Instrumental Vaginal Delivery

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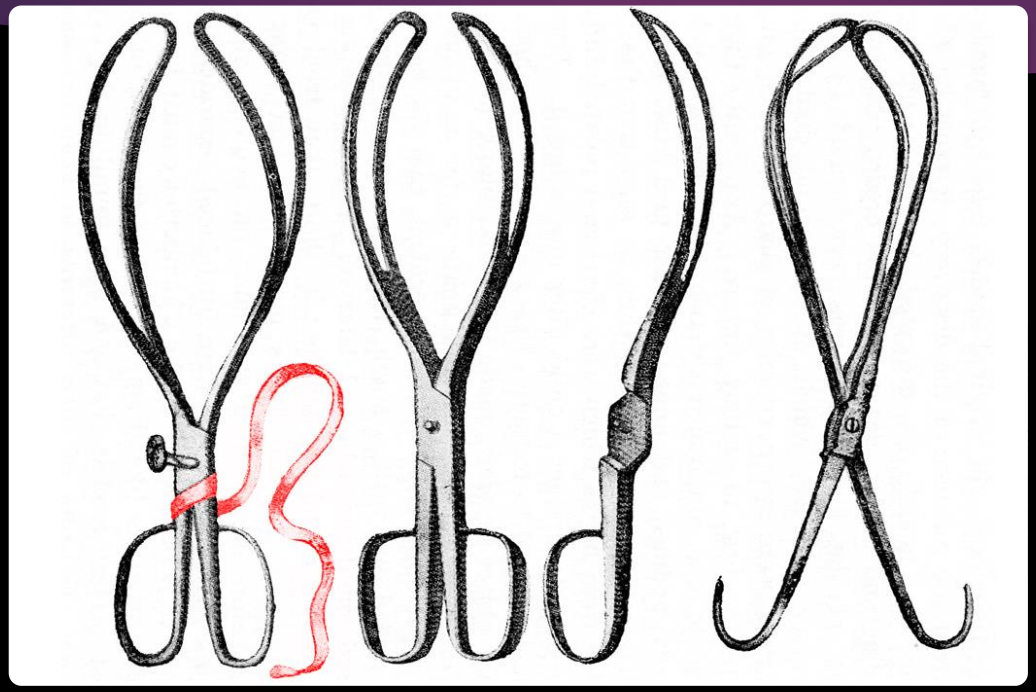
MOMS ECHO
1/10/2023



Chamberlen Forceps

1600s

Thomas Denman 1815

9. A rule for the time of applying the *forceps* has been formed from the following circumstance; that, after the cessation of the pains, the head of the child should have rested for six hours in such a situation as to allow the use of the *forceps* before they are used.

Princess Charlotte of Wales
A Triple Obstetric Tragedy

November 16, 1817

Joseph Bolivar DeLee 1920

- Perhaps, laceration, prolapse, and all the evils women in labor are subject to are, in fact, natural to labor, and therefore normal, in the same way as death of the mother salmon and death in the male bee in copulation, are natural and normal.

- If you adopt this view, I have no ground to stand on. But if you believe that a woman after delivery should be as healthy, as well as anatomically perfect as she was before, and that the child should be undamaged, then you will have to agree with me. that labor is pathogenic, because experiences prove such ideal result exceedingly rare.

Prophylactic Forceps

- Proposed that natural labor was harmful
- Advocated for routinized medical intervention
  - Parturient sedated with scopolamine when labor began
  - Cervix allowed to dilate
  - Ether administered during second stage
  - Episiotomy
  - "Lift the fetus" with forceps
- But believed that "watchful expectancy" should govern the actions of most birth attendants

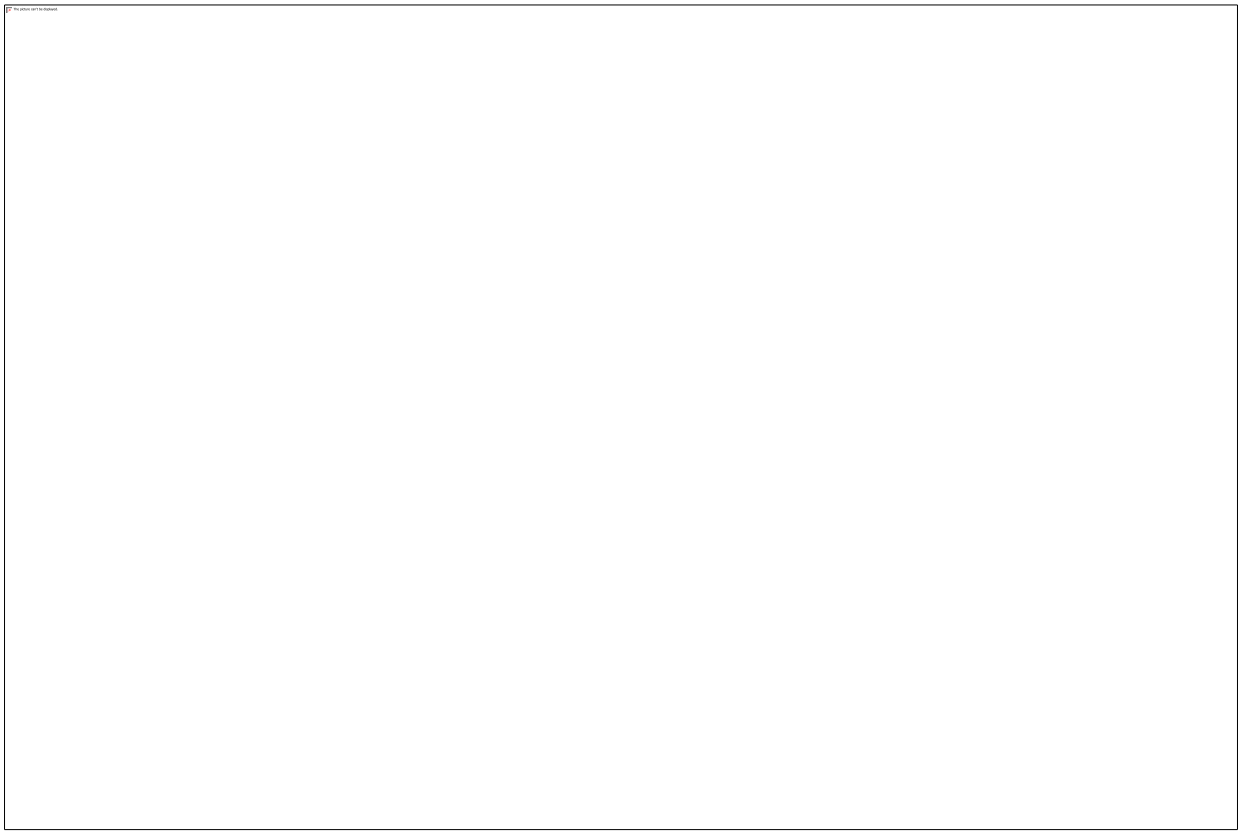
Indications for Operative Vaginal Delivery

- Prolonged Second Stage
- Suspicion of immediate or potential compromise
- Shortening of the second stage of labor for maternal benefit

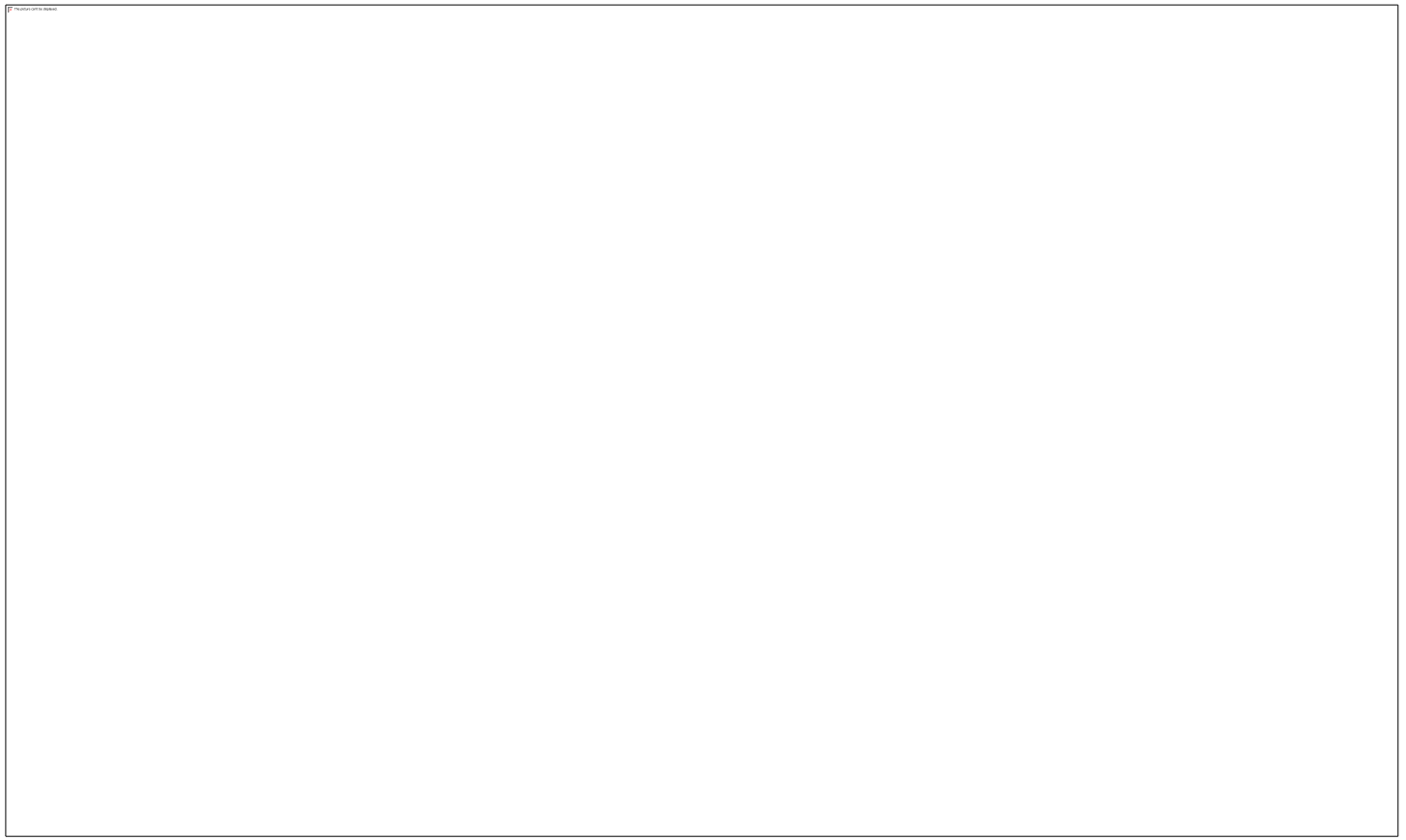
Classification of Instrumental Deliveries

- Outlet Forceps
- • Scalp is visible at the introitus without separating the labia.
- • Fetal skull has reached the pelvic floor.
- • Fetal head is at or on the perineum.
- • Sagittal suture is in anteroposterior diameter or right or left occiput anterior or posterior position
- • Rotation does not exceed 45 degrees.
- Low Forceps
- • Leading point of fetal skull is at +2 cm or greater and not on the pelvic floor.
- • Without rotation: rotation is 45 degrees or less (right or left occiput anterior to occiput anterior, or right or left occiput posterior to occiput posterior)
- • With rotation: rotation is greater than 45 degrees
- Midforceps
- • Station is above +2 cm but head is engaged.

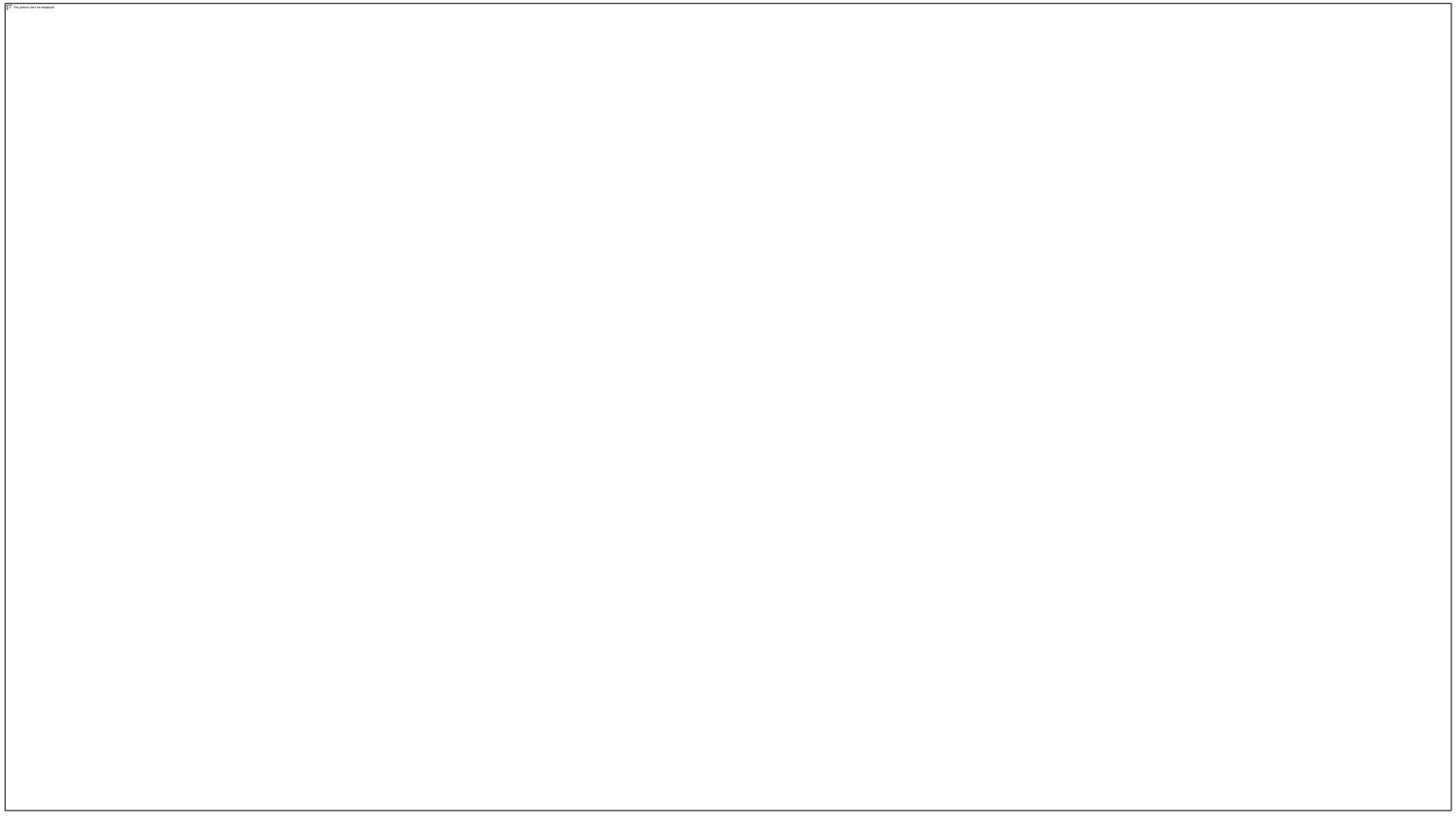
Modern Obstetrical Forceps



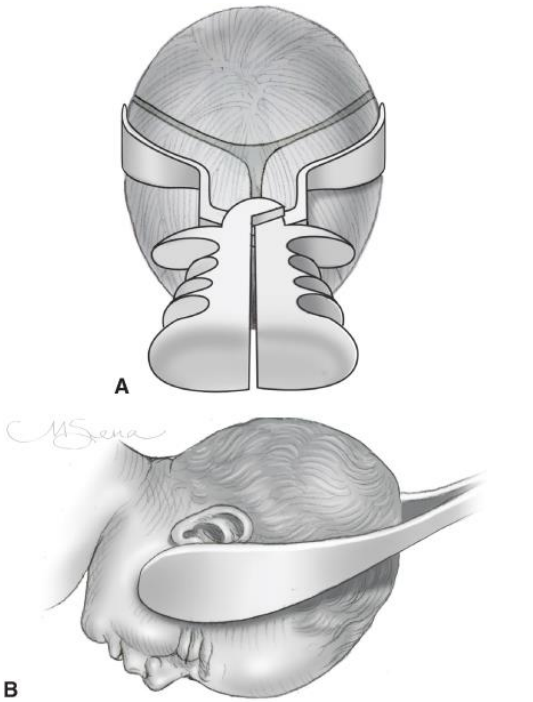
Classical Forceps



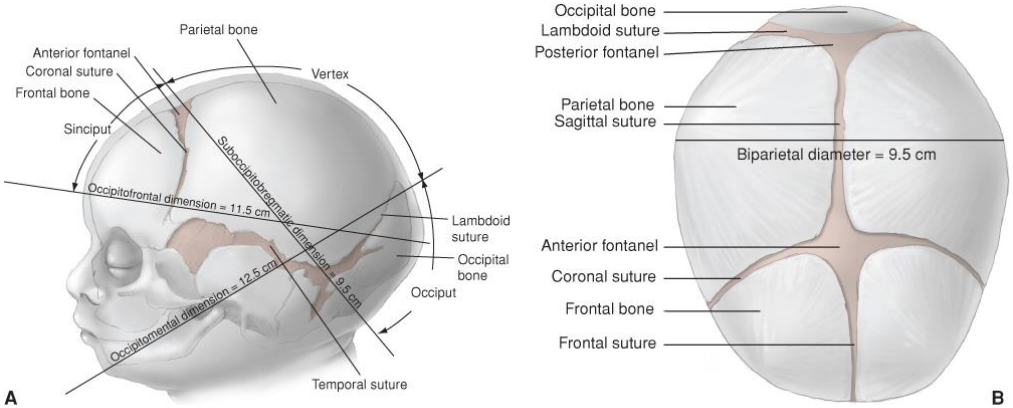
Specialized Forceps



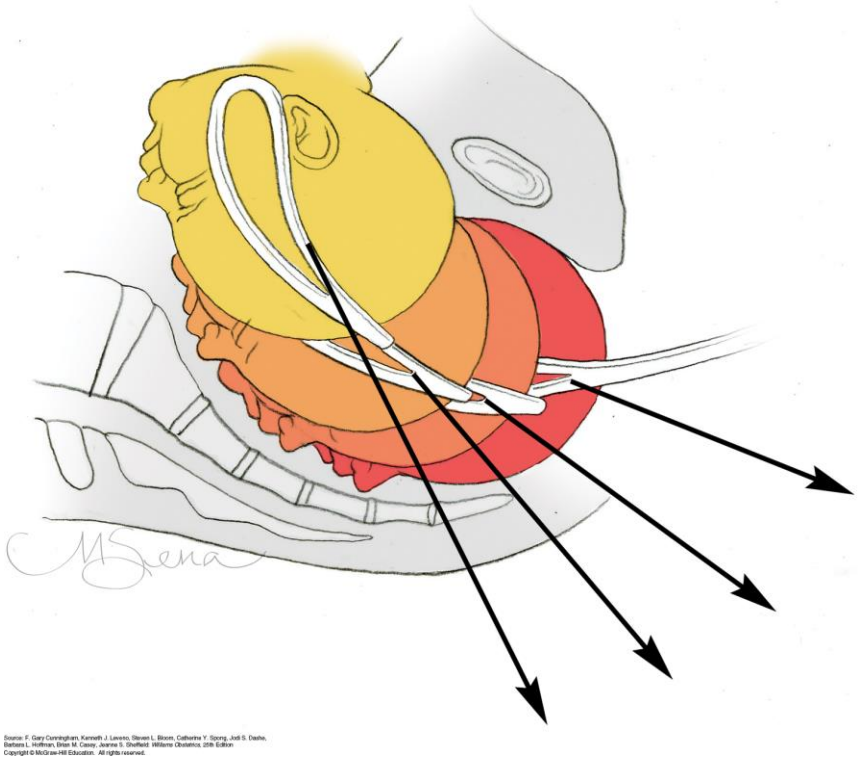
Vacuum Devices



A. The forceps are symmetrically placed and articulated. B. The vertex is OA. (Reproduced with permission from Yeomans ER: Operative vaginal delivery. In Yeomans ER, Hoffman BL, Gilstrap LC III, et al (eds): Cunningham and Gilstrap's Operative Obstetrics, 3rd ed. New York, McGraw-Hill Education, 2017.)



Fetal head (A, B) at term showing fontanels, sutures, and various dimensions.



With low forceps, the direction of gentle traction for delivery of the head is indicated (arrow). The vector changes with fetal descent.

Forceps vs Vacuum

Forceps	Vacuum Extraction
Greater third- and fourth-degree and vaginal lacerations	Higher failure rate than forceps
Greater maternal discomfort postpartum	Increased risk of neonatal injury
Greater duration of training needed	Minor: cephalohematoma, retinal hemorrhage
Increased risk of neonatal facial nerve injury	Major: subarachnoid hemorrhage, subgaleal hemorrhage
	Less need for maternal anesthesia

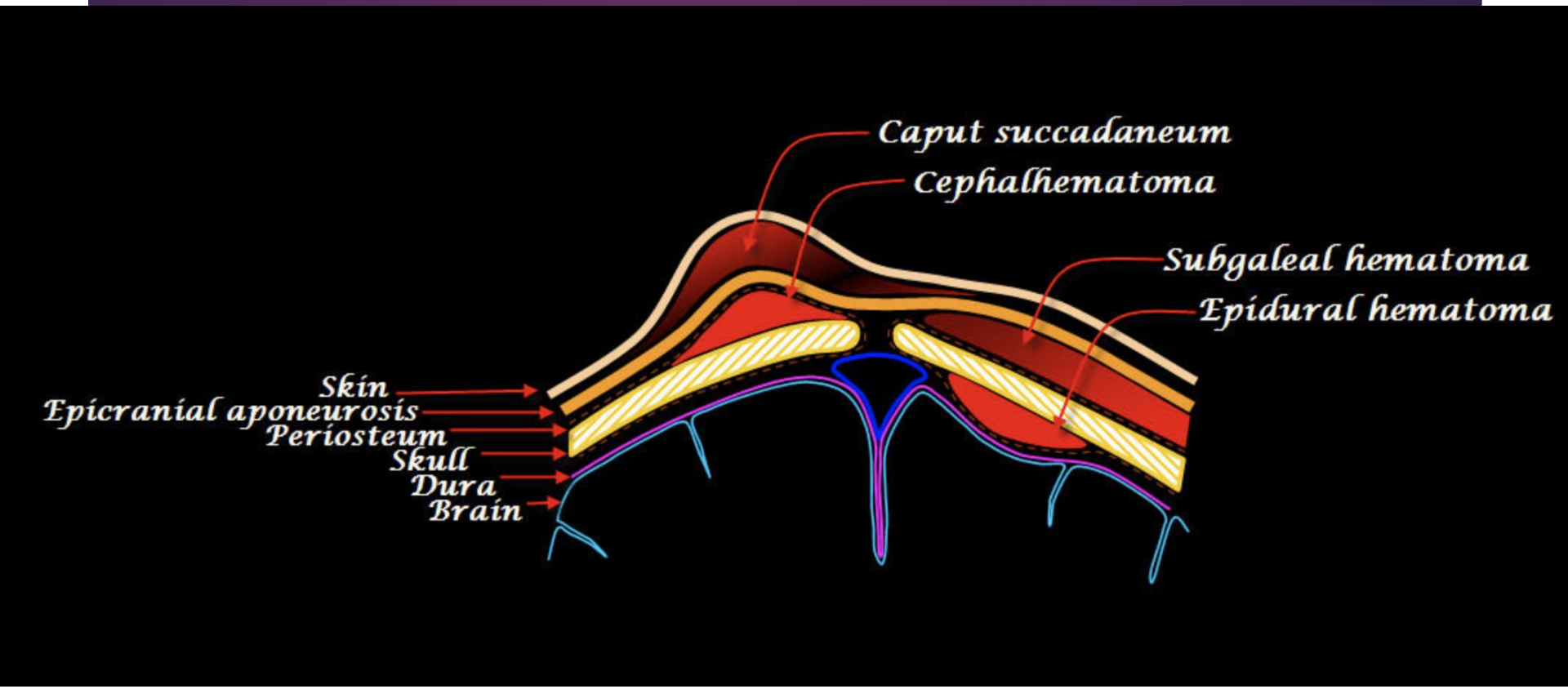

Caput succadaneum
Cephalhematoma
Subgaleal hematoma
Epidural hematoma
Skin
Epicranial aponeurosis
Periosteum
Skull
Dura
Brain

TABLE 2 ■ Birth Injuries of the Head

Injury	Incidence	Sutures and Scalp	Birth History	Associated Symptoms and Treatment	Prognosis
Cephalo-hematoma	4–25 in 1,000 deliveries	Does not cross suture lines Firm, fluctuant mass Usually unilateral Usually located over parietal bone No discoloration of scalp Distinct borders Increase in size at 12–24 hours	Forceps delivery Prolonged or difficult delivery More frequent in males More frequent in primiparas	Usually no other symptoms Skull fracture Severe blood loss (rare) Intercranial hemorrhage (rare) Infection (rare) Phototherapy for hyperbilirubinemia	Resolves in 2 weeks to 6 months
Caput succedaneum	Frequent	Crosses suture lines Soft, pitting, superficial edema over presenting part in vertex delivery Ecchymosis, petechia, or purpura over presenting part Maximum size at birth	Vertex delivery Vacuum extraction	Usually no other symptoms Resolves in several days Blood loss minimal	Excellent
Subgaleal hemorrhage	4 in 10,000 deliveries 64 in 10,000 vacuum extraction deliveries	Crosses suture lines Diffuse swelling progressively spreading from base of neck to orbits to ears Possible periorbital swelling (may not appear initially) Possible displacement of ears anteriorly Possible crepitus	Vacuum extraction Difficult or traumatic delivery including combined vacuum and forceps	Falling hematocrit Hypotonia Pallor Hypovolemic shock Seizures Skull fracture(s)	25% mortality rate