



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The Uterus

ANATOMY • LECTURE 8

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 8: The Uterus

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

FUNDUS	BODY	ISTHMUS	CERVIX	MYOMETRIUM	ENDOMETRIUM
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LEARNING OBJECTIVES — tick off as you go

- ☐ Describe the gross anatomy of the uterus.
- ☐ Identify the parts of the uterus (fundus, body, isthmus, cervix).
- ☐ Describe the uterine wall layers.
- ☐ Recognise normal positions (anteversion, anteflexion).
- ☐ Describe blood supply, venous drainage, lymphatics and innervation.
- ☐ Identify uterine relations.
- ☐ Recognise congenital (Müllerian) anomalies.

1 Overview and Parts of the Uterus

IN ONE LINE: A thick-walled, pear-shaped muscular organ: $\sim 7.5 \times 5 \times 2.5$ cm and 40–90 g — growing to ~ 1 kg and 30–35 cm in pregnancy.

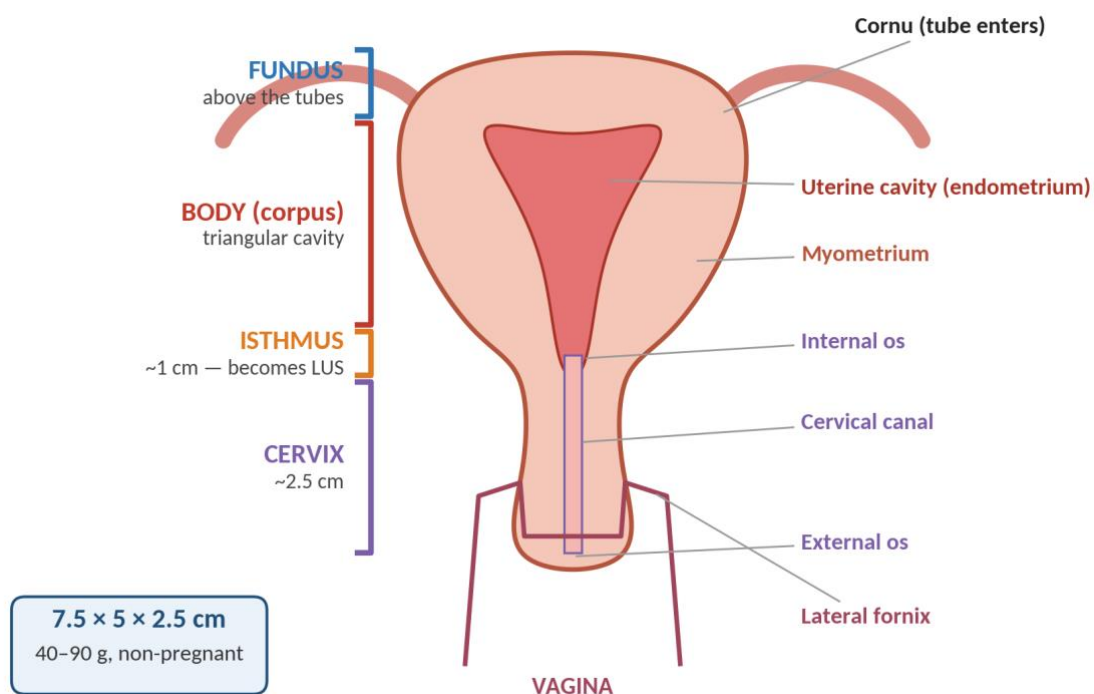


Figure 1. Four parts, top to bottom.

Part	Key facts
Fundus	Dome above the tubal openings; convex; covered by peritoneum; fundal height tracks gestation in the second half of pregnancy
Body (corpus)	Main part; triangular cavity; anterior (vesical) and posterior (intestinal) surfaces; lateral borders take the broad ligament; cornua = where tubes enter
Isthmus	~1 cm constriction at the internal os → becomes the lower uterine segment in pregnancy — the site of the CS incision
Cervix	~2.5 cm; supravaginal + vaginal (portio/ectocervix) parts; canal from internal to external os

- **External os:** nullipara — small, round ('pinhole'); multipara — transverse slit.
- Cervical crypts produce mucus that changes through the cycle.

The transformation zone

The cervix as seen at colposcopy (schematic)

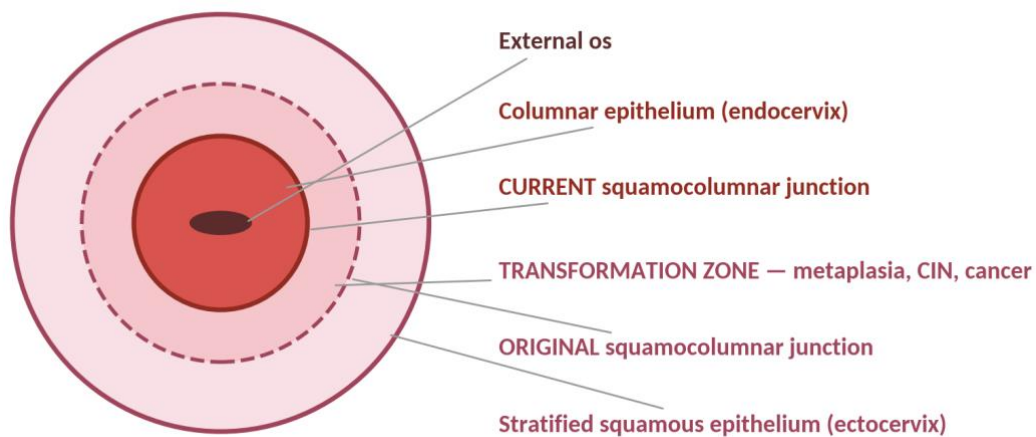


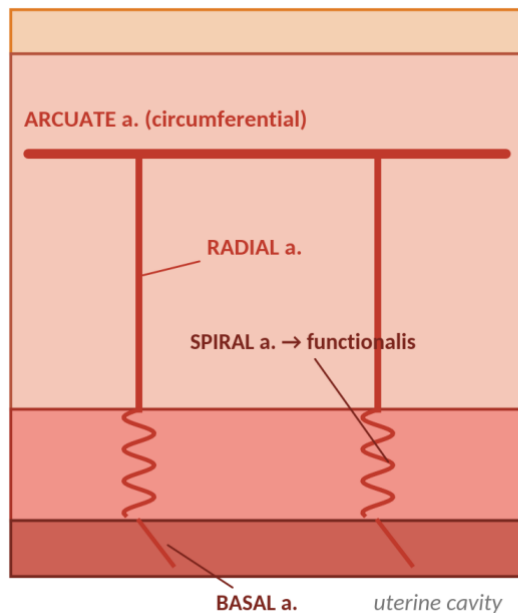
Figure 2. Where cervical cancer starts.

CLINICAL LINK

The **transformation zone** lies between the original and current squamocolumnar junctions — metaplastic, and the site of **CIN and cervical cancer** (HPV 16/18).

2 Uterine Wall Layers

Uterine artery → arcuate → radial → spiral (functionalis) / basal (basalis)



PERIMETRIUM (serosa)

visceral peritoneum

MYOMETRIUM — thickest

outer longitudinal • middle interlacing ('living ligatures') • inner circular

ENDOMETRIUM — functionalis

cyclical; SHED at menstruation

ENDOMETRIUM — basalis

NOT shed; regenerates the functionalis

Figure 3. Three layers, outside in — with the arterial cascade running through them.

PERIMETRIUM

- Visceral peritoneum over body and fundus
- Reflects onto bladder (vesicouterine pouch) and rectum (POD)
- Continuous with the broad ligament

MYOMETRIUM — thickest

- Outer longitudinal, middle interlacing, inner circular
- Middle 'figure-of-8' fibres kink the vessels running through the wall — **living ligatures** for postpartum haemostasis
- Site of **fibroids**

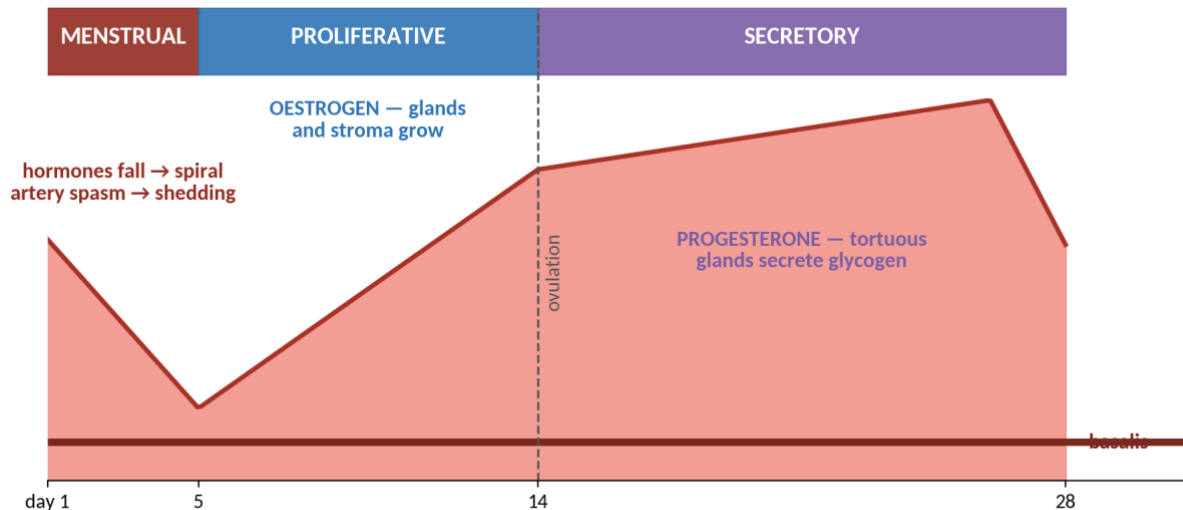
ENDOMETRIUM — functionalis

- Cyclical: proliferates, secretes, **sheds**
- Supplied by **spiral arteries**

ENDOMETRIUM — basalis

- **Not shed**; regenerates the functionalis
- Supplied by **basal arteries**
- Simple columnar epithelium (ciliated + secretory), tubular glands

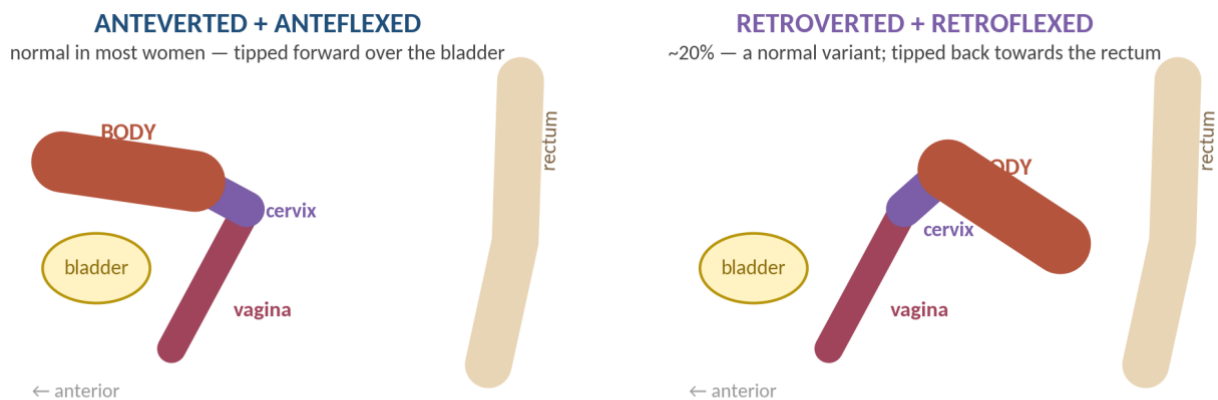
The endometrial cycle



Endometrial thickness through the cycle (schematic)

Figure 4. Oestrogen builds it, progesterone matures it, withdrawal sheds it.

3 Position of the Uterus



VERSION = angle between vagina and CERVIX • FLEXION = angle between cervix and BODY

Figure 5. Version and flexion.

MNEMONIC / MEMORY HOOK

VERSION = Vagina vs cervix. FLEXION = cervix vs body — the uterus 'flexes' at its own waist, the isthmus.

- Retroverted/retroflexed in **~20%** — usually asymptomatic; sometimes dysmenorrhoea or dyspareunia.
- A retroverted gravid uterus can become **incarcerated at ~12–14 weeks** → **urinary retention**.
- Also: axial (in line with the vagina); lateral deviation with fibroids or adnexal masses.

4 Relations and Ligaments

Relation	Structures
Anterior	Vesicouterine pouch → bladder (with vesicocervical space)
Posterior	Pouch of Douglas → rectum; small bowel and sigmoid may lie in the pouch

Relation	Structures
Lateral	Broad ligament: uterine vessels, ureter (base, ~1.5–2 cm from the cervix at the internal os), round and ovarian ligaments, tube, ovary, lymphatics, nerves, pelvic plexus near the uterosacrals
Superior	Bowel loops, omentum

TRUE (FIBROMUSCULAR) LIGAMENTS — Lecture 9

- **Cardinal** (Mackenrodt's): main lateral support
- **Uterosacral**: posterior support
- **Pubocervical**: anterior support
- **Round**: helps hold the uterus **anteverted**
- **Ovarian**: ovary to uterus

PERITONEAL FOLDS

- **Broad ligament**: peritoneal drape
- **Suspensory (IP) ligament**: carries ovarian vessels

5 Blood Supply, Lymphatics and Nerves

ARTERIES

- **Uterine a.** (anterior division, internal iliac): base of broad ligament → **over the ureter** 1.5–2 cm from the cervix → ascends tortuously
- Branches: cervical, vaginal, tubal, ovarian
- Arcuate → radial → spiral / basal (Figure 3)
- Anastomoses with the **ovarian a.** (aorta, L2)

VEINS

- Uterine venous plexus on the lateral wall
- → uterine veins → **internal iliac**
- Some via ovarian veins (R → IVC; L → left renal v.)

LYMPHATICS (Lecture 5)

- **Fundus** → para-aortic (ovarian vessels); a little to superficial inguinal (round ligament)
- **Body** → external iliac
- **Cervix** → obturator, external and internal iliac, sacral

NERVES (Lecture 4)

- **Sympathetic T10–L2**: body pain → lower abdomen/back
- **Parasympathetic S2–S4**: cervical pain → lower back/perineum
- Pelvic plexus beside the uterosacrals — at risk in radical hysterectomy (bladder dysfunction)

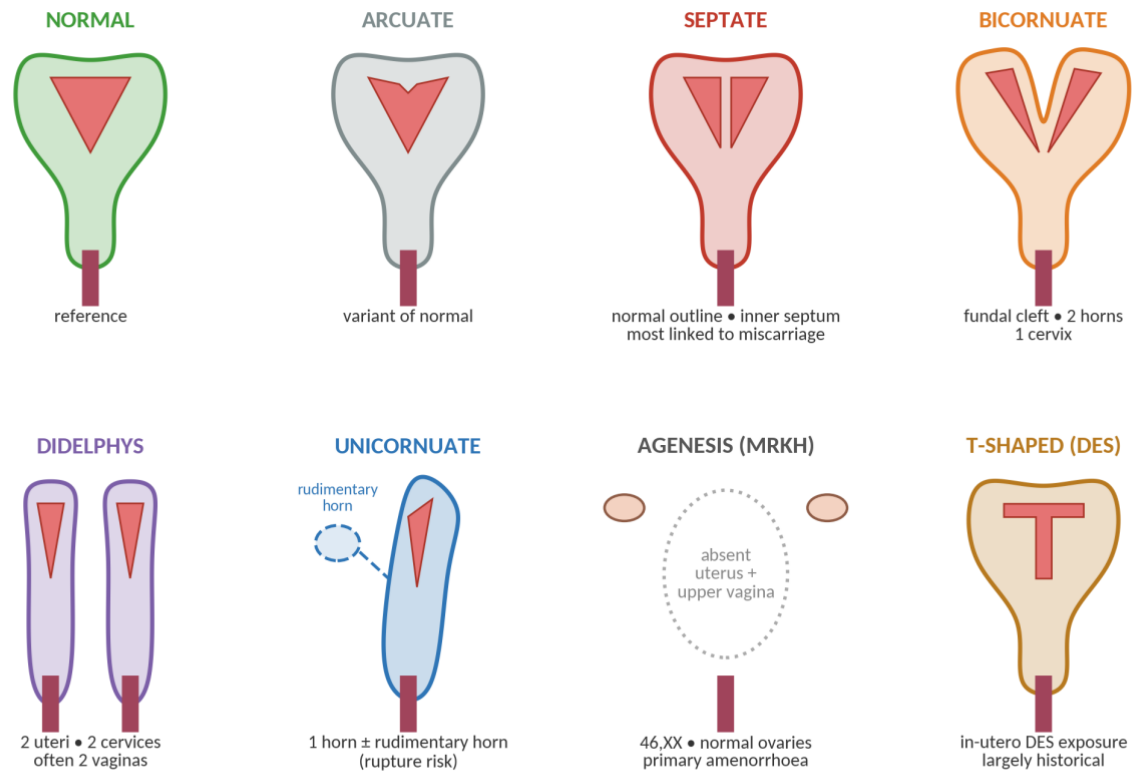
MNEMONIC / MEMORY HOOK

'**Water under the bridge**' — the ureter runs under the uterine artery (Lecture 3).

6 Embryology and Müllerian Anomalies

~6 weeks paramesonephric (Müllerian) ducts form	Fusion caudal ends fuse (complete ~10–12 wk) → uterovaginal canal	Resorption midline septum breaks down → one cavity	Result uterus, cervix, upper vagina; unfused tops = tubes
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In males, **AMH/MIS** from Sertoli cells makes the Müllerian ducts regress; its absence in females lets them persist.



Check the kidneys — renal anomalies accompany ~30% of Müllerian anomalies.

Figure 6. The Müllerian anomaly gallery.

MNEMONIC / MEMORY HOOK

Three ways to go wrong: **FORM** (agenesis, unicornuate) → **FUSE** (didelphys, bicornuate) → **RESORB** (septate, arcuate).

Anomaly	What it is	Clinical point
MRKH (agenesis)	Absent uterus + upper vagina; 46,XX; normal ovaries and hormones	Primary amenorrhoea; vaginal dilation/surgery; surrogacy or uterine transplant
Unicornuate	One duct fails; ± rudimentary horn	Obstetric complications; rudimentary horn pregnancy can rupture — remove a functional horn
Didelphys	Complete fusion failure: 2 uteri, 2 cervixes, often 2 vaginas	Pregnancy usually possible; obstetric complications
Bicornuate	Partial fusion failure: fundal cleft, 2 horns, 1 cervix	Miscarriage, preterm birth
Septate	Failed septum resorption; normal outer contour	Most strongly linked to recurrent miscarriage; hysteroscopic resection
Arcuate	Small fundal indentation	Variant of normal
DES (T-shaped)	In-utero diethylstilbestrol	Largely historical; miscarriage, ectopic, preterm birth

EXAM HOOK

Imaging: 3D ultrasound and MRI (plus HSG, hysteroscopy/laparoscopy). **Always image the kidneys** — renal anomalies in ~30%.

7 Histology and Pregnancy Changes

CERVIX HISTOLOGY

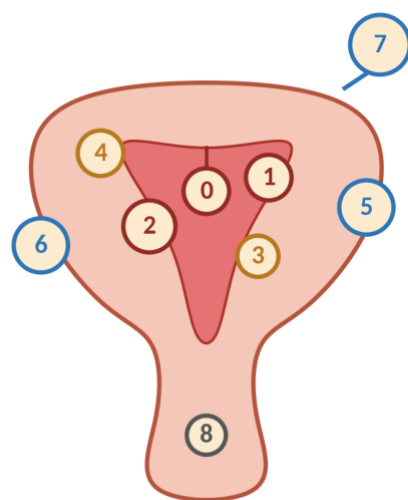
- Mostly fibrous connective tissue (~80%), little smooth muscle
- **Ectocervix:** stratified squamous
- **Endocervix:** simple columnar, mucus glands
- Transformation zone: dynamic, metaplastic

PREGNANCY

- ~40 g → ~1 kg, mainly by **hypertrophy**
- Isthmus → **lower uterine segment** (thinner than the upper segment), forming from the second trimester
- Decidual change in the endometrium
- **Hegar's sign:** softening of the isthmus •
- **Goodell's:** softening of the cervix •
- **Chadwick's:** bluish discolouration

8 Clinical Correlations

Fibroids — FIGO classification



SUBMUCOSAL 0-2 • INTRAMURAL 3-4 • SUBSEROUSAL 5-7 • OTHER 8

- 0 Pedunculated, intracavitary
- 1 Submucosal, <50% intramural
- 2 Submucosal, ≥50% intramural
- 3 100% intramural, touches endometrium
- 4 Intramural
- 5 Subserosal, ≥50% intramural
- 6 Subserosal, <50% intramural
- 7 Subserosal, pedunculated
- 8 Other — e.g. cervical, parasitic

Hybrid fibroids touching both endometrium and serosa are written as two numbers, e.g. 2-5.

Figure 7. FIGO fibroid types 0–8.

- Benign myometrial tumours; **~70% of women by 50**; heavy menstrual bleeding, pain, pressure, subfertility, miscarriage.

ADENOMYOSIS

- Endometrial glands and stroma **within the myometrium**
- HMB, dysmenorrhoea, bulky uterus
- MRI for diagnosis

ENDOMETRIAL HYPERPLASIA / CANCER

- Hyperplasia with or without atypia — risk of progression
- Cancer: postmenopausal bleeding
- **Commonest gynaecological cancer in the UK**

CAESAREAN SECTION

- **Lower segment** incision: thinner, less vascular, heals better
- Classical (upper segment): higher rupture risk later

HYSTERECTOMY

- **Total:** uterus + cervix
- **Subtotal:** body only, cervix kept (rare now)
- **Radical:** + parametrium, upper vagina, pelvic nodes (cervical cancer)

9 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

7.5×5×2.5 cm, non-pregnant	40–90 g → ~1 kg at term	~1 cm Isthmus	~2.5 cm Cervix
~20% Retroverted	12–14 wk Incarceration risk	1.5–2 cm Ureter from cervix	~30% Renal anomalies with Müllerian

HIGH-YIELD CHECKLIST

- ☐ Parts: fundus, body, isthmus (= internal os → LUS in pregnancy), cervix.
- ☐ Usually anteverted (vagina–cervix) and anteflexed (cervix–body).
- ☐ Retroverted in ~20%; incarceration risk at 12–14 weeks.
- ☐ Layers: perimetrium, myometrium (3), endometrium (functionalis sheds; basalis regenerates).
- ☐ Squamocolumnar junction and transformation zone — where cervical cancer starts.
- ☐ Uterine a. (anterior division, internal iliac) + ovarian a. (aorta, L2) anastomose in the broad ligament.
- ☐ Uterine artery crosses ANTERIOR to the ureter 1.5–2 cm from the cervix.
- ☐ Lymph: fundus → para-aortic; body → external iliac; cervix → obturator, iliac, sacral.
- ☐ Nerves: body — sympathetic T10–L2; cervix — parasympathetic S2–S4.
- ☐ Müllerian ducts form uterus, cervix and upper vagina; anomalies = form, fuse or resorb failures.
- ☐ Septate uterus: most linked to miscarriage; hysteroscopic resection. Check the kidneys.
- ☐ FIGO fibroids: submucosal 0–2, intramural 3–4, subserosal 5–7, other 8.

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

Question	Answer
Which part of the uterus becomes the lower segment?	Isthmus
Anteversion is the angle between...?	Vagina and cervix
Anteflexion is the angle between...?	Cervix and body
Which endometrial layer is shed?	Functionalis
Where does cervical cancer usually start?	Transformation zone
Which Müllerian anomaly has a normal outer contour?	Septate uterus
Which anomaly is most strongly linked to recurrent miscarriage?	Septate uterus
MRKH karyotype and ovarian function?	46,XX; normal ovaries

Question	Answer
What else must you image in a Müllerian anomaly?	The kidneys
FIGO type of a fibroid 100% intramural touching the endometrium?	Type 3
Softening of the isthmus in early pregnancy is called...?	Hegar's sign

10 References

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- Moore KL et al. Clinically Oriented Anatomy. 8th ed. 2017.
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- ASRM Müllerian Anomalies Classification 2021.
- Munro MG et al. FIGO classification system (PALM-COEIN). 2011; revised 2018.