PIPADOR REVISION

MRCOG Part 1 Revision Notes

Formation of the Fallopian Tubes

EMBRYOLOGY • LECTURE 61

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 61: Formation of the Fallopian Tubes

Embryology • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

MÜLLERIAN	WOLFFIAN	TUBE	CLINICAL	CANCER

LEARNING OBJECTIVES — tick off as you go

- ☐ Describe the Müllerian ducts and the fate of their three parts.
- ☐ Name the regions of the tube, their functions, blood supply and lymph drainage.
- ☐ Explain tubal function — cilia, fluid and hormonal control.
- ☐ Recognise MRKH, embryological remnants and tubal anomalies.
- ☐ Apply to ectopic pregnancy, hydrosalpinx, tubal testing, sterilisation and the tubal origin of serous cancer.

1 The Müllerian Ducts

IN ONE LINE: *Each tube is the UNFUSED upper part of a Müllerian duct — kept because there is no AMH.*

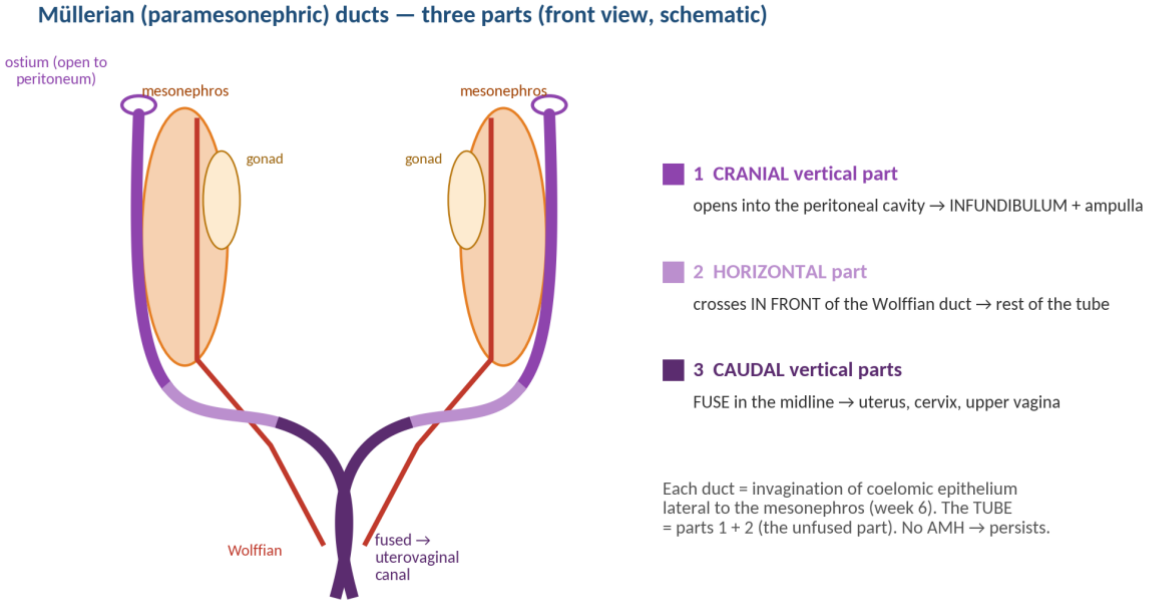


Figure 1. Three parts of the Müllerian duct.

- **Week 6**: coelomic epithelium lateral to the mesonephros invaginates → Müllerian duct, lateral to the Wolffian duct. It grows down, crosses **in front of** the Wolffian duct and fuses with its partner.
- **Male**: Sertoli AMH (from ~week 7–8) → regression; remnants = **appendix testis** (top) and **prostatic utricle** (bottom).

2 Regions, Supply and Structure

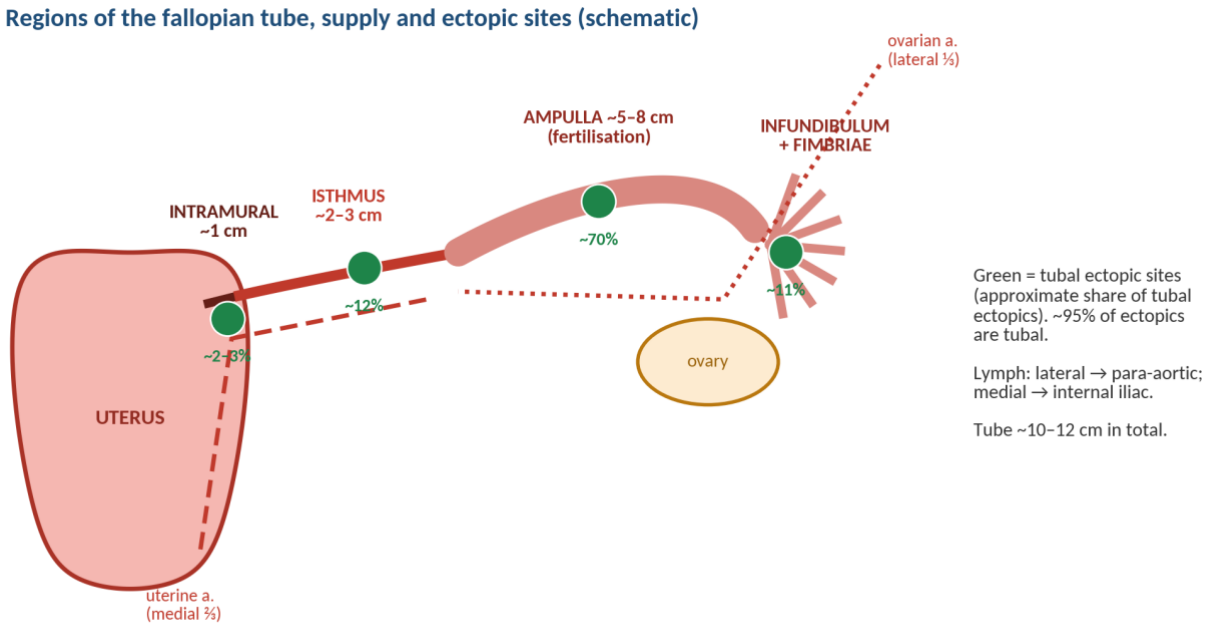


Figure 2. Regions, supply and ectopic sites.

Region	Length	Function
Intramural (interstitial)	~1 cm	Through the uterine wall into the cavity
Isthmus	~2–3 cm	Narrow, muscular — sperm reservoir; controls embryo transit (sterilisation clips go here)
Ampulla	~5–8 cm	Widest — site of fertilisation and commonest ectopic site
Infundibulum	Funnel	Fimbriae pick up the ovulated oocyte

- **Epithelium** (not 'endothelium'): **ciliated** + **secretory (PAX8+)** cells; smooth muscle and serosa from surrounding mesoderm.
- **Function**: cilia beat towards the uterus; tubal fluid (glucose, amino acids, bicarbonate) feeds the gametes and embryo. **Oestrogen** ↑ cilia and contractions; **progesterone** ↓ cilia and relaxes the isthmus. Primary ciliary dyskinesia can reduce fertility and raise ectopic risk.

MNEMONIC / MEMORY HOOK

Medial → lateral: 'I-I-A-I' — Intramural, Isthmus, Ampulla, Infundibulum. The tube WIDENS as it goes out; fertilisation (and most ectopics) in the Ampulla.

3 Anomalies and Remnants

Condition	Key points
MRKH syndrome	Müllerian agenesis/hypoplasia: 46,XX, normal ovaries and puberty, primary amenorrhoea, absent or short vagina; tubes often present but may be rudimentary. Renal anomalies ~30–40% (+ skeletal) — image the kidneys
Accessory / duplicated tube	Rare; extra ostium — may predispose to ectopic or torsion

Condition	Key points
Absent tube	Usually with an absent or rudimentary uterine horn on the same side

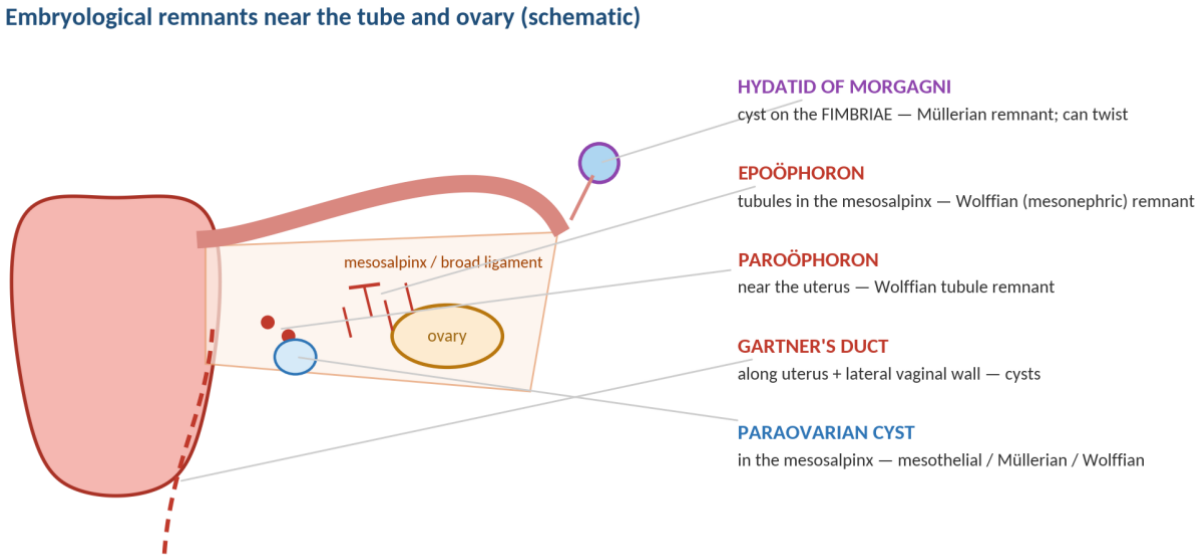


Figure 3. Müllerian vs Wolffian remnants.

4 Clinical Correlates

ECTOPIC PREGNANCY

- **~95% tubal**, ~70% of those **ampullary**
- Risks: PID, previous ectopic or tubal surgery, IUD in place at conception, IVF, smoking, age
- Damaged cilia + scarring delay transport

HYDROSALPINX + IVF

- Distal blockage → fluid-filled tube (PID, endometriosis)
- Roughly **halves IVF success** (fluid refluxes into the cavity)
- **Salpingectomy (or proximal occlusion) before IVF** improves outcomes (NICE CG156)

TUBAL TESTING (NICE CG156)

- No comorbidities: **HSG** or **HyCoSy**
- PID, endometriosis or previous surgery: **laparoscopy + dye** (can treat at the same time)
- Chlamydia screen (or prophylaxis) before uterine instrumentation

STERILISATION

- **Filshie clips** on the isthmus — lifetime failure ~1 in 200
- Reversal needs ~4 cm of healthy tube
- Hysteroscopic (Essure) devices withdrawn in 2017
- **Salpingectomy** increasingly chosen — also lowers ovarian cancer risk

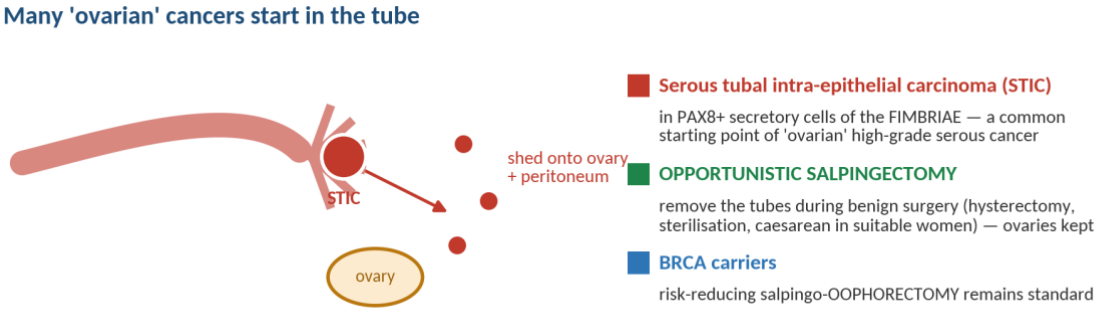


Figure 4. Tubal origin of high-grade serous cancer.

★ **PEARL**

Tube = unfused cranial + horizontal Müllerian duct; uterus/cervix/upper vagina = fused caudal parts. Hydatid of Morgagni is Müllerian; epoöphoron, paroöphoron and Gartner's duct are Wolffian.

5 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

Week 6 Müllerian ducts form	**10–12 cm** Tube length	**~95%** Ectopics that are tubal	**~70%** Tubal ectopics — ampulla
~50% IVF loss with hydrosalpinx	**1 in 200** Filshie clip failure	**~4 cm** Tube needed for reversal	**30–40%** MRKH renal anomalies

HIGH-YIELD CHECKLIST

- ☐ Müllerian ducts: coelomic epithelium, week 6, lateral to Wolffian; cross in front and fuse.
- ☐ Tube = cranial vertical + horizontal parts; fused caudal parts = uterus, cervix, upper vagina.
- ☐ No AMH → ducts persist; males: appendix testis, prostatic utricle.
- ☐ Intramural, isthmus, ampulla (fertilisation), infundibulum with fimbriae.
- ☐ Uterine a. medial ⅔, ovarian a. lateral ⅓; lymph para-aortic + internal iliac.
- ☐ Oestrogen ↑ cilia; progesterone ↓ cilia, relaxes isthmus.
- ☐ MRKH: 46,XX, normal ovaries, primary amenorrhoea, renal anomalies.
- ☐ Hydatid of Morgagni = Müllerian; epo-/paroöphoron, Gartner's = Wolffian.
- ☐ Hydrosalpinx halves IVF success — salpingectomy first.
- ☐ STIC in fimbriae → opportunistic salpingectomy.

Self-assessment — cover the right-hand column

Question	Answer
Which part of the Müllerian duct forms the tube?	The unfused cranial vertical + horizontal parts
Why do male fetuses lack tubes?	Sertoli AMH makes the Müllerian ducts regress
Site of fertilisation?	Ampulla
Where are Filshie clips applied?	Isthmus
Origin of the hydatid of Morgagni?	Müllerian (paramesonephric) remnant
Ovaries and karyotype in MRKH?	Normal ovaries, 46,XX
Effect of hydrosalpinx on IVF, and management?	About halves success — salpingectomy/occlusion first
Tubal test for a woman with no comorbidities?	HSG or HyCoSy (NICE)
Where do many high-grade serous cancers start?	Fimbrial epithelium (STIC)
Five ectopic risk factors?	PID, previous ectopic, tubal surgery, IUD in situ, IVF (also smoking)

6 References

- Sadler TW. Langman's Medical Embryology. 14th ed. 2019.
- NICE CG156. Fertility problems: assessment and treatment. 2013 (updated 2017).
- RCOG / BGCS. Opportunistic salpingectomy for ovarian cancer prevention (Scientific Impact Paper / position statement).
- NICE NG126. Ectopic pregnancy and miscarriage. 2019 (updated 2023).