A Heads Up on Subgaleal Hemorrhage

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Disclosures

- I have nothing to disclose
Objectives

• After this presentation the learners will be able to:
  o Differentiate between common scalp swellings and subgaleal hemorrhage
  o Identify delivery history and physical assessment findings which warrant frequent reassessment for signs of subgaleal hemorrhage
The Case

• This is a published case presentation.
• Any resemblance to a case in any local hospital is purely coincidental.
• All pictures are publicly available on the internet. All patient pictures are from published articles in reference list.
Case of Baby Jane

Assessment

• 41 week, 3891Gm female
• Gravida-1 Para-0
• Spontaneous labor
• Vacuum extraction vaginal delivery
• Tight nuchal cord cut approximately 50 seconds prior to delivery
• Mild shoulder dystocia
• Apgars 3 @ 1, 4 @ 5, and 7 @ 10 minutes
Scalp swellings

- Caput succadaneum
- Cephalhematoma
- Subgaleal hematoma
- Epidural hematoma

Layers:
- Skin
- Epicranial aponeurosis
- Periosteum
- Skull
- Dura
- Brain
Scalp swellings

- Caput succedaneum
  - Serosanguineous fluid in subcutaneous tissues of presenting part
  - Soft spongy, crosses suture lines, shifts with positioning
  - Minimal blood loss
  - Resolves in 48-72 hours
Caput succedaneum
**Scalp swellings**

- Cephalohematoma
  - Blood accumulation between skull bone and periosteum
  - Does not cross suture lines, initially firm
  - Location - parietal and occipital bones, 85% unilateral
  - Blood loss is rarely severe
  - Resolves in 2 weeks to 3 months
Cephalohematoma

http://newborns.stanford.edu/PhotoGallery/Cephalohematoma1.html
Scalp swellings

- **Subgaleal hemorrhage**
  - Rupture of the emissary veins, blood accumulation in the subaponeurotic space.
  - Massive blood loss possible, no barrier to stop the bleeding.
  - Space can hold 240ml
    - Newborn blood volume 78-86ml/Kg (Harriet Lane, 2012)
    - 3Kg infant, 80ml/Kg = 240ml
  - Space extends from nape of neck to orbits of the eyes and from ear to ear.
  - May see fluid wave
  - Displace ear anteriorly
  - Swelling around the eyes
  - Resolves in 2-3 weeks High morbidity
Subgaleal hemorrhage

http://newborns.stanford.edu/PhotoGallery/Subgaleal3.html
Caput

Cephalohematoma

Subgaleal hemorrhage

How I think about things.....
Incidence

- 1 in 2500 spontaneous vaginal births
- 10 fold increase with the use of forceps or vacuum
- Vacuum use is reported in approximately 49% of all subgaleal hemorrhage

(Schierholz, E., Walker, S.R., 2010)
Vacuum Assisted Delivery

http://www.aafp.org/afp/2008/1015/p953.html
Risk factors associated with SGH after vacuum-assisted delivery

- Nulliparous mother
- Failed vacuum extraction
- Inadvertent cup release (pop-offs)
- Sequential use of vacuum and forceps
- Apgar less than 8 @ 5 min following vacuum assisted delivery
- Deflexing cup application (cup edge less than 3 cm from anterior fontanel)
- Paramedian cup application (cup centered more than 1 cm lateral to sagittal suture)

(Karlsen, 2013)
Figure 2. Cup Placement

CORRECT PLACEMENT

POSTERIOR FONTANELLE

FLEXING MEDIAN

ANTERIOR FONTANELLE

INCORRECT PLACEMENT

FLEXING PARAMEDIAN

DEFLEXING MEDIAN

DEFLEXING PARAMEDIAN

http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2009/dec16_6(suppl1)/Pages/07.aspx
What do we place on all newborns?
Case of Baby Jane

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- Apgars 3 @ 1, 4 @ 5, and 7 @ 10 minutes
What else would you like to know?

- Question 1
- Question 2
- Question 3
How long?

- How long was the vacuum in place prior to delivery?
  - Time from initiation of vacuum to delivery 21 minutes
How many pop-offs?
  o “multiple pop-offs”
Where was the cup placed?

• Where is the chignon (cup mark)?
  ○ Unknown
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Case of Baby Jane

- Baby required bag mask ventilation for ~ 4 minutes
- On examination “bogginess” of scalp noted
- Baby described as flaccid and “shocked” looking
- To nursery for observation
- 1.5 hrs of life transport called because baby paler and unresponsive
Case of Baby Jane

- Fluid boluses suggested but no IV access
- Transport noted severe swelling of the baby’s scalp
- Hct @ 3.5 hrs of life 34 compared to cord Hct 49
- Rec’d 50ml/Kg crystalloid and blood plus glucose, NaHCO3, Dopamine
Case of Baby Jane

- Despite NICU care baby continued to deteriorate with severe encephalopathy, profound hypotension, renal failure, disseminated intravascular coagulation (DIC), she died at 18 hours of life.
- Postmortem exam confirmed massive subgaleal hemorrhage, with several diastatic fractures and anoxic-ischemic changes within the brain.
Assessment

- Get complete delivery history
- Number of pop-offs, length of time with suction
- Assess location of suction mark
- Initial Head circumference
- Reassessment of FOC - each cm increase in FOC = approximately 40ml of blood loss (Reid, 2007)
- Assess for signs of shock - increased HR, decreased BP, increased cap refill, pallor
Plan

• Diagnostic testing
• Blood gas, Hct, clotting studies,
• Blood products- Hypovolemic shock
• Blood volume replacement (FFP, PRBC)
• Platelets and clotting factors (DIC)
• Inotropes to maintain adequate blood pressure
Implementation Nursing care

• Assess and stabilize respiratory status
• Assess head and skull for abrasions, ecchymosis, and swelling
• Measure head circumference
• Obtain laboratory studies: blood gas, type and cross, CBC, coagulation studies
• Obtain IV access; peripheral vs umbilical
• Communicate with family, transport team, and physicians
Evaluation

- Continued frequent assessment of vital signs, respiratory status, head examination and laboratory studies
Did I meet the objectives?

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References