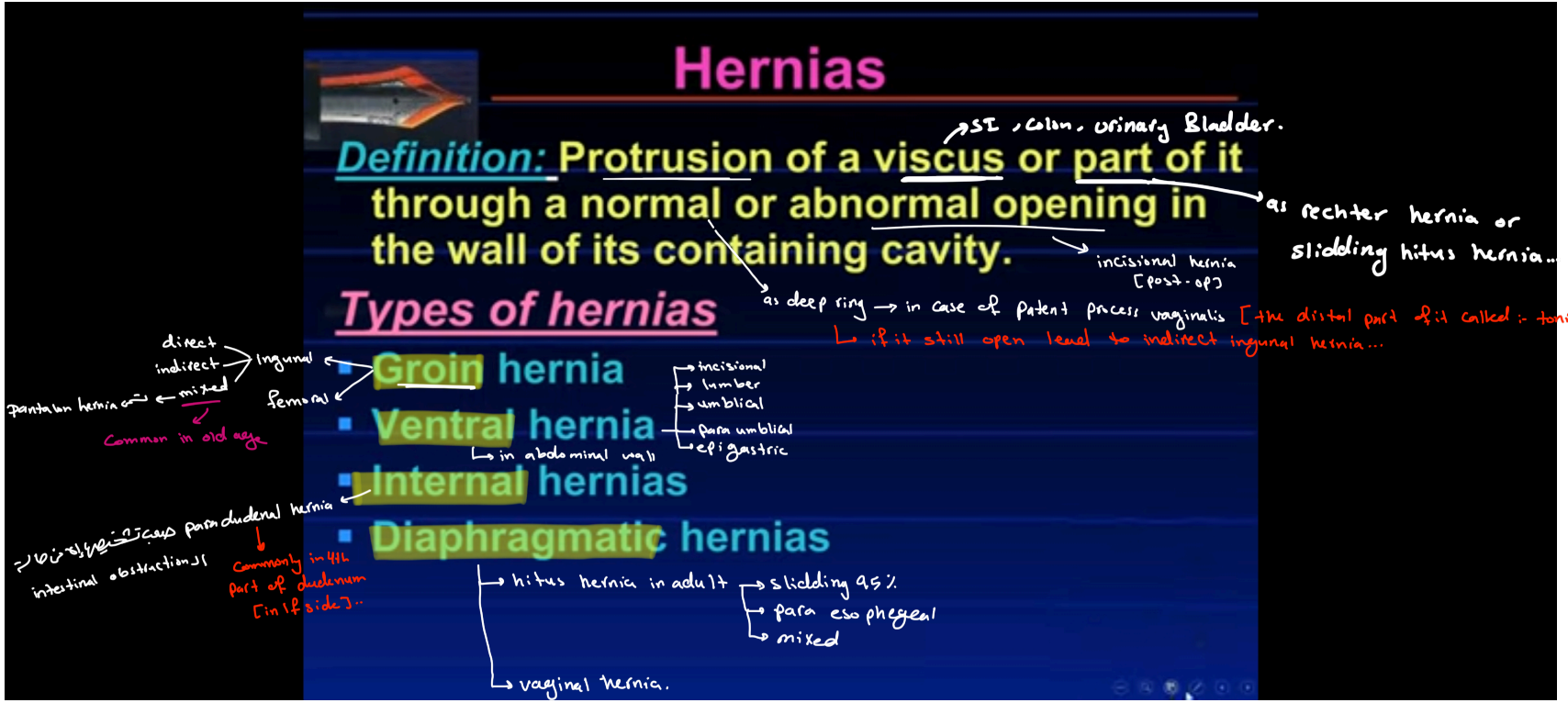
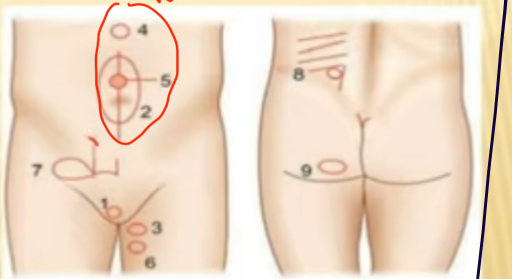

Hernias
Definition: Protrusion of a viscus or part of it through a normal or abnormal opening in the wall of its containing cavity.
SI, colon, urinary Bladder.
as rechter hernia or sliddling hitus hernia...
incisional hernia [post-op]
as deep ring → in case of patent process vaginalis [the distal part of it called :- tunica vaginalis surrounding the testis]...
if it still open lateral to indirect inguinal hernia...
Types of hernias
direct
indirect
inguinal
femoral
pantalon hernia
mixed
Common in old age
Groin hernia
incisional
lumber
umbilical
Ventral hernia
para umbilical
epigastric
in abdominal wall
Internal hernias
paraduodenal hernia
Commonly in 4th part of duodenum [in left side]..
Diaphragmatic hernias
hitus hernia in adult
sliddling 95%
para esophageal
mixed
vaginal hernia.

Types of Hernias

Clip slide

BASED ON SITES

ventral hernia

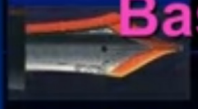


Common hernias:
1. Inguinal
2. Incisional
3. Femoral
4. Epigastric
5. Umbilical

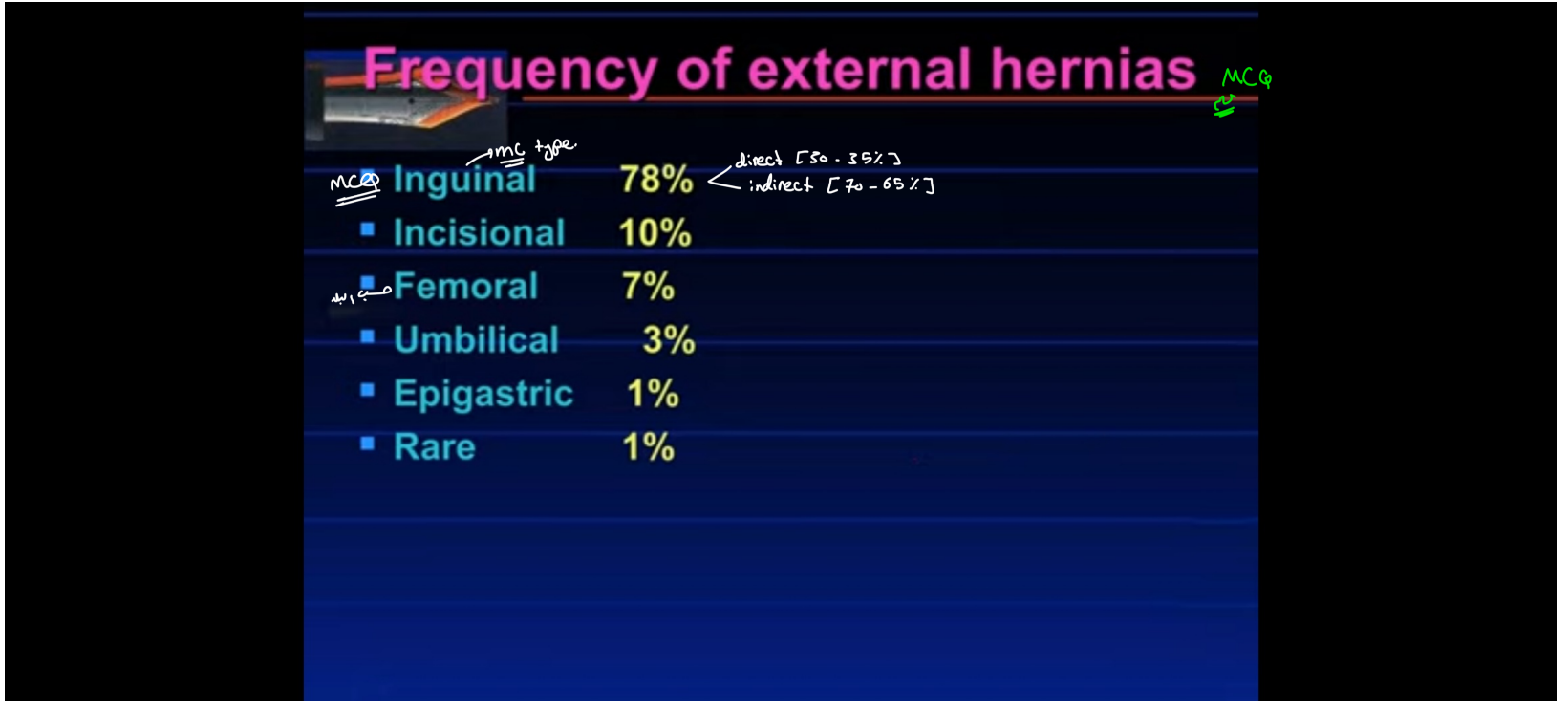
Rare hernias:
6. Obturator
7. Spigelian
8. Lumbar
9. Gluteal

Cardinal feature

Basic features of a hernia MCQ or OSKE...



- Abdominal wall defect (congenital-acquired).
  - opening < normal / abnormal
  - patent process vaginalis or congenital umbilical hernia.
  - mcc of it is :- weakness in the abdominal wall...
    - in elderly [indirect hernia or incisional hernia]...
- Expansile impulse on cough .
  - direct hernia
  - * if the hernia not bulge on cough → complicated hernia [الكلام ده true بجد بس مش OSKE بس ممكن يتسأل MCQ]
- Reducibility .
  - الكلام ده مش مهم بس ممكن يتسأل


Frequency of external hernias
MCQ
mc type
MCQ
Inguinal 78%
direct [50 - 35%]
indirect [70 - 65%]
Incisional 10%
Femoral 7%
Umbilical 3%
Epigastric 1%
Rare 1%

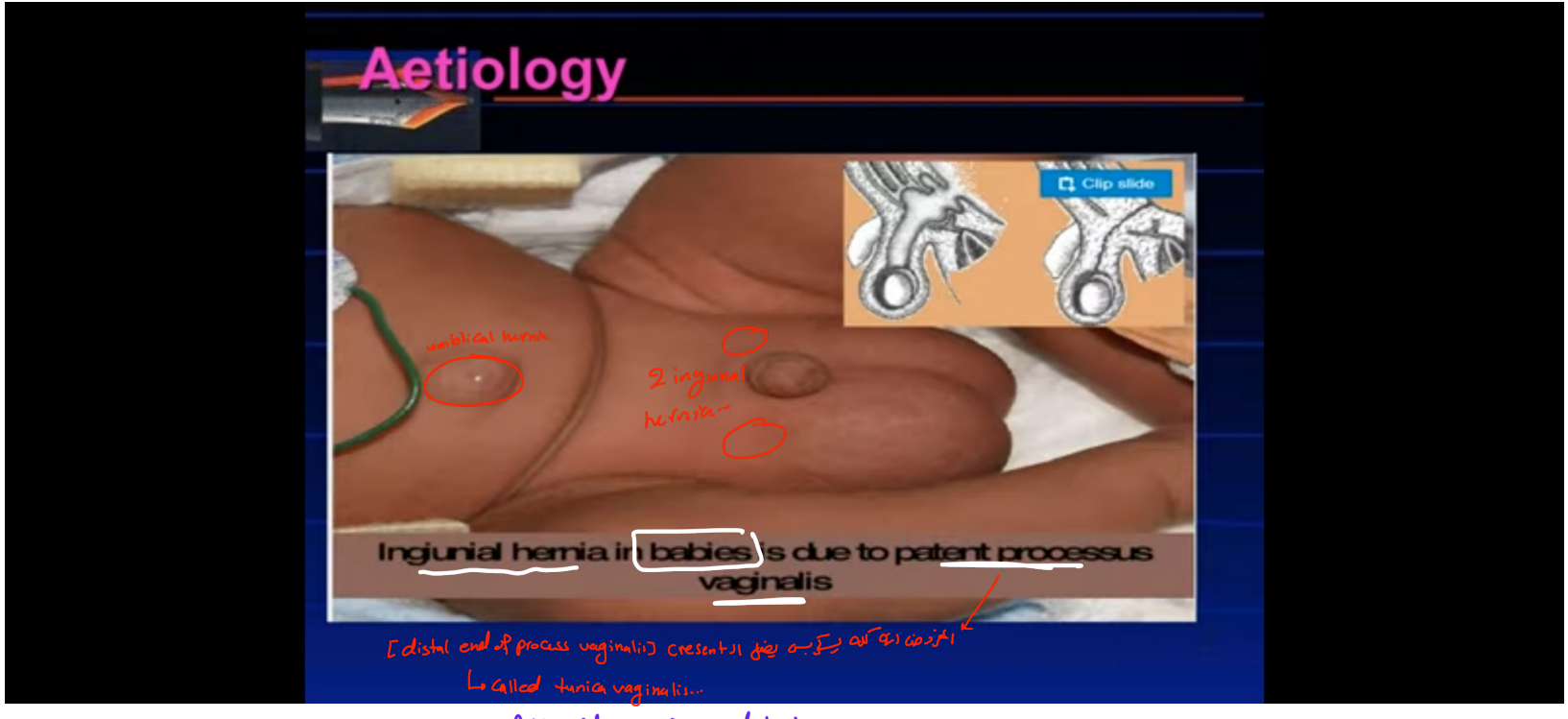
Aetiology

- *Congenital:* pre-formed sac
  - Congenital I H (patent process vaginalis)
  - Congenital U H (exomphalos)
- *Acquired hernias:* in old pt
  1. Raised intra-abdominal pressure.
  2. Weak abdominal wall.

The 2 causes of any hernia :-

b in old pt or post op if there is nerve injury...

MCQ * The femoral hernia is never congenital hernia...
always acquired hernia...



[distal end of process vaginalis] crescentul شيء بيكون شكله زي الهلال
↳ called tunica vaginalis...

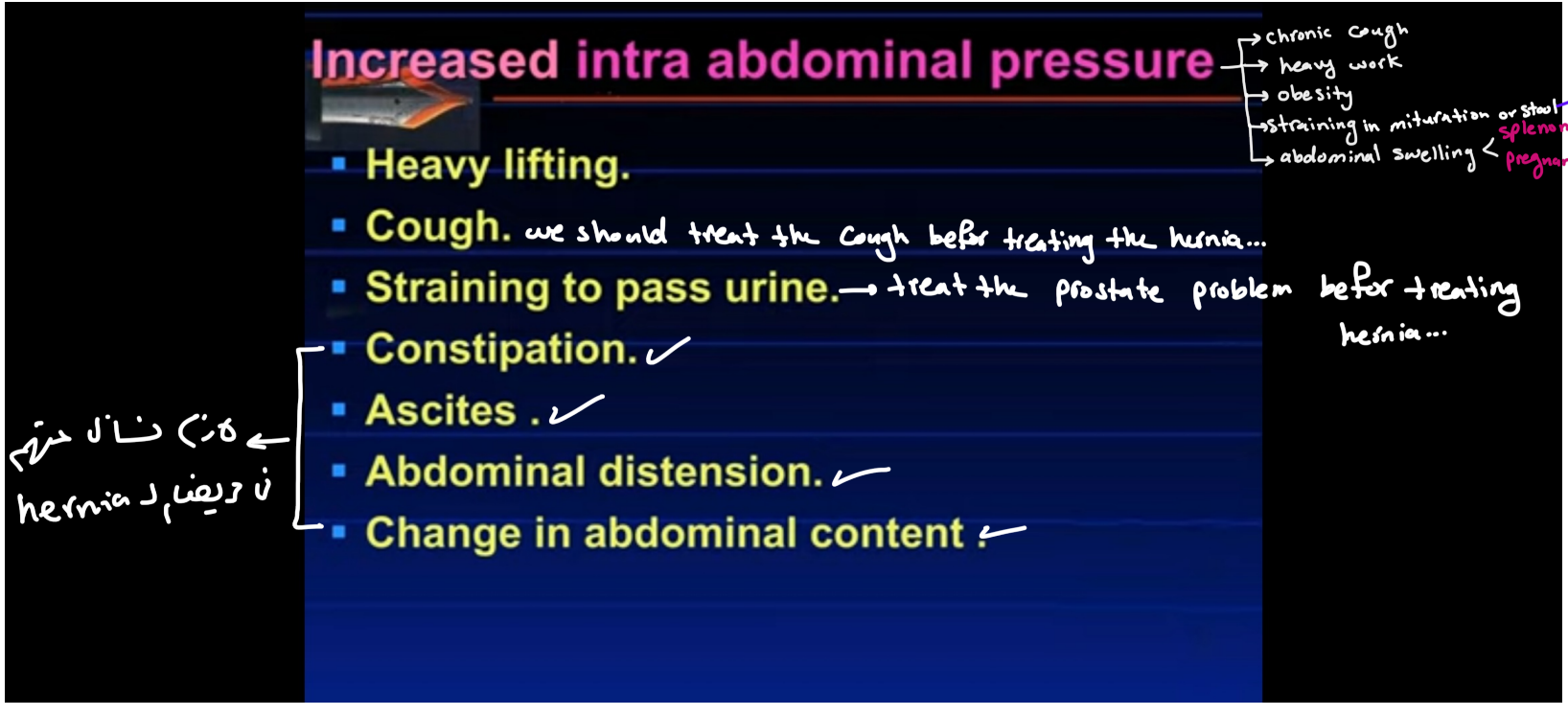
* open of process vaginals → [* if it wide opening lead to inguinal hernia...
* if it narrow opening lead to hydrocele...

* any case of inguinal hernia we should ask about:-

① هل بيحمل أشياء ثقيلة

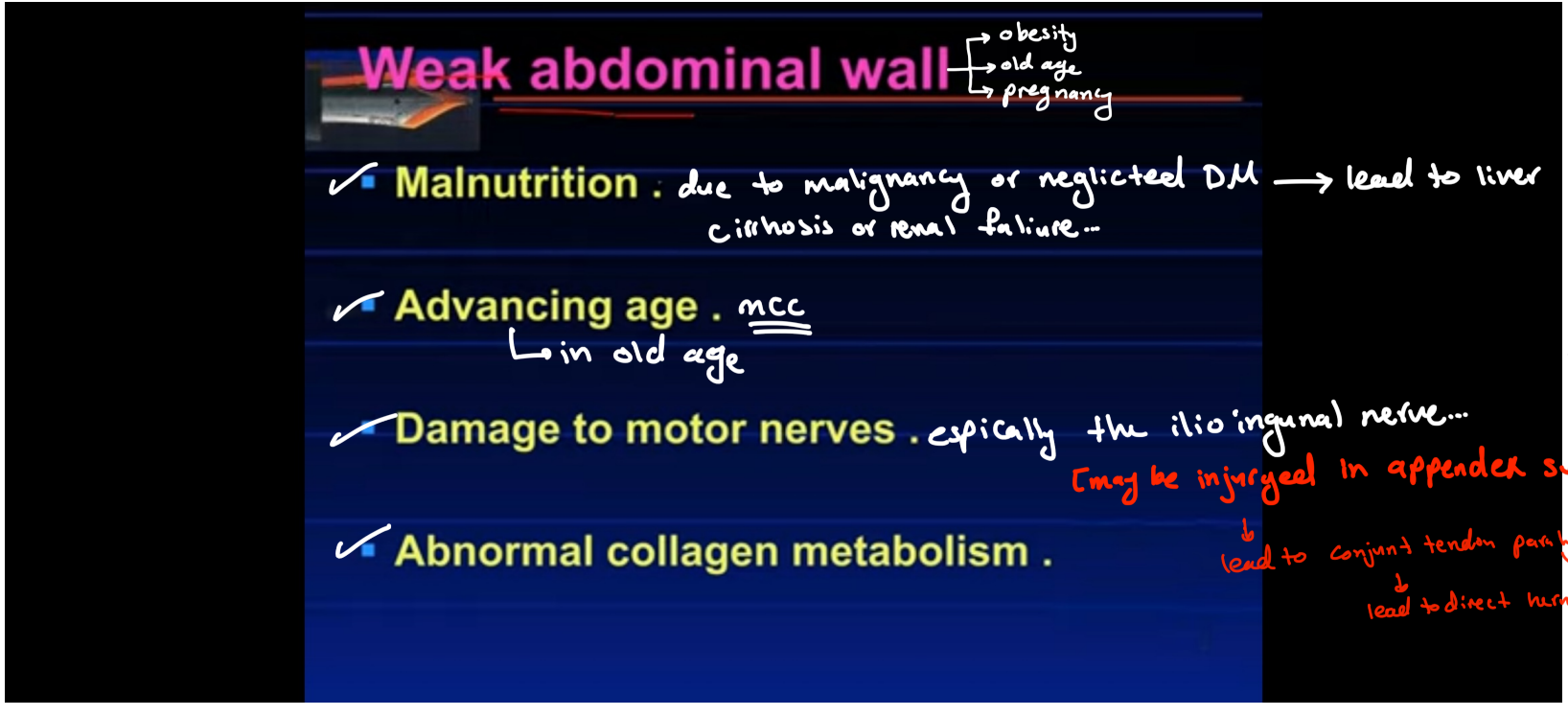
② هل عنده chronic cough

③ هل عنده straining to pass the urine or BPH



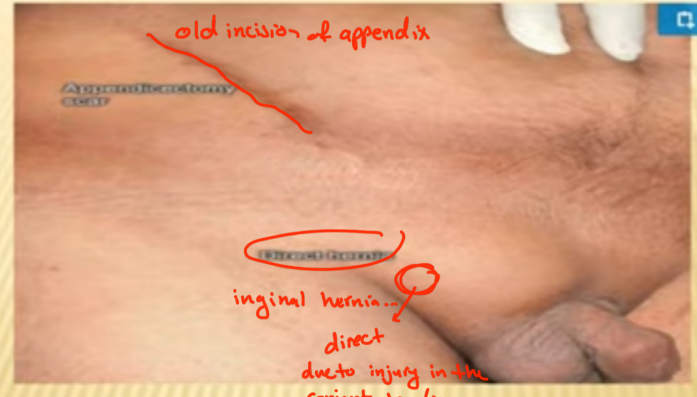
* The conjunct tendon presented in post. wall of inguinal wall...

* The ilioinguinal nerve in inguinal canal → sensory nerve...
but superior to it → mixed nerve...
if it injured in hernia surgery lead to → medial aspect of upper thigh ↓ ↓ ↓
↓ in inguinal canal
scrotum in male... labia in female...



* The origin of the ilioinguinal nerve :- L1 and supply the conjunt tenedon...

Classification of I H



Old appendicectomy scar with direct inguinal hernia. It is due to injury to ilioinguinal nerve during appendicectomy.

Anatomical features



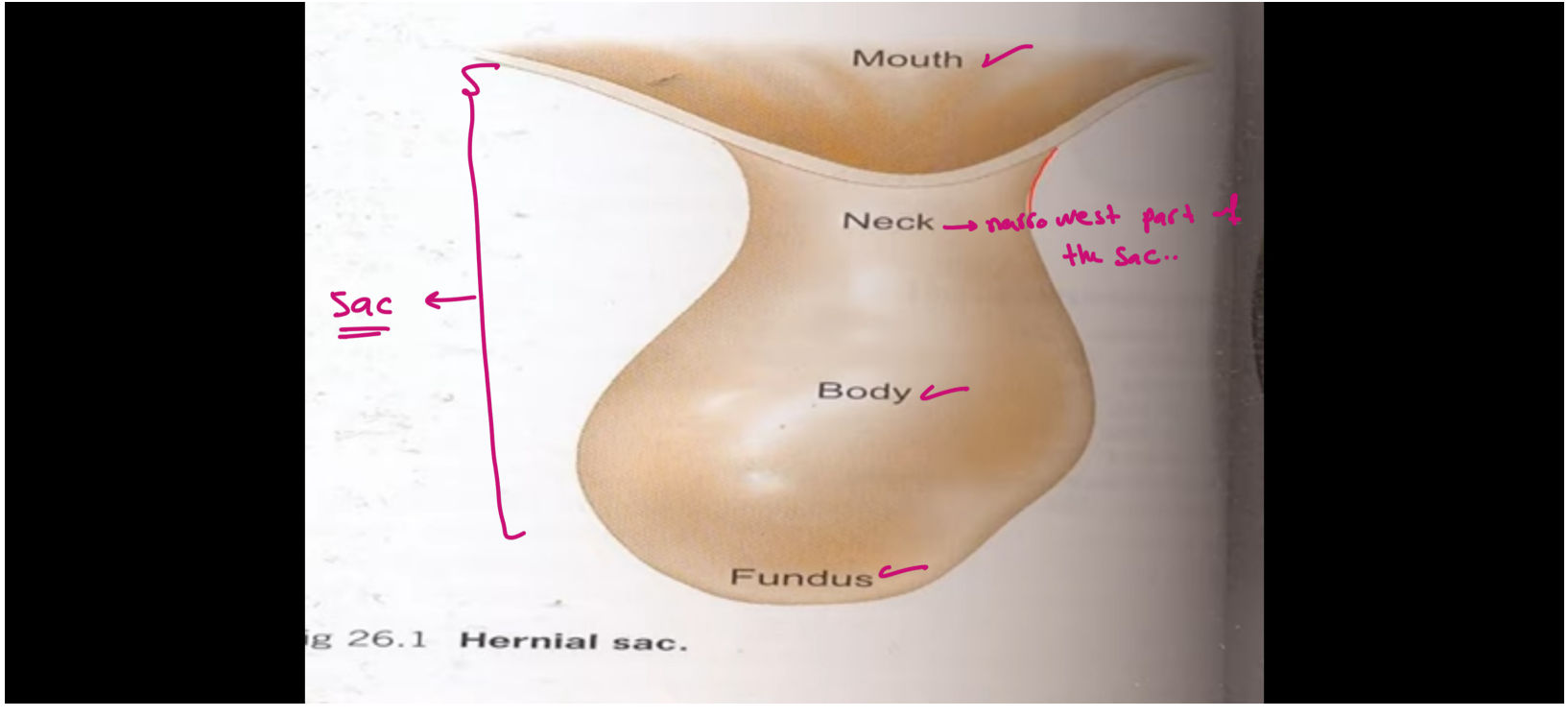
3 feature of the hernia:-

1. Sac has fundus - body - neck - opening
2. Covering
3. Content
   - intestine
   - omentum

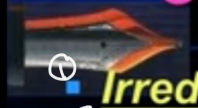
	Intestine	Omentum
Consistency	Soft ← in Auscultation we hear bowel sound	Doughy ← مثل العجين
Gurgling	During reduction ↑	None
Ease of reduction	*First* part more difficult then easy.	*Last* part more difficult ← ... don't في البداية يكون → So in omentum hernia there is incomplete reduction..
Percussion	Resonant	Dull

as: paraumbilical and incisional hernia.

* why indirect hernia more liable to complication and Strangulation than direct (→ wid neck) hernia ?!
due to the neck sac in indirect hernia is narrow so the bowel enter to the body ...



Complication of hernias



1. **Irreducibility.** حشر إصبتة ي جمع
   - due to:
     - Narrow neck
     - Adhesions ⇒ inflammation صار في overy] تمنع content ال -2] appendix
       نالتصقت وطلعة قادرة ي جمع..
2. **Obstruction.** → intestinal obstruction without strangulation
   - Incarcerated
3. **Strangulation.** → most dangerous complication due to bowel Ischemia, necrosis, gangrine, perforation, peritonitis and then death...
4. Inflammation ⇒ appendix -: contents, مثلاً حكاز
5. Torsion of omentum
6. Hydrocele of cord.

1- منكزما حاولنا نرجعوا صار في التصاقات صارلها

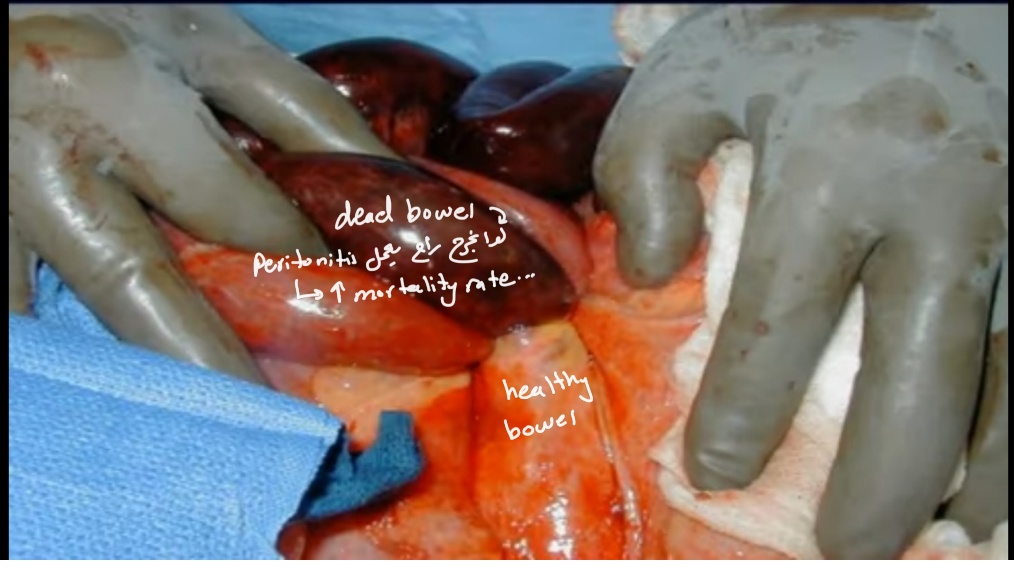
Signs of strangulation



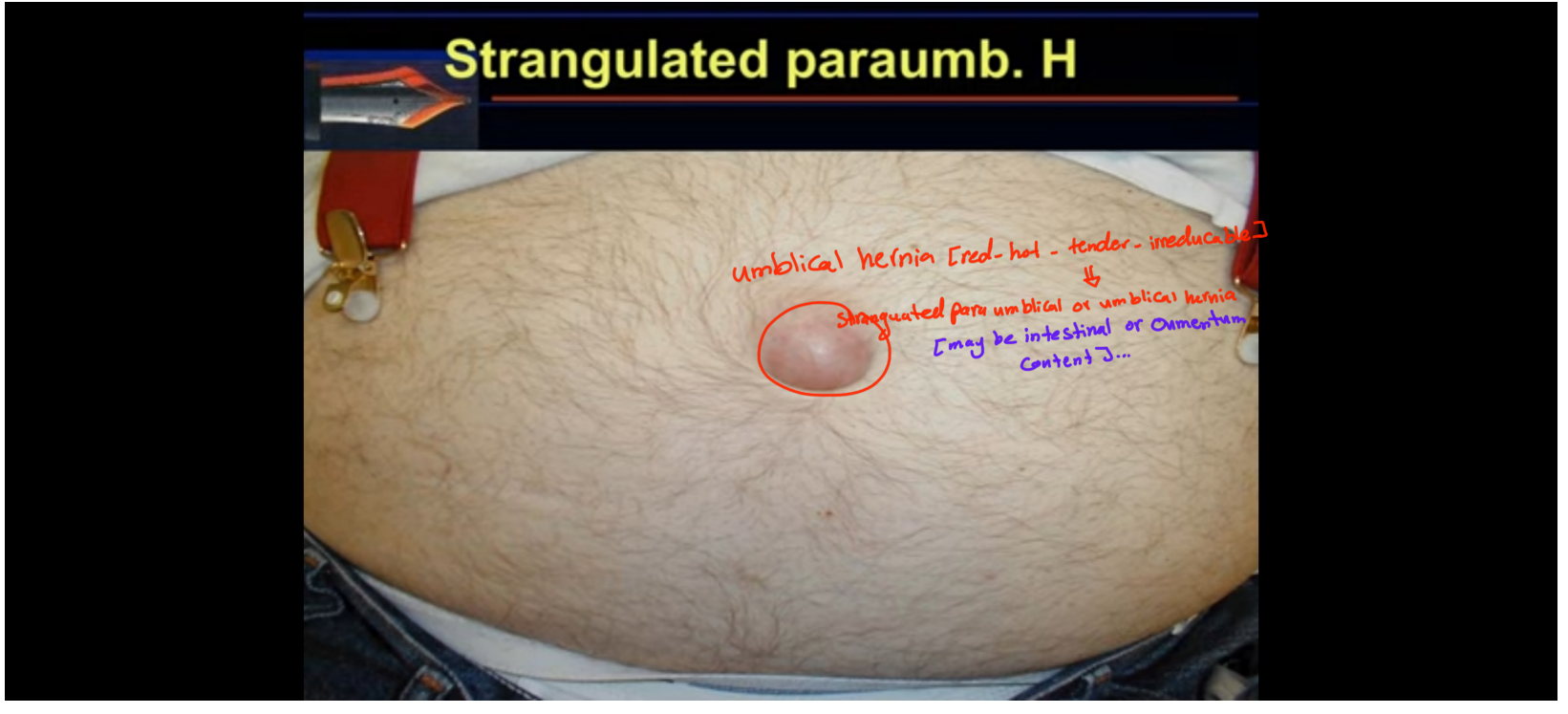
- Tense swelling.
- Tender.
- Irreducible.
- Warm , inflamed, and indurated.
- No impulse on cough. [-ve cough test so this hernia:- complicated]
- Signs of obstruction.
- Late septic shock.

in late stage there is content leakage and then peritonitis → death..

Gangrenous Bowel



Strangulated paraumb. H



Special types of hernias



Sliding hernia

MCQ ✓

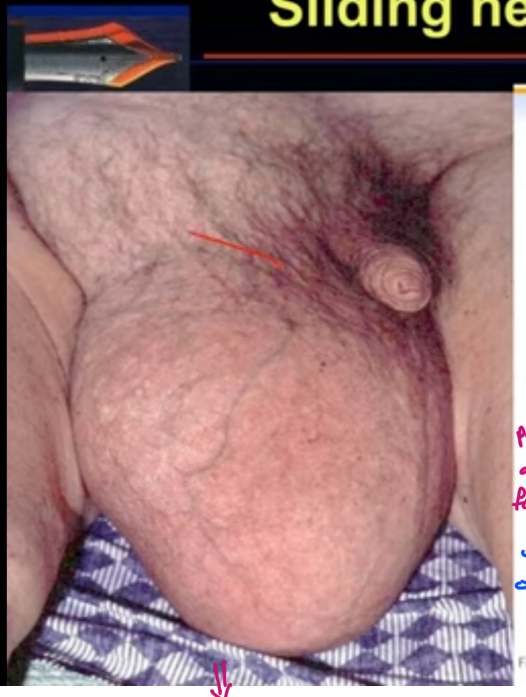
Definition

in Rt: cecum
in lf: sigmoid
→ these content more common than other

- Extra- peritoneal structure form part of the wall of the sac.
- 5% Of all hernias
- Incidence increase with age — Male > female [exclusively in male] above 40 years old.
- Usually indirect
- The content → Colon , bladder , ovary., appendix
- Partial reduction.

← سبب رجعة

Sliding hernia



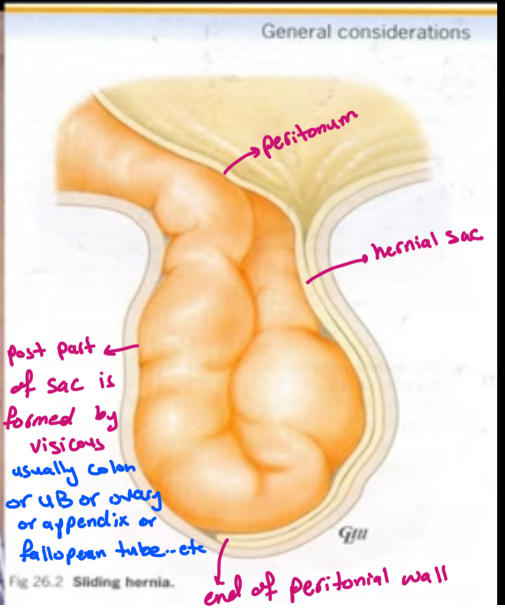


Fig 26.2 Sliding hernia.

huge hiatus sliding hernia
[part of the hernial sac formed by visicous]...


2
Rt and It Ind. Ing H
reach to scrotum site..

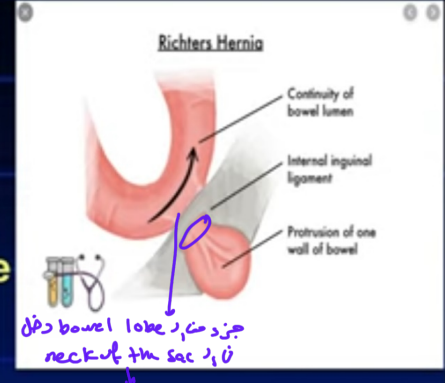
③ ◆ ***Richter's hernia*** very common in femoral hernia...

- Part of bowel wall is trapped
- Strangulation without obstruction

④ ◆ ***Hernia EN W-Maydal's hernia*** there is 2 lobes of bowel [rare]

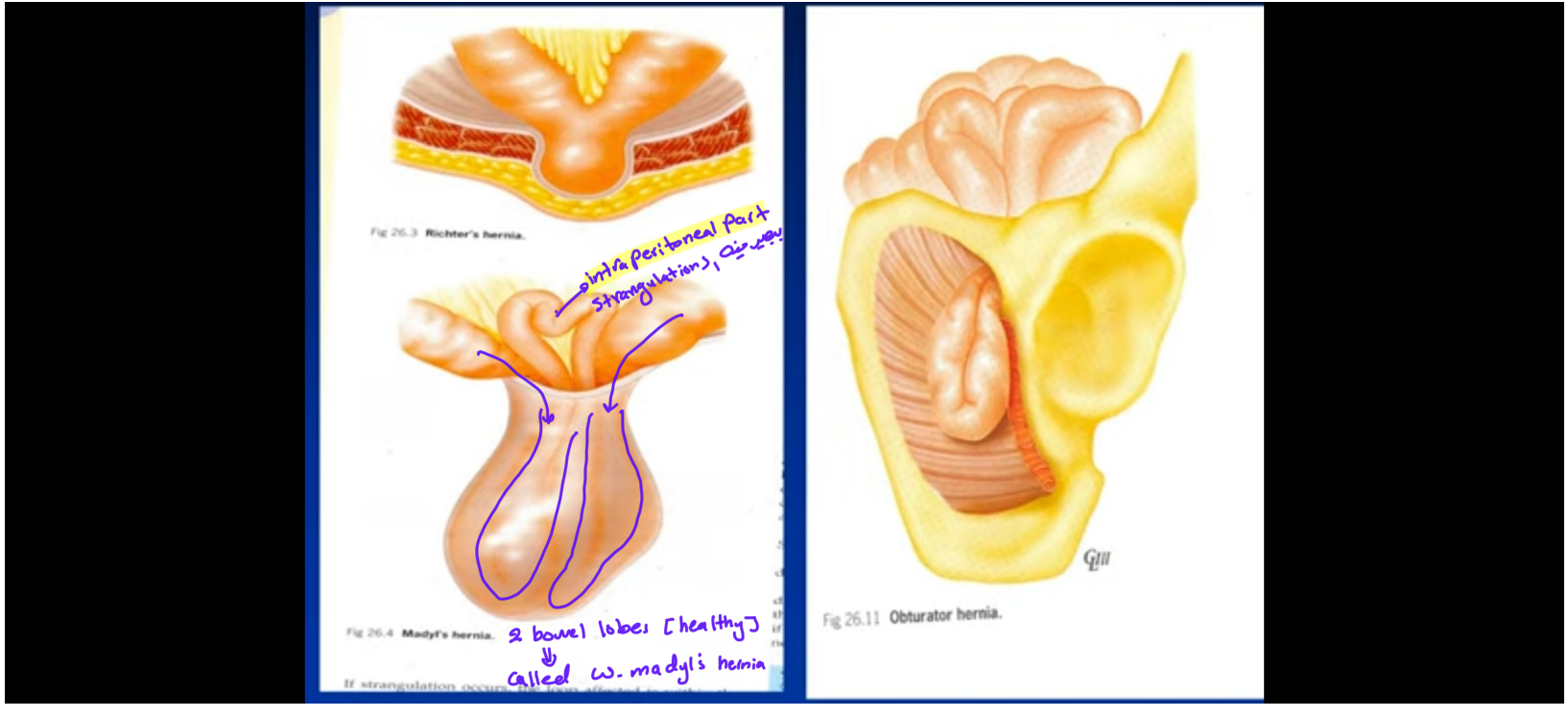
◆ ***Spigelian hernia***

- Intraparietal hernia, in line of linea semilunaris
- At level of arcuate line
- Local pain, lump at site, obstruction.



Strangulation + may be lead to perforation

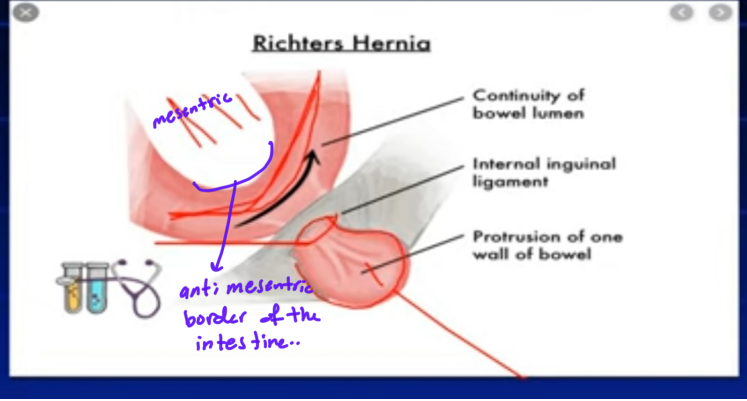
intestinal obstruction



note:- لو رجعنا الـ intra peritoneal part البطن بدون ما تتأثر وفيها الـ 2 healthy bowel lobes
↳ ف عكس يكون خربان ⇒ healthy part خيار تاني

Richter's hernia

- Part of bowel wall is trapped
- Strangulation without obstruction
- Common in femoral hernias, elderly. Male
- Part of the intestine's antimesenteric border through a rigid small defect in the abdominal wall



* The linea alba :- line between the Rt and lt rectus muscle.

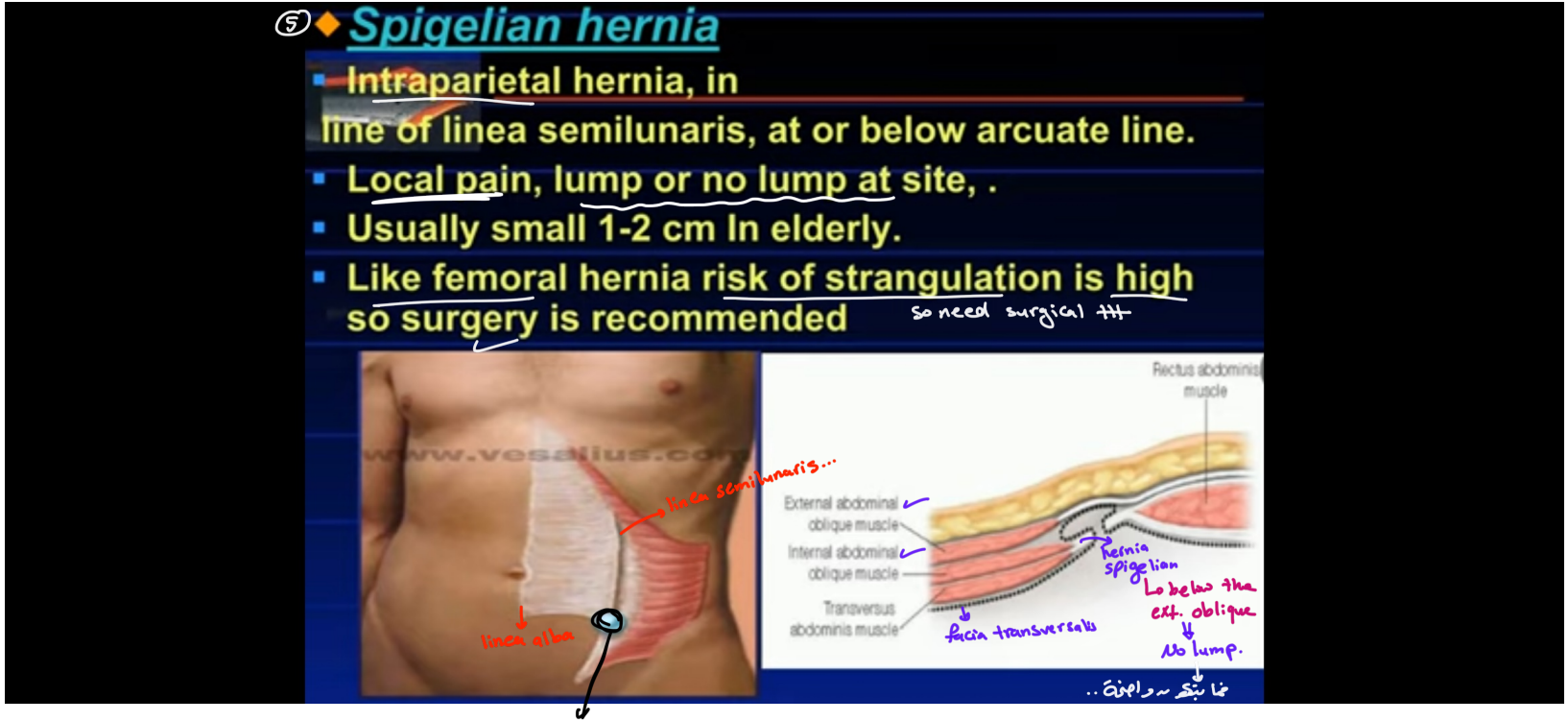
→ lateral border of the rectus muscle :- linea semilunaris...

→ the linea alba above the umblicus 2 fingers → wide so risk for diversation of recti...
(and just line below the umblicus...

* Arcut line :- half way between the umblicus and symphsis pubis... [below it there is No rectus sheath, just facia transveralis just post.] ⇒ above this line there is :- Ant. wall of rectus sheath [ext. oblique aponeurosis and half of internal oblique].

→ The point of crossing between the Arcut line and linea semilunaris ⇒ at or below this point is the site of spigelian hernia...

→ The post. wall of rectus sheath :- half of internal oblique and transverce abdominal muscle.



site of spigelian hernia...

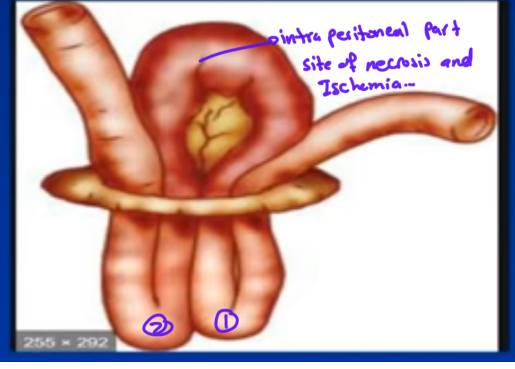
Spigelian hernia







- **Maydl hernias W Hernia :** are defined as the Presence of two small bowel loops within a single hernial sac.
- th there are two efferent and two afferent loops of bowel, forming a "W" shape.
- Centre portion of the 'W loop may become strangulated, either alone or in combination with the bowel in the hernial sac.
- It is more often seen in men, and predominantly on the right side



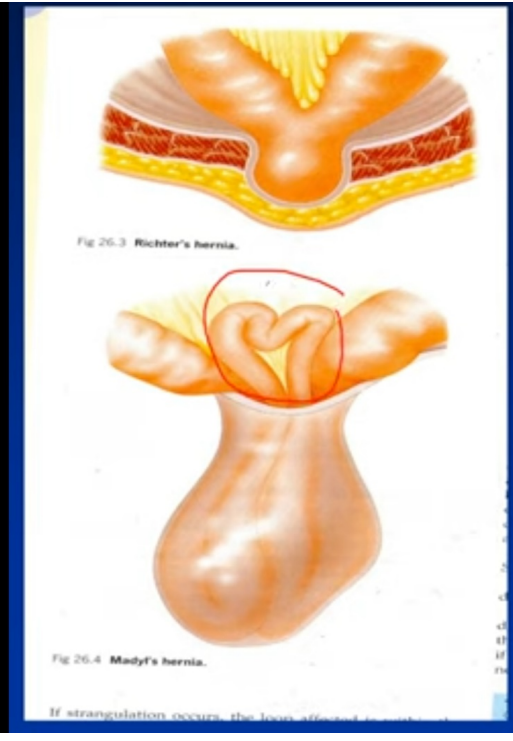


Fig 26.3 **Richter's hernia.**

Fig 26.4 **Madyl's hernia.**

If strangulation occurs, the loop affected

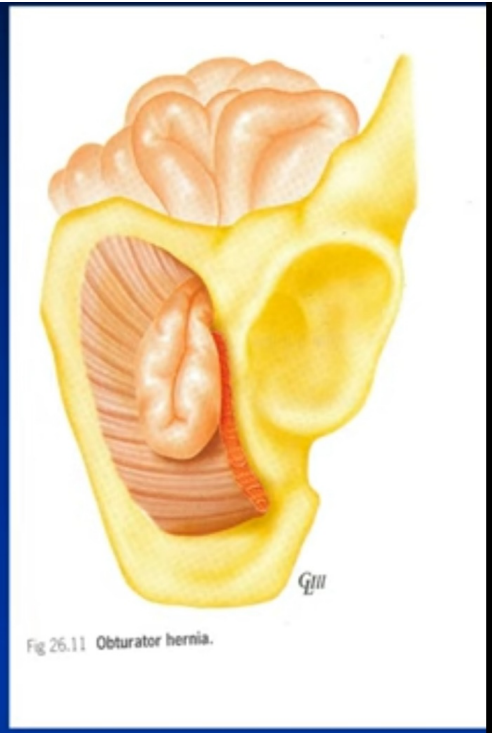
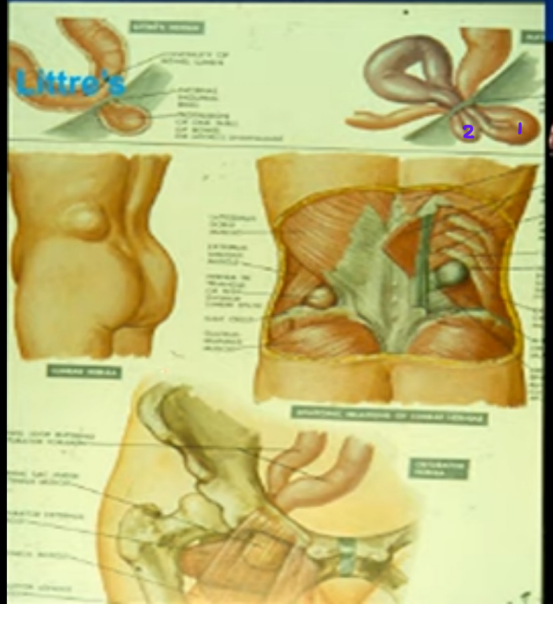
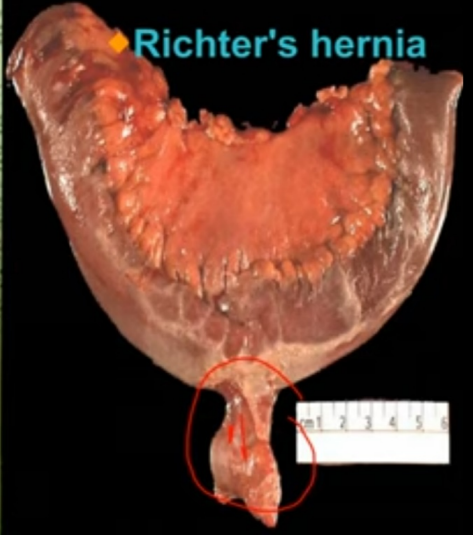


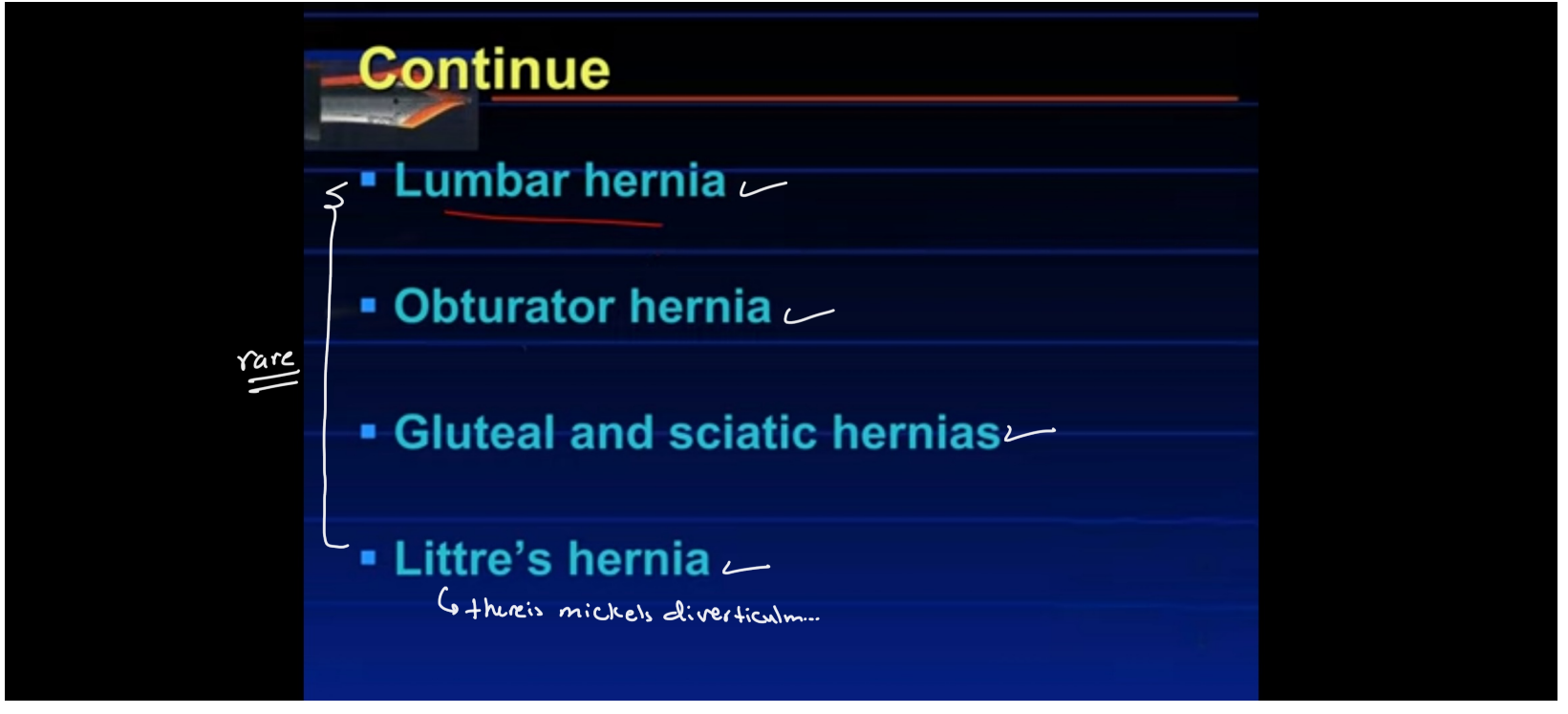
Fig 26.11 **Obturator hernia.**

Hernia EN W-Maydal's hernia



Richter's hernia




Continue
Lumbar hernia
Obturator hernia
Gluteal and sciatic hernias
Littre's hernia
rare
Littre's hernia Meckel's diverticulum...



Sciatic hernia.

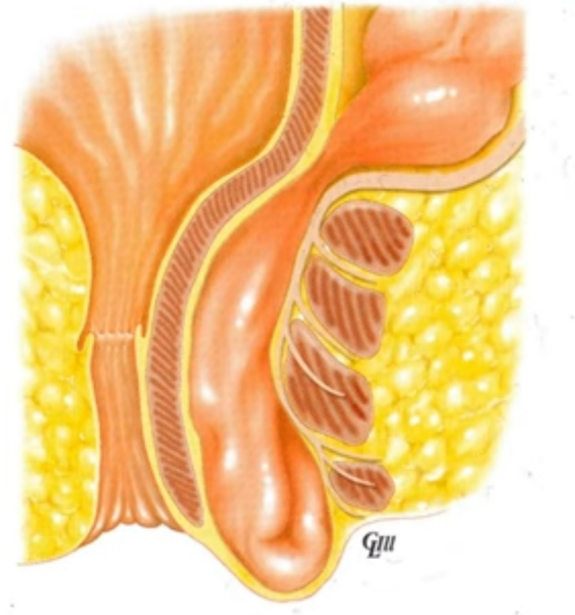
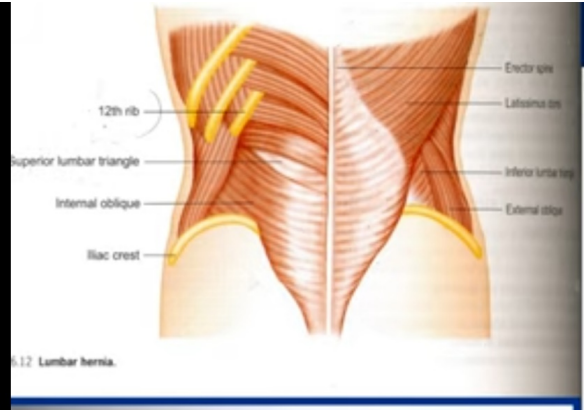


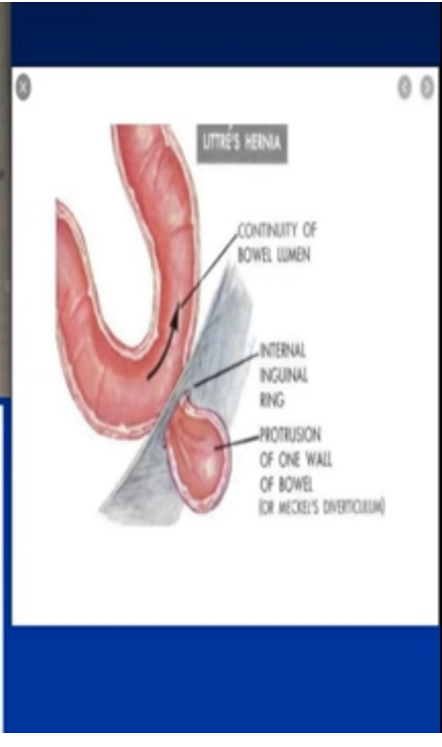
Fig 26.14 **Perineal hernia.**



6.12 **Lumbar hernia.**



6.13 **Interparietal hernia.**

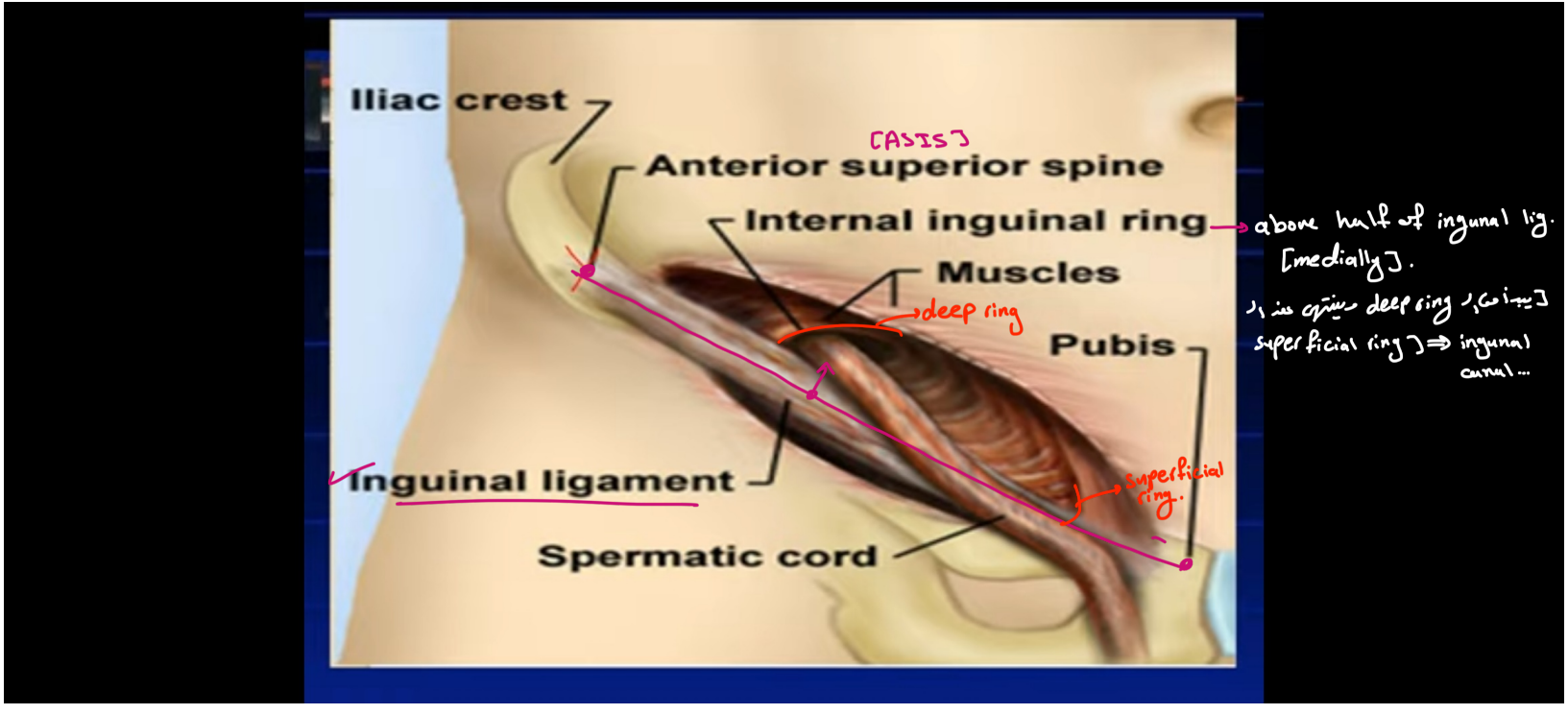




Specific hernias

- *Inguinal hernia*
- *Anatomy of inguinal canal* lower part of ant. abdominal wall above the medial half of inguinal ligament...
- 4cm 1.5 inch long
- Pass downward, forward, and medially.
- *Content*
- Boundaries of inguinal canal.
- Deep ring.
- Superficial ring.
- Spermatic cord.

OSKE


Iliac crest
[ASIS]
Anterior superior spine
Internal inguinal ring
Muscles
deep ring
Pubis
Inguinal ligament
superficial ring.
Spermatic cord
above half of inguinal lig. [medially].
deep ring
superficial ring ⇒ inguinal canal...

* The deep ring is:- opening in the fascia transversalis...
  ↳ lies 1.5 inch above the mid point of the inguinal ligament...

* we see the femoral pulse then 1.5 inch lateral and 1.5 inch above ⇒ site of deep ring...
  [The femoral A. medial to the deep ring]...
  ↳ present in the mid inguinal point..

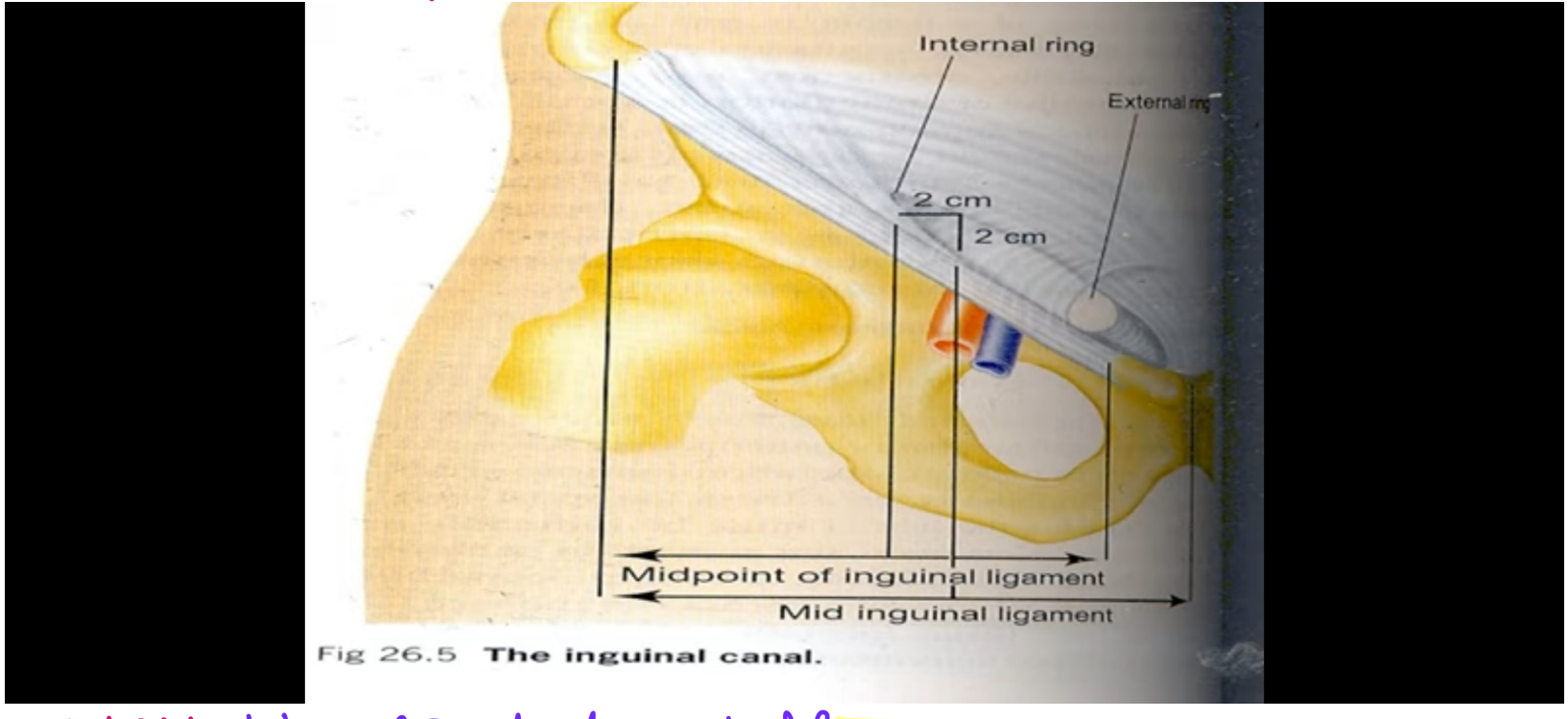
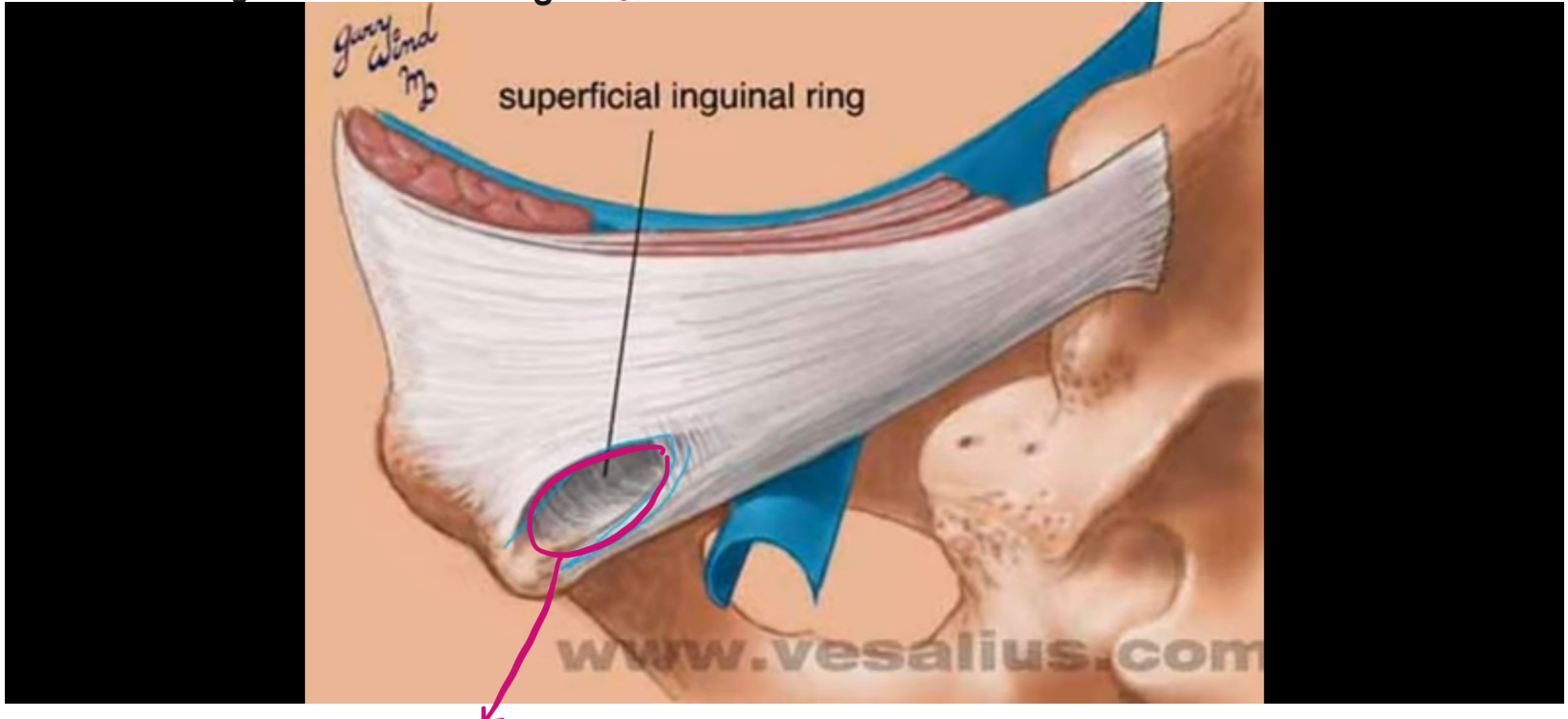


Fig 26.5 **The inguinal canal.**

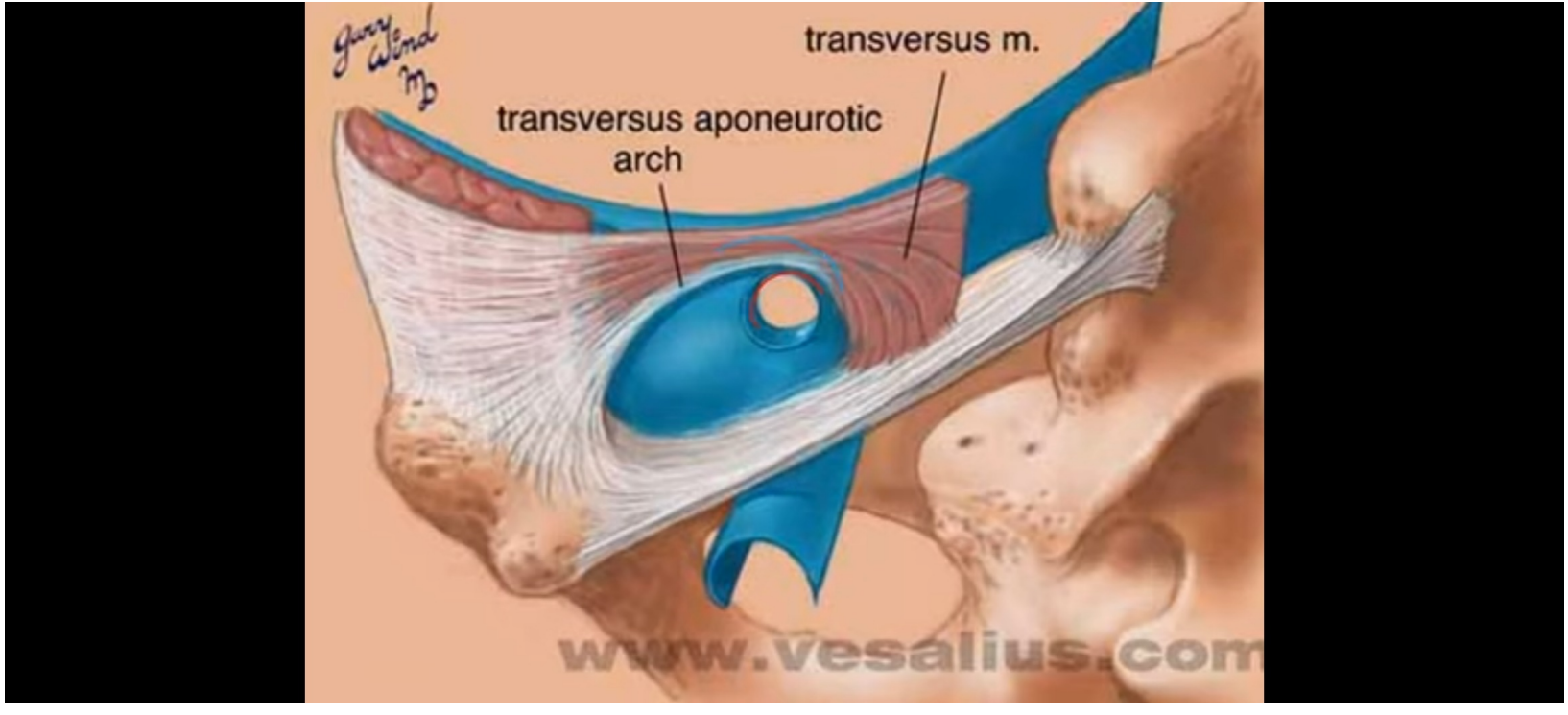
* The mid inguinal point:- between ASIs and mid line → site of femoral Artery...
* The mid point of inguinal ligament:- site of deep ring..

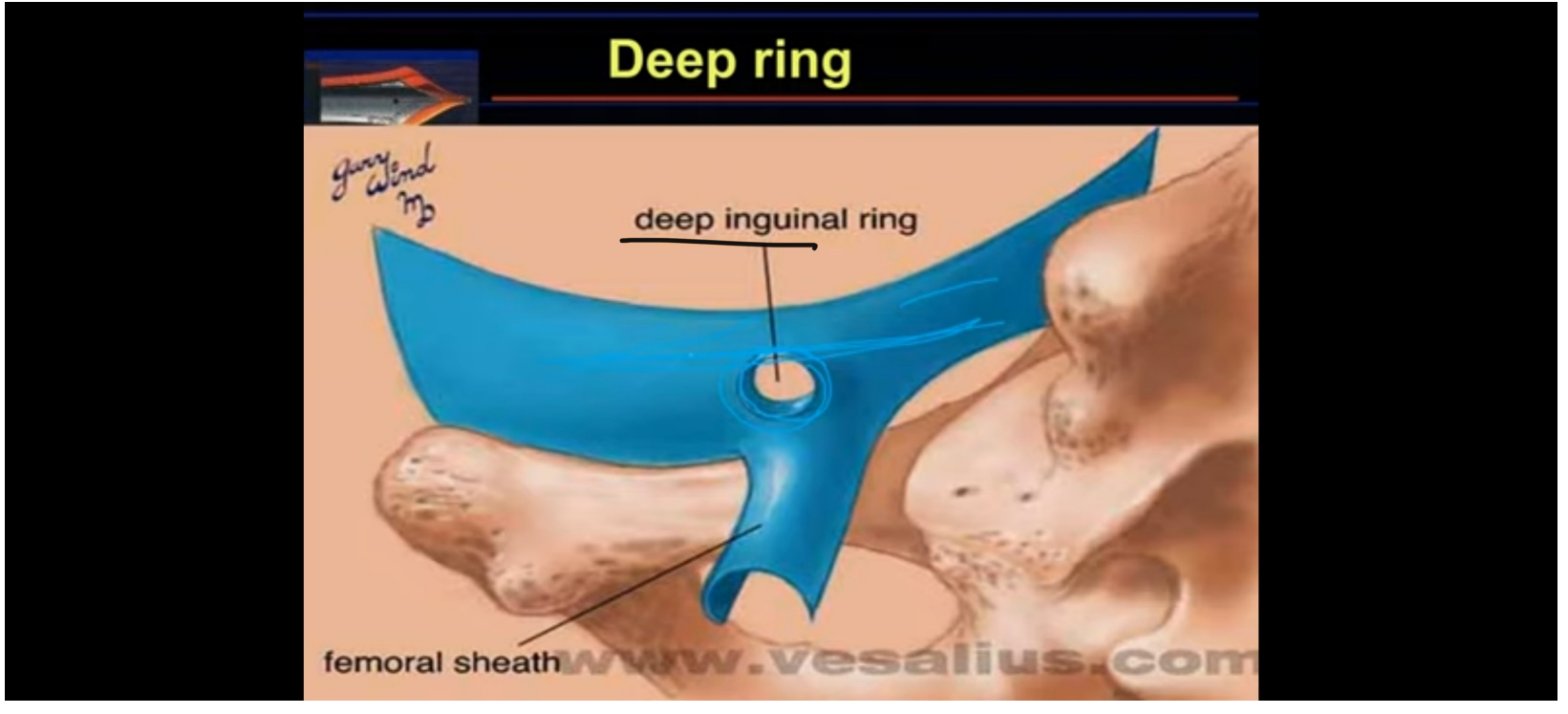
The inguinal canal Boundaries:-

* The **Anterior wall** of the inguinal canal formed by: external oblique aponeurosis...
* The **lateral wall** of the inguinal canal formed by: internal oblique aponeurosis and tranversus...
* The **posterior wall** of the inguinal canal formed by:
  - The roof of inguinal canal formed by arch fibrous of the internal oblique and tranversus abdominal muscle..
  - The floor of inguinal canal formed by inguinal lig.
* The **medial wall** of the inguinal canal formed by: Conjuant tendon...

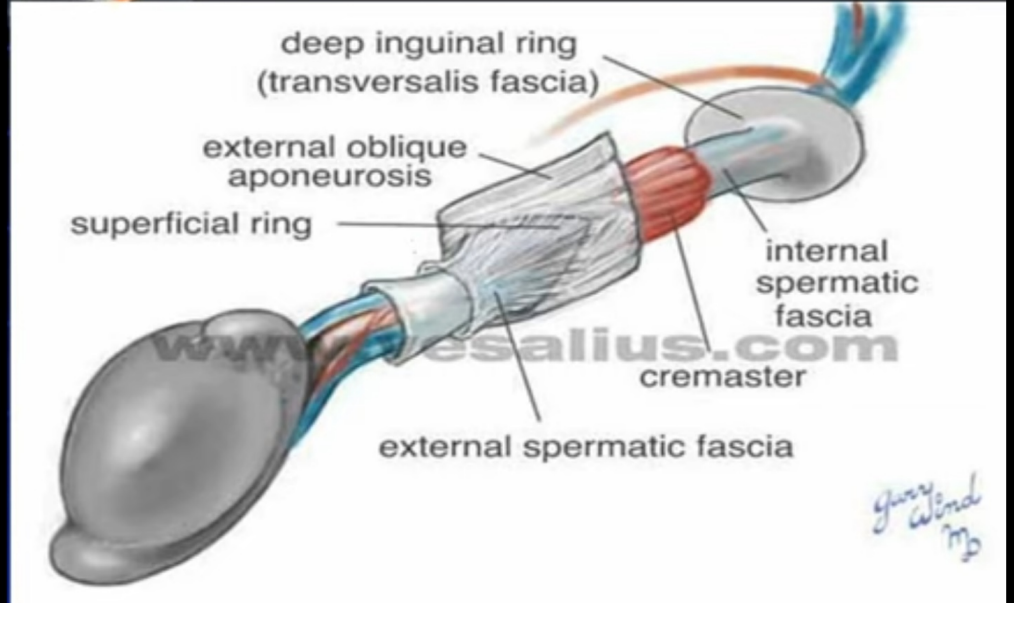


inverted V Shape opening in the ext. oblique aponeurosis → superficial ring..


transversus m.
transversus aponeurotic arch
www.vesalius.com

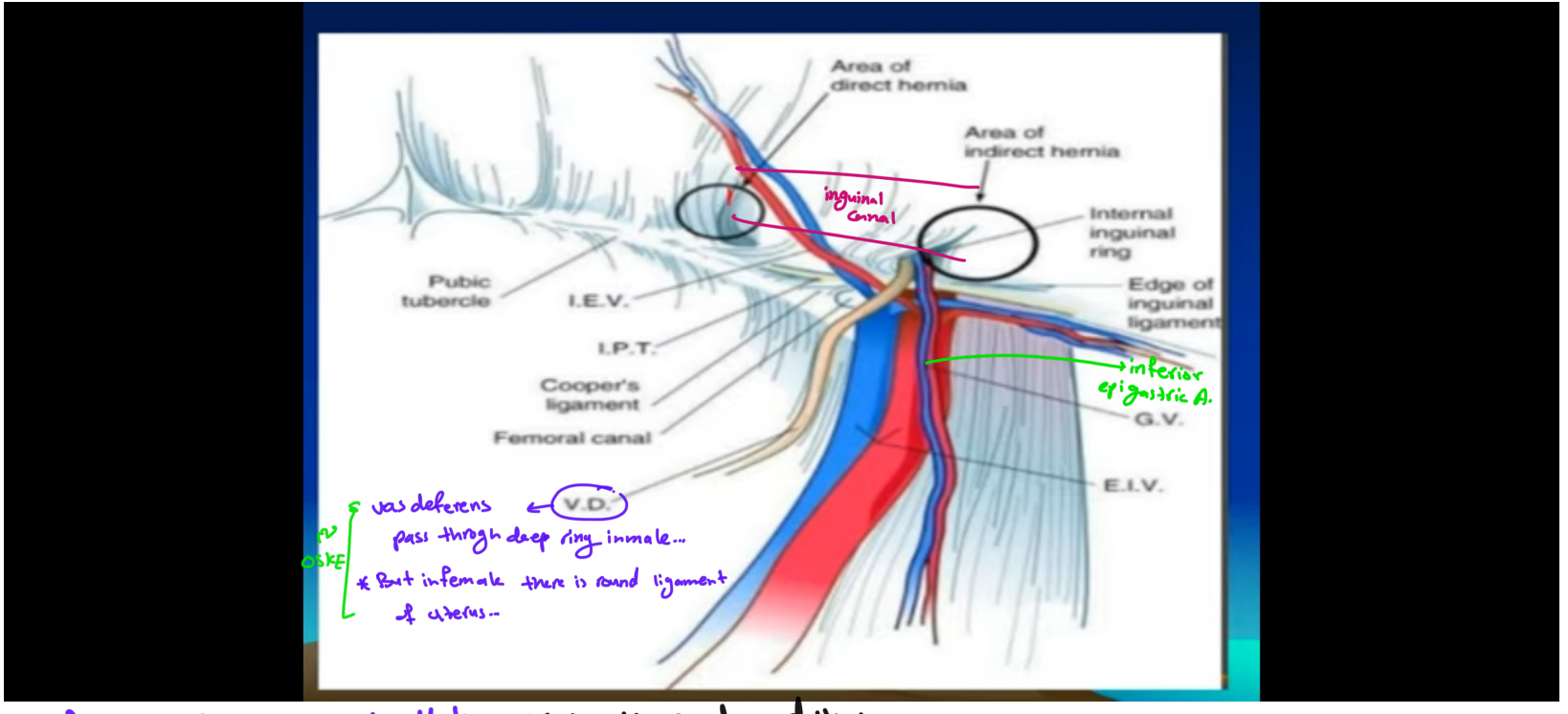

Deep ring
deep inguinal ring
femoral sheath
www.vesalius.com

COVERING OF CORD



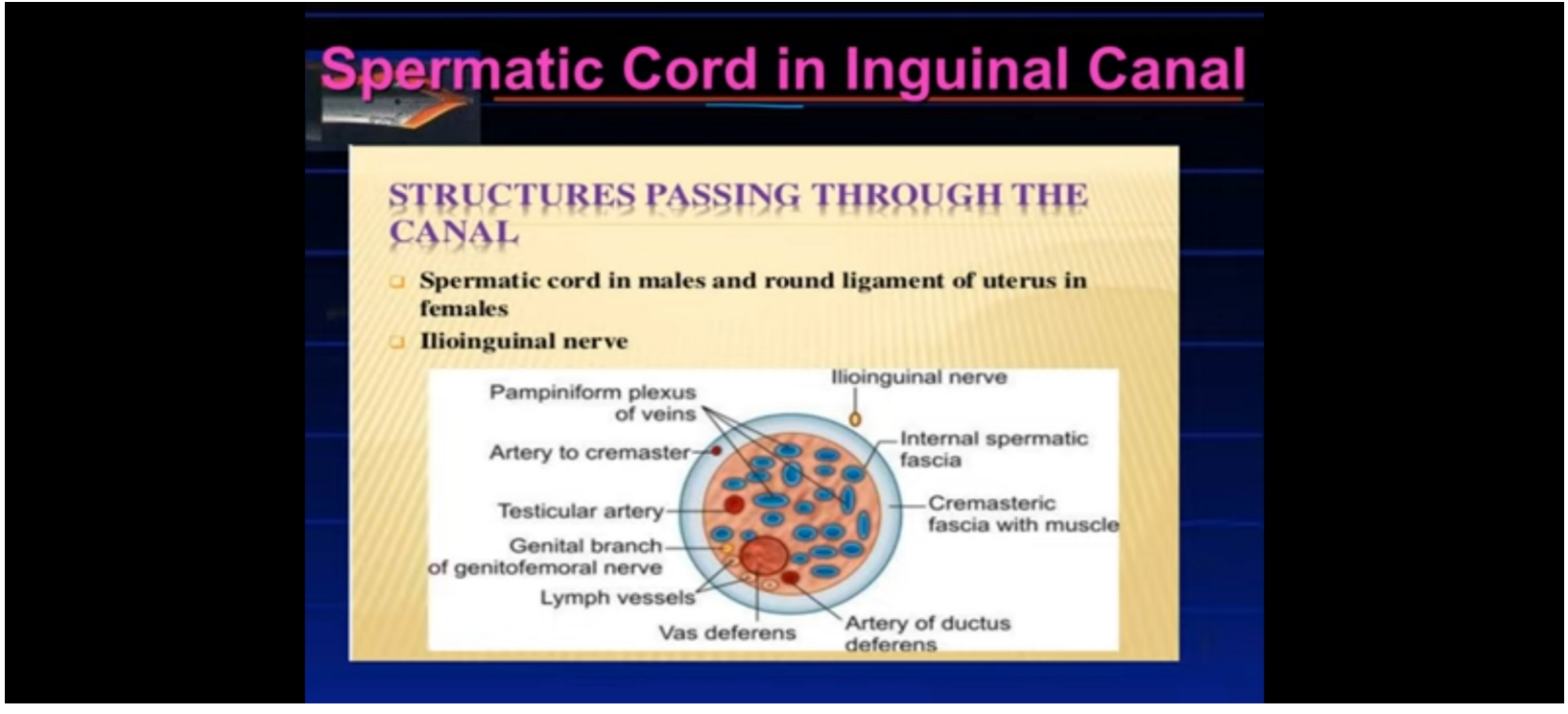
* Herina → Int. to inferior epigastric Artery is:- indirect hernia..
→ medial to inferior epigastric Artery is:- direct hernia..

* The origin of inferior epigastric artery :- external iliac artery below the Arcut line to join with superior epigastric artery in umbilical level [L3-L4]...

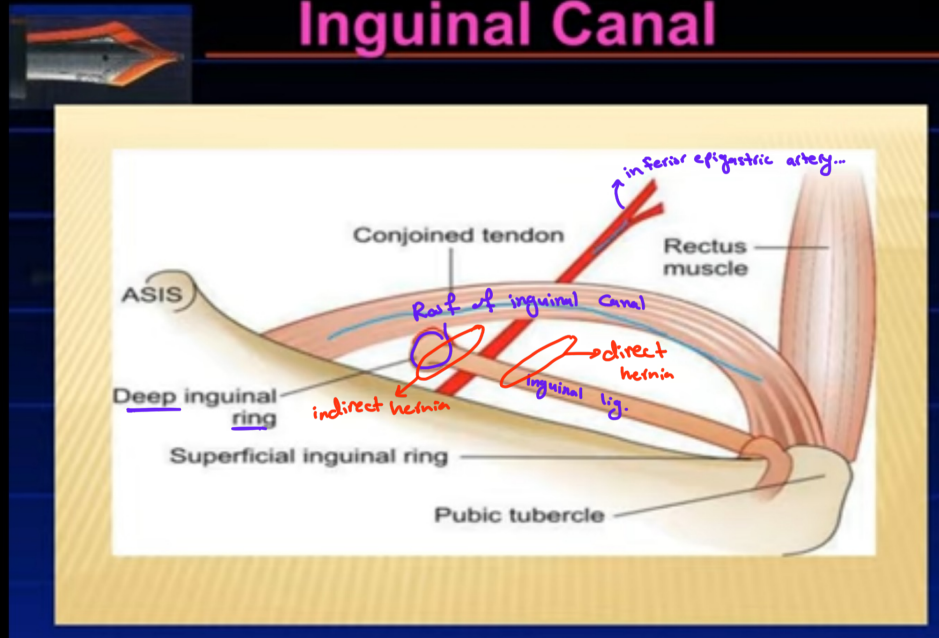


* The content of inguinal canal → in Male :- spermatic cord. and ilioinguinal nerve...
→ in Female :- round lig. of uterus and ilioinguinal nerve...

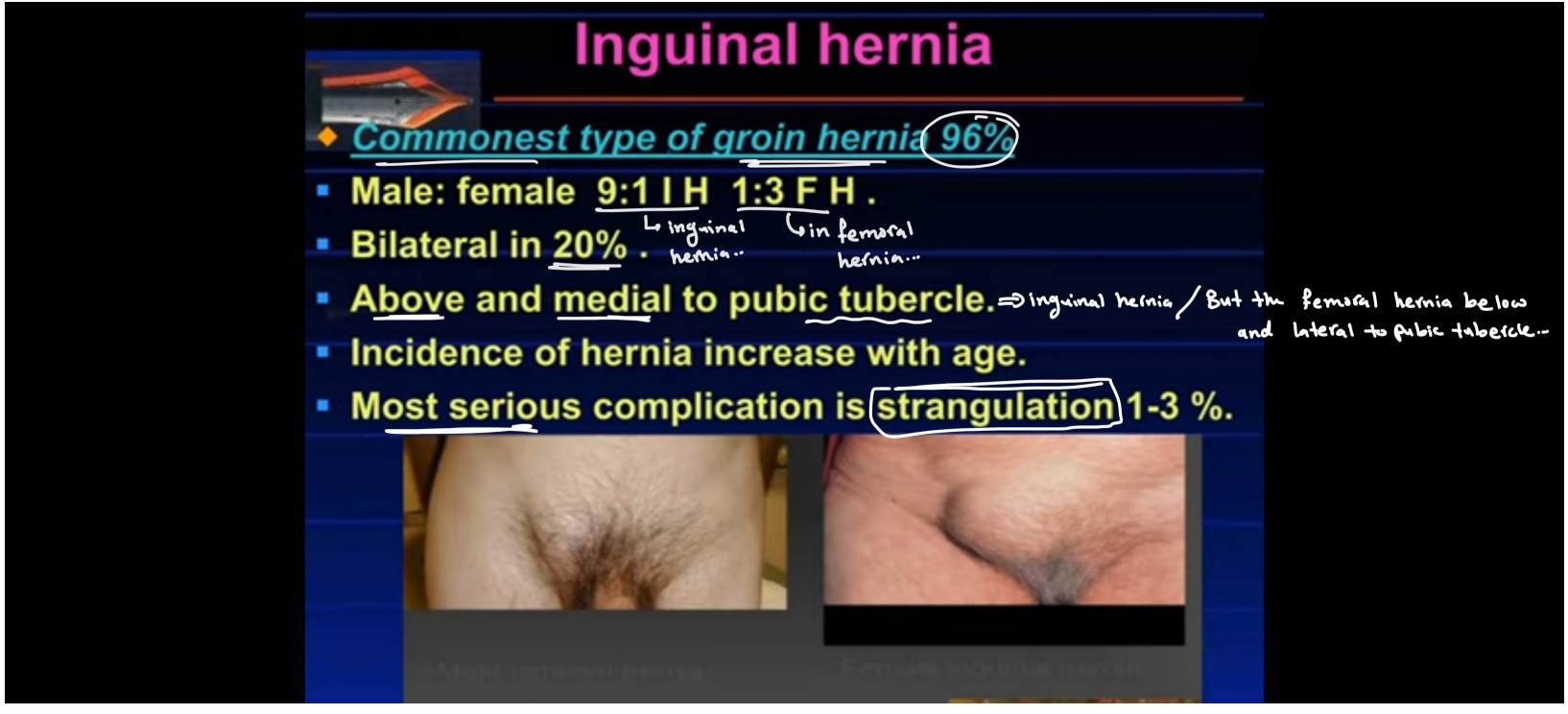
* structures of spermatic cord :- vas deferens [most important]..
pampiniform plexus
3 Artery [testicular A. → most important one]..
lymphatic
nerves [ilio inguinal nerve]..



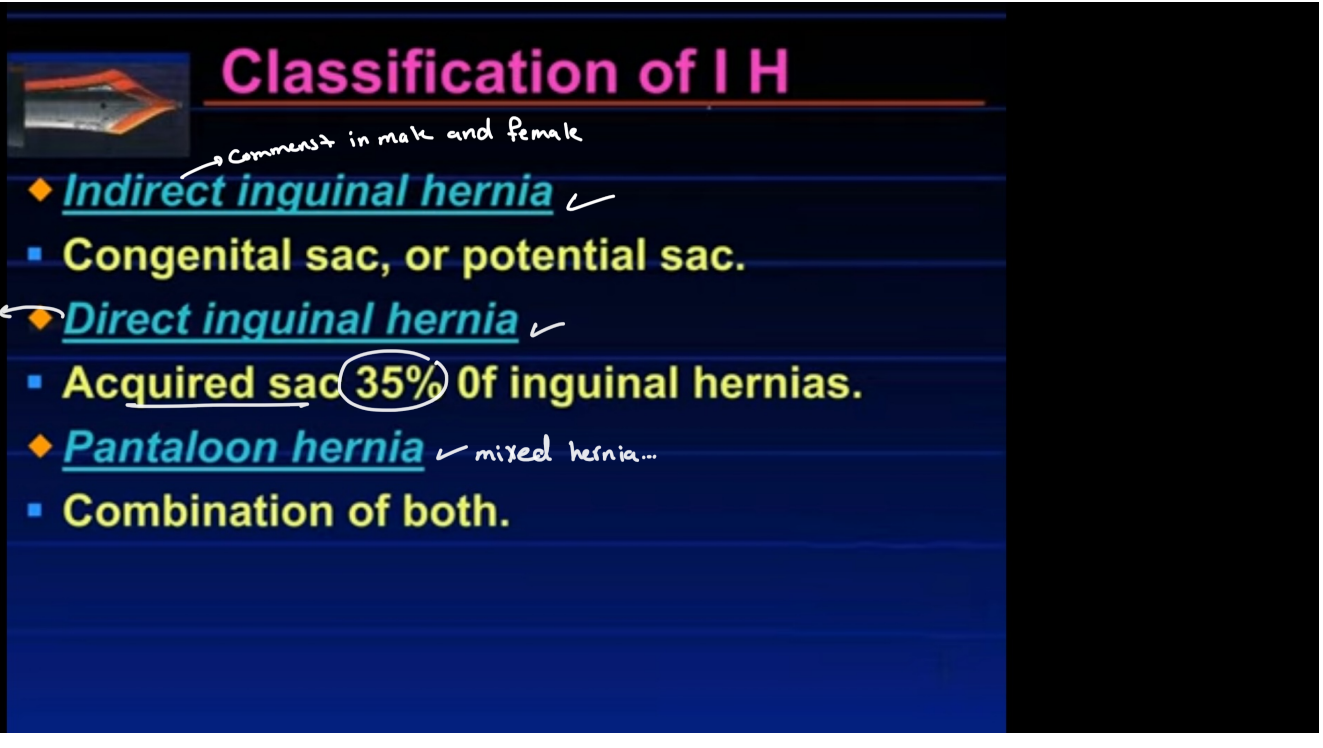
Inguinal Canal

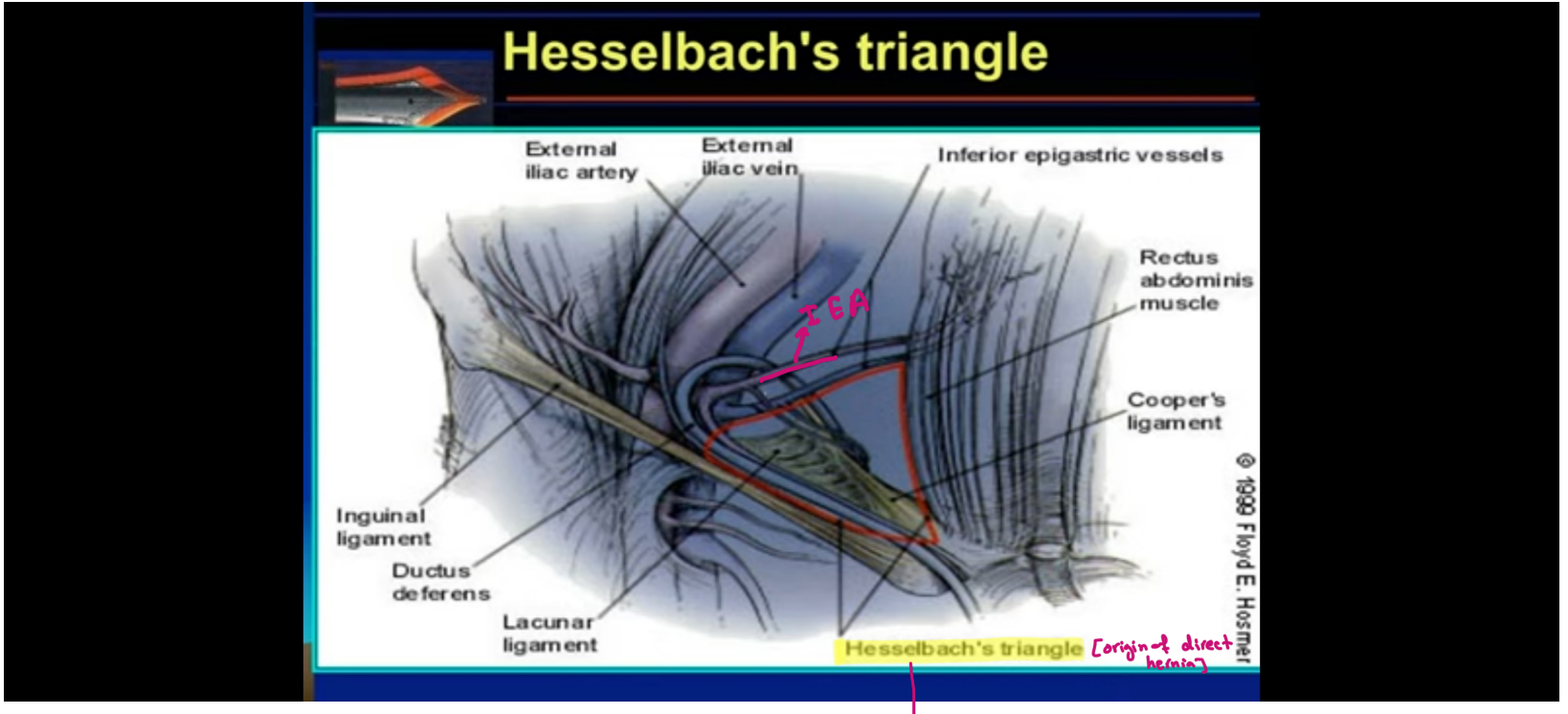


* The most common type of hernia in humans is:- Inguinal hernia...
* The most common type of hernia in males is:- indirect Inguinal hernia...
* The most common type of hernia in females is:- indirect Inguinal hernia...
→ The femoral hernia more common than inguinal hernia in Female...



L inguinal hernia..
L in femoral hernia...
⇒ inguinal hernia / But the femoral hernia below and lateral to pubic tubercle..


Classification of I H
Commenst in male and female
Indirect inguinal hernia
Congenital sac, or potential sac.
Direct inguinal hernia
Acquired sac 35% 0f inguinal hernias.
Pantaloon hernia
mixed hernia...
Combination of both.

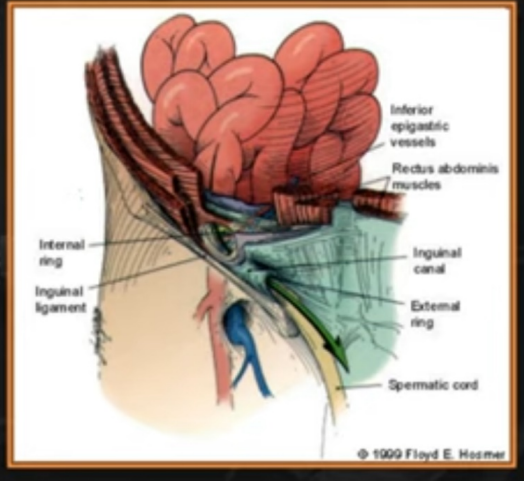


between the inferior epigastric artery and medial border of rectus muscle and inguinal ligament...

Indirect Hernia Route

Note:

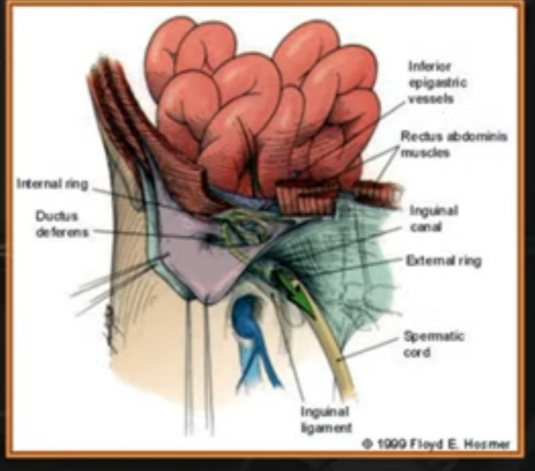
The hernia sac passes outside the boundaries of Hesselbach's triangle and follows the course of the spermatic cord.



Direct Hernia Route

Note:

The hernia sac passes directly through Hesselbach's triangle and may disrupt the floor of the inguinal canal.



* pt has [BPH - constipation - chronic cough] and hernia → we should treat the cause of ↑ intra abdominal pressure...

OSKE

Difference between Indirect, Direct I H



	INDIRECT	DIRECT
Age	Usually young	Old [exclusive in Male]
cause	May be congenital or acquired	Acquired → ↑ intra abdominal pressure... → weakness of abdominal wall...
bilateral	20%	50% due to ↑ intra abdominal pressure...
Protrusion on cough	Oblique from deep ring to superficial ring...	Straight from posterior to anterior...
Appearance on standing	يعني بتلاقيه فجأة من العدم طلع كبير...	Does reach
Reduction on lying down	May not reduce due to narrow neck...	Reduce

There is patent processus vaginalis → closed normally but in indirect hernia still opened...

acquired ← يعني ناتج عن الضغط / ممكن يكون ستر ولكن بعد كده فتح ⇐

Difference between indirect, direct I H

Neck of sac	Narrow (more risk for complication)	Wide
strangulation	Not uncommon	Unusual [rare]
Relation to inferior epigastric	lateral	Medial
Descent to scrotum	Common	Rare
Internal ring test	Control	No control



Diagnosis

- ***History and examination***
  - Groin swelling
  - Impulse on cough
  - Reducibility
  - Groin pain

Imaging and treatment



- Ultrasound
- CT MRI scan
- Laparoscopy
- Exploration
- Herniography
- *Herniotomy:* excision of sac only.
- Herniorrhaphy: strengthen posterior wall.
- Bassini,Macvay,Shouldice repair
- Hernioplasty:mesh repair


Repair of I H → the best choice is herinoplasty [putting mesh]
REPAIR MAY BE:
PURE TISSUE REPAIR
• Shouldice,Mac Vay,Modified bassini
PROSTHE TI-C REPAIR
• Lichtenstein,Rives,Gilbert,Stopa,TEP,TAPP
① we do repair of posterior canal → called herinorhaphy
② we put mesh called: herinoplasty..
laparoscope
open surgery...

..وبتقرب post wall of the inguinal canal بتبعد ← Bassini's Repair

... conjointed tendon الـ بـ inguinal lig. الـ فبتجيب

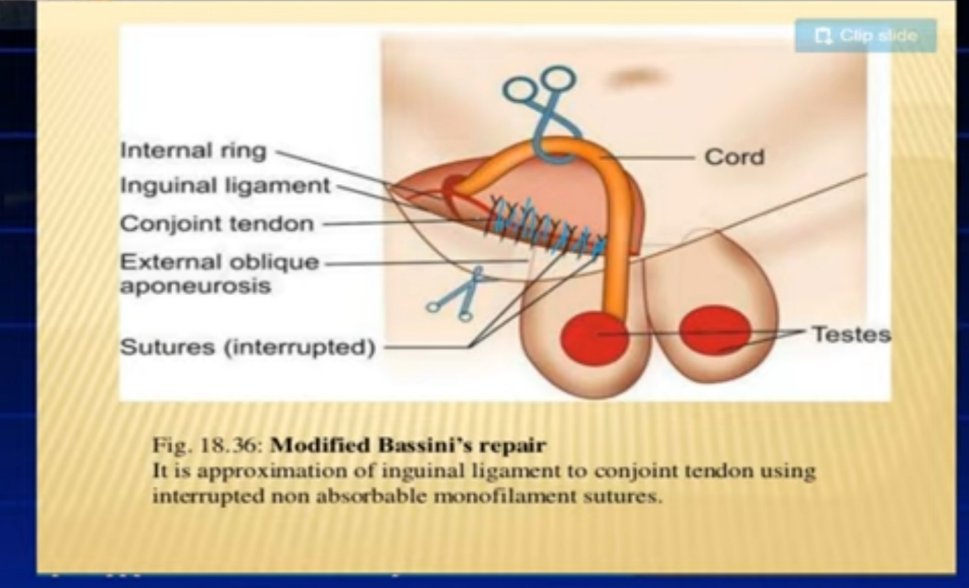


Fig. 18.36: **Modified Bassini's repair**
It is approximation of inguinal ligament to conjoint tendon using interrupted non absorbable monofilament sutures.

Mesh Repair :- The Best Choice for hernia ttt...



Clip slide

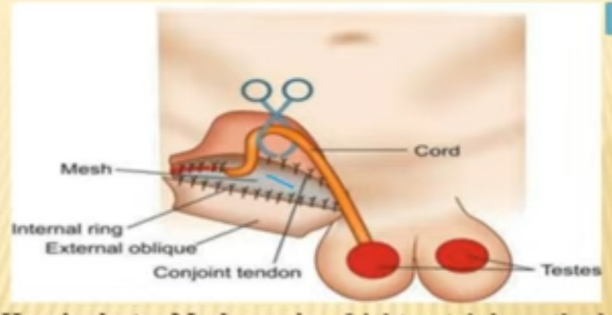


Fig. 18.43: Hernioplasty: Mesh repair—Lichtenstein's method (done under local anaesthesia).

- Mesh is fixed inferiorly to lacunar & inguinal ligaments, medially to overlap rectus sheath & fixed to fascia over the pubic bone
- Laterally an artificial deep ring is created by crossing of both upper and lower leaf of mesh, superiorly it is fixed to conjoint tendon.

* we use truss in case of :- MI pt + painfull complicated hernia...



FEMORAL HERNIA

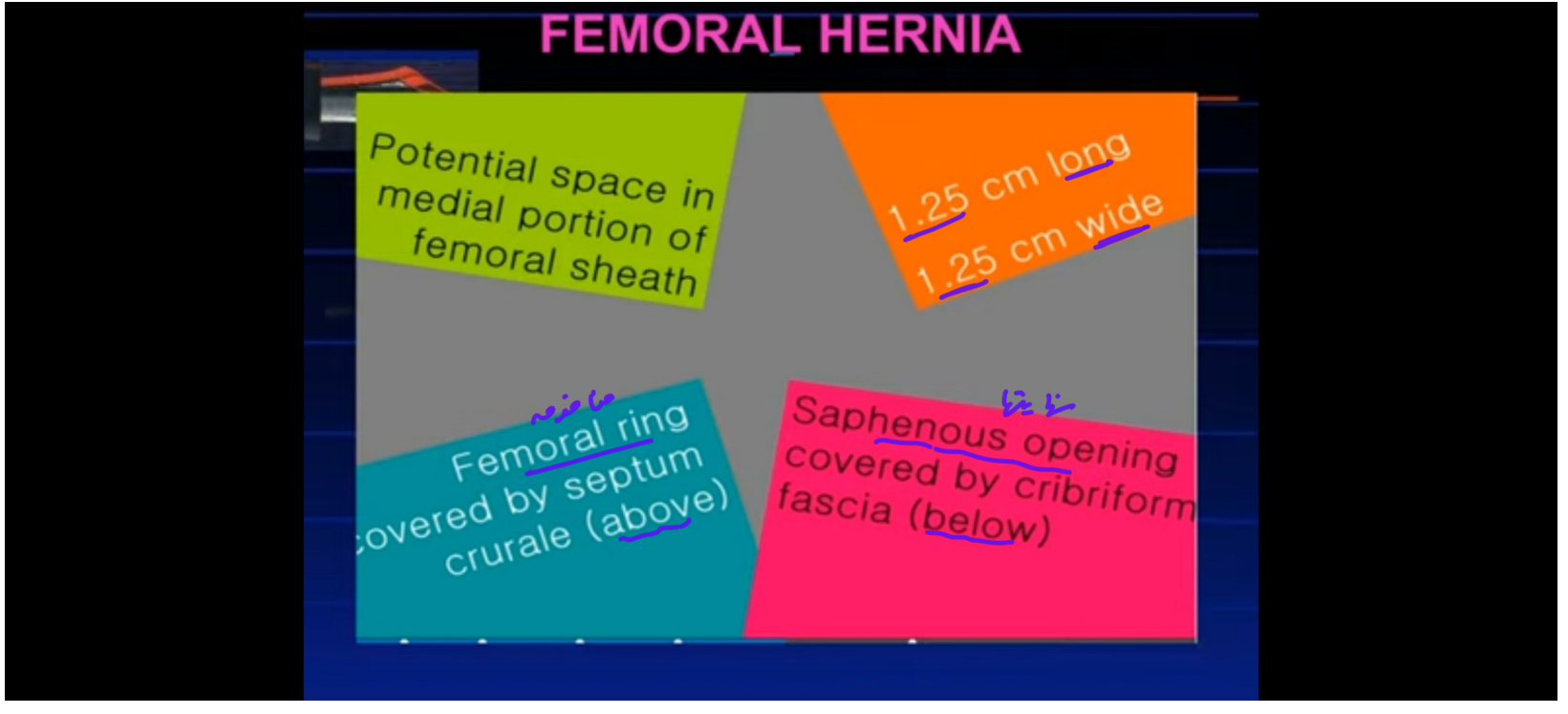
we should repair it as soon as possible...



- 4% of all hernias, strangulation 20% (common)
- 20 % of female groin hernias .
- Acute presentation 50% . intestinal obstruction presentation of richter type...
- 5% in male hernias, Bilateral in 20%
- Always acquired hernia.

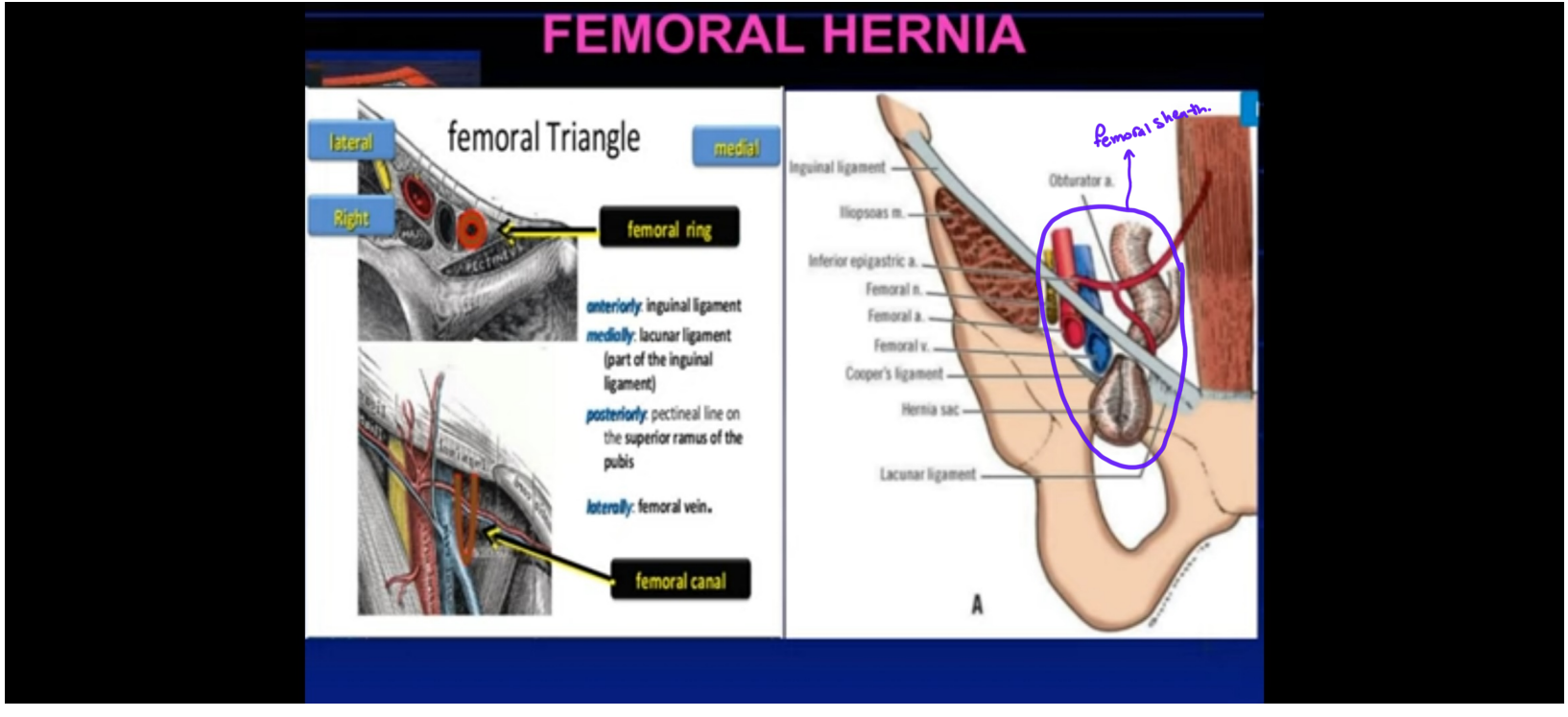
Anatomy of femoral canal

- 1.2 cm gap, in most medial compartment of femoral sheath.
- Contain fat , lymphatics , and one lymph node of Cloquet.
- Boundaries


FEMORAL HERNIA
Potential space in medial portion of femoral sheath
1.25 cm long
1.25 cm wide
Femoral ring
covered by septum crurale (above)
Saphenous opening
covered by cribriform fascia (below)

* The femoral sheath contain:- 1- Lateral compartment there is femoral Artery...
2- intermidate compartment there is femoral vein...
3- medial compartment there is femoral canal...

* The Boundres of femoral canal:- 1- medially → lacunar lig... 4- below → pectineal ligament..
2- laterally → femoral vein [most dangerous if it injured lead to severe bleeding].
3- above → inguinal ligament...



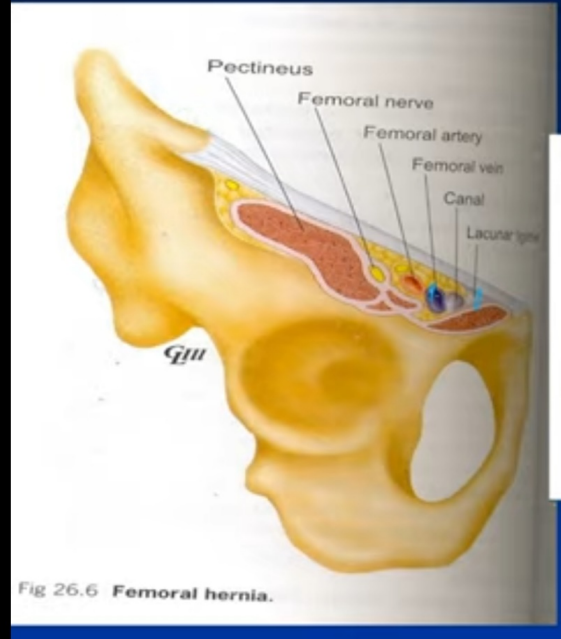
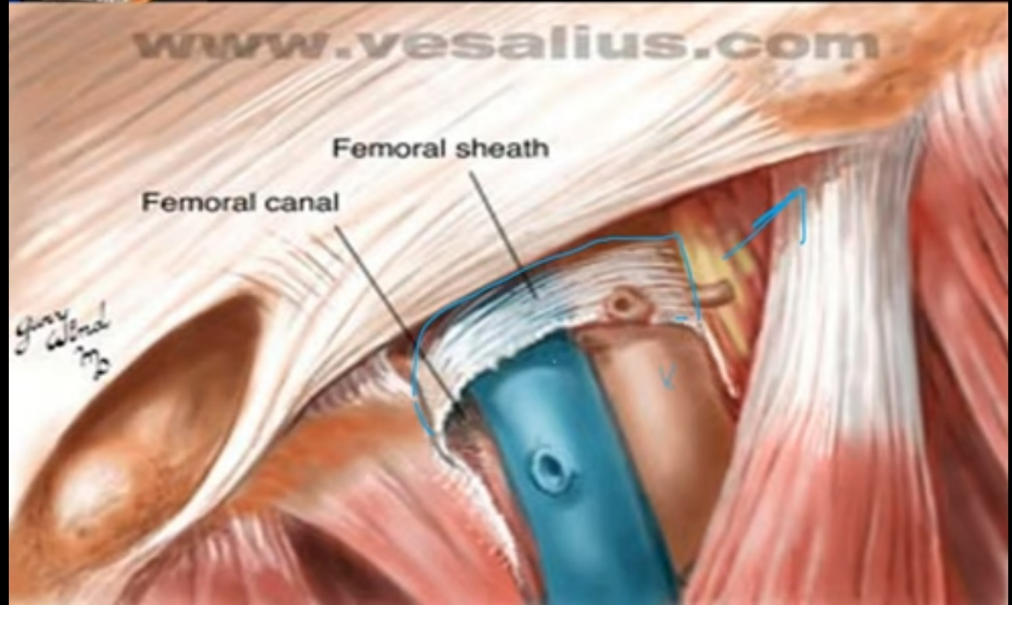


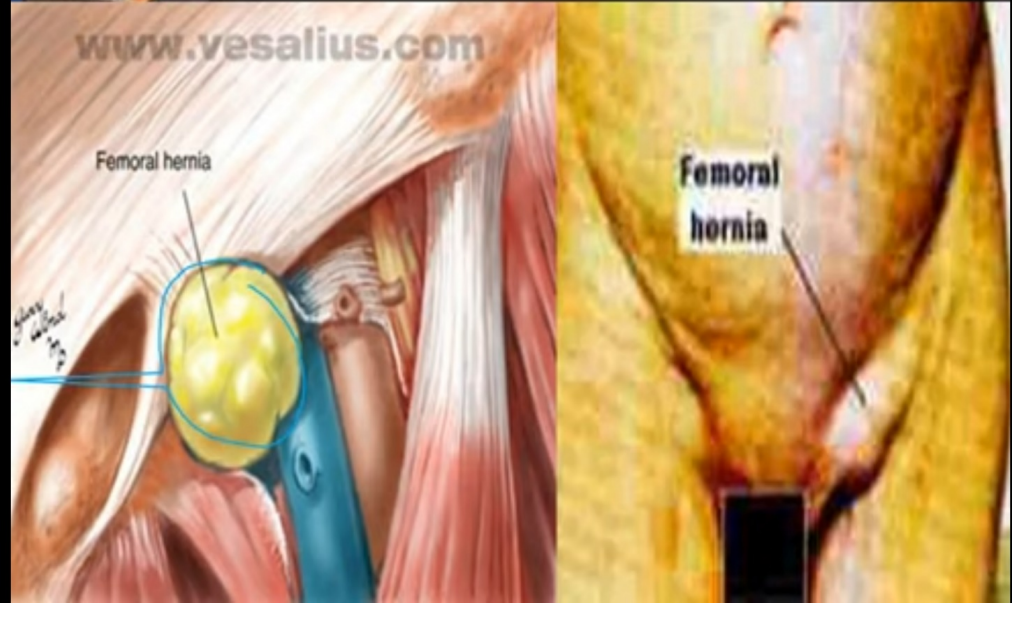
Fig 26.6 **Femoral hernia.**



Anatomy of femoral canal



FEMORAL HERNIA



يعني اي DDx يلي بتاخدها بينهم ربنه الـ F.H ...

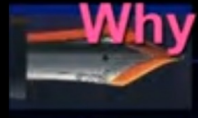
Inguinal swelling resemble F H

most important

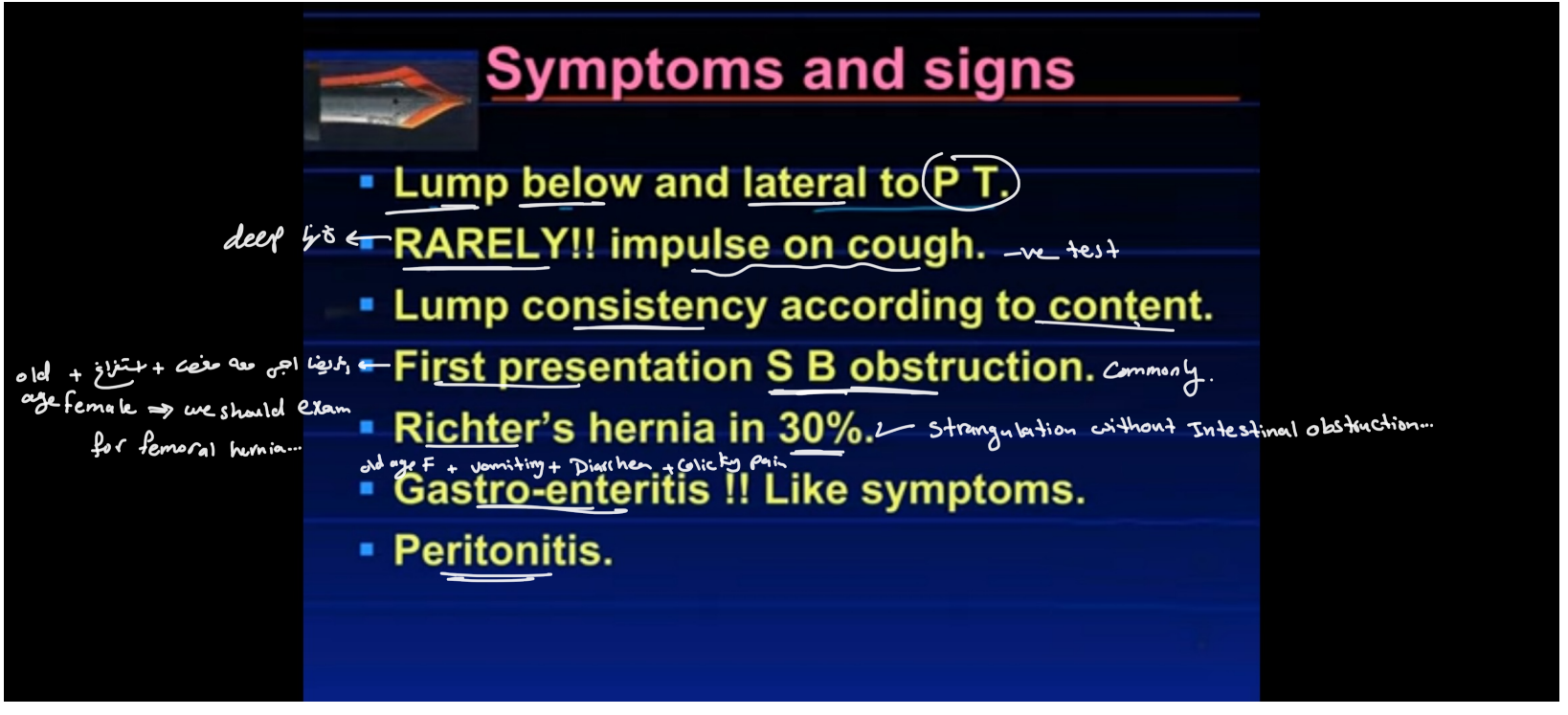
① Inguinal hernia	Above and medial to P T
② Enlarged lymph node	Multiple, mobile seek cause
③ Saphena varix	Compressible Palpable thrill on cough
④ lipoma	Soft, not reducible
⑤ Ectopic testis	Empty scrotum
⑥ Femoral artery aneurysm	Expanding pulsation,bruit
⑦ Psoas abscess	Fluctuant, lateral to femoral artery, loin mass

له اكتر من بتاخدها.

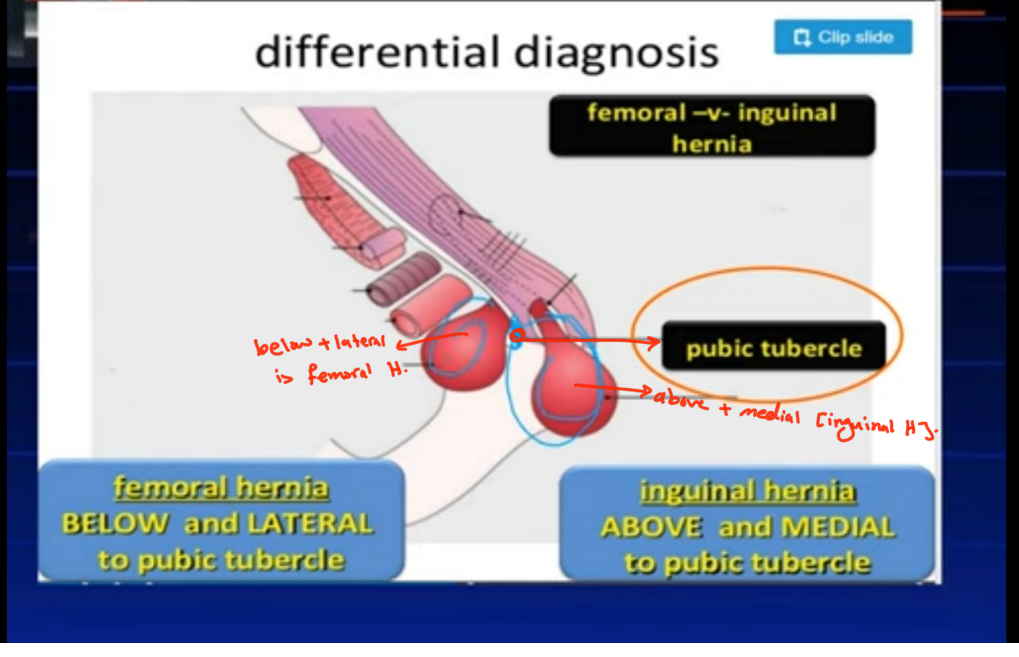
Why F H is common in females?



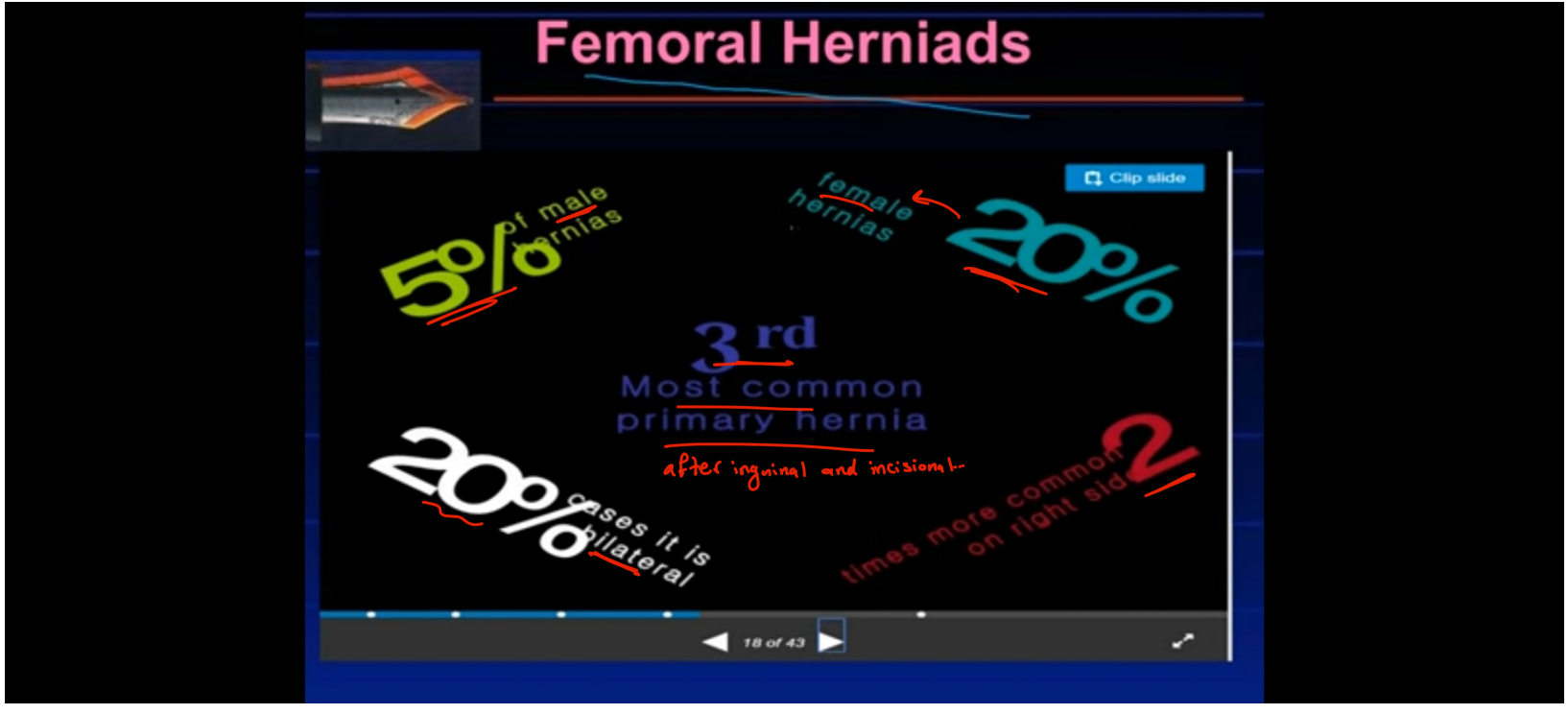
1. **Wide pelvis.** so the medial compartment of femoral sheath : wide...
2. **Lax pelvic ligaments after repeated pregnancies.**
3. **Weight loss in old age.**


Symptoms and signs
Lump below and lateral to P T.
RARELY!! impulse on cough.
Lump consistency according to content.
First presentation S B obstruction.
Richter's hernia in 30%.
Gastro-enteritis !! Like symptoms.
Peritonitis.
deep
-ve test
Commonly.
Strangulation without Intestinal obstruction...
old age F + vomiting + Diarrhea + Colicky pain
old + عايط + كيء وبعدين اجي اعيط
age female ⇒ we should exam
for femoral hernia...

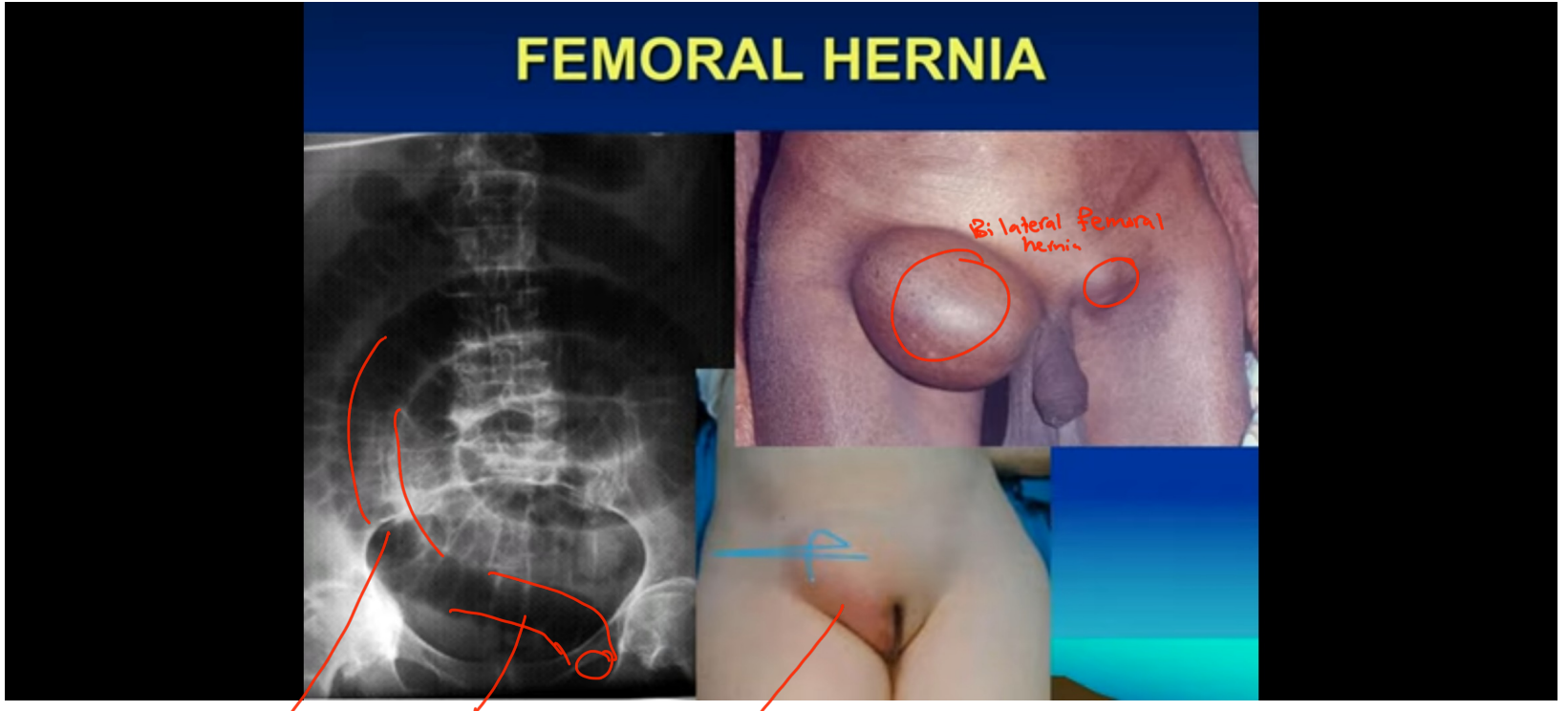
FEMORAL HERNIA



* 20% of female hernia...
* 5% of male hernia...
* 3rd mc type of hernias...
* 20% Bilateral...
* 2% in Rt side more common than lt side...



FEMORAL HERNIA



Femoral hernia





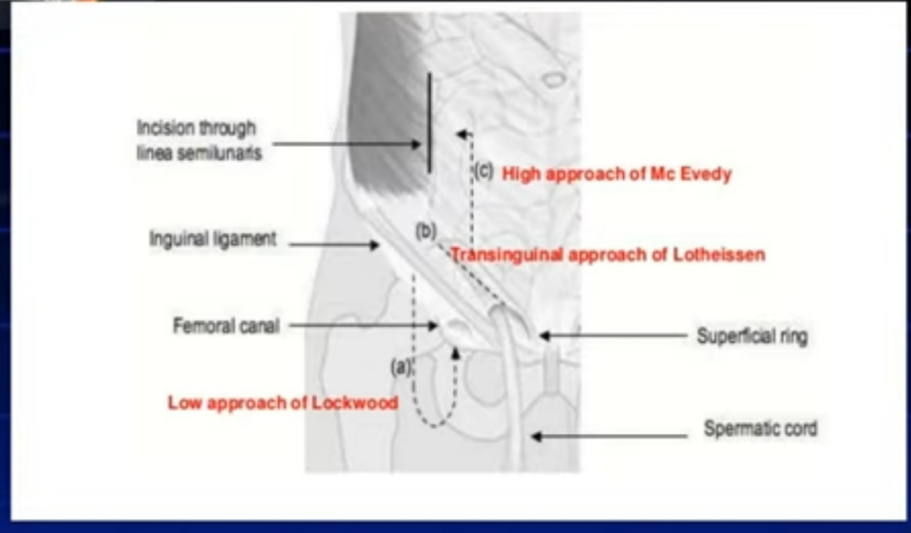
* multiple air fluid level

* 50% of pt presented with intestinal obstruction → emergency surgery..



Treatment




Incision through
linea semilunaris
(c) High approach of Mc Evedy
Inguinal ligament
(b)
Transinguinal approach of Lotheissen
Femoral canal
Superficial ring
(a)
Low approach of Lockwood
Spermatic cord

Ventral hernia — umbilical, paraumbilical, incisional, epigastric, lumber.. etc.

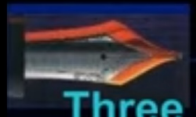
Definition: Any protrusion of viscera through anterior abdominal wall. [any hernia not in groin]..

Congenital - **Spontaneous Or Acquired**





Umbilical hernia



Three types

- Congenital U hernia (exomphalos)
  - ← ما بتخوفش لغاية لما حد يبتدي يحاول...
- Infantile U hernia
  - May need surgery جدا خطيرة ← ممكن تكون حالة
- Adult U hernia

- True U hernia
- Para umbilical hernia

Umbilical hernia





Aetiology

- *Congenital:* pre-formed sac
  - Congenital I H (patent process vaginalis)
  - Congenital U H (exomphalos)
- *Acquired hernias*
  - Raised intra-abdominal pressure.
  - Weak abdominal wall.
  - Female to male 3 : 1

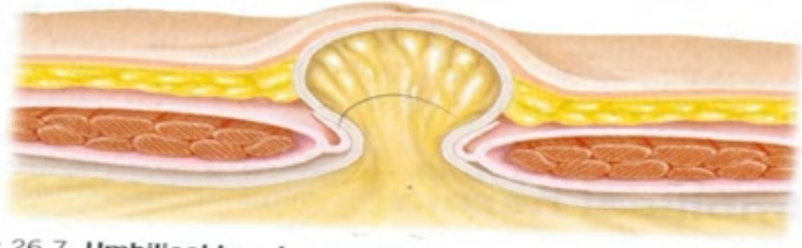


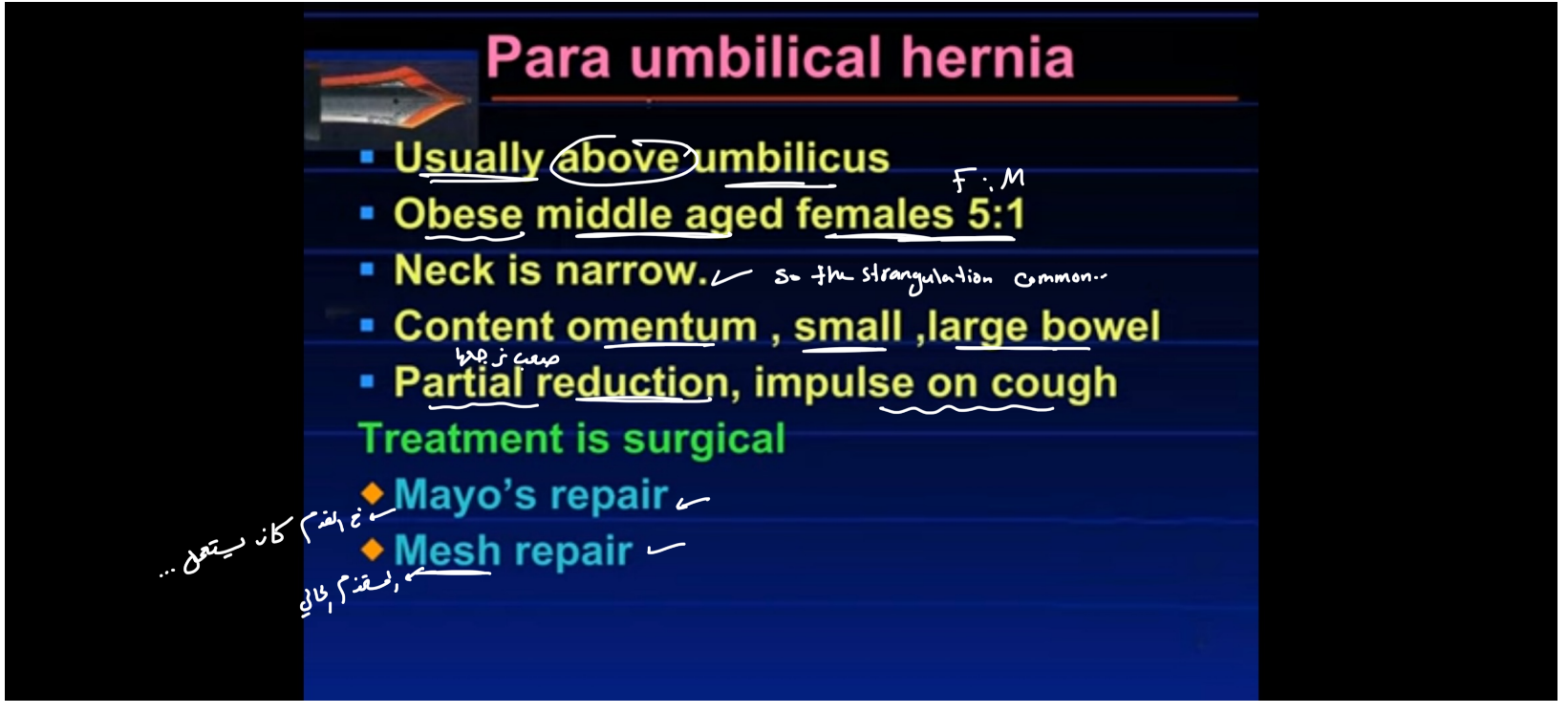
Fig 26.7 **Umbilical hernia.**

umbilicus لـ طالعة شوية



Fig 26.8 **Para-umbilical hernia.**

umbilicus لـ بعيد شوية


Para umbilical hernia
Usually above umbilicus
Obese middle aged females 5:1
F : M
Neck is narrow.
So the strangulation common..
Content omentum , small ,large bowel
Partial reduction, impulse on cough
صعب نرجعها
Treatment is surgical
Mayo's repair
Mesh repair

Ventral hernias









Paraumbilical hernia •



Incisional hernia 2nd mc type...

- 10% of all hernias ~20%
- 1% of all laparotomies

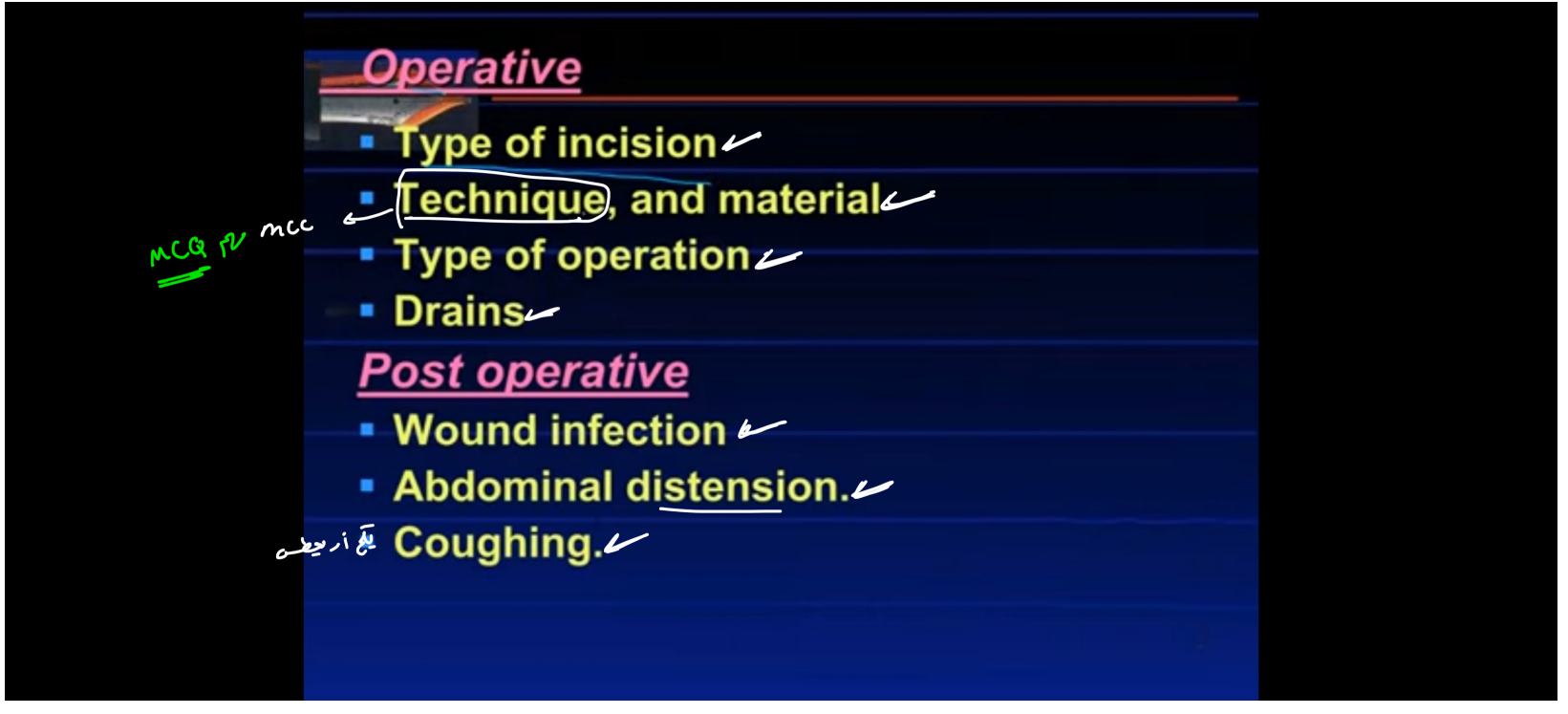
Causes

- **Preoperative**
  - Malnutrition - DM - liver cirrhosis - malignancy - steroid induce [medical causes not surgical]...
- **Operative** 95% of causes.. [mcc]
  - ① wrong technique or we use not absorbable suturing...
  - ② tention → leak of content...
- **Post operative**
  - wound infection.

ف esophageal Atresia او esophageal tension بعملها الـ Babies ال
↓
leakage بيعمل

Types of Incisional hernias




Operative
Type of incision
Technique, and material
Type of operation
Drains
Post operative
Wound infection
Abdominal distension.
Coughing.



Pathology

- Most hernias develop within one year post operation, rare after 3 years.
- Irreducible , multi-loculated.

ما بترجع بشكل كامل

أكثر من غرفة



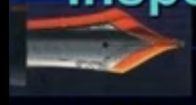
- Every Incisional hernia should be repaired. so any incisional hernia need surgical ##
- Recurrence rate is high 10%. any may reach to 30% حسب مين بيعالج وكيفها



Examination of the groin

- Standing position
- Recumbent
- Look and feel from in front
- Above or below pubic tubercle
- Scrotal or inguino-scrotal swelling
- Look and examine from the side

Inspection



- Site
- Position
- Shape
- Size
- Surface
- Edge
- Skin over the swelling
- Cough impulse