PIPADOR REVISION

MRCOG Part 1 Revision Notes

Formation of the Vagina

EMBRYOLOGY • LECTURE 63

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 63: Formation of the Vagina

Embryology • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

MÜLLERIAN (upper)	UROGENITAL SINUS	VAGINAL PLATE (lower)	OBSTRUCTION	CLINICAL

LEARNING OBJECTIVES — tick off as you go

- ☐ Describe the dual origin of the vagina and the vaginal plate.
- ☐ Explain the hymen and epithelial replacement (and vaginal adenosis).
- ☐ Know the vagina's blood supply, lymph drainage and nerves, and why they differ above and below.
- ☐ Recognise agenesis, transverse and longitudinal septa, imperforate hymen, persistent UG sinus.
- ☐ Work through primary amenorrhoea with cyclical pain.

1 Two Origins

IN ONE LINE: *Upper ~⅔ from the fused Müllerian ducts; lower ~⅓ from the urogenital sinus via the sinovaginal bulbs and vaginal plate.*

The vagina has two origins (sagittal, schematic)

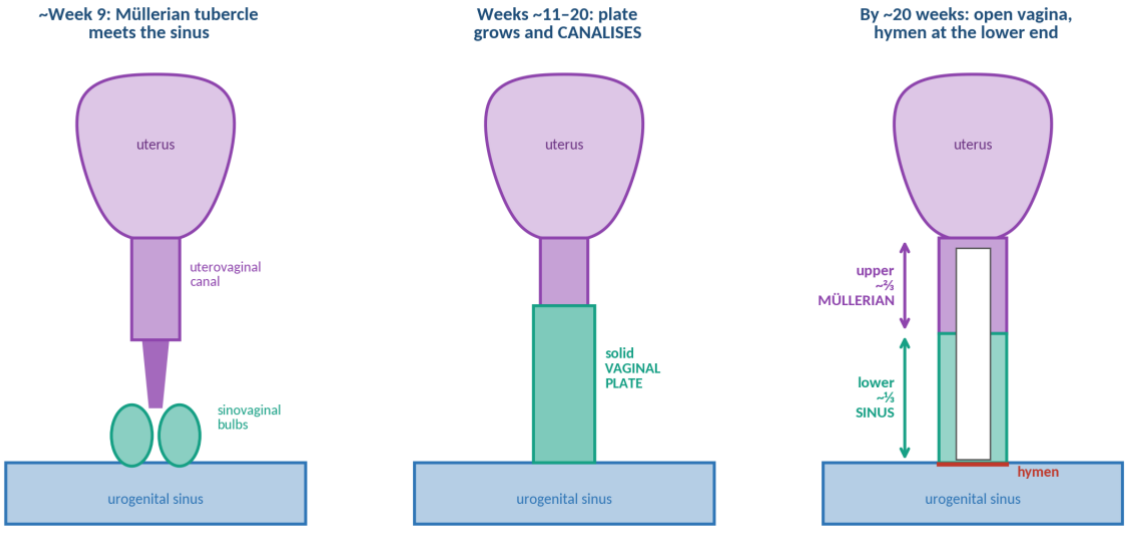


Figure 1. Uterovaginal canal meets the sinus.

- The Müllerian tubercle touches the back wall of the urogenital sinus (~week 9) → **sinovaginal bulbs** grow out → solid **vaginal plate** → **canalises (weeks ~11–20)**. Failure → **transverse vaginal septum**.
- **Hymen**: thin membrane where the canalised plate meets the sinus; normally opens in late fetal life or around birth.

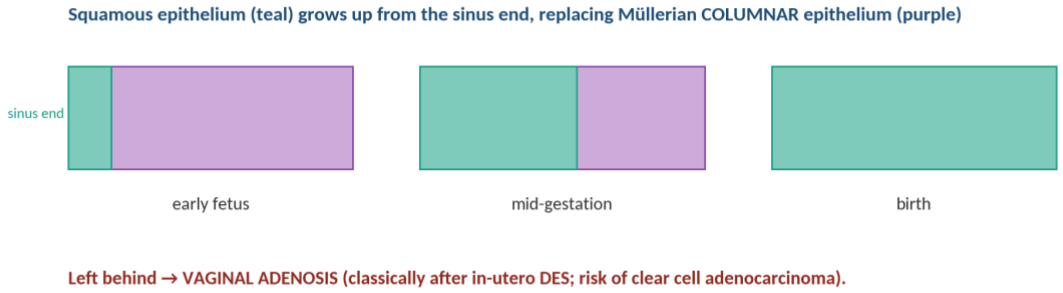


Figure 2. Squamous replaces columnar epithelium.

- Muscle and connective tissue from surrounding mesoderm; **no glands** in the vaginal wall. Oestrogen thickens the glycogen-rich epithelium; thin before puberty and after menopause. Androgen excess (CAH) virilises the lower vagina → persistent urogenital sinus.

2 Upper vs Lower Vagina

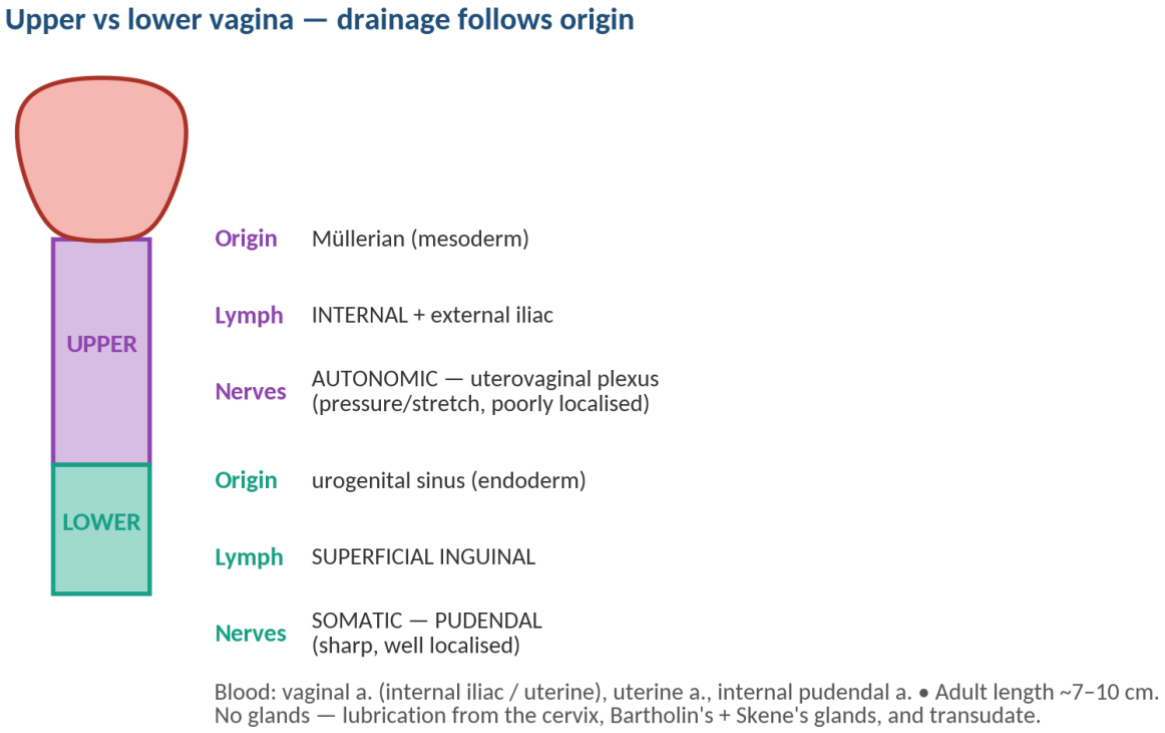


Figure 3. Supply follows origin.

MNEMONIC / MEMORY HOOK

'Upper = Up to the Iliacs, Lower = Leg nodes (inguinal)' — and lower vagina is Pudendal (somatic), so it hurts sharply.

3 Congenital Anomalies

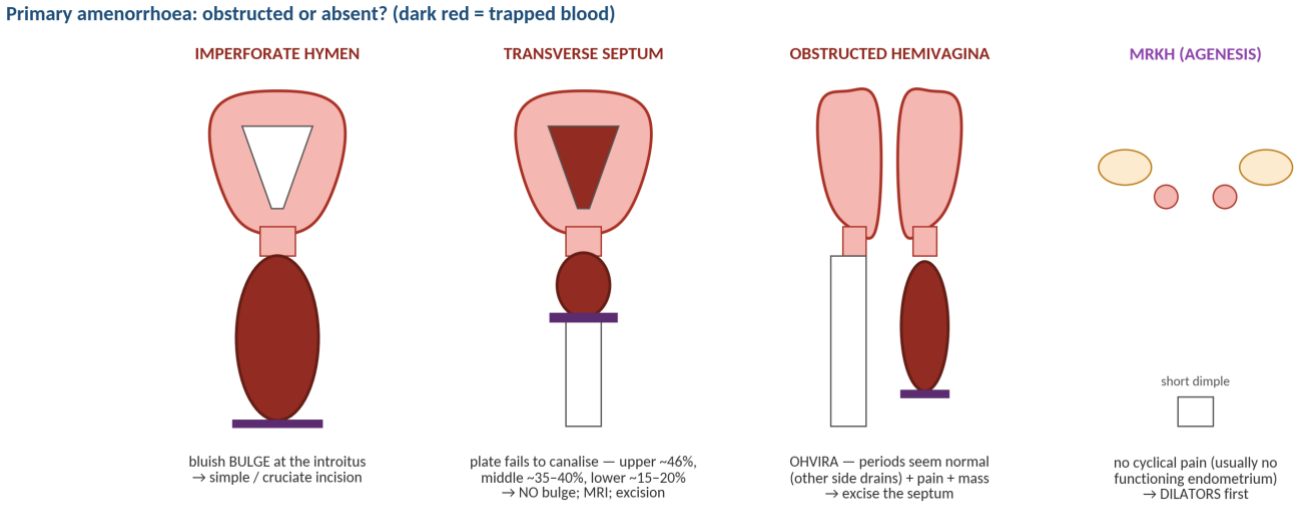


Figure 4. Obstructed or absent?

Anomaly	Key points
Imperforate hymen	Commonest obstructive anomaly of the female genital tract (~1 in 1000–2000) — note it is not Müllerian (sinus-derived). Primary amenorrhoea + cyclical pain + bluish bulging membrane; haematocolpos. Hymenotomy
Transverse vaginal septum	Vaginal plate fails to canalise; upper ~46%, middle ~35–40%, lower ~15–20%. Amenorrhoea + pain + haematocolpos/metra but no introital bulge; MRI for level and thickness; excision ± reconstruction
Longitudinal septum	Failed fusion/resorption — often with didelphys; may obstruct one side (OHVIRA) or cause dyspareunia
Vaginal agenesis	Usually MRKH (46,XX, normal ovaries); dilators first, vaginoplasty (e.g. Vecchietti) if needed. Also think of complete AIS (46,XY, no uterus, testes)
Persistent urogenital sinus	One perineal opening — virilised CAH or cloacal anomaly; MDT reconstruction
Vaginal adenosis	Columnar islands left behind — classically DES; clear cell adenocarcinoma risk

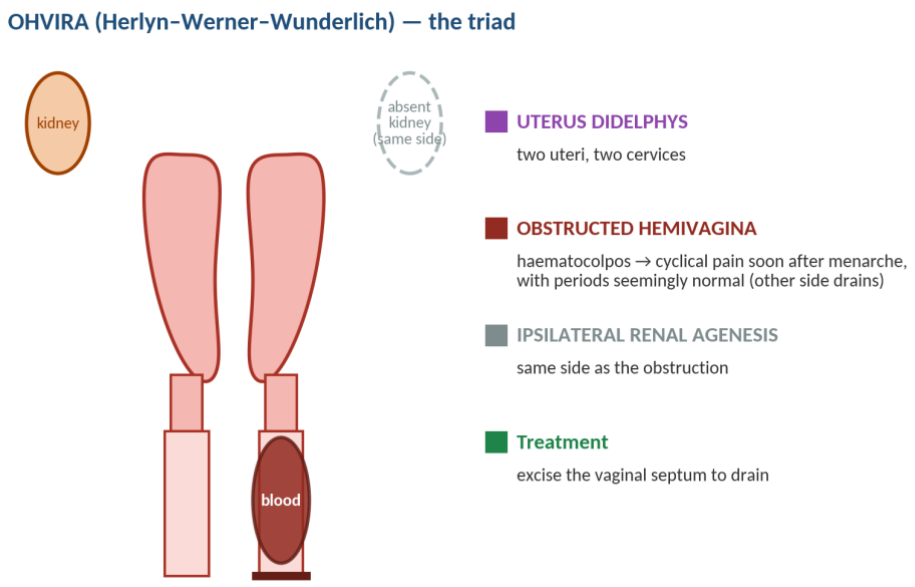


Figure 5. OHVIRA (from Lecture 62).

4 Clinical Approach

AMENORRHOEA + CYCLICAL PAIN

- Normal secondary sexual characteristics + monthly pain → **outflow obstruction**
- Look: bulge = hymen; no bulge = septum
- Transabdominal US (not TVS in adolescents) → haematocolpos / haematometra; **MRI** for planning; EUA if needed

SUPPORT + FERTILITY

- Specialist adolescent gynaecology + psychology
- Sexual function generally good after dilators or surgery
- MRKH: **uterine transplantation** has led to live births since 2014 (Sweden), now also in the UK — still limited
- DES daughters: historical surveillance for clear cell cancer

★ PEARL

Bulge at the introitus = imperforate hymen; no bulge = transverse septum.

Upper vagina → iliac nodes; lower vagina → superficial inguinal nodes — because of its dual origin.

5 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

~⅔ / ~⅓ Müllerian / sinus	**Wk 11–20** Plate canalises	**~46%** Septa in upper third	**1:1000–2000** Imperforate hymen
7–10 cm Adult vagina	**0** Glands in the wall	**46,XX** MRKH	**46,XY** Complete AIS

HIGH-YIELD CHECKLIST

- ☐ Upper ~⅔ Müllerian; lower ~⅓ urogenital sinus (sinovaginal bulbs → vaginal plate).
- ☐ Plate canalises weeks ~11–20; failure → transverse septum.
- ☐ Squamous replaces columnar; leftover columnar = adenosis (DES).
- ☐ No glands in the vaginal wall.
- ☐ Upper: iliac nodes, autonomic nerves. Lower: superficial inguinal nodes, pudendal nerve.
- ☐ Imperforate hymen: commonest obstruction, bluish bulge, hymenotomy (not Müllerian).
- ☐ Transverse septum: no bulge, MRI, excision.
- ☐ Longitudinal septum ± didelphys; OHVIRA triad.
- ☐ Agenesis: MRKH (dilators first) vs complete AIS.
- ☐ Persistent UG sinus: CAH.

Self-assessment — cover the right-hand column

Question	Answer
Origins of the upper and lower vagina?	Upper — Müllerian; lower — urogenital sinus
What forms the vaginal plate?	Sinovaginal bulbs from the urogenital sinus
Failure of plate canalisation causes?	Transverse vaginal septum
Imperforate hymen vs transverse septum on examination?	Bulging bluish membrane vs no bulge
Lymph drainage of the lower vagina?	Superficial inguinal nodes
Embryological basis of vaginal adenosis?	Incomplete squamous replacement of Müllerian columnar epithelium
First-line treatment of vaginal agenesis in MRKH?	Vaginal dilators
Components of OHVIRA?	Didelphys, obstructed hemivagina, ipsilateral renal agenesis
Cause of a single perineal opening in a virilised 46,XX baby?	CAH — persistent urogenital sinus
Does the vaginal wall have glands?	No

6 References

- Sadler TW. Langman's Medical Embryology. 14th ed. 2019.
- Grimbizis GF et al. ESHRE/ESGE classification of female genital tract congenital anomalies. 2013.
- Brännström M et al. Livebirth after uterus transplantation. Lancet 2015.