



PIPADOR REVISION

MRCOG Part 1 Revision Notes

The Fetal Skull

ANATOMY • LECTURE 32

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 32: The Fetal Skull

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

ANTERIOR FONTANELLE

POSTERIOR FONTANELLE

SUTURES / BONE

DELIVERABLE

TRANSVERSE

LEARNING OBJECTIVES — tick off as you go

- ☐ Name the bones, sutures and fontanelles of the fetal skull.
- ☐ Distinguish the anterior and posterior fontanelles on vaginal examination.
- ☐ Define the regions of the skull and the presenting diameters for each attitude.
- ☐ Describe moulding and how it is graded.
- ☐ Distinguish caput succedaneum, cephalhaematoma and subgaleal haemorrhage.

1 Bones, Sutures and Fontanelles

IN ONE LINE: The largest, least compressible part of the fetus: a membranous vault (loosely joined bones) on a cartilaginous base — built to mould.

- **Vault bones:** 2 frontal, 2 parietal (largest), occipital, and small contributions from the temporal bones and sphenoid.

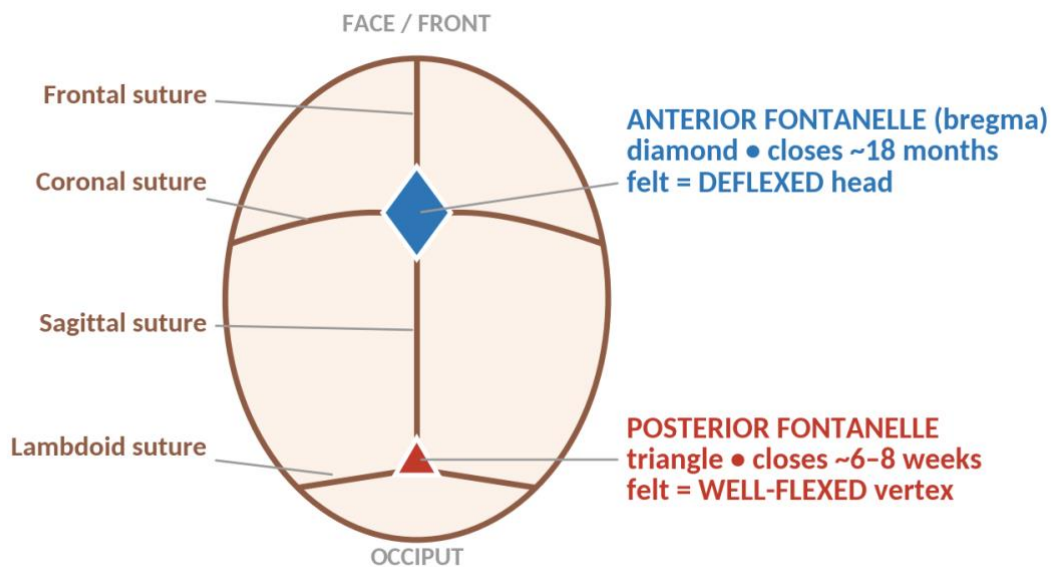


Figure 1. Sutures and fontanelles, seen from above (from Lecture 7).

Suture	Between
Sagittal	The two parietal bones — midline, front to back; the key landmark for position
Coronal	Frontal and parietal bones — across the front of the vault
Lambdoid	Parietal and occipital bones — across the back

Suture	Between
Frontal (metopic)	The two frontal bones — continues the sagittal suture forwards; usually fuses in the first year
Squamous (temporal)	Parietal and temporal bones — little relevance in labour

ANTERIOR FONTANELLE (BREGMA)

- **Diamond**, ~2.5 × 3 cm
- **4 sutures** meet: sagittal, 2 coronal halves, frontal
- Closes ~**18 months**
- Felt easily in labour = **deflexed** head
- Bulging: raised ICP • sunken: dehydration • large/late: hypothyroidism, hydrocephalus, achondroplasia

POSTERIOR FONTANELLE (LAMBDA)

- **Triangular (Y)**, ~1 cm
- **3 sutures** meet: sagittal + 2 lambdoid limbs
- Closes ~**6–8 weeks** after birth
- Felt in labour = **well-flexed** vertex; its position gives OA / OT / OP

MNEMONIC / MEMORY HOOK

Anterior = 4 corners, 4 sutures, closes late (18 months). Posterior = 3 corners, 3 sutures, closes early (6–8 weeks).

Also: two sphenoidal (anterolateral) and two mastoid (posterolateral) fontanelles — six in all.

2 Regions of the Skull

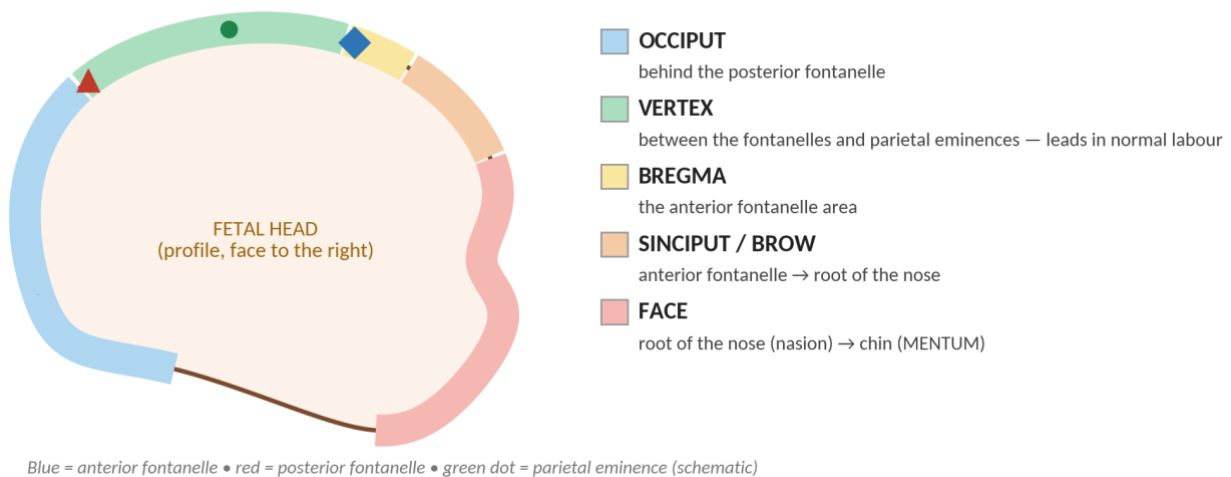
Regions of the fetal skull

Figure 2. Regions of the fetal skull.

3 Diameters of the Fetal Head

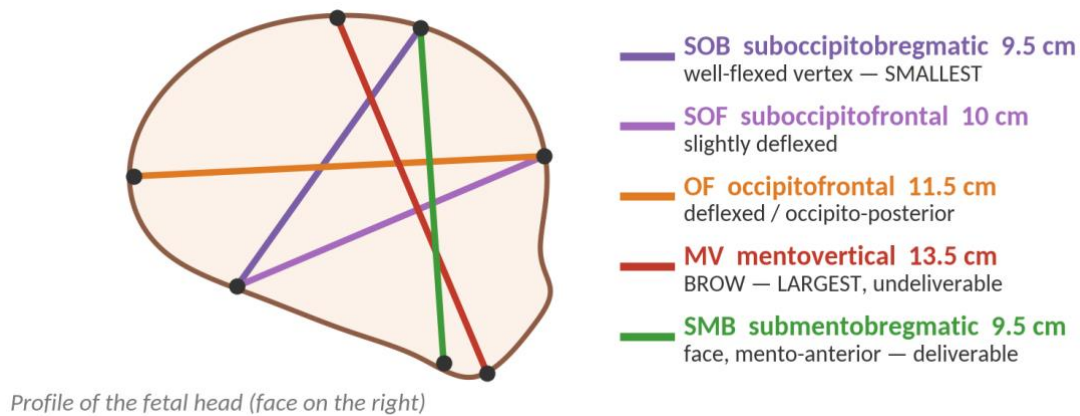


Figure 3. Longitudinal diameters (from Lecture 7).

Diameter	Length	Attitude / presentation
Suboccipito-bregmatic	9.5 cm	Fully flexed vertex — the ideal
Suboccipito-frontal	10–10.5 cm	Partly deflexed vertex
Occipito-frontal	11.5 cm	Deflexed vertex ('military'), often OP
Mento-vertical	13.5 cm — largest	BROW — not deliverable vaginally at term
Submento-vertical	11.5 cm	Incompletely extended face
Submento-bregmatic	9.5 cm	FACE, fully extended — deliverable if mento-anterior

Transverse diameters — skull from above

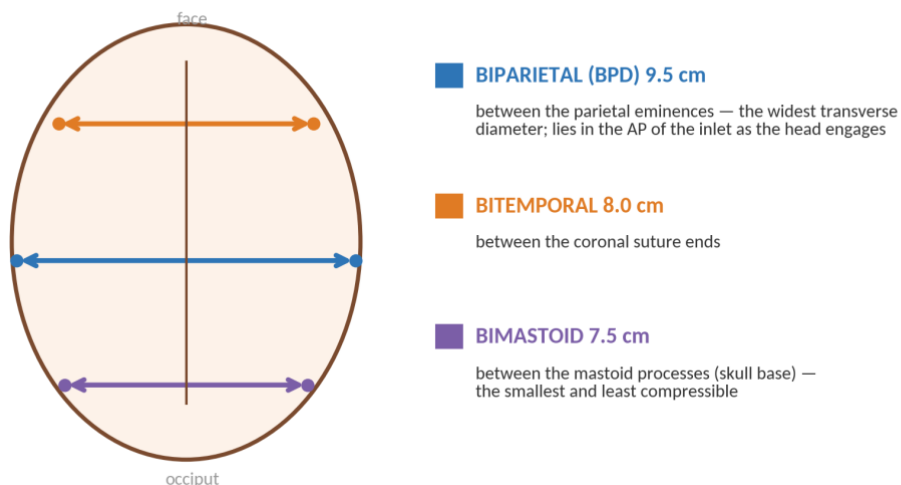


Figure 4. Transverse diameters.

Circumference	Approx.	Plane
Suboccipito-bregmatic	~28–30 cm	Fully flexed vertex
Occipito-frontal	~34–35 cm	Deflexed vertex (the usual 'head circumference')
Mento-vertical	~38 cm	Brow

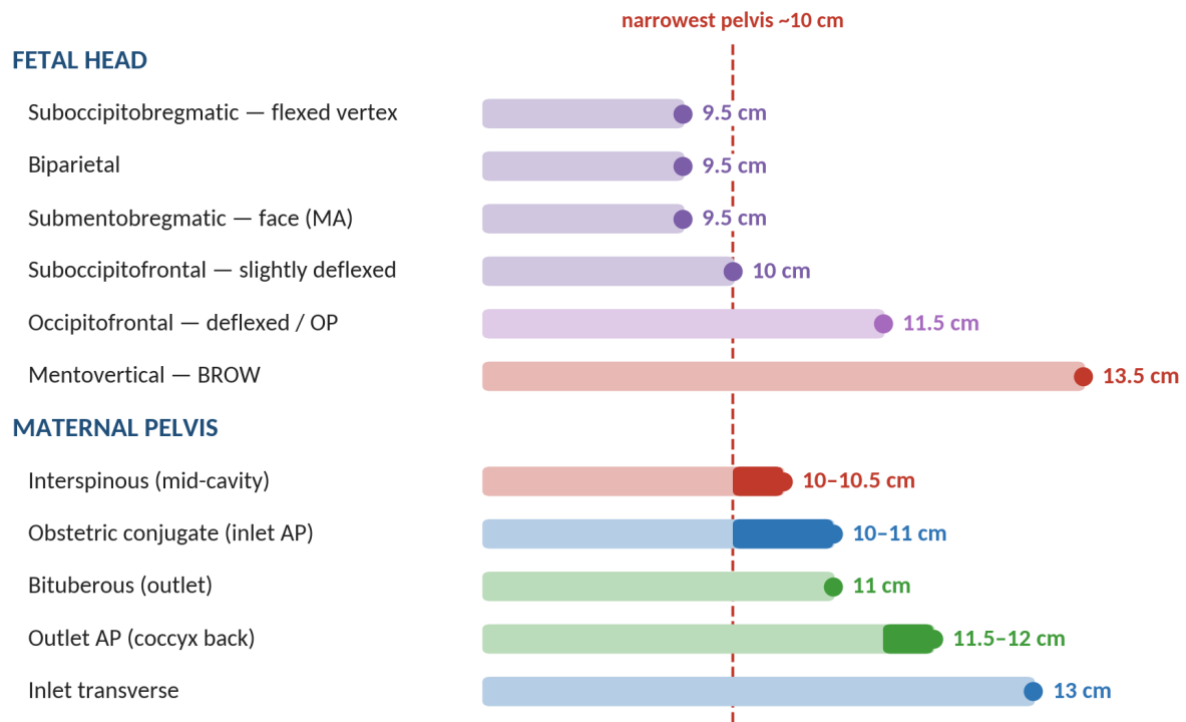


Figure 5. Why brow gets stuck — head vs pelvis (from Lecture 7).

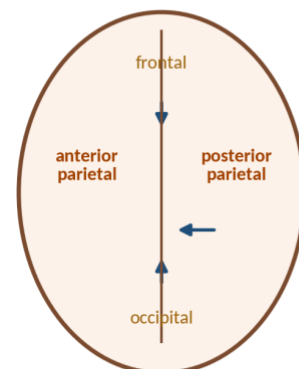
4 Moulding

Grades of moulding (feel at the sutures)

- 0**  separated
- 1**  apposed (touching)
- 2**  overlapped — REDUCIBLE
- 3**  overlapped — NOT reducible

Grade 3 moulding + no progress = think cephalopelvic disproportion.

Which bone slides under which?



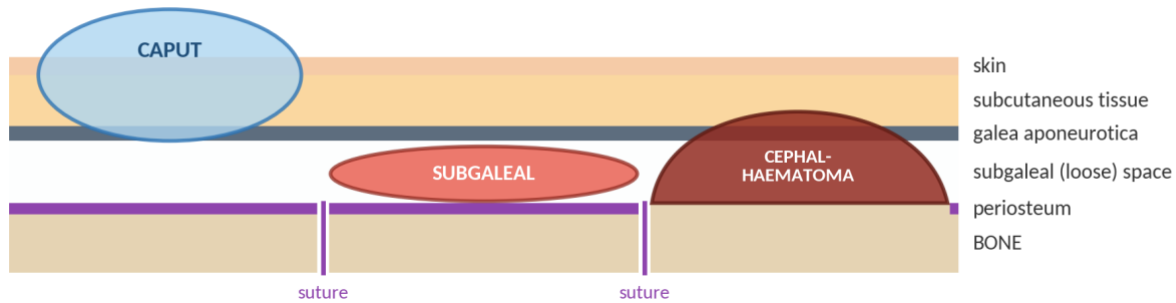
Frontal + occipital slip UNDER the parietals; the POSTERIOR parietal slips under the ANTERIOR one (pressed back by the sacral promontory).

Figure 6. Grading moulding and which bones override.

- Moulding shortens the presenting diameter by roughly **0.5–1 cm** — a compensation for a tight fit. **Grade 3 (overlapping, irreducible)** with poor progress suggests **cephalopelvic disproportion**.

5 Caput, Cephalhaematoma and Subgaleal Haemorrhage

Scalp layers and the three newborn swellings (schematic)



CAPUT SUCCEDANEUM

oedema ABOVE the galea • crosses sutures • pits • present at birth • gone in 1–2 days

SUBGALEAL HAEMORRHAGE

blood between galea and periosteum • crosses sutures, spreads over the whole scalp • can hold the baby's blood volume → SHOCK • mainly after VACUUM — an emergency

CEPHALHAEMATOMA

blood UNDER the periosteum • STOPS at sutures (one bone) • appears over 1–2 days • resolves over weeks • anaemia, jaundice • more with vacuum

Figure 7. Layer of the scalp decides whether a swelling crosses sutures.

Feature	Caput succedaneum	Cephalhaematoma
Nature	Oedema of the scalp (above the galea)	Subperiosteal blood
Crosses sutures?	Yes	No — confined to one bone
Onset	Present at birth	Appears over 1–2 days
Pits?	Yes	No
Resolves	1–2 days	Weeks; may calcify
Cause / problems	Pressure against the cervix • harmless	Instrumental (vacuum > forceps) • anaemia, jaundice

EXAM HOOK

Subgaleal haemorrhage: blood between the **galea and periosteum**; crosses sutures and spreads over the whole scalp; can hold much of the newborn's blood volume → **hypovolaemic shock**. Mainly after **vacuum** — observe closely (head circumference, heart rate, haemoglobin) and resuscitate early.

6 Presentation and Deliverability

DELIVERABLE

- **Flexed vertex (OA):** SOB 9.5 × BPD 9.5 — ideal
- **Deflexed vertex / OP:** OF 11.5 — slower labour, may rotate
- **Face, mento-anterior:** SMB 9.5 — can deliver

NOT DELIVERABLE (AS IT IS)

- **Brow:** MV 13.5 cm — caesarean unless it flexes or fully extends
- **Face, mento-posterior:** head already maximally extended against the sacrum — caesarean unless it rotates to mento-anterior

★ PEARL — why the head rotates

At the **inlet** the widest pelvic diameter is **transverse**, so the head engages with its **long (occipito-frontal) axis transverse** and the **BPD** in the pelvic AP.

At the **outlet** the widest diameter is **AP**, so the head must **rotate** (usually to OA) — the basis of the cardinal movements: engagement, descent, flexion, internal rotation, extension, restitution/external rotation, expulsion.

- **Plagiocephaly** from moulding or positioning usually settles by ~6 months; **craniosynostosis** (early suture fusion) gives a fixed shape — e.g. sagittal synostosis → long, narrow head (scaphocephaly).

7 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

9.5 cm SOB — flexed vertex	11.5 cm OF — deflexed / OP	13.5 cm MV — brow	9.5 cm SMB — face
9.5 cm Biparietal	18 mo Anterior fontanelle closes	6–8 wk Posterior fontanelle closes	4 vs 3 Sutures at each fontanelle

HIGH-YIELD CHECKLIST

- ☐ Sutures: sagittal (parietals), coronal (frontal–parietal), lambdoid (parietal–occipital), frontal.
- ☐ Anterior fontanelle: diamond, 4 sutures, closes ~18 months. Posterior: triangle, 3 sutures, 6–8 weeks.
- ☐ Posterior fontanelle felt = well flexed; anterior felt = deflexed.
- ☐ Regions: occiput, vertex, bregma, sinciput (brow), face (mentum).
- ☐ SOB 9.5 flexed; SOF 10–10.5; OF 11.5 deflexed; MV 13.5 brow; SMB 9.5 face.
- ☐ BPD 9.5, bitemporal 8.0, bimastoid 7.5.
- ☐ Brow and mento-posterior face are not deliverable as they are.
- ☐ Moulding: frontal + occipital under parietals; posterior parietal under anterior; grades 0–3.
- ☐ Caput crosses sutures; cephalhaematoma doesn't; subgaleal crosses and can cause shock.
- ☐ Head engages long axis transverse, then rotates to AP at the outlet.

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

Question	Answer
Suture between the two parietal bones?	Sagittal
How many sutures meet at the posterior fontanelle?	Three
When does the anterior fontanelle close?	~18 months
Presenting diameter of a flexed vertex?	Suboccipito-bregmatic, 9.5 cm
Presenting diameter in brow presentation?	Mento-vertical, 13.5 cm
Which face presentation can deliver vaginally?	Mento-anterior
Which parietal bone slips under the other?	The posterior parietal
Irreducible overlapping sutures = which grade?	Grade 3
Swelling limited by suture lines?	Cephalhaematoma

Question	Answer
Swelling that can cause hypovolaemic shock?	Subgaleal haemorrhage
Instrument most linked to subgaleal bleeding?	Vacuum (ventouse)

8 References

- Standring S, editor. Gray's Anatomy. 42nd ed. 2020.
- Marshall J, Raynor M, editors. Myles Textbook for Midwives. 17th ed. 2020.
- RCOG Green-top Guideline No. 26. Assisted Vaginal Birth. 2020.