



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The External Oblique

ANATOMY • LECTURE 23

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 23: The External Oblique

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

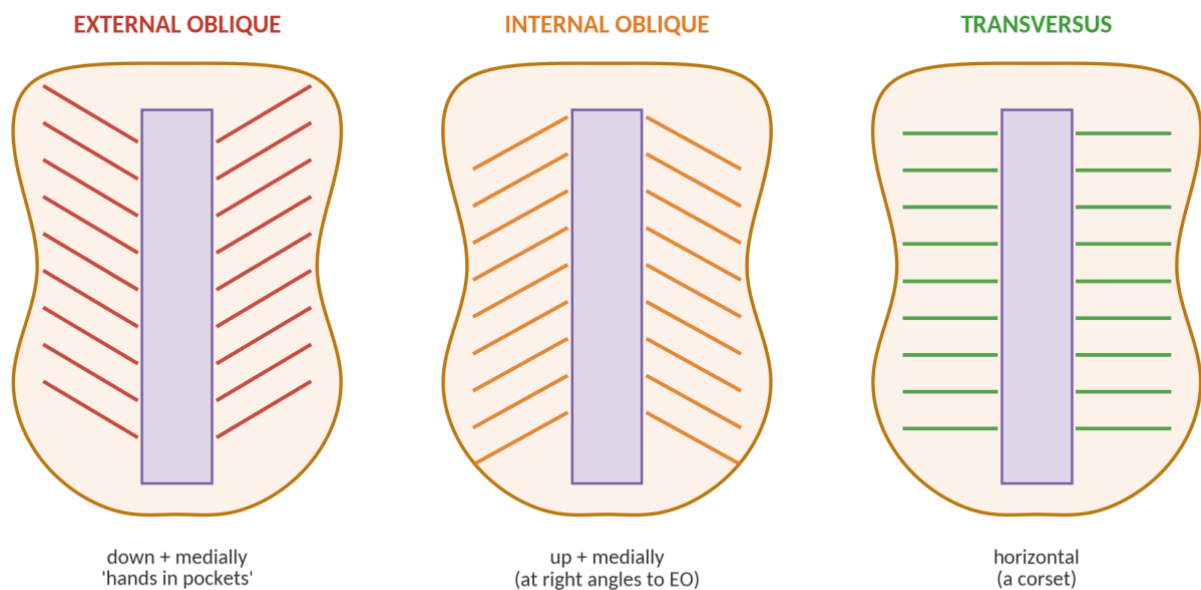
EXTERNAL OBLIQUE	INTERNAL OBLIQUE	TRANSVERSUS	RECTUS	TRANSVERSALIS FASCIA	LIGAMENTS
------------------	------------------	-------------	--------	----------------------	-----------

LEARNING OBJECTIVES — tick off as you go

- ☐ Describe the origin, insertion and fibre direction of the external oblique.
- ☐ List the specialised structures formed from its aponeurosis.
- ☐ Describe the walls of the inguinal canal and its contents in the female.
- ☐ State the nerve and blood supply and the actions of the muscle.
- ☐ Apply to incisions, hernias, nerve injury and TAP block.

1 Overview

IN ONE LINE: The largest and most superficial of the three flat muscles of the anterolateral abdominal wall — fibres run down and forwards, like hands going into coat pockets.



Outside in: EO → IO → TA • nerves and vessels run between IO and TA (the neurovascular plane)

Figure 1. Three layers, three fibre directions.

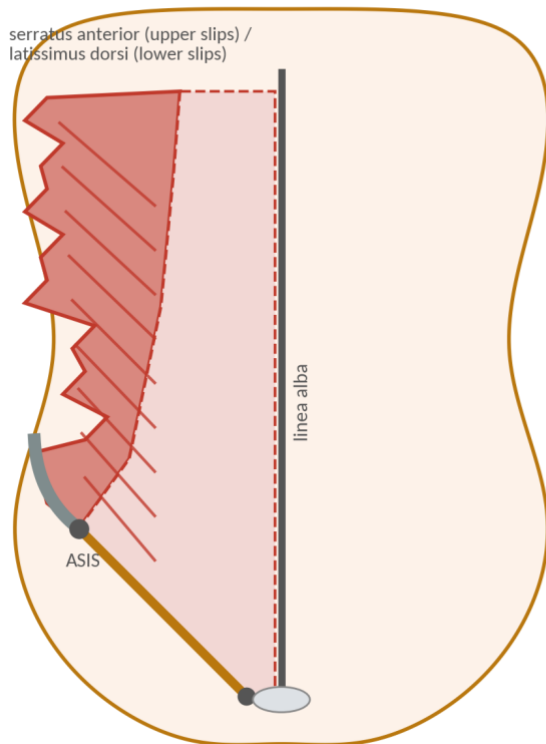
MNEMONIC / MEMORY HOOK

EO = 'hands in pockets' (down + medial). IO is at right angles (up + medial). TA runs across like a corset.

- **Embryology:** from the hypaxial part of the myotomes; the segmental nerves (T7–L1) keep their supply and run in the plane **between IO and TA**.

2 Origin and Insertion

Patient's right external oblique — front view (schematic)



ORIGIN: outer surfaces of ribs 5–12

8 fleshy slips • interdigitate with serratus anterior (upper) and latissimus dorsi (lower)

FLESHY → APONEUROTIC

about the mid-clavicular line above and the spino-umbilical line below

→ ANTERIOR RECTUS SHEATH + LINEA ALBA

EO always passes IN FRONT of rectus

→ ANTERIOR HALF OF THE ILIAC CREST

outer lip

→ INGUINAL LIGAMENT

free rolled lower edge: ASIS → pubic tubercle

→ PUBIC CREST + TUBERCLE

via the crura of the superficial ring

Figure 2. From ribs 5–12 to the midline, iliac crest and pubis.

ORIGIN

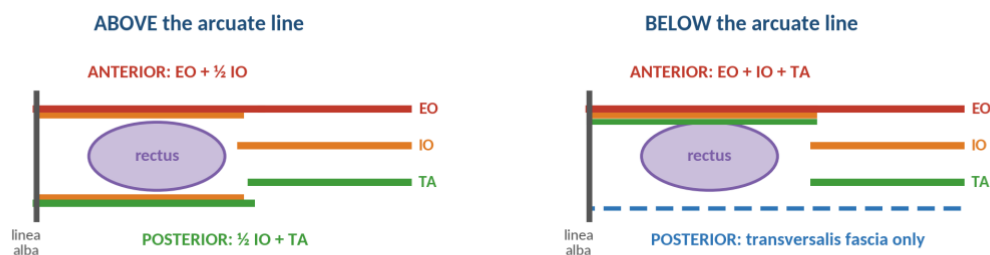
- **Eight fleshy slips** from the outer surfaces and lower borders of **ribs 5–12**
- Upper slips interdigitate with **serratus anterior**, lower slips with **latissimus dorsi**
- Becomes aponeurotic at about the mid-clavicular line above and the spino-umbilical line below

INSERTION

- **Anterior rectus sheath and linea alba** — at every level
- Outer lip of the **anterior half of the iliac crest**
- Free lower rolled edge = **inguinal ligament** (ASIS → pubic tubercle)
- **Pubic crest and tubercle** via the crura of the superficial ring

EXAM HOOK

The EO aponeurosis **never splits** — it passes **in front of rectus above AND below the arcuate line**. It is IO that splits above the arcuate line.



EO aponeurosis never splits — it passes IN FRONT of rectus at every level. Arcuate line = $\frac{1}{2}$ of the way from umbilicus to pubis; inferior epigastrics enter the sheath here.

Figure 3. The rectus sheath above and below the arcuate line.

3 Specialised Bands of the Aponeurosis

Right groin, front view — EO specialisations near the pubic tubercle (schematic)

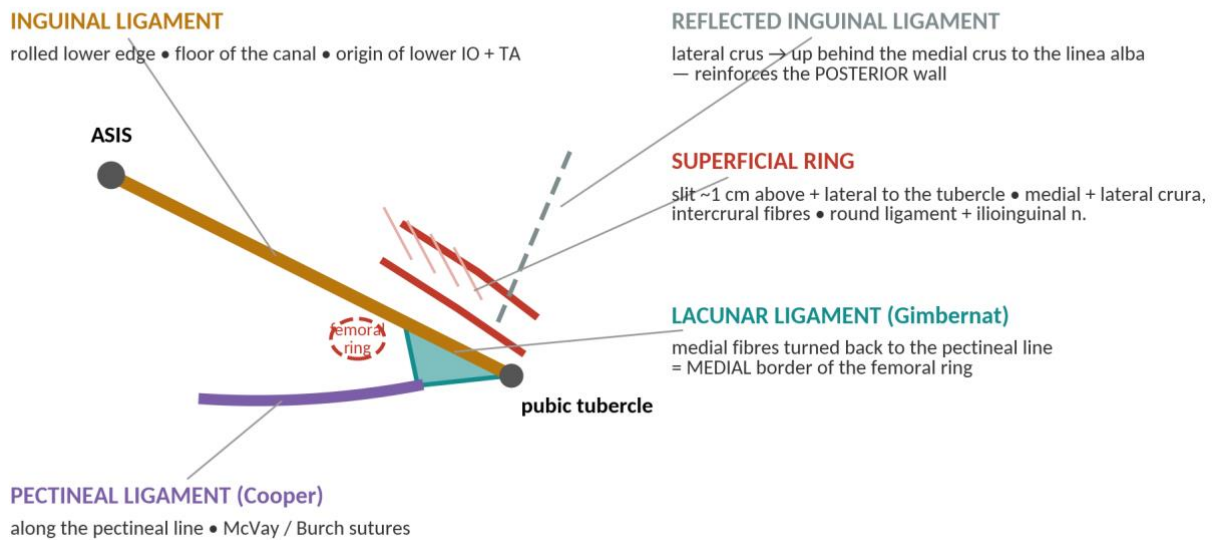
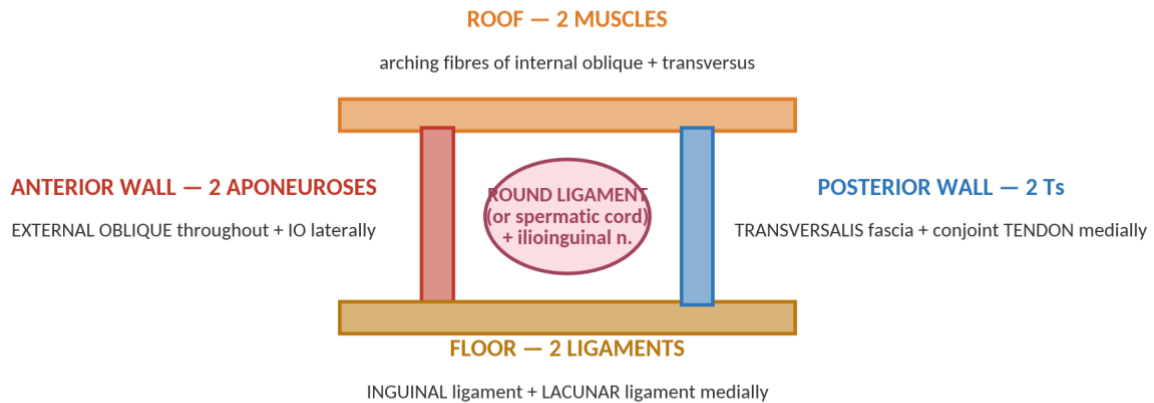


Figure 4. The medial end of the inguinal ligament.

Structure	Anatomy
Inguinal ligament (Poupart)	Rolled lower border, ASIS → pubic tubercle; floor of the inguinal canal; origin of the lower fibres of IO and TA
Lacunar ligament (Gimbernat)	Triangular medial fibres turned back to the pectineal line — medial border of the femoral ring
Pectineal ligament (Cooper)	Continues along the pectineal line of the superior pubic ramus — used in Burch colposuspension and McVay repair
Reflected inguinal ligament	From the lateral crus, up behind the medial crus to the linea alba — reinforces the POSTERIOR wall behind the superficial ring
Superficial inguinal ring	Triangular slit ~1 cm above and lateral to the pubic tubercle; medial and lateral crura joined by intercrural fibres; transmits the round ligament (or cord) and ilioinguinal nerve

4 The Inguinal Canal

Mnemonic 'MALT' — clockwise from the roof: 2 Muscles • 2 Aponeuroses • 2 Ligaments • 2 Tendons/fascia



Schematic cross-section of the canal (anterior on the LEFT)

Figure 5. Walls of the canal — 'MALT'.

MNEMONIC / MEMORY HOOK

MALT, clockwise from the roof: 2 **M**uscles (roof: IO + TA arching fibres) • 2 **A**poneuroses (anterior: EO + IO laterally) • 2 **L**igaments (floor: inguinal + lacunar) • 2 **T**s (posterior: transversalis fascia + conjoint tendon).

- **Female contents:** round ligament of the uterus (deep ring → canal → superficial ring → labium majus), ilioinguinal nerve, genital branch of the genitofemoral nerve, lymphatics. A patent processus vaginalis here = **canal of Nuck** (hernia or hydrocele).

5 Nerve Supply, Blood Supply and Actions

NERVES

- **T7–T11** thoraco-abdominal (lower intercostal) nerves
- **T12** subcostal nerve
- Small contribution from **L1** (iliohypogastric)
- They run between IO and TA and reach EO from its deep surface

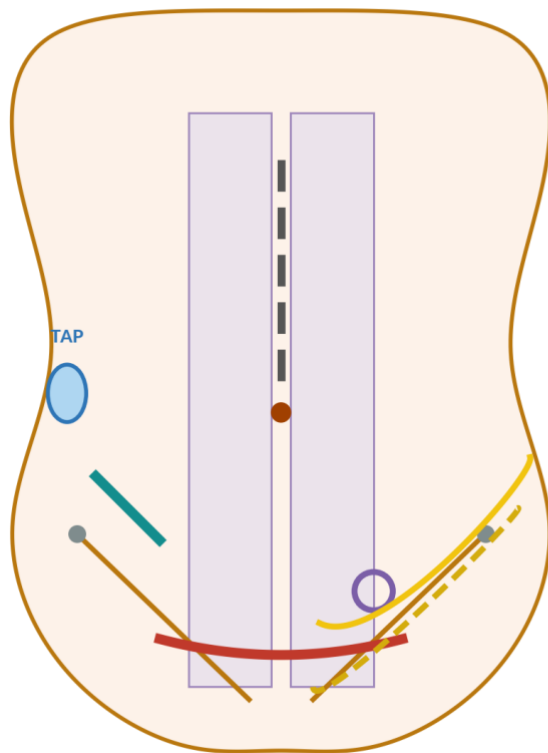
ARTERIES

- Lower posterior intercostal (T7–T11) and subcostal arteries
- Superior + inferior epigastric (mainly to rectus)
- **Deep circumflex iliac** along the iliac crest
- Skin: superficial epigastric, superficial circumflex iliac, external pudendal (femoral)

Action	How
Compress the abdomen	Bilateral — raises intra-abdominal pressure: defecation, micturition, bearing down in labour, vomiting, coughing, forced expiration
Flex the trunk	Bilateral, with rectus
Rotate the trunk	Right EO + left IO rotate the trunk to the left (opposite side)
Side-bend	Unilateral, with quadratus lumborum
Posture	Stabilises the lumbar spine and pelvis; depresses the lower ribs in forced expiration

6 Surgical and Clinical Relevance

Incisions, nerves and hernias



PFANNENSTIEL

rectus sheath incised transversely 2–3 cm above the symphysis; recti separated in the midline, not cut

GRIDIRON / LANZ (right iliac fossa)

EO aponeurosis split along its fibres, then IO and TA along theirs

ILIOHYPOGASTRIC + ILIOINGUINAL NERVES

pierce IO near the ASIS and run under the EO aponeurosis — at risk at the lateral ends of low transverse incisions

SPIGELIAN HERNIA

through the IO/TA aponeurosis at the linea semilunaris, usually UNDER an intact EO aponeurosis

TAP BLOCK

ultrasound: EO → IO → local anaesthetic between IO and TA

Figure 6. Incisions, nerves and hernias related to EO.

INCISIONS

- **Pfannenstiel**: transverse, 2–3 cm above the symphysis; the rectus sheath (all three aponeuroses at this level) is cut transversely and the recti are separated in the midline
- **Gridiron / Lanz**: each muscle layer is split along its own fibre direction

NERVE INJURY

- **Iliohypogastric** and **ilioinguinal** nerves pierce IO near the ASIS and run under the EO aponeurosis
- Lateral extension of low transverse incisions (or lateral port closure) can trap or cut them → chronic groin / labial pain or numbness

HERNIAS

- Inguinal hernias leave through the **superficial ring** — **direct** through Hesselbach's triangle (weak posterior wall), **indirect** through the deep ring (patent processus vaginalis / canal of Nuck)
- **Spigelian**: through the IO/TA aponeurosis at the linea semilunaris, usually **under an intact EO aponeurosis** — easily missed

TAP BLOCK

- Ultrasound: identify **EO → IO → TA**
- Local anaesthetic goes **between IO and TA** (the neurovascular plane), not under EO
- Useful after caesarean section and laparoscopy

★ PEARL — the conjoint tendon

The **conjoint tendon (falx inguinalis)** is NOT from the external oblique — it is the fused medial aponeuroses of **internal oblique** and **transversus** inserting onto the pubic crest and pectineal line.

Weak conjoint tendon / posterior wall → **direct** hernia. Patent processus vaginalis → **indirect** hernia.

7 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

8 Slips of origin	5–12 Ribs of origin	T7–T12 Nerve supply	1 cm Superficial ring above + lateral to tubercle
3 Flat muscles	2 × 4 MALT walls	2–3 cm Pfannenstiel above symphysis	1/3 Arcuate line: umbilicus → pubis

HIGH-YIELD CHECKLIST

- ☐ EO: largest, most superficial flat muscle; fibres down + medial.
- ☐ Origin ribs 5–12 (8 slips) interdigitating with serratus anterior and latissimus dorsi.
- ☐ Insertion: linea alba, anterior rectus sheath (all levels), anterior iliac crest, pubic crest/tubercle.
- ☐ Inguinal ligament = rolled lower edge, ASIS → pubic tubercle.
- ☐ Lacunar ligament = medial border of the femoral ring; pectineal (Cooper's) ligament along the pectineal line.
- ☐ Superficial ring ~1 cm above + lateral to the pubic tubercle.
- ☐ Inguinal canal walls: MALT; female canal carries the round ligament + ilioinguinal nerve.
- ☐ Nerves T7–T12 (± L1) running between IO and TA.
- ☐ Conjoint tendon = IO + TA, not EO.
- ☐ TAP block: local anaesthetic between IO and TA.
- ☐ Iliohypogastric/ilioinguinal injury at lateral ends of low transverse incisions.

Quick-fire self-test — cover the right-hand column

Question	Answer
Direction of EO fibres?	Down, forwards and medially
Ribs of origin?	5–12
Does EO form part of the posterior rectus sheath?	No — anterior sheath only, at every level
What forms the floor of the inguinal canal?	Inguinal ligament (+ lacunar ligament medially)
Medial border of the femoral ring?	Lacunar ligament
Ligament used in Burch colposuspension?	Pectineal (Cooper's) ligament
Where is the superficial inguinal ring?	~1 cm above and lateral to the pubic tubercle
What forms the conjoint tendon?	Internal oblique + transversus abdominis aponeuroses
Which muscles rotate the trunk to the left?	Right EO + left IO
Where does local anaesthetic go in a TAP block?	Between internal oblique and transversus
Where does a Spigelian hernia usually lie?	Under an intact EO aponeurosis at the linea semilunaris

8 References

- Standring S, editor. Gray's Anatomy. 42nd ed. 2020.
- Moore KL et al. Clinically Oriented Anatomy. 8th ed. 2017.
- Drake RL et al. Gray's Anatomy for Students. 4th ed. 2019.