

SUBGALEAL HAEMORRHAGE

annual report 2016

SUBGALEAL HAEMORRHAGE

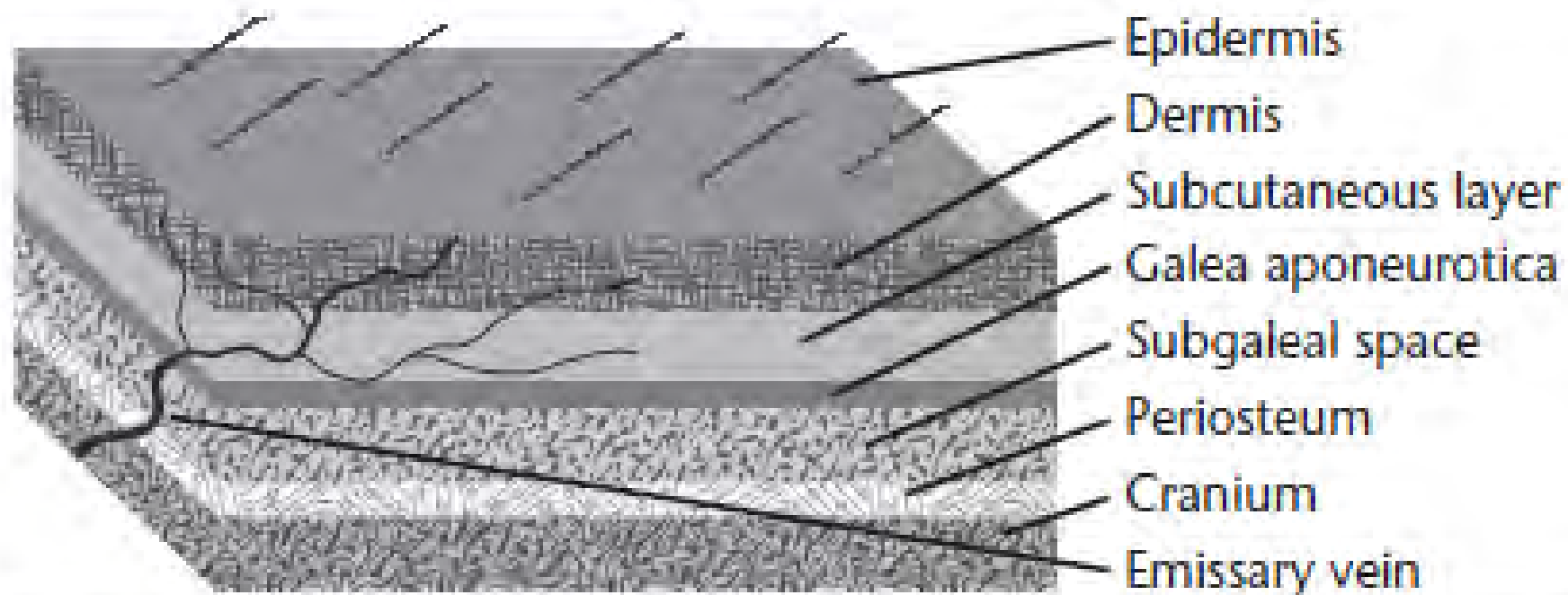
- Potentially lethal condition
- Mortality decreased from 17-25% to 5-14% in babies admitted to NICU (Colditz *et al*, 2014)
- Mortality 2.8% in center with formal surveillance program for SGH (Boo *et al*, 2005)

MORBIDITY AND MORTALITY

- Significant reduction morbidity and mortality by:
 - Identification risk factors (vacuum)
 - Early diagnosis (1-6 h)
 - Close observation
 - Aggressive treatment

ANATOMY

Note the location of an emissary vein in the large subgaleal space.

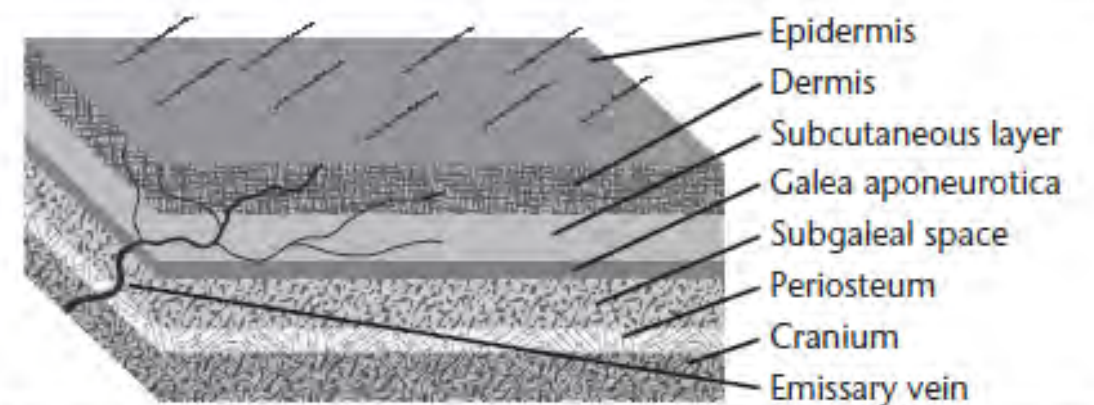


From: Seery, G. (2002). Surgical anatomy of the scalp. *Dermatologic Surgery*, 28, 582. Reprinted by permission.

SUBGALEAL HAEMORRHAGE

- Caused by rupture of the emissary veins
- Connections between the dural sinuses and the scalp veins
- Blood accumulates between the epicranial aponeurosis of the scalp and the periosteum.
- This potential space extends forward to the orbital margins, backward to the nuchal ridge and laterally to the temporal fascia
- 1 cm depth may hold up to 250 mL of blood

Note the location of an emissary vein in the large subgaleal space.



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total blood volume baby=85 mL/Kg;
blood loss of 54 mL in 3 Kg baby
equals loss of
20% of circulating blood volume

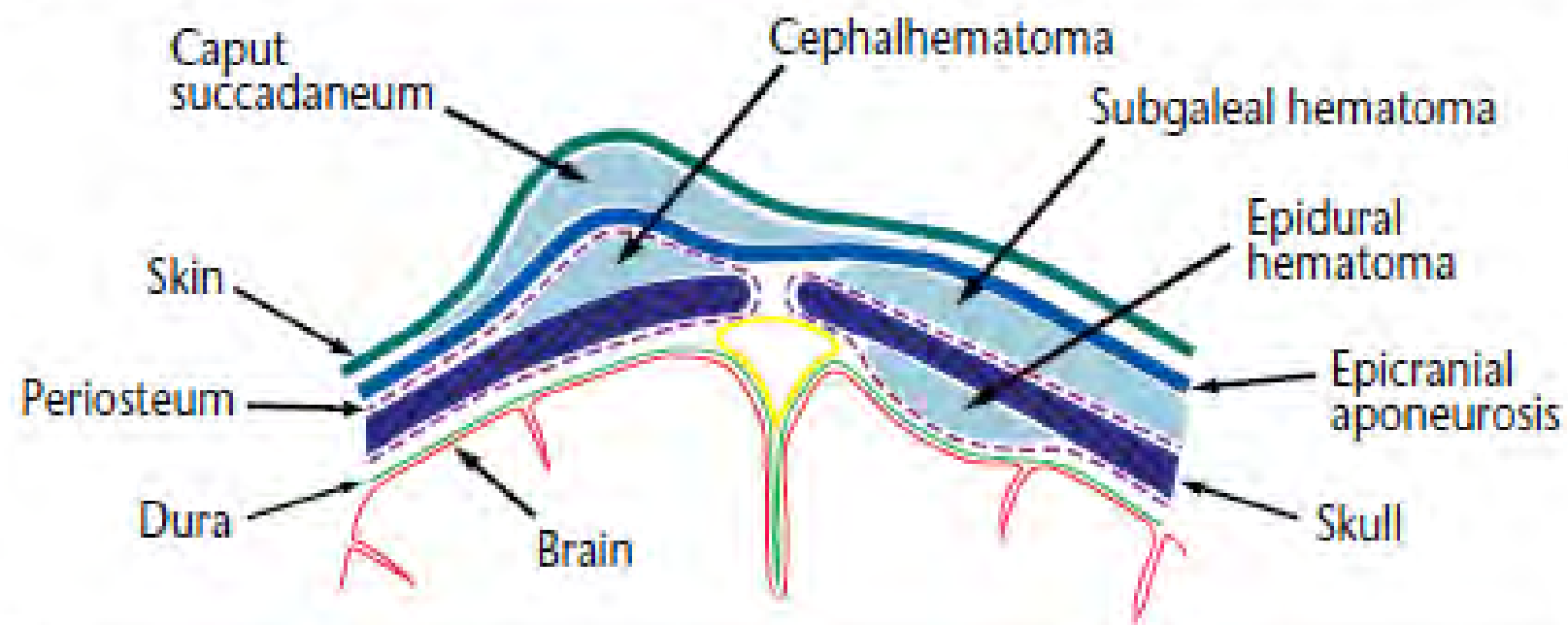
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Generalised signs:

- APGAR <7 at 5 min without asphyxia
- Haemodynamic instability (>HR, >RR, pallor, <refill, acidosis, <BP)
- Anaemia, coagulopathy

Localised signs:

- Generalised scalp swelling, ballotable, crossing suture lines, gravity dependent
- Displacement of ears, peri-orbital oedema
- Increase head circumference



From: Sheikh, A. M. H. Public domain with credit.



MANAGEMENT

- Identification risk factors
- cord pH, lactate, Ht and plat
- Close observation (birth, 1, 2, 4, 6 and 8h) (with surveillance program)
- Urgent paediatric review and NICU admission

MANAGEMENT SHOCK

- Saline bolus
- Packed red blood cell transfusion ($\text{Hb} < 140 \text{ g/L}$, *Boo et al*)
- Consider ventilation and inotropic support
- Consider treatment of acidosis
- Consider FFP ($\text{INR} > 1.5$; *Boo et al*), plat, cryoprecipitate or factor VII treatment

EPIDEMIOLOGY

- 0.6/1000 of all deliveries
- 4.6/1000 of vacuum deliveries
- between 60-89% of subgaleal haematomas occur as a result of vacuum delivery

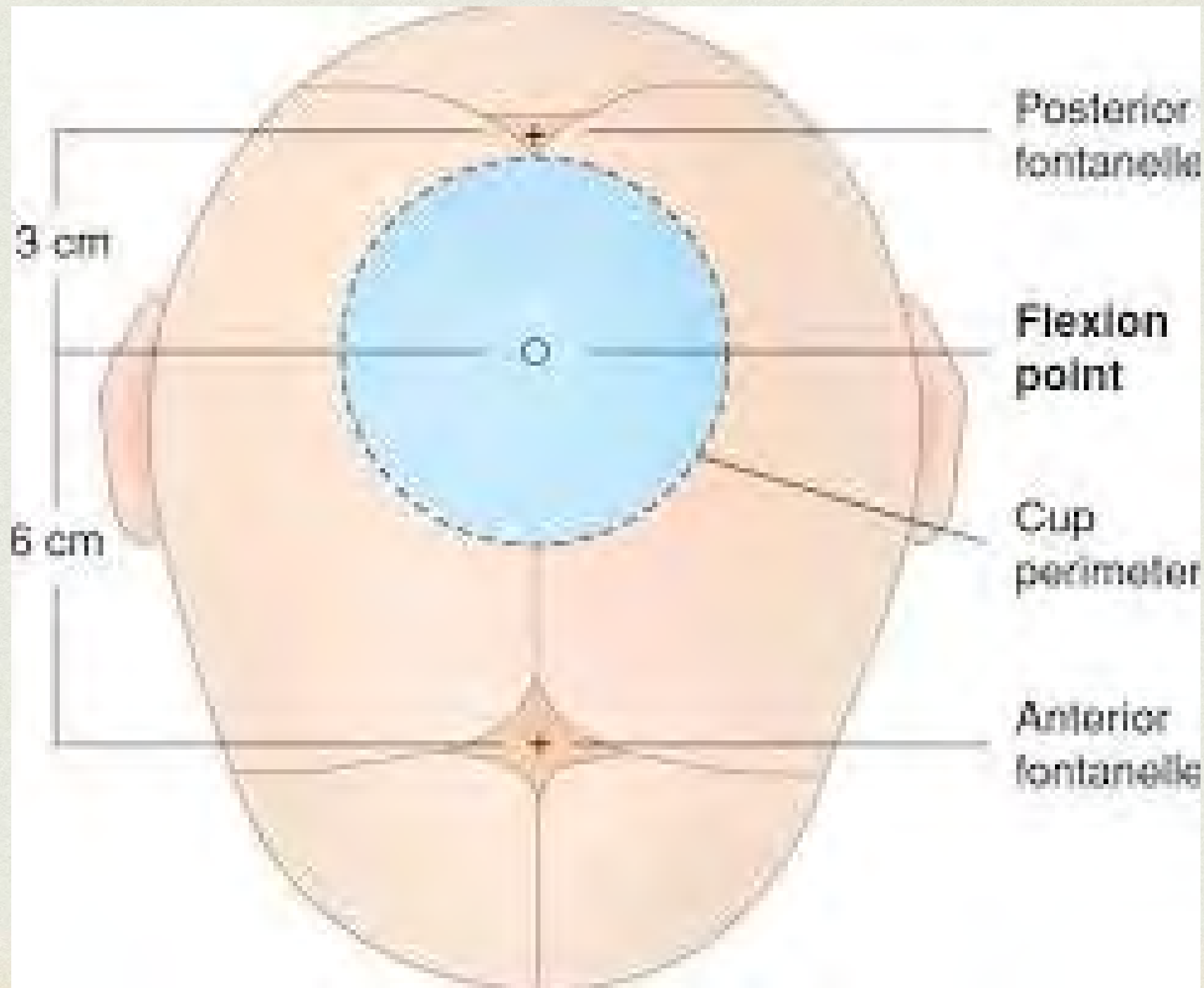
PREVENTION OF SGH

- patient selection
- technical aspects

PATIENT SELECTION

- vacuum extraction absolutely contraindicated < 34 weeks and relatively contraindicated < 36 weeks
- contraindicated among infants diagnosed or suspected of any bleeding disorder

TECHNICAL ASPECTS CUP PLACEMENT

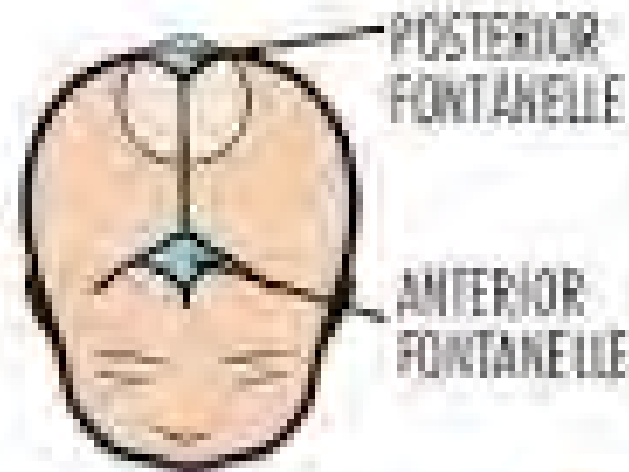


TECHNICAL ASPECTS CUP PLACEMENT

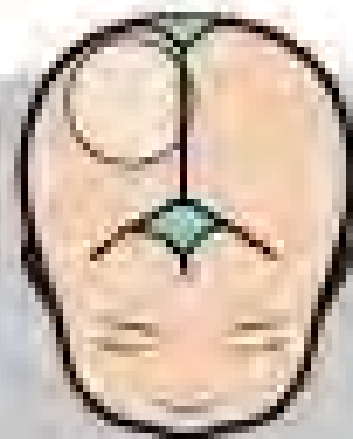
Figure 2. Cup Placement

CORRECT PLACEMENT

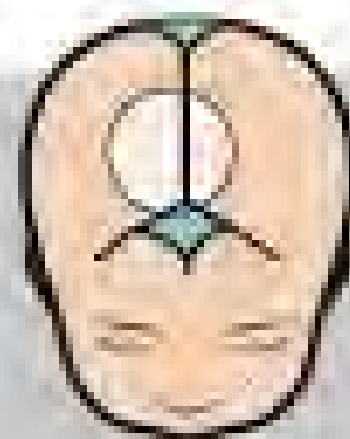
FLEXING
MEDIAN



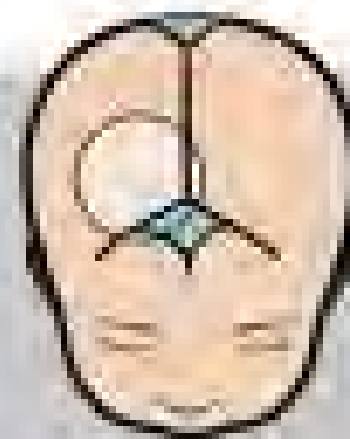
**INCORRECT
PLACEMENTS**



FLEXING
PARAMEDIAN



DEFLEXING
MEDIAN



DEFLEXING
PARAMEDIAN

TECHNICAL ASPECTS

- cup placement
- steady traction
- verify adequate descent
- Traction should not be prolonged

EARLY DIAGNOSIS LEVEL 1 SURVEILLANCE

minimal surveillance for all infants delivered by instrumental deliver

Regimen:

- Baseline set of post-delivery observation
- Hats and bonnets should be avoided
- concerns regarding neonatal behaviour should prompt a further full set of observations and institution of level 2 surveillance

LEVEL 2 NEONATAL SURVEILLANCE

Indication: one or more of the following

- Total vacuum extraction time > 20 min and/or > 3 pulls and/or > 2 cup detachments
- 5 min Apgar score < 7
- at clinician request
- level 1 observations are causing concern

LEVEL 2 NEONATAL SURVEILLANCE

Regimen

- acid base status
- HCT and Plt count
- Formal neonatal observations for SGH should continue for at least the first 12 hours
- Hourly for the first 2 hours of life and the 2 hourly for a further 6 hours - pulse oximetry may assist to diagnose tachycardia
- full set of observations

LEVEL 3 NEONATAL SURVEILLANCE

Indication

- Where there is a clinical suspicion of SGH immediately following delivery
- Where abnormalities are noted on level 2 surveillance

Regimen

- The infant should be reviewed by a paediatrician. These infants are likely admitted to the nursery with institution of resuscitation and further laboratory assessment including Hct and Coagulation profile

CONCLUSION

- prevention
- early diagnosis
- treatment