PIPADOR REVISION

MRCOG Part 1 Revision Notes

Formation of the Uterus

EMBRYOLOGY • LECTURE 62

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 62: Formation of the Uterus

Embryology • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

FUSION FAILURE	RESORPTION FAILURE	DEVELOPMENT FAILURE	IMAGING	CLINICAL

LEARNING OBJECTIVES — tick off as you go

- ☐ Describe the three steps of uterine development and their timing.
- ☐ Know the origins of endometrium, myometrium and perimetrium.
- ☐ Classify Müllerian anomalies (ESHRE/ESGE 2013; ASRM 2021) and link each to its developmental error.
- ☐ Distinguish septate from bicornuate uterus on imaging.
- ☐ Apply to recurrent miscarriage, preterm birth, renal associations, OHVIRA and MRKH management.

1 Three Steps to One Uterus

IN ONE LINE: *Grow → fuse → resorb. Fusion failure changes the OUTSIDE shape; resorption failure leaves a normal outside with a septum inside.*

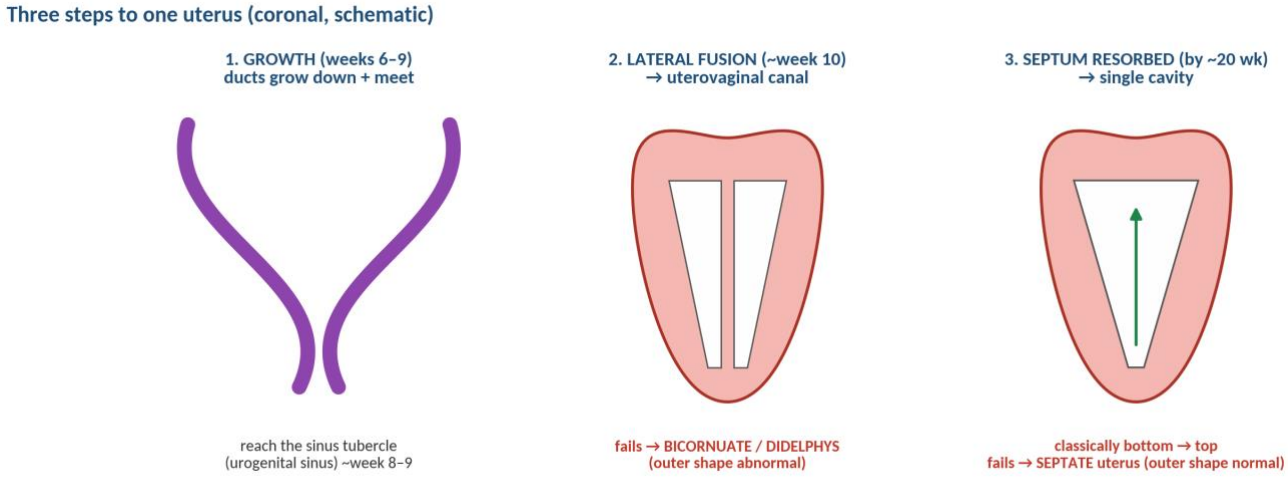


Figure 1. Growth, lateral fusion, septal resorption.

- The fused **uterovaginal canal** forms the uterine body, **cervix** and **upper vagina** (cervix recognisable histologically by ~16 weeks).
- **Endometrium** = Müllerian epithelium; **myometrium** and stroma = surrounding mesoderm; **perimetrium** = peritoneum.
- **Proportions**: at birth the cervix is ~twice the body (maternal hormones); roughly equal in childhood; after puberty the **body is ~twice the cervix**. ~50–70 g non-pregnant → ~1 kg at term.

2 Müllerian Anomalies

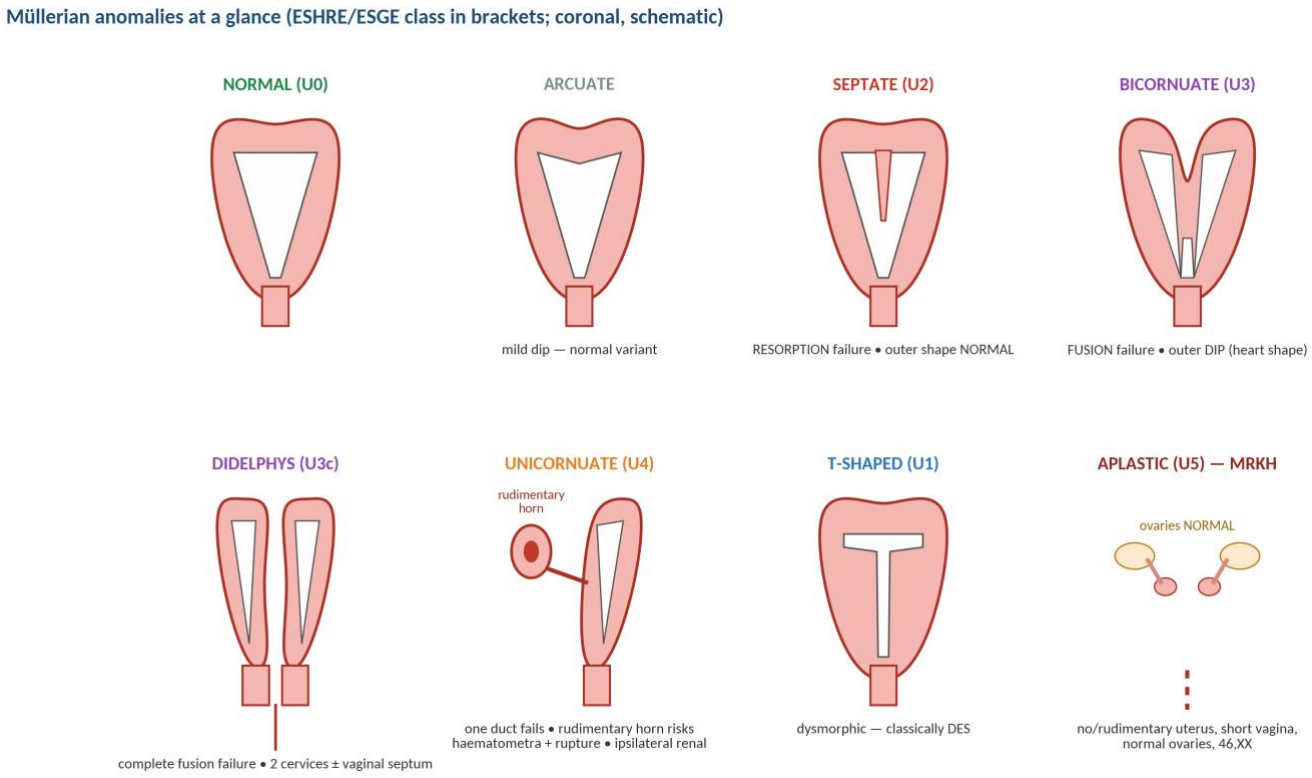


Figure 2. The main anomalies.

ESHRE/ESGE	Class	Developmental error / notes
U0	Normal	—
U1	Dysmorphic (T-shaped, infantile)	Abnormal shape, normal outline — classically DES exposure
U2	Septate (partial/complete)	Resorption failure — commonest anomaly (~1/3); outer fundus normal
U3	Bicorporeal (bicornuate; U3c = didelphys)	Fusion failure — outer fundal cleft
U4	Hemi-uterus (unicornuate ± rudimentary horn)	One duct fails to develop
U5	Aplastic (MRKH spectrum)	Both ducts fail
U6	Unclassified	—

- ESHRE/ESGE adds **cervical (C0–C4)** and **vaginal (V0–V4)** codes. **ASRM 2021 (MAC2021)** uses **descriptive categories** (e.g. Müllerian agenesis, cervical agenesis, unicornuate, didelphys, bicornuate, septate, longitudinal and transverse vaginal septum, complex) — the numbered Class I–VII list is the older **1988 AFS** system. Arcuate is now treated as a normal variant.

Anomaly	Key points
Septate	Strongest link with miscarriage; outer fundus convex. Hysteroscopic resection is simple, but benefit is uncertain — an RCT (TRUST, 2021) found no rise in live births; discuss case by case

Anomaly	Key points
Bicornuate	Heart-shaped outline. Bicollis = two cervices; unicollis = one cervix. Preterm birth, malpresentation. Metroplasty rarely indicated
Didelphys	Two uteri, two cervices, often a longitudinal vaginal septum; pregnancy usually possible, preterm risk ↑
Unicornuate	± rudimentary horn: non-communicating functional horn → haematometra, pain, endometriosis; pregnancy in the horn → rupture (excise). Ipsilateral renal agenesis in ~40%
MRKH	46,XX, normal ovaries and puberty, primary amenorrhoea, absent/short vagina. Type 1 isolated; type 2 with renal/skeletal/cardiac/hearing anomalies. Vaginal dilators first; Vecchietti or other vaginoplasty if dilators fail; psychological support
DES (T-shaped)	Diethylstilbestrol in pregnancy until early 1970s: T-shaped cavity, cervical hood, clear cell adenocarcinoma of vagina — now rare

3 Imaging

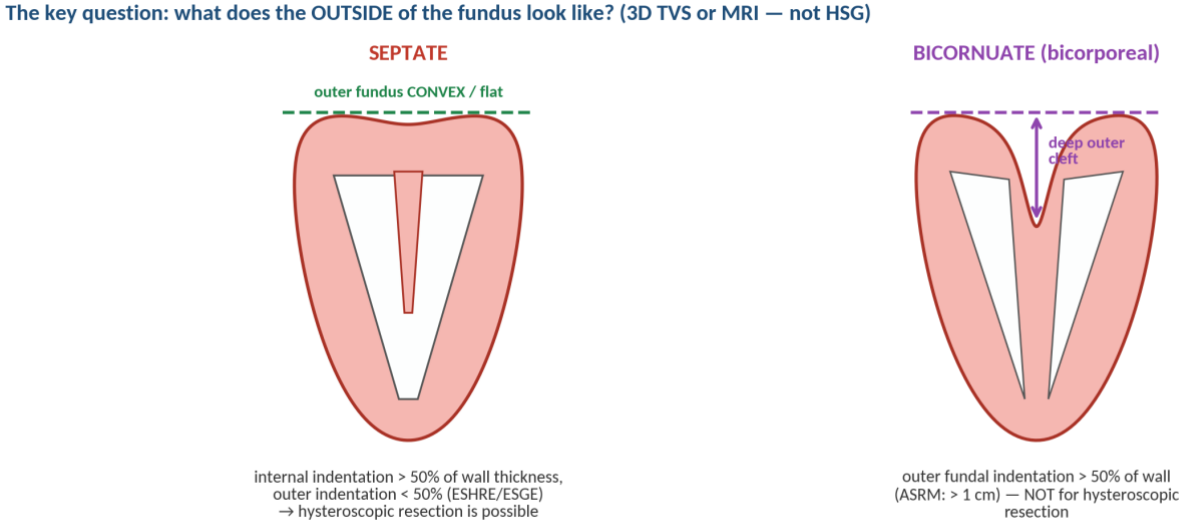


Figure 3. Septate vs bicornuate — look at the outside.

Test	Role
2D TVS	First line
3D TVS	Best non-invasive test — shows cavity and outer contour
MRI	Complex or obstructive anomalies, MRKH, rudimentary horns; also check kidneys
HSG	Cavity + tubes, but can't see the outside — cannot separate septate from bicornuate
Hysteroscopy + laparoscopy	Definitive when imaging is unclear; allows treatment

MNEMONIC / MEMORY HOOK

'Septate: Smooth outside, Split inside. Bicornuate: Bumpy (heart-shaped) outside.'

4 Clinical Correlates

RECURRENT MISCARRIAGE

- Müllerian anomalies in ~5% of women overall, **~13%** with recurrent loss
- Septate uterus has the strongest link
- RCOG GTG 17: assess uterine anatomy (3D TVS preferred)

PREGNANCY

- Bicornuate, didelphys, unicornuate → **preterm birth, breech, FGR**
- Consider cervical length surveillance; individual birth planning
- Most anomalies don't cause infertility (except MRKH / obstruction)

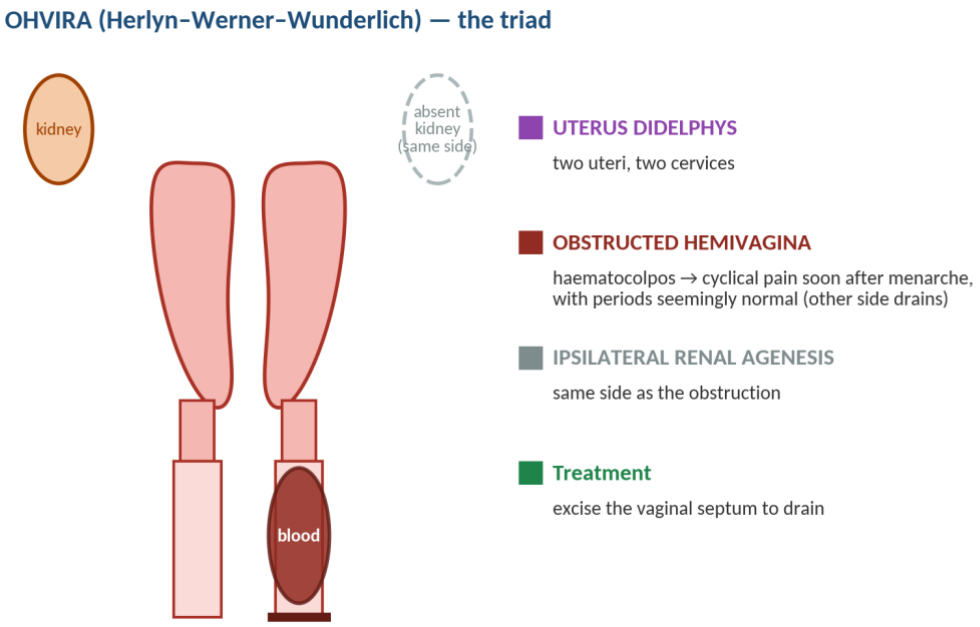


Figure 4. OHVIRA triad.

EXAM HOOK

Always image the kidneys with any Müllerian anomaly — shared intermediate-mesoderm origin. Unicornuate uterus → ipsilateral renal agenesis; **OHVIRA** = didelphys + obstructed hemivagina + ipsilateral renal agenesis.

★ PEARL

Septate = resorption failure (normal outside) • **bicornuate/didelphys = fusion failure** (abnormal outside) • **unicornuate = one duct missing** • **MRKH = both missing**.

HSG can't tell septate from bicornuate — use **3D TVS or MRI**.

5 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

Week 6 Müllerian ducts form	**~Week 10** Fusion complete	**~20 wk** Septum resorbed	**~1/3** Anomalies that are septate
~13% Anomalies in recurrent loss	**~40%** Unicornuate + renal agenesis	**2:1** Adult body : cervix	**U0–U6** ESHRE/ESGE classes

HIGH-YIELD CHECKLIST

- ☐ Uterus = fused caudal Müllerian ducts: grow → fuse → resorb.
- ☐ Endometrium Müllerian; myometrium mesoderm.
- ☐ ESHRE/ESGE U0–U6 (+ C and V codes); ASRM 2021 is descriptive.
- ☐ Septate = resorption failure, commonest, miscarriage link; resection benefit uncertain.
- ☐ Bicornuate/didelphys = fusion failure; bicollis = 2 cervices.
- ☐ Unicornuate ± rudimentary horn: haematometra, rupture, renal agenesis.
- ☐ MRKH: 46,XX, normal ovaries; dilators first.
- ☐ 3D TVS / MRI to see the outer contour; HSG can't.
- ☐ Image kidneys; OHVIRA triad.
- ☐ Preterm birth + malpresentation with fusion anomalies.

Self-assessment — cover the right-hand column

Question	Answer
Three steps of uterine development?	Caudal growth, lateral fusion, septal resorption
Origin of endometrium vs myometrium?	Müllerian epithelium vs surrounding mesoderm
Developmental error in a septate uterus?	Failure of septal resorption
How to tell septate from bicornuate?	Outer fundal contour on 3D TVS or MRI
What does 'bicollis' mean?	Two cervices
ESHRE/ESGE class for unicornuate?	U4 (hemi-uterus)
Risk of pregnancy in a rudimentary horn?	Rupture
First-line treatment of vaginal agenesis in MRKH?	Vaginal dilators
Components of OHVIRA?	Didelphys, obstructed hemivagina, ipsilateral renal agenesis
Classic cause of a T-shaped uterus?	In-utero DES exposure

6 References

- Grimbizis GF et al. The ESHRE/ESGE consensus on the classification of female genital tract congenital anomalies. Hum Reprod 2013.
- Pfeifer SM et al. ASRM Müllerian Anomalies Classification 2021. Fertil Steril 2021.
- Rikken JFW et al. Septum resection versus expectant management (TRUST). Hum Reprod 2021.
- RCOG Green-top Guideline No. 17. Recurrent Miscarriage. 2023.