



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The Uterine Ligaments

ANATOMY • LECTURE 9

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 9: The Uterine Ligaments

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

CARDINAL	UTEROSACRAL	PUBOCERVICAL	ROUND	OVARIAN	SUSPENSORY (IP)	BROAD
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LEARNING OBJECTIVES — tick off as you go

- ☐ Distinguish true (fibromuscular) ligaments from peritoneal folds.
- ☐ Identify the cardinal (Mackenrodt's), uterosacral and pubocervical ligaments.
- ☐ Describe the round ligament and ovarian ligament.
- ☐ Recognise the role of these ligaments in uterine support.
- ☐ Apply DeLancey's three levels of vaginal support.
- ☐ Relate ligament anatomy to prolapse and surgical procedures.

1 Overview — What Holds the Uterus Up?

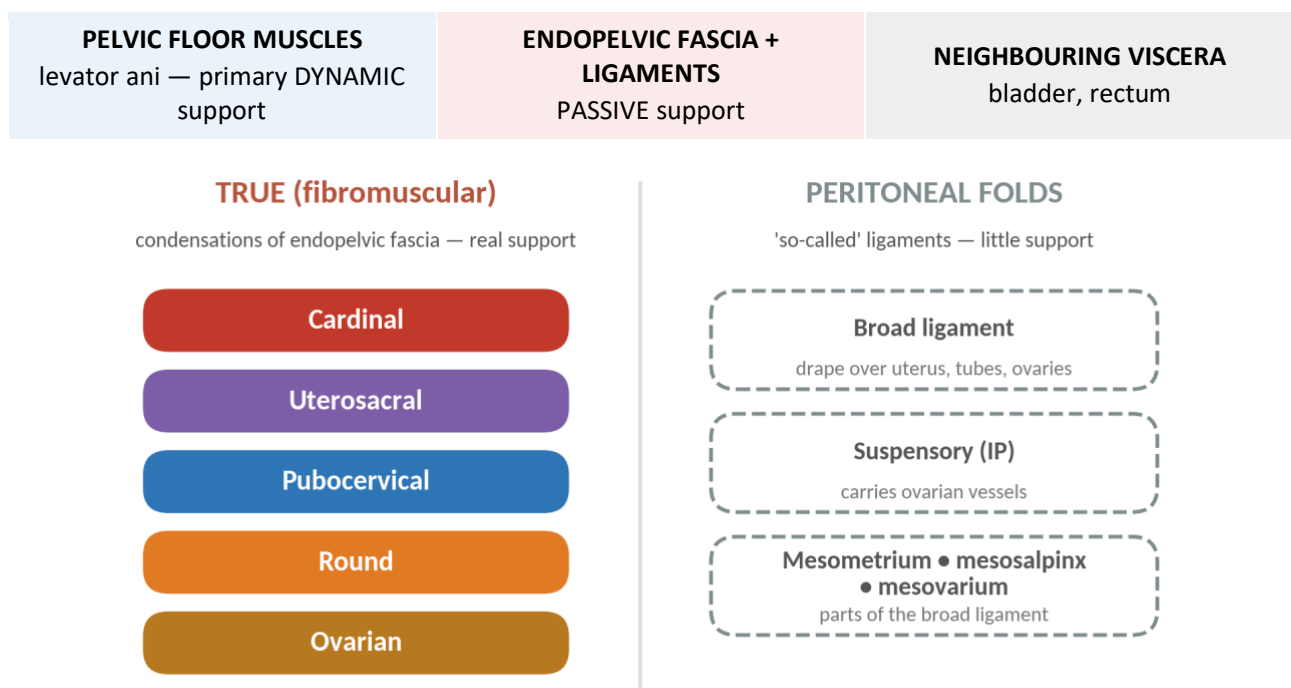


Figure 1. True ligaments vs peritoneal folds — sort them first.

2 The Three Cervical Ligaments

Superior view — cardinal + uterosacral = Level I (apical) support

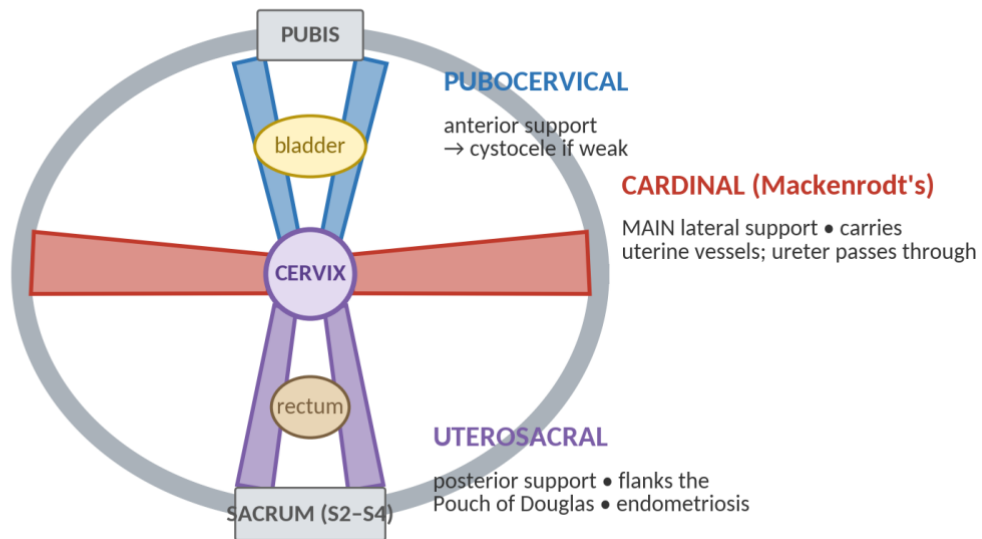


Figure 2. The cervix is held like the hub of a wheel: forwards, sideways and backwards.

MNEMONIC / MEMORY HOOK

P-C-U, front to back: Pubocervical → Cardinal → Uterosacral. The Cardinal is the 'Captain' — the main support.

2.1 Cardinal (Mackenrodt's, transverse cervical) ligaments

ANATOMY

- Fibromuscular condensation of endopelvic fascia
- Cervix + upper vagina (lateral fornices) → lateral pelvic wall
- At the **base of the broad ligament** (parametrium)
- Contains **uterine vessels**, lymphatics, autonomic nerves; the **ureter** runs through its lower part

FUNCTION + CLINICAL

- **PRIMARY lateral support** — Level I (apical)
- Weakness → **uterine / vault prolapse**
- Divided at radical hysterectomy (parametrectomy) — **ureter at risk**
- Can be incorporated into vault suspension

2.2 Uterosacral ligaments

ANATOMY

- Cervix (supravaginal) + upper posterior vagina → **anterior sacrum (S2-S4)**
- Pass either side of the rectum
- **Lateral boundaries of the Pouch of Douglas** — paired ridges at laparoscopy
- Smooth muscle + dense connective tissue; pelvic (inferior hypogastric) plexus runs alongside

FUNCTION + CLINICAL

- Posterior support (Level I); pull the cervix back → keep the uterus **anteverted**
- Common site of **endometriosis** — nodular on PV
- Weakness → enterocele, uterine/vault prolapse
- Used in **McCall culdoplasty** and **high uterosacral suspension** — ureteric risk
- Autonomic damage in radical surgery

2.3 Pubocervical ligaments

ANATOMY

- Bilateral bands: cervix + upper anterior vagina → **back of the pubis**
- Pass beneath / lateral to the bladder
- Weaker than cardinal and uterosacral

FUNCTION + CLINICAL

- Anterior support; help hold the bladder
- Weakness → **cystocele**
- **Paravaginal defect**: detachment from the ATFP → paravaginal repair

3 Round and Ovarian Ligaments

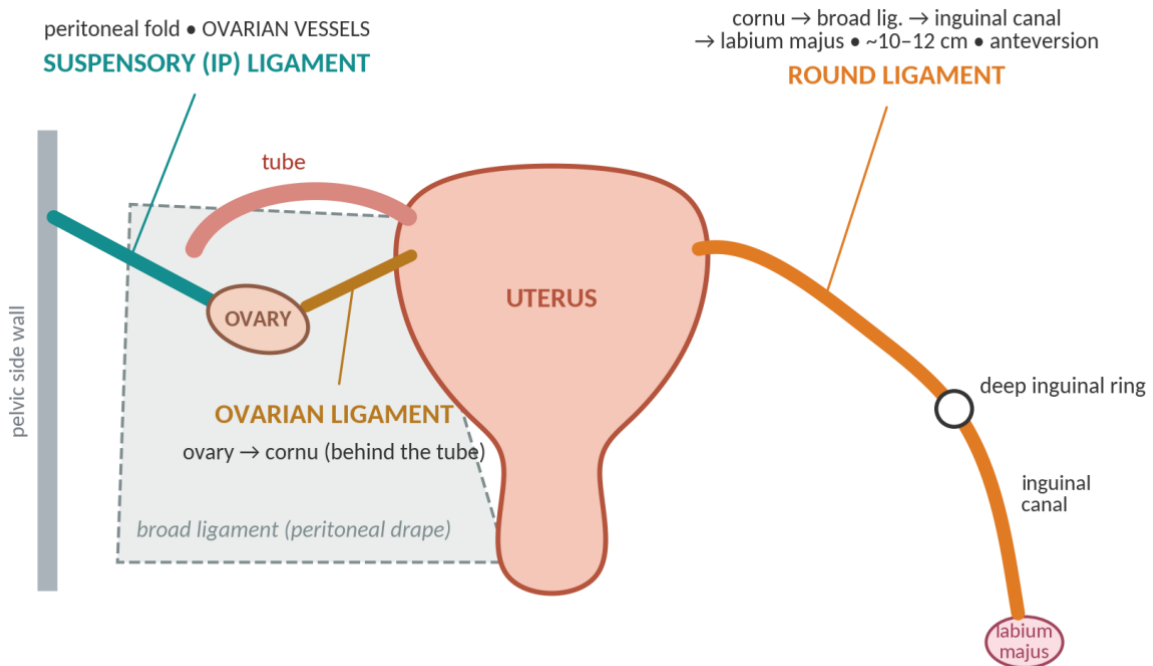
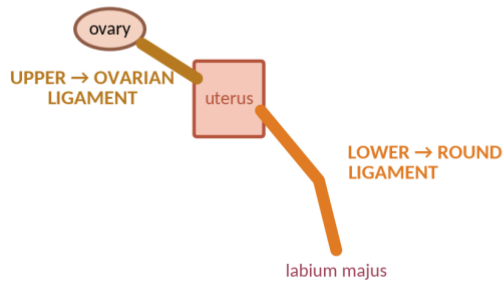


Figure 3. Two cords from the cornu: round (front, to the groin) and ovarian (back, to the ovary).

	ROUND LIGAMENT	OVARIAN LIGAMENT
Type	Fibromuscular cord, ~10–12 cm	Short fibrous cord
Course	Cornu (below/in front of the tube) → anterior leaf of broad ligament → side wall → deep ring → inguinal canal → superficial ring → labium majus	Medial pole of ovary → cornu (behind the tube), within the broad ligament
Function	Helps hold the uterus anteverted; pulls the fundus forward; stretches in pregnancy	Tethers ovary to uterus; allows some mobility
Embryology	Lower gubernaculum	Upper gubernaculum
Clinical	First structure divided at hysterectomy • Sampson's artery bleeds at laparoscopy • pregnancy pain • endometriosis/varicosities as a groin lump • lymph from fundus → superficial inguinal • canal of Nuck hernia/hydrocele	Divided at oophorectomy / hysterectomy with ovarian conservation • ovary twists around it in torsion

FEMALE: gubernaculum splits at the uterus



MALE

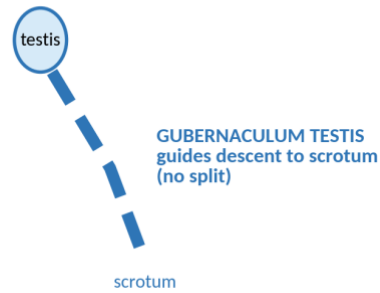


Figure 4. One gubernaculum, two ligaments.

MNEMONIC / MEMORY HOOK

ROund → gROin (in FRONT of the tube); OVarian → OVary (BEHIND the tube).

4 Peritoneal 'Ligaments'

BROAD LIGAMENT

- Double peritoneal fold over uterus, tubes, ovaries, parametrium
- Lateral uterus → lateral pelvic wall
- **Not a true ligament — little support**
- Detail: Lecture 10

SUSPENSORY (INFUNDIBULOPELVIC)

- Upper pole of ovary (+ tubal infundibulum) → lateral pelvic wall
- Contains the **ovarian artery and vein**
- Divided at oophorectomy — **find the ureter underneath**

5 DeLancey's Three Levels of Vaginal Support

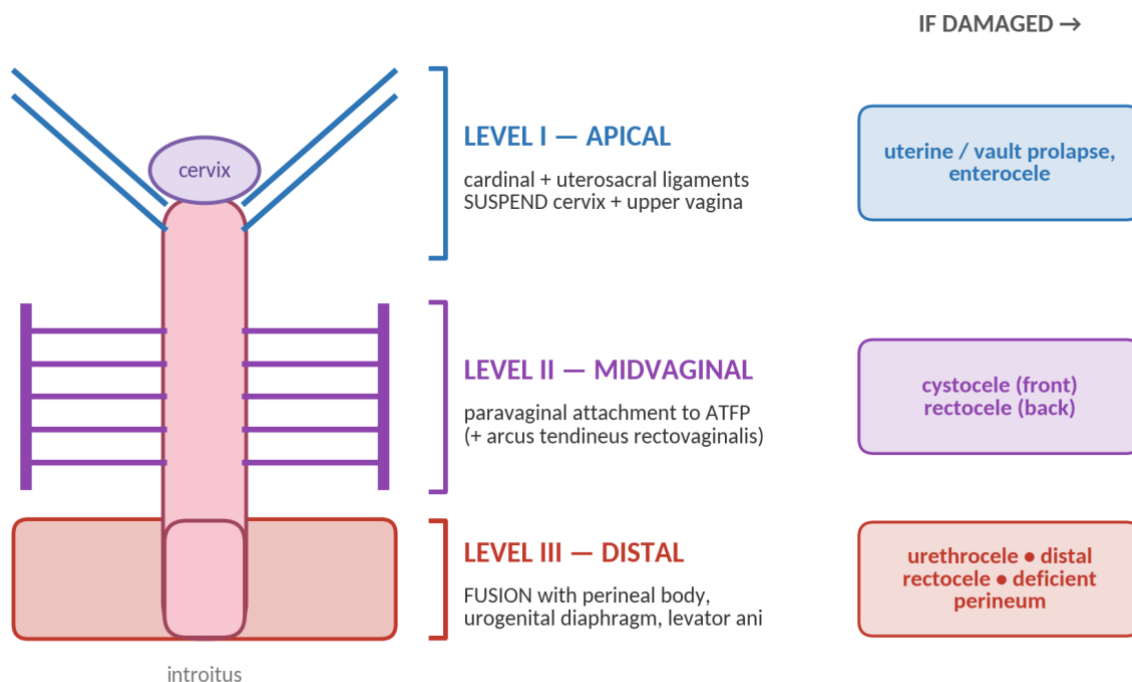


Figure 5. Which level fails decides which prolapse you see.

MNEMONIC / MEMORY HOOK

SUSPEND → ATTACH → FUSE (Level I apical → II midvaginal → III distal). Damage at several levels often coexists — repair each one.

Endopelvic fascia

Fascial structure	Position and defect
Pubocervical fascia	Anterior, between vagina and bladder → cystocele
Rectovaginal fascia (Denonvilliers' in males)	Posterior, between vagina and rectum → rectocele
ATFP ('white line')	Pubis → ischial spine; paravaginal attachment (Level II)

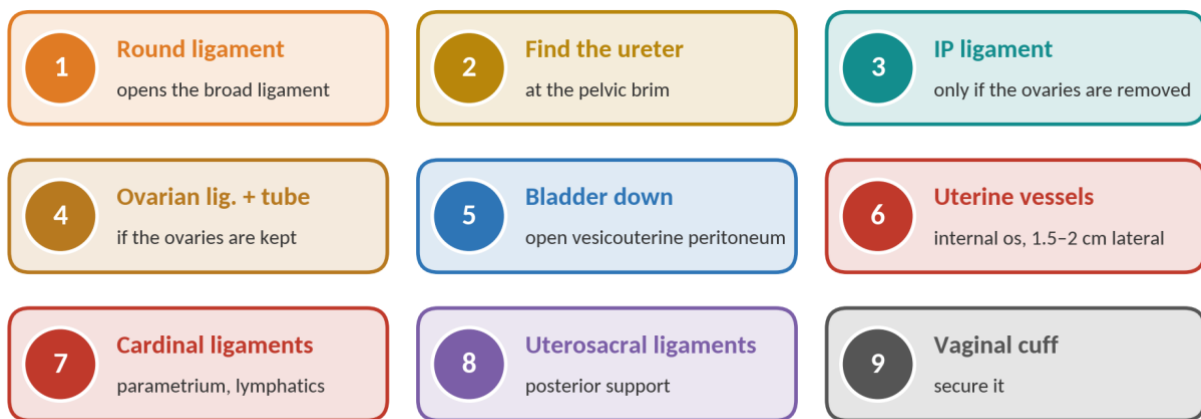
6 Surgical Significance**6.1 Hysterectomy — ligament by ligament**

Figure 6. The order in which ligaments are met at abdominal hysterectomy.

6.2 Apical prolapse surgery

Procedure	Anchor	Watch out for
McCall culdoplasty	Uterosacrals — also obliterates the POD	Ureter
High uterosacral suspension	Uterosacrals → vault	Ureteric kinking — cystoscopy advised
Sacrospinous fixation	Sacrospinous ligament (not a uterine ligament)	Pudendal nerve, gluteal pain
Sacrocolpopexy	Sacral promontory via mesh (abdominal / laparoscopic)	Regarded as the gold standard for vault prolapse

6.3 – 6.4 Cerclage and radical hysterectomy

CERVICAL CERCLAGE

- **McDonald:** purse-string at the cervix
- **Shirodkar:** higher, after bladder mobilisation
- **Transabdominal:** cervicoisthmic junction, above the cardinal/uterosacral level — after failed vaginal cerclage

RADICAL HYSTERECTOMY

- Removes **parametrium (cardinal ligaments)** and upper vagina + pelvic nodes
- Wertheim / Meigs / Piver–Rutledge (now Querleu–Morrow) classifications
- Risks: ureter, bladder (autonomic), sexual dysfunction
- Nerve-sparing preserves the pelvic plexus

7 Clinical Correlations

PELVIC ORGAN PROLAPSE

- Loss of ligament + muscle support
- Risks: vaginal birth (parity, instrumental, big baby), obesity, age, raised abdominal pressure, connective tissue disease, menopause, prior hysterectomy
- POP-Q; PFMT, pessary or defect-specific repair

ROUND LIGAMENT PAIN

- Sharp, brief groin/lower abdominal pain on movement
- Second trimester
- Reassure; avoid sudden movement; simple analgesia

UTEROSACRAL ENDOMETRIOSIS

- Nodular tenderness on PV; deep dyspareunia
- DIE: MRI shows nodules; laparoscopic excision

URETER DANGER ZONES

- **IP ligament:** ureter at the brim, just medial to the ovarian vessels
- **Cardinal:** internal os, 1.5–2 cm lateral (under the uterine artery)
- **Uterosacral:** during suspension
- Identify the ureter before ligating any of them

8 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

5 True ligaments	2 Main peritoneal 'ligaments'	3 DeLancey levels	S2–S4 Uterosacral attachment
10–12 cm Round ligament length	1.5–2 cm Uterine a. × ureter from cervix	1st Round lig. — first divided	2nd tri Round ligament pain

HIGH-YIELD CHECKLIST

- ☐ TRUE ligaments: cardinal, uterosacral, pubocervical, round, ovarian.
- ☐ PERITONEAL folds: broad, suspensory (infundibulopelvic).
- ☐ Cardinal: main lateral support; cervix/upper vagina → side wall; uterine artery and ureter.
- ☐ Uterosacral: → S2–S4; flanks the POD; endometriosis site.
- ☐ Pubocervical: cervix → back of pubis; cystocele if weak.
- ☐ Round: cornu → inguinal canal → labium majus; anteversion; first divided; lower gubernaculum.
- ☐ Ovarian: ovary → cornu (behind the tube); upper gubernaculum.
- ☐ IP ligament: ovarian vessels; ligated at oophorectomy — find the ureter.
- ☐ DeLancey I apical (cardinal + uterosacral), II midvaginal (ATFP), III distal (perineal body).
- ☐ Sampson's artery bleeds; round ligament endometriosis = groin lump; canal of Nuck hydrocele.
- ☐ Identify the ureter before ligating the cardinal or uterosacral ligaments.

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

Question	Answer
Main lateral support of the cervix?	Cardinal (Mackenrodt's) ligament
Which ligaments flank the Pouch of Douglas?	Uterosacral ligaments
Weak pubocervical ligament causes...?	Cystocele
Where does the round ligament end?	Labium majus
Embryological origin of the round ligament?	Lower gubernaculum
Which ligament carries the ovarian vessels?	Suspensory (infundibulopelvic)
Is the broad ligament a true ligament?	No — a peritoneal fold
DeLancey Level II structure?	Paravaginal attachment to the ATFP
First structure divided at hysterectomy?	Round ligament
Nerve at risk in sacrospinous fixation?	Pudendal
A female groin swelling along the round ligament may be...?	Canal of Nuck hydrocele (or round ligament endometriosis)

9 References

- Standring S, editor. Gray's Anatomy. 42nd ed. 2020.
- DeLancey JO. Anatomic aspects of vaginal eversion after hysterectomy. Am J Obstet Gynecol. 1992;166:1717-28.
- Moore KL et al. Clinically Oriented Anatomy. 8th ed. 2017.
- Drake RL et al. Gray's Anatomy for Students. 4th ed. 2019.