



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The Vagina

ANATOMY • LECTURE 11

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 11: The Vagina

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

VAGINA	MÜLLERIAN (upper ¼)	UROGENITAL SINUS (lower ¼)	UPPER ½	MIDDLE ½	LOWER ½
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LEARNING OBJECTIVES — tick off as you go

- ☐ Describe vaginal gross anatomy (walls, fornices, dimensions).
- ☐ Identify vaginal histology (no glands, glycogen, lactobacilli).
- ☐ Describe vaginal embryology (dual origin).
- ☐ Describe blood supply, lymphatics and innervation.
- ☐ Recognise relations and clinical correlations: pH, infections, congenital anomalies, prolapse.

1 Overview and Gross Anatomy

IN ONE LINE: A fibromuscular tube from the introitus to the cervix: birth canal, receives the penis, drains menses, and keeps an acid defence.

Sagittal view, anterior on the LEFT (schematic)

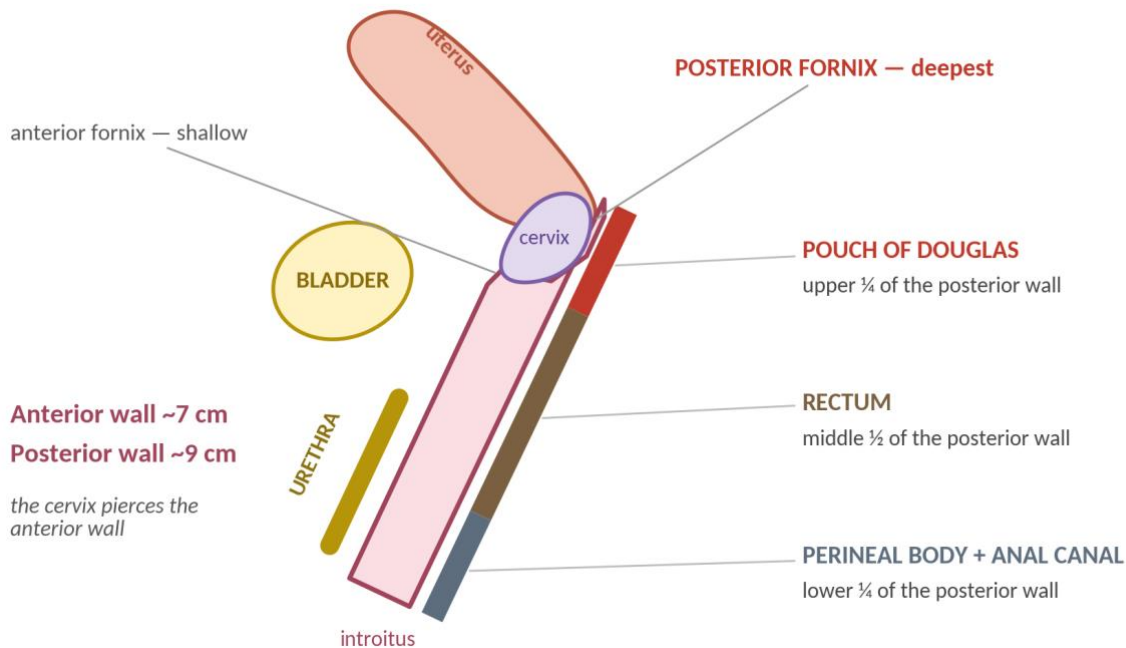


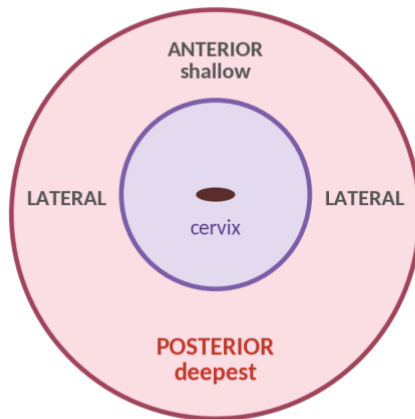
Figure 1. Sagittal view: two wall lengths, the fornices, and what lies in front and behind.

Feature	Key facts
Length	Anterior wall ~7 cm; posterior ~9 cm — the cervix pierces the anterior wall
Lumen	Walls in apposition; H-shaped in cross-section; transverse rugae (more prominent before menopause)

Feature	Key facts
Distensibility	Stretches to accommodate the fetal head
Introitus + hymen	Opening in the vestibule between the labia minora; hymen annular, septate, cribriform or imperforate

The four fornices

Four fornices — looking up the vagina



posterior fornix: culdocentesis • colpotomy • vNOTES

H-shaped lumen



walls lie in apposition; transverse rugae allow distension

Figure 2. Looking up the vagina — and the collapsed H-shaped lumen.

CLINICAL LINK

The **posterior fornix** is the deepest and lies against the **Pouch of Douglas**: culdocentesis (historical), **posterior colpotomy**, **vNOTES**.

2 Histology and the Acid Defence

MUCOSA stratified squamous NON-keratinised • NO glands • glycogen-rich • lamina propria	MUSCULARIS inner circular + outer longitudinal smooth muscle	ADVENTITIA fibroelastic tissue blending with pelvic fascia
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Lubrication comes from **cervical mucus and transudate** — there are no vaginal glands.

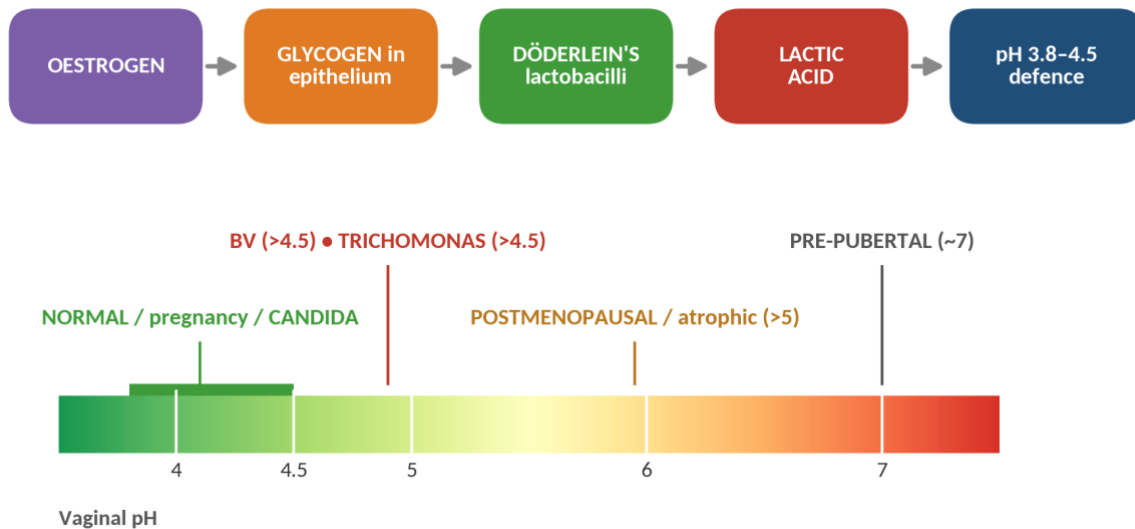


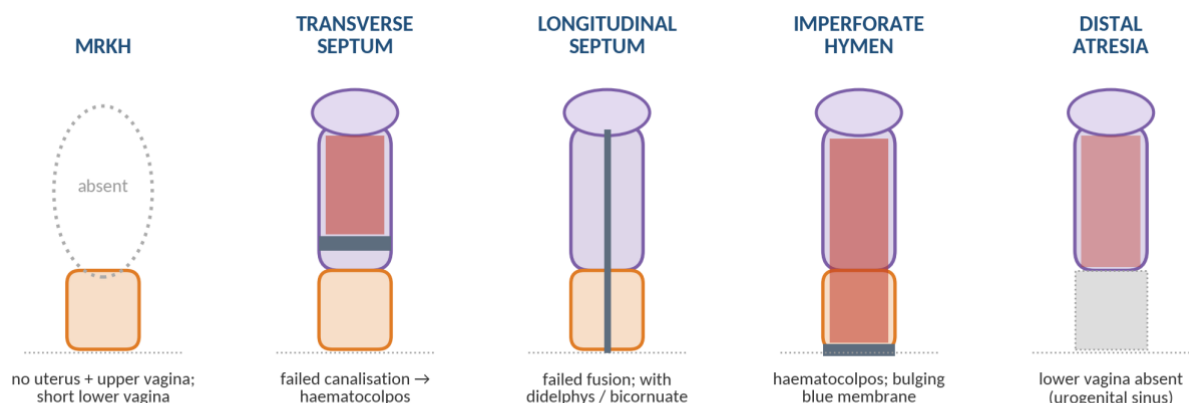
Figure 3. From oestrogen to acid — and where each condition sits on the pH scale.

Life stage	Vaginal environment
Pre-pubertal	Thin epithelium, pH ~7, few lactobacilli
Reproductive	Thick epithelium, pH 3.8–4.5, lactobacilli dominant (<i>L. crispatus</i> , <i>iners</i> , <i>jensenii</i> , <i>gasseri</i>)
Pregnancy	More glycogen and lactobacilli — more acidic
Postmenopausal	Atrophic, less glycogen, pH >5, infection-prone

3 Embryology — A Dual Origin

UPPER ⅔ — MÜLLERIAN fused caudal paramesonephric ducts	LOWER ⅓ — UROGENITAL SINUS sinovaginal bulbs
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- They meet at the **Müllerian tubercle**; the solid **vaginal plate canalises by ~5 months**.
- The **hymen** separates vagina from vestibule and normally perforates around birth.
- Some texts give the Müllerian share as the upper third — the principle (two origins, meeting low in the vagina) is what matters.



Purple = Müllerian (upper ⅔) • Orange = urogenital sinus (lower ⅓) • Red = trapped menstrual blood

Figure 4. Congenital anomalies, colour-coded by embryological origin.

Anomaly	Cause	Management
MRKH	Müllerian agenesis: no uterus or upper vagina; normal ovaries; short lower vagina	Dilators (Frank) or surgical neovagina (McIndoe)
Transverse septum	Failed canalisation/fusion; can occur at any level	Primary amenorrhoea, haematocolpos → resection
Longitudinal septum	Incomplete Müllerian fusion; with didelphys/bicornuate	Often none; dyspareunia or obstructed labour → excise
Imperforate hymen	Failed hymenal perforation	Cyclical pain, haematocolpos, bulging membrane → hymenotomy
Distal vaginal atresia	Failed urogenital sinus contribution; upper tract normal	Surgical

MNEMONIC / MEMORY HOOK

TOP missing = **MÜLLERIAN (MRKH)**. **BOTTOM** missing = **SINUS (distal atresia)**.

4 Relations

Side	Structures
Anterior	Upper: bladder base • Lower: urethra (intimate) • separated by pubocervical/vesicovaginal fascia
Posterior	Upper ¼: Pouch of Douglas • Middle ½: rectum (rectovaginal fascia) • Lower ¼: perineal body + anal canal
Lateral	Upper: cardinal ligaments, ureters (pass forward beside the upper vagina) • Middle: levator ani • Lower: vestibular bulb, bulbospongiosus, Bartholin's gland

MNEMONIC / MEMORY HOOK

Posterior wall ¼ – ½ – ¼: Douglas → Rectum → Perineal body (top to bottom).

5 Blood Supply, Lymphatics and Nerves — by Thirds

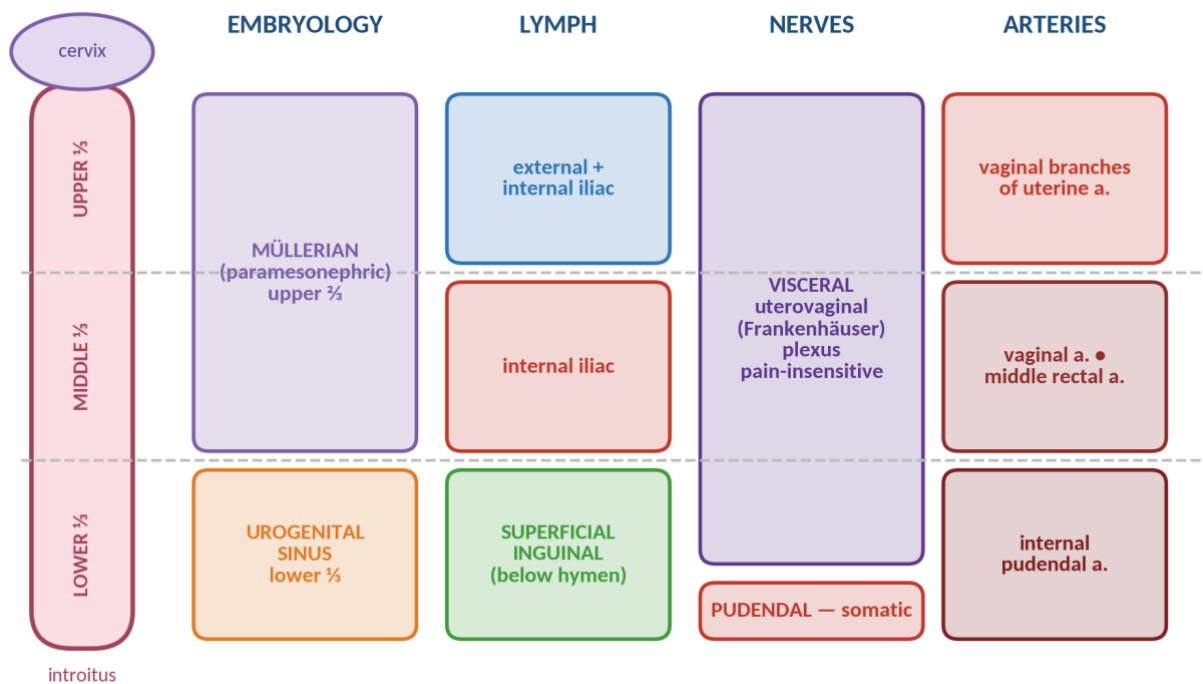


Figure 5. Everything that changes along the length of the vagina, on one chart.

ARTERIES + VEINS

- **Vaginal a.** (internal iliac, anterior division — the female inferior vesical)
- Vaginal branches of the **uterine a.**
- Middle rectal (posterior wall); **internal pudendal** (lower)
- Anterior/posterior **azygos arteries** link them
- Vaginal venous plexus → internal iliac; joins vesical, uterine, rectal plexuses

NERVES

- **Most of the vagina: visceral** — uterovaginal (Frankenhäuser's) plexus from the inferior hypogastric plexus (T10–L2 + S2–S4)
- Relatively **pain-insensitive**
- **Near the introitus: somatic pudendal (S2–S4)** — touch and pain

6 Clinical Correlations

6.1 Vaginal infections

Condition	Cause	pH	Features / treatment
Bacterial vaginosis	Gardnerella, anaerobes	>4.5	Fishy odour, thin discharge, clue cells — metronidazole
Candidiasis	Candida albicans	Normal	Itch, 'cottage cheese' discharge — azoles
Trichomoniasis	T. vaginalis (STI)	>4.5	Frothy green discharge, strawberry cervix — metronidazole, treat partner
Atrophic vaginitis	Oestrogen deficiency	>5	Dryness, dyspareunia — topical oestrogen

MNEMONIC / MEMORY HOOK

Candida is the odd one out — the pH stays NORMAL. BV and Trichomonas push it above 4.5.

6.2 Prolapse and other conditions

PROLAPSE (POP-Q)

- **Cystocele:** anterior — pubocervical fascia/paravaginal (Level II)
- **Rectocele:** posterior — rectovaginal fascia
- **Enterocele:** bowel in a peritoneal sac, upper posterior (apical failure)
- **Vault prolapse:** after hysterectomy

VAGINAL CANCER

- Rare (~2% of gynae cancers)
- Mostly **squamous**, HPV-related
- Usually **upper posterior wall**
- Direct and lymphatic spread; DES → clear cell adenocarcinoma (historical)

REPAIRS

- **Anterior colporrhaphy:** plicate pubocervical fascia
- **Posterior colporrhaphy** ± perineorrhaphy
- **Vault:** sacrospinous fixation, sacrocolpopexy, high uterosacral suspension
- **Vaginal hysterectomy** for uterine prolapse

BARTHOLIN'S CYST / ABSCESS

- Glands at **4 and 8 o'clock** at the introitus
- Duct blockage → cyst; infection → abscess
- Word catheter or marsupialisation; antibiotics if cellulitis

EXAM HOOK

Examination: inspect → speculum (cervix, fornices, walls) → bimanual via the fornices → sample the **transformation zone**. In children, refer to paediatric gynaecology.

7 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

7 / 9 cm Anterior / posterior wall	4 Fornices	3.8–4.5 Normal pH	>4.5 BV / Trichomonas
⅔ : ⅓ Müllerian : sinus	~5 mo Vaginal plate canalises	4 & 8 o'clock — Bartholin's	~2% Vaginal cancer share

HIGH-YIELD CHECKLIST

- ☐ Anterior wall ~7 cm, posterior ~9 cm.
- ☐ Four fornices; posterior is deepest, next to the Pouch of Douglas.
- ☐ Stratified squamous non-keratinised epithelium; NO glands.
- ☐ Oestrogen → glycogen → Döderlein's lactobacilli → lactic acid → pH 3.8–4.5.
- ☐ Upper ⅔ Müllerian; lower ⅓ urogenital sinus. MRKH: upper absent, lower present.
- ☐ Arteries: vaginal a., uterine a. branches, middle rectal, internal pudendal.
- ☐ Lymph: upper → external/internal iliac; middle → internal iliac; lower → superficial inguinal.
- ☐ Nerves: mostly visceral and pain-insensitive; pudendal (somatic) near the introitus.
- ☐ Imperforate hymen / transverse septum → haematocolpos, primary amenorrhoea, cyclical pain.
- ☐ BV and Trichomonas pH >4.5; Candida pH normal.
- ☐ Vaginal cancer: rare, squamous, upper posterior wall.

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

Question	Answer
Why is the posterior wall longer?	The cervix pierces the anterior wall
Deepest fornix?	Posterior
Does the vagina have glands?	No
Which organism makes the vagina acidic?	Döderlein's lactobacilli (lactic acid from glycogen)
Normal reproductive-age pH?	3.8–4.5
Infection with a normal pH?	Candidiasis
Origin of the lower third?	Urogenital sinus
MRKH — which part of the vagina is present?	The short lower part
Lymph drainage of the lower third?	Superficial inguinal nodes
Middle ½ of the posterior wall is related to...?	Rectum
Where are Bartholin's glands?	4 and 8 o'clock at the introitus

8 References

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