



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The Ovaries

ANATOMY • LECTURE 12

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 12: The Ovaries

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

OVARY	IP LIGAMENT	OVARIAN LIGAMENT	FOLLICLES	ARTERY	VEINS / LYMPH
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LEARNING OBJECTIVES — tick off as you go

- ☐ Describe ovarian gross anatomy and dimensions.
- ☐ Identify ovarian attachments (suspensory ligament, ovarian ligament, mesovarium).
- ☐ Recognise the unique peritoneal status (intraperitoneal but not covered by peritoneum).
- ☐ Describe ovarian histology, follicle structure and development.
- ☐ Describe blood supply, lymphatic drainage (DIRECT to para-aortic) and innervation.
- ☐ Apply to torsion, masses, cancer and PCOS.

1 Overview and Gross Anatomy

OÖGENESIS production of ova	STEROIDOGENESIS oestrogen, progesterone, androgens	ENDOCRINE CONTROL of the cycle and reproduction
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Feature	Key facts
Shape and size	Almond-shaped; ~3 × 1.5 × 1 cm; 5–8 g; smaller before puberty and after menopause; varies with the cycle
Surfaces / poles	Medial and lateral surfaces; tubal (upper) and uterine (lower) poles
Borders	Anterior (mesovarian) = hilum where vessels, nerves and lymphatics enter; posterior border free
Position	Ovarian fossa on the lateral pelvic wall; long axis vertical in nulliparae, more variable after pregnancy

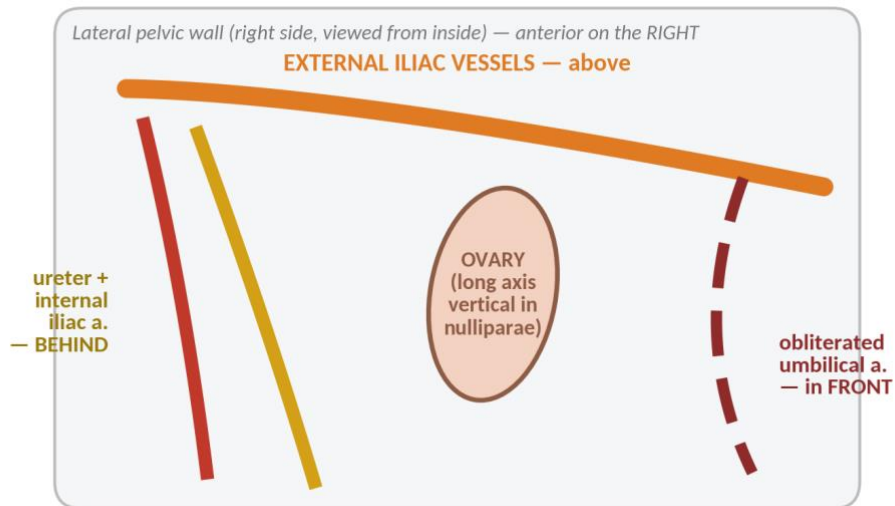


Figure 1. The ovarian fossa — three boundaries to learn.

MNEMONIC / MEMORY HOOK

Fossa boundaries: Iliac ABOVE (external iliac vessels), Umbilical in FRONT (obliterated umbilical a.), Ureter BEHIND (with the internal iliac a.).

2 Attachments

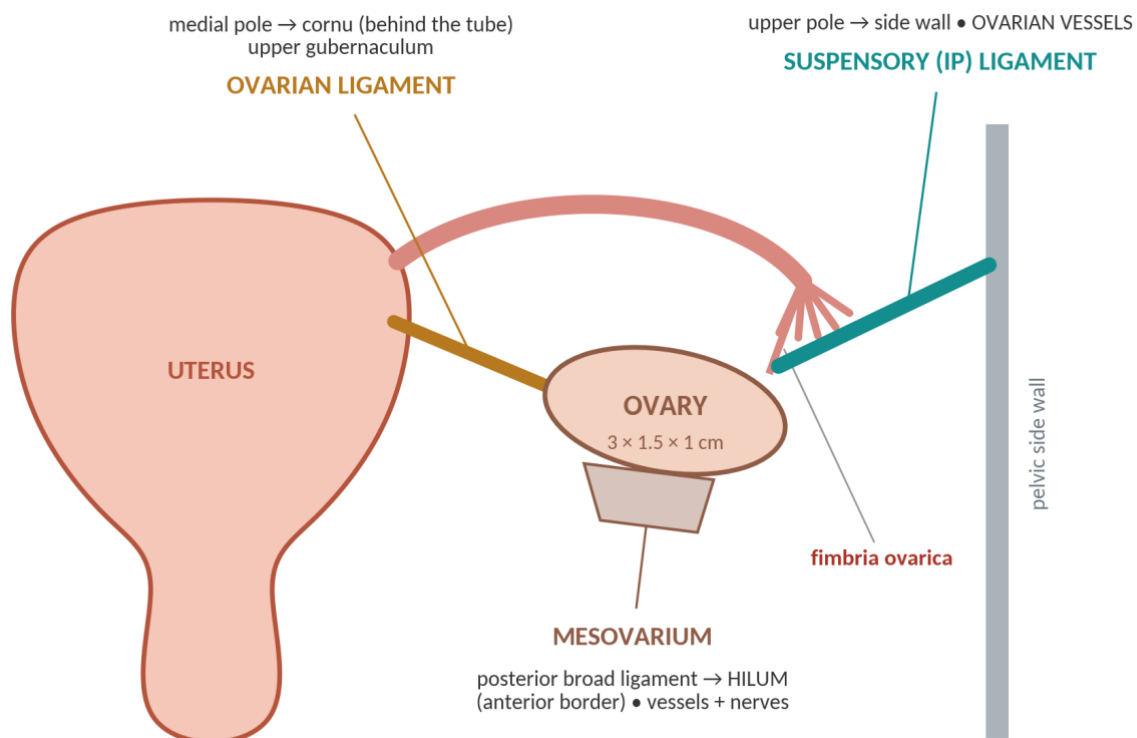


Figure 2. Three attachments — and the fimbria ovarica reaching down to the upper pole.

Attachment	Runs	Contents / point
Suspensory (infundibulopelvic)	Upper pole → lateral pelvic wall (peritoneal fold)	Ovarian artery, vein, lymphatics, nerves — key surgical structure

Attachment	Runs	Contents / point
Ovarian (utero-ovarian) ligament	Medial pole → uterine cornu, behind the tube	Upper gubernaculum; allows mobility
Mesovarium	Posterior leaf of broad ligament → hilum	Carries vessels and nerves into the ovary

3 Peritoneal Status and Histology

THE OVARY IS UNIQUE

Intraperitoneal but NOT covered by peritoneum — no serosa.

Covered by '**germinal epithelium**' — a misnomer: modified mesothelium, **not** the source of germ cells.

So: the ovum is released **straight into the peritoneal cavity** (caught by the fimbriae — rarely an abdominal pregnancy), and ovarian cancer **seeds the peritoneum** easily.

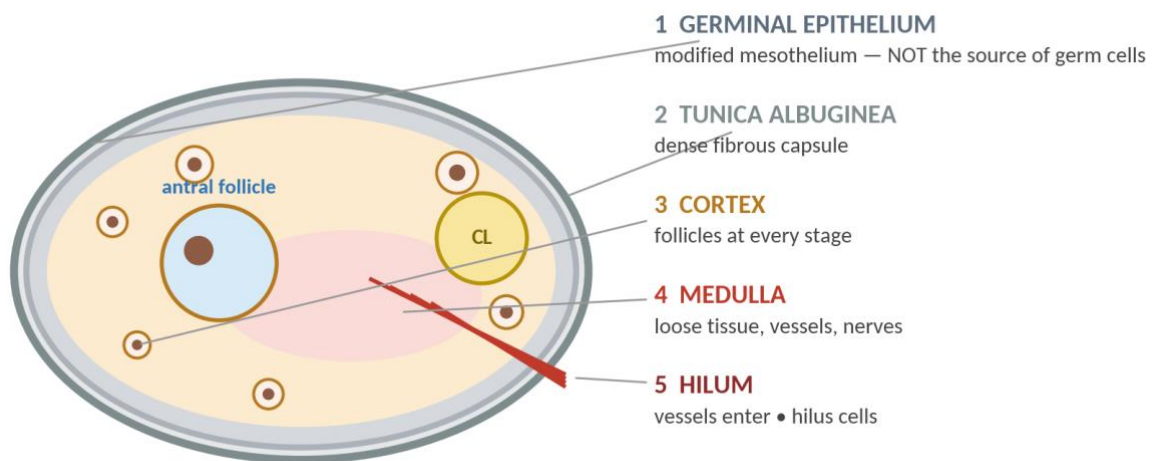


Figure 3. Five layers, from surface to hilum.

Follicle development

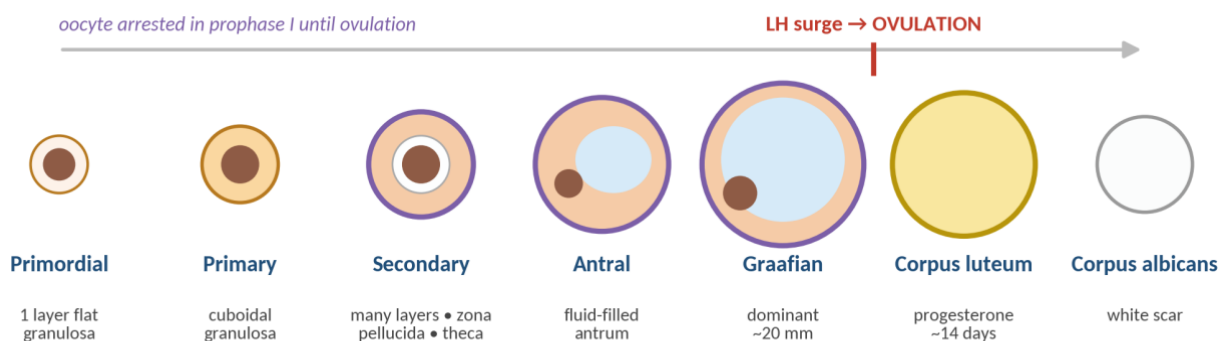


Figure 4. From primordial follicle to corpus albicans.

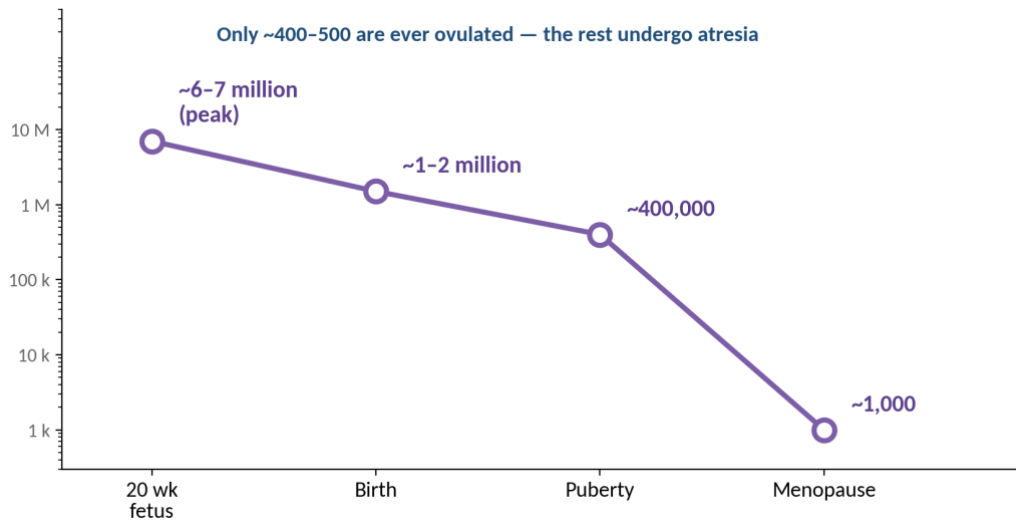


Figure 5. Oocyte numbers fall from a peak before birth.

MNEMONIC / MEMORY HOOK

'Seven, two, point-four': ~7 million at 20 weeks → ~1-2 million at birth → ~0.4 million at puberty. Only ~400-500 are ever ovulated.

4 Blood Supply, Lymphatics and Nerves

OVARIAN ARTERY — from the AORTA at L2

- 1. Descends retroperitoneally on psoas
- 2. Crosses in front of the ureter, then the **external iliac vessels** at the brim
- 3. Enters the **IP ligament**
- 4. Reaches the hilum via the **mesovarium**
- 5. Anastomoses with the **uterine a.** in the broad ligament; tubal branches

VEINS — asymmetric

- **Pampiniform plexus** → ovarian vein
- **Right** → **IVC**
- **Left** → **left renal vein** (right angle — congestion-prone)
- Ovarian vein thrombosis: right > left, postpartum
- Pelvic congestion: left ovarian vein insufficiency

LYMPH — DIRECT to PARA-AORTIC (L1-L2)

- Right → precaval / aortocaval nodes
- Left → para-aortic nodes around the left renal vein
- **Not primarily pelvic** — minor routes to external iliac (uterine vessels) and superficial inguinal (round ligament)
- Para-aortic metastases possible with clear pelvic nodes

NERVES

- Sympathetic **T10-T11** along the ovarian artery (aortic plexus); minor parasympathetic
- Visceral pain → **T10-T11**: ipsilateral flank, periumbilical to groin
- Torsion/rupture can mimic **appendicitis** (right) or **renal colic**

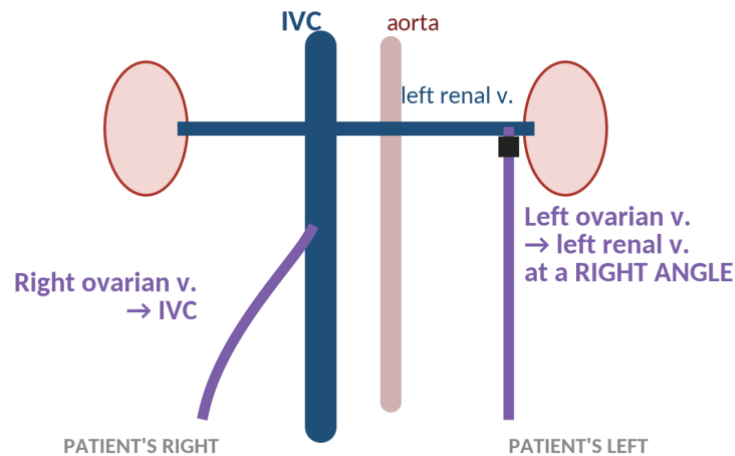


Figure 6. Right and left ovarian veins drain differently (from Lecture 3).

EXAM HOOK

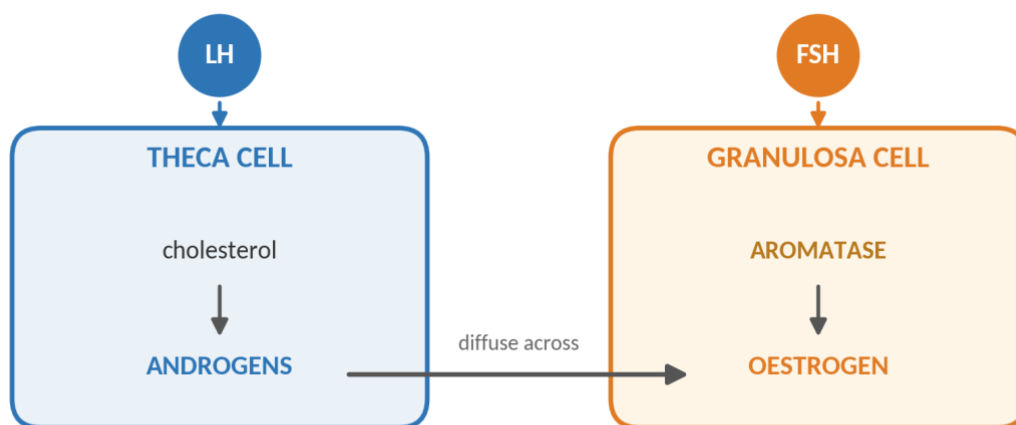
Remember the ovary by where it was born: it starts high on the posterior abdominal wall, so its **artery** (aorta, L2), **veins** (IVC / left renal) and **lymph** (para-aortic, L1–L2) all still go back up there.

5 Embryology

4–6 weeks bipotential gonadal ridge (intermediate mesoderm)	PGCs migrate yolk sac → dorsal mesentery of hindgut → ridge	No SRY ovarian genes (WNT4, RSPO1, FOXL2) → ovary	Descent to the pelvis — less far than the testis
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- Oogonia divide mitotically at **12–16 weeks**; peak **~7 million at 20 weeks**; primary oocytes arrested in **prophase I** until ovulation.
- Gubernaculum: **upper** → ovarian ligament, **lower** → round ligament.

6 Ovarian Function



LH surge → ovulation • LH keeps the corpus luteum making progesterone • hCG takes over in pregnancy (to ~10 weeks)

Figure 7. Two cells, two gonadotrophins.

- HPO axis: GnRH → FSH + LH → ovary. **Ovulation** mid-cycle (day 14 of 28) after the **LH surge**; oocyte released into the peritoneal cavity and caught by the fimbriae.
- **Corpus luteum**: ~14 days without pregnancy; maintained by **hCG** in pregnancy until the placenta takes over (~10 weeks).

7 Clinical Correlations

OVARIAN TORSION

- Twists on its vascular pedicle (IP ligament) → ischaemia
- More likely if enlarged (cyst, tumour, hyperstimulation)
- **Right > left** (sigmoid protects the left)
- Acute pain, vomiting, tender mass; Doppler may be normal
- **Surgical emergency:** detorsion ± cystectomy/oophorectomy; oophorectomy if necrotic

CYSTS

- **Functional** (commonest; resolve): follicular, corpus luteum, theca lutein
- **Pathological:** dermoid, endometrioma, cystadenoma, cystadenocarcinoma
- Risk scoring: **IOTA / RMI** — size, locules, solid parts, septa, vascularity

OVARIAN CANCER

- **Epithelial ~90%** (high-grade serous commonest; endometrioid, clear cell, mucinous)
- Germ cell (young); sex cord-stromal (granulosa, thecoma, Sertoli-Leydig)
- Spread: **peritoneal** > lymphatic (para-aortic) > blood (late)
- CA-125, USS, RMI, CT; late presentation

PCOS

- **2 of 3:** oligo/anovulation, hyperandrogenism, polycystic ovaries
- PCO on USS (current international guideline): **≥20 follicles per ovary** and/or **volume ≥10 mL**; AMH may be used in adults
- Insulin resistance, metabolic risk
- Lifestyle, metformin, COC, ovulation induction

OHSS

- Complication of fertility treatment
- Enlarged ovaries, ascites, pleural effusion — third spacing
- **VTE risk;** graded mild → critical

PREMATURE OVARIAN INSUFFICIENCY

- Loss of function **before 40**
- Idiopathic, genetic (Turner, fragile X), iatrogenic, autoimmune
- **HRT until ~51**

CLINICAL LINK

Surgery: identify the **ureter before clamping the IP ligament**; para-aortic lymphadenectomy for ovarian cancer staging; **cystectomy over oophorectomy** for benign disease in young women.

8 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

3×1.5×1 cm • 5–8 g	L2 Ovarian artery (aorta)	L1–L2 Para-aortic lymph	T10–T11 Sympathetic / pain
~7 M Oocytes at 20 weeks	~400 k At puberty	~14 d Corpus luteum life	≥20 Follicles = PCO (2023)

HIGH-YIELD CHECKLIST

- ☐ 3 × 1.5 × 1 cm, 5–8 g; ovarian fossa of the lateral pelvic wall.
- ☐ Attachments: IP ligament (ovarian vessels), ovarian ligament (to cornu), mesovarium (to hilum).
- ☐ Intraperitoneal but NOT covered by peritoneum — germinal epithelium.
- ☐ Layers: germinal epithelium → tunica albuginea → cortex (follicles) → medulla.
- ☐ Ovarian artery from the AORTA at L2 — not the internal iliac.
- ☐ Right ovarian vein → IVC; left → left renal vein.
- ☐ Lymph DIRECT to para-aortic nodes at L1–L2.
- ☐ Pain via T10–T11 → flank/periumbilical; mimics appendicitis or renal colic.
- ☐ ~7 million oocytes at 20 weeks, 1–2 million at birth, ~400,000 at puberty; arrested in prophase I.
- ☐ Torsion: right > left; surgical emergency; detorse if viable.
- ☐ Corpus luteum ~14 days; hCG maintains it in pregnancy.
- ☐ Ovarian cancer spreads mainly by peritoneal seeding; para-aortic nodes often involved.

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

Question	Answer
Where does the ovarian artery arise?	Abdominal aorta at L2
Where does the left ovarian vein drain?	Left renal vein
First lymph nodes for the ovary?	Para-aortic (L1–L2)
Which ligament carries the ovarian vessels?	Suspensory (infundibulopelvic)
What covers the ovary instead of peritoneum?	Germinal epithelium (modified mesothelium)
Boundary of the ovarian fossa behind?	Ureter and internal iliac artery
When is the oocyte number at its peak?	~20 weeks' gestation (~7 million)
Meiosis arrested at which stage until ovulation?	Prophase I
Which cell makes androgens under LH?	Theca cell
Which side twists more often, and why?	Right — the sigmoid limits the left
Nerve roots for ovarian pain?	T10–T11

9 References

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