



PIPADOR REVISION

MRCOG Part 1 Revision Notes

Inlet, Passage & Outlet

ANATOMY • LECTURE 7

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 7: Pelvic Inlet, Passage and Outlet

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

INLET	MID-CAVITY	OUTLET	CURVE OF CARUS	FETAL HEAD
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LEARNING OBJECTIVES — tick off as you go

- ☐ Define the pelvic inlet, passage (mid-cavity) and outlet.
- ☐ Describe the three diameters at each level (AP, transverse, oblique).
- ☐ Identify obstetric measurements (obstetric and diagonal conjugates, interspinous, bituberous).
- ☐ Describe fetal head diameters and their relationship to the maternal pelvis.
- ☐ Apply pelvic anatomy to the mechanism of labour.
- ☐ Recognise cephalopelvic disproportion.

1 Overview — Three Levels of the True Pelvis

IN ONE LINE: False pelvis above the brim is abdomen; the TRUE pelvis below it is the birth canal: inlet → mid-cavity → outlet.

The obstetric pelvis — sagittal view, anterior on the RIGHT

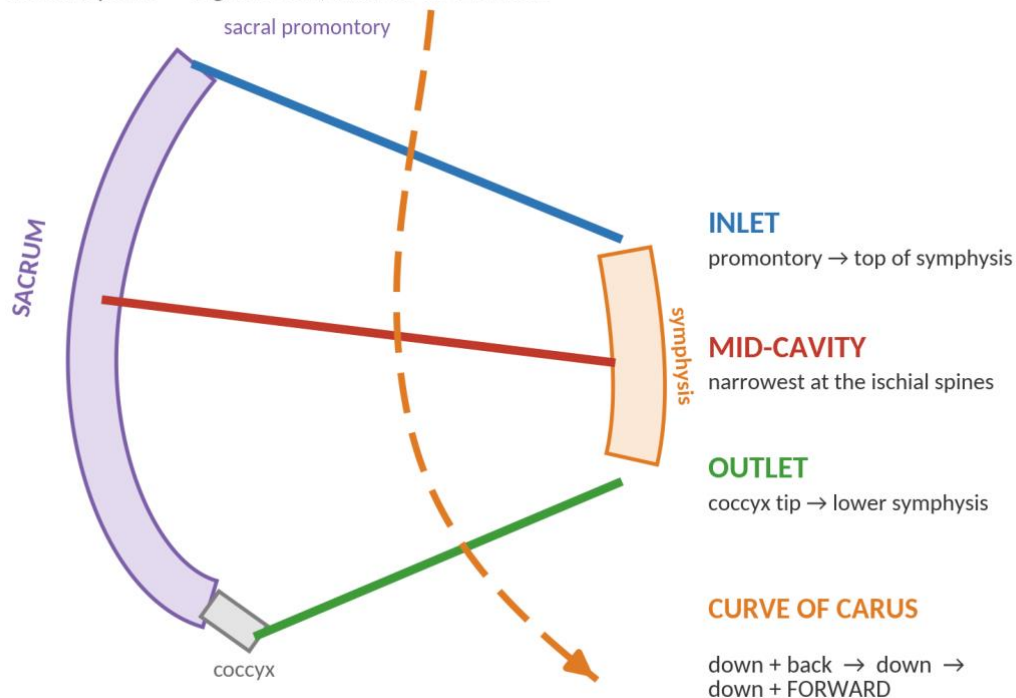
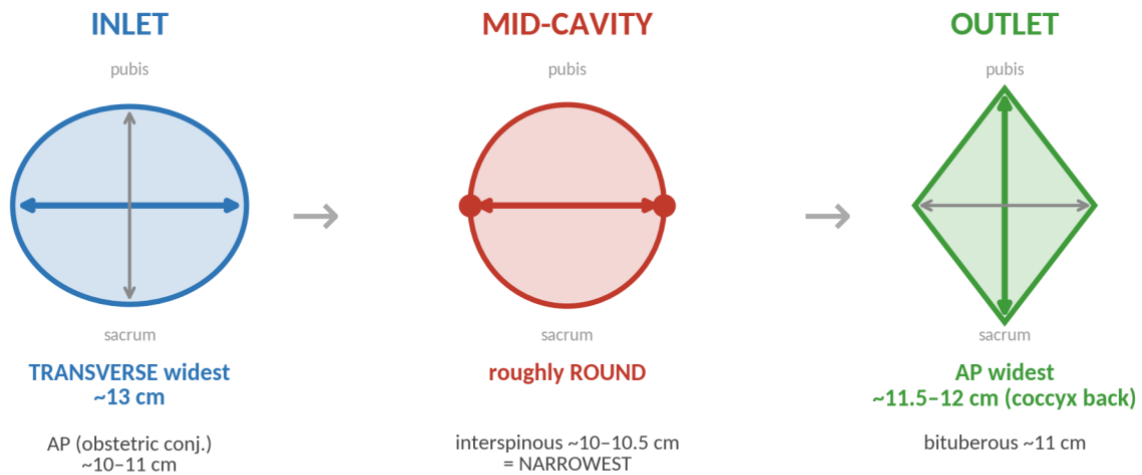


Figure 1. The three planes and the curved path the head follows through them.



The widest diameter turns through 90° — so the fetal head must rotate from transverse to AP.

Figure 2. The single most important idea in this lecture.

MNEMONIC / MEMORY HOOK

Inlet is WIDE side-to-side; outlet is LONG front-to-back — so the head enters transverse and leaves AP, rotating at the spines.

2 Pelvic Inlet (Superior Aperture)

IN ONE LINE: Formed by the pelvic brim (linea terminalis) — see Lecture 1 for 'PAAPPS'.

Posterior	Posterolateral	Lateral	Anterolateral	Anterior
sacral promontory	ala of sacrum	arcuate line of ilium	pectineal line	pubic crest + top of symphysis

Inlet diameter	Size	Definition
Anatomical conjugate	~11 cm	Promontory → upper border of symphysis
OBSTETRIC conjugate	~10-11 cm	Promontory → nearest point on the posterior surface of symphysis — narrowest fixed AP diameter; decides engagement
Diagonal conjugate	~12-12.5 cm	Promontory → lower border of symphysis — the one you can feel PV
TRANSVERSE	~13 cm	Widest distance between iliopectineal lines — longest inlet diameter
Oblique (R and L)	~12 cm	SI joint → opposite iliopubic eminence

EXAM HOOK

Obstetric conjugate = diagonal – 1.5 to 2 cm. Diagonal >12 cm → inlet likely adequate. In an adequate pelvis you usually **cannot reach the promontory**.

The head usually engages in the **transverse or oblique** diameter.

3 Mid-Cavity (Passage)

WALLS

- Front: back of symphysis and pubis (~5 cm deep)
- Sides: obturator internus and ischium
- Back: concave sacrum (~10–12 cm deep)
- Floor: levator ani

DIAMETERS

- AP: mid-symphysis → S3, ~12 cm
- Interspinous ~10–10.5 cm — **NARROWEST part of the pelvis**
- Oblique ~12 cm (variable)

CLINICAL LINK

The spines mark **station 0** and the level where **internal rotation** to occipito-anterior usually happens. Arrest here = **deep transverse arrest**.

4 Pelvic Outlet (Inferior Aperture)

IN ONE LINE: Diamond-shaped: a line between the ischial tuberosities splits it into the urogenital (front) and anal (back) triangles.

Anterior	Anterolateral	Lateral	Posterolateral	Posterior
lower symphysis (subpubic angle)	ischiopubic rami	ischial tuberosities	sacrospinous ligaments	tip of coccyx

Outlet diameter	Size	Note
AP (anatomical)	~9.5 cm	Lower symphysis → coccyx tip
AP (obstetric)	~11.5–12 cm	Coccyx pushed back in labour — becomes the longest outlet diameter
Transverse (bituberous)	~11 cm	Between ischial tuberosities; narrow tuberosities can obstruct
Subpubic angle	>90° (female)	Wide in the gynaecoid pelvis

5 Pelvic Axis — Curve of Carus

INLET down and BACK	MID-CAVITY straight DOWN	OUTLET down and FORWARD — head extends
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The pelvic axis joins the centres of each plane; the curve of Carus is the path of the presenting part along it (Figure 1).

6 The Fetal Skull

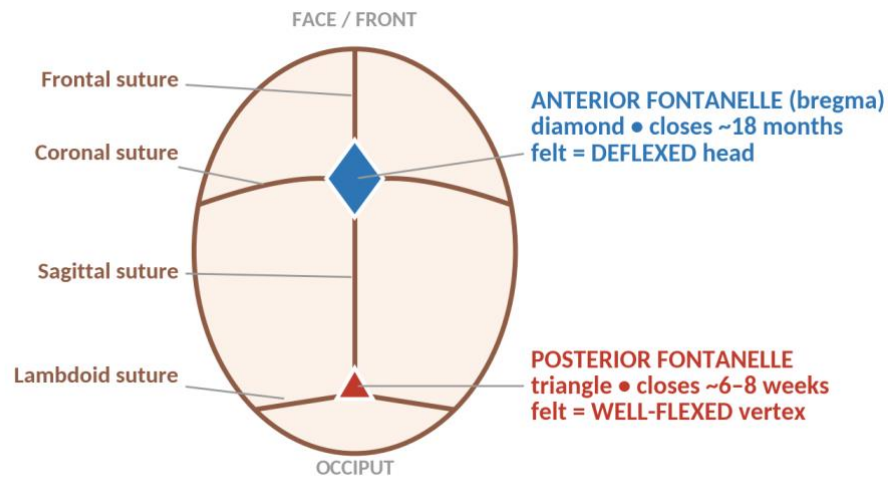
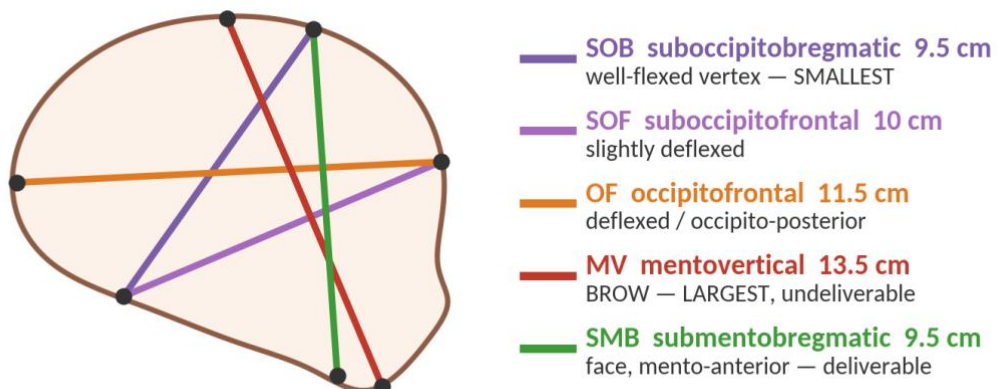


Figure 3. Sutures and fontanelles — what you feel on vaginal examination.

MNEMONIC / MEMORY HOOK

Feel the **TRIANGLE** → the head is flexed. Feel the **DIAMOND** → it is deflexed (occipito-posterior or brow).

Fetal head diameters



Profile of the fetal head (face on the right)

Figure 4. As the head extends, the presenting diameter grows — until full extension (face) shrinks it again.

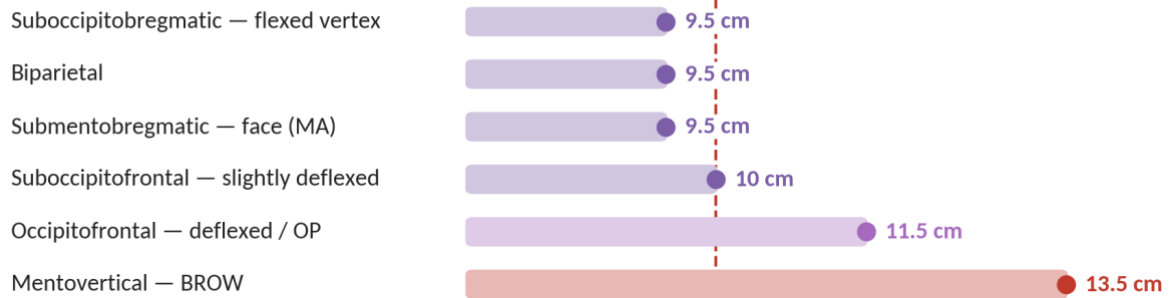
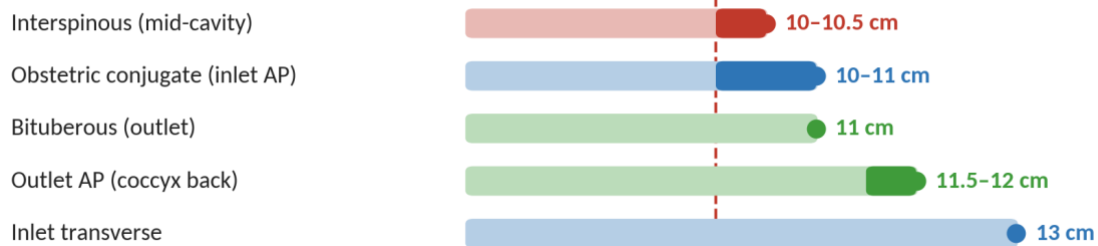
FETAL HEAD**MATERNAL PELVIS**

Figure 5. Will it fit? Head diameters against the maternal pelvis.

EXAM HOOK

Well-flexed vertex presents the **smallest** diameter: **suboccipitobregmatic 9.5 cm**. Brow presents the **largest**: **mentoverical 13.5 cm** — undeliverable. Face **mento-anterior** (submentobregmatic 9.5 cm) can deliver; **mento-posterior** cannot. Bitemporal 8 cm.

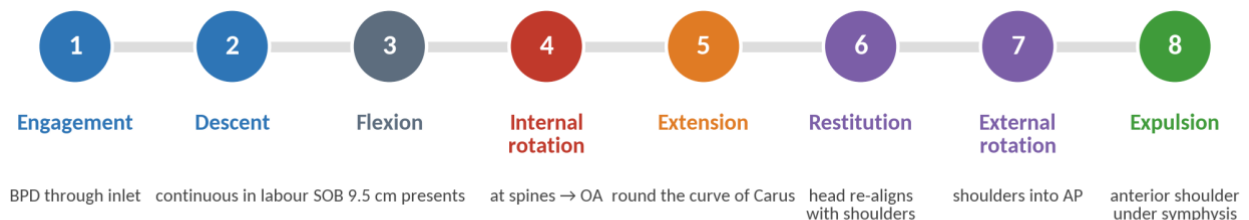
7 Mechanism of Labour — Eight Cardinal Movements

Figure 6. The cardinal movements of a vertex presentation.

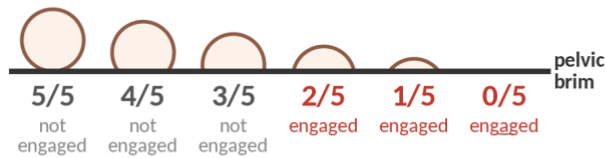
MNEMONIC / MEMORY HOOK

'Every Doctor Feels Increasingly Excited Reaching Excellent Exams'

Engagement • Descent • Flexion • Internal rotation • Extension • Restitution • External rotation • Expulsion

8 Engagement and Station

FIFTHS PALPABLE ABDOMINALLY



Engaged = $\leq 2/5$ palpable. Instrumental delivery: $\leq 1/5$.

STATION ON PV

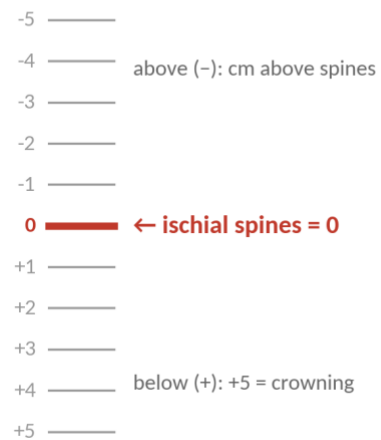


Figure 7. Abdominal fifths and vaginal station.

ENGAGEMENT

- Widest diameter (biparietal) at or below the inlet
- Clinically: head not ballotable; **$\leq 2/5$ palpable**
- Primigravida: 36–38 weeks; multipara: late pregnancy or in labour

STATION

- Leading bony part vs the ischial spines
- **0** = at the spines; -1 to -5 above; +1 to +5 below
- +5 = crowning

9 Asynclitism

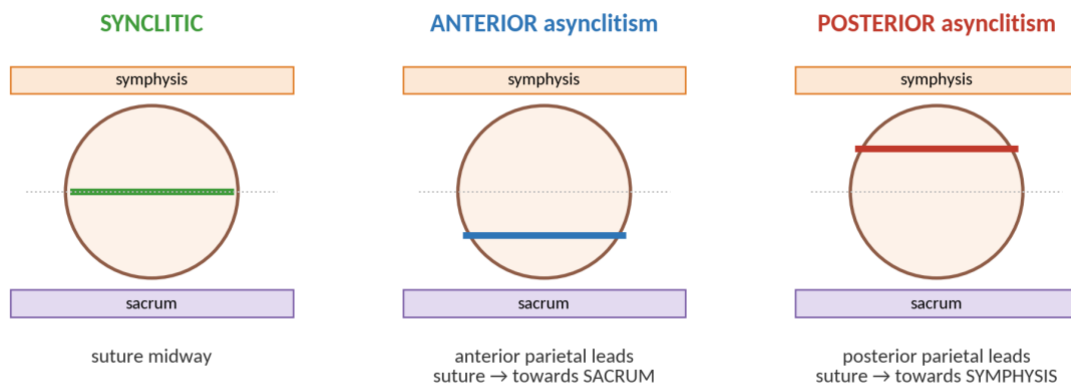


Figure 8. Where is the sagittal suture?

- Minor asynclitism is **normal** as the head negotiates the inlet; severe asynclitism can cause **arrest**.

MNEMONIC / MEMORY HOOK

Anterior asynclitism: the suture moves **Away from the Anterior** (towards the sacrum) — the anterior parietal bone leads.

10 Cephalopelvic Disproportion and Pelvic Types

CAUSES OF CPD • Maternal: small or contracted pelvis; android/platypelloid shape; deformity (rickets, fracture, tumour) • Fetal: macrosomia, hydrocephalus, malpresentation	SUSPECT IT WHEN... • Head fails to engage in a primigravida • Failure to progress despite good contractions • Excessive moulding and caput
MANAGEMENT • Trial of labour with close monitoring • Caesarean section if no progress • Pelvimetry rarely used — poor predictive value	PELVIC TYPES (Lecture 1) • Gynaecoid ~50%: round — ideal • Android ~20%: heart-shaped — obstruction • Anthropoid ~25%: AP > T — OP • Platypelloid ~3%: flat — poor engagement

11 Clinical Correlations

FAILURE TO PROGRESS — the '3 Ps' • Powers: inadequate contractions • Passenger: large baby, malposition • Passage: abnormal pelvis • Commonest reason for CS in primigravidae	WHERE LABOUR ARRESTS • Inlet: failure to engage → CPD → CS • Mid-cavity: deep transverse arrest → rotation needed • Outlet: usually overcome by extension
INSTRUMENTAL DELIVERY — prerequisites • Head $\leq 1/5$ palpable; station 0 or below • Vertex; cervix fully dilated; membranes ruptured • Position known (OA/OT/OP) • Adequate analgesia; empty bladder	OTHER • SFH (cm) $\approx$ gestation (weeks) ± 2 cm in the second half of pregnancy — NICE advises measuring from 24 weeks • Deviation: growth concerns, polyhydramnios, multiples • Pelvic fracture ('open book'): may require CS

12 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

13 cm Inlet transverse (widest)	10–11 cm Obstetric conjugate	12–12.5 cm Diagonal conjugate	10–10.5 cm Interspinous (narrowest)
11 cm Bituberous	11.5–12 cm Outlet AP (coccyx back)	9.5 cm Suboccipitobregmatic	13.5 cm Mentoverical (brow)

HIGH-YIELD CHECKLIST

- ☐ Inlet widest in the TRANSVERSE (~13 cm).
- ☐ Mid-cavity narrowest at the INTERSPINOUS diameter (~10–10.5 cm).
- ☐ Outlet widest in the AP once the coccyx moves back (~11.5–12 cm).
- ☐ Obstetric conjugate ~10–11 cm = narrowest fixed AP diameter; diagonal ~12.5 cm (PV).
- ☐ Bituberous ~11 cm; subpubic angle >90°.
- ☐ Smallest head diameter: suboccipitobregmatic 9.5 cm; largest: mentovertical 13.5 cm (brow).
- ☐ Face mento-anterior (submentobregmatic 9.5 cm) delivers; mento-posterior does not.
- ☐ Anterior fontanelle: diamond, closes ~18 months. Posterior: triangle, closes ~6–8 weeks — felt = well flexed.
- ☐ Eight cardinal movements (E-D-F-I-E-R-E-E).
- ☐ Engagement: widest diameter at or below the inlet; ≤2/5 palpable.
- ☐ Station 0 at the ischial spines — level of internal rotation.
- ☐ Failure to progress: Powers, Passenger, Passage. Instrumental: head ≤1/5 palpable.

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

Question	Answer
Widest diameter of the inlet?	Transverse (~13 cm)
Narrowest diameter of the pelvis?	Interspinous (~10–10.5 cm)
Diagonal conjugate is 12.5 cm — estimated obstetric conjugate?	~10.5–11 cm
Which outlet diameter becomes longest in labour?	AP (coccyx pushed back)
Which way does the curve of Carus turn at the outlet?	Down and forward
Smallest presenting diameter and its attitude?	Suboccipitobregmatic 9.5 cm — well-flexed vertex
Mentovertical diameter and presentation?	13.5 cm — brow (undeliverable)
You feel a diamond-shaped fontanelle — what does it suggest?	Deflexed head (OP or brow)
How many fifths palpable = engaged?	2/5 or fewer
Where does internal rotation usually occur?	At the level of the ischial spines / pelvic floor
Sagittal suture displaced towards the sacrum?	Anterior asynclitism

13 References

- Standring S, editor. Gray's Anatomy. 42nd ed. 2020.
- Moore KL et al. Clinically Oriented Anatomy. 8th ed. 2017.
- Cunningham FG et al. Williams Obstetrics. 26th ed. McGraw-Hill; 2022.
- RCOG MRCOG Part 1 curriculum — Anatomy.