Maternal and neonatal Birth injuries
Neonatal resuscitation

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Birth injuries

Definition:

- Are any physical or emotional distress that occurs to the fetus or the mother during labor(speciallythe 2nd stage).
- They may be avoidable, or they may be unavoidable and occur despite skilled and competent obstetric care, as in an especially hard or prolonged labor or with an abnormal presentation.

Risk factors for birth injury:

Fetal

- Macrosomia
- Abnormal presentation
- cephalopelvic disproportion

Maternal

- Obesity
- Pelvic abnormalities
- Short stature
- Uterine inertia

Delivery

- Instrumental delivery: Vacuum & Forceps
- Prolonged labour
- Skills of the obstetrician

TYPES OF BIRTH INJURIES:

Newborn injuries:

-Extracranial injuries: Caput succedaneum, Subgalealhematoma & Subperiosteal hematoma.

-Intracranial injuries: Epidural, Subdural, Subarachnoid, Intracerebral & Intraventricular

-Facial injuries: Nasal septal dislocation & Ocular injuries.

- Neurological injuries: Bell's palsy, Erb's palsy & Klumpke's paralysis.

-Soft tissue injuries: Bruising, Abrasions , Lacerations, Fat necrosis &

-Fractures: Clavicle , Skull , Humerus & Femur.

Torticollis.

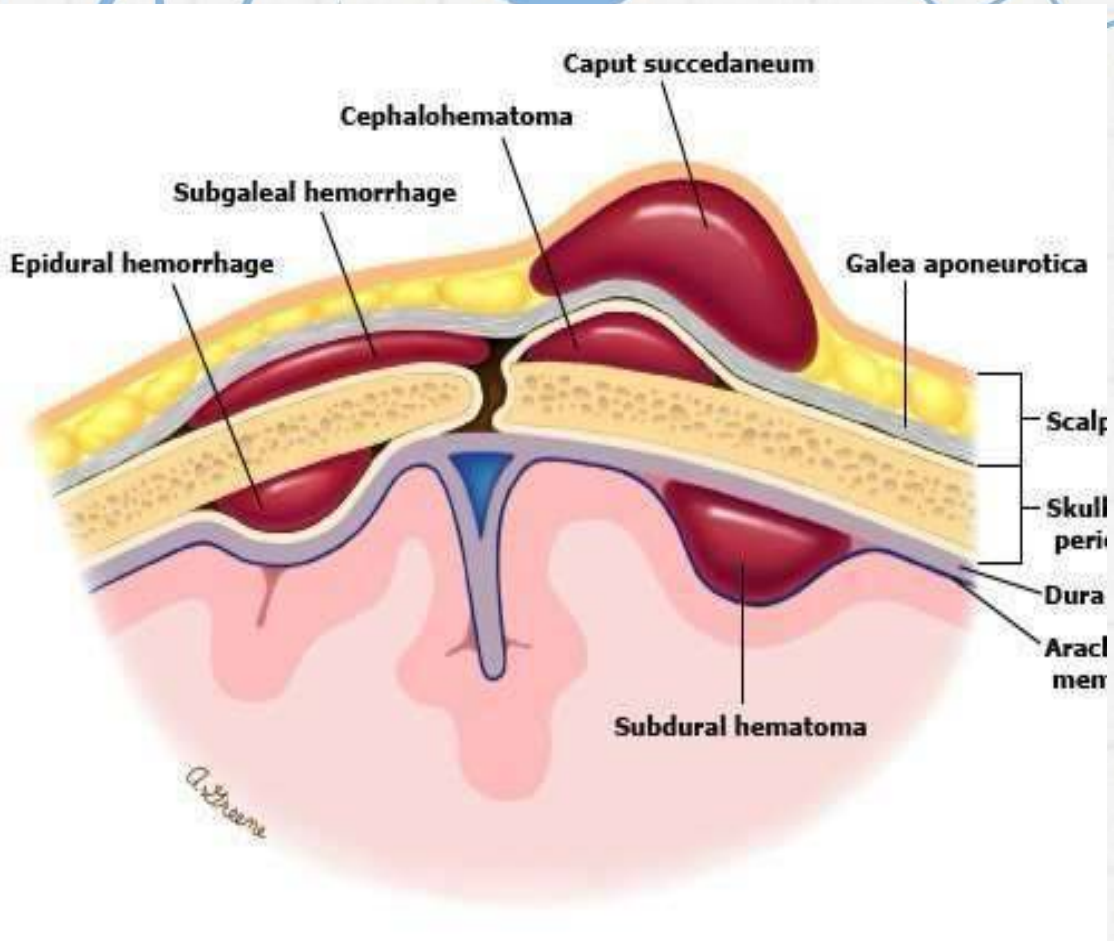
- Abdominal injuries.

Maternal injuries:

-Perineal tears.

- Vulvar hematoma.

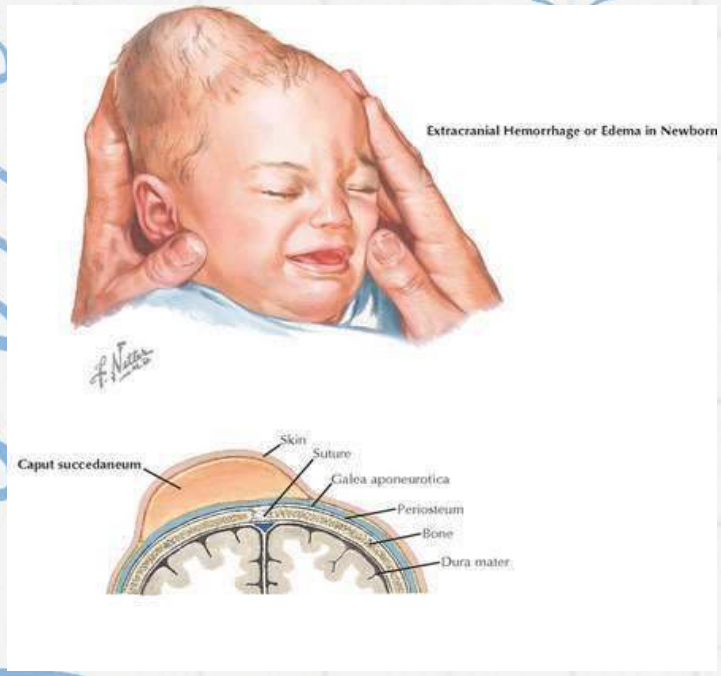
-Uterine rupture.



Extracranial injuries :

- Caput succedaneum
- Subgaleal hematoma .
- Subperiosteal hematoma.

-Caput Succedaneum:



- a frequently observed lesion, is characterized by a Serum, blood, or both accumulate above the periosteum (subcutaneous, above aponeurosis) in the presenting part during labor.
- This extravasation results from the higher pressure of the uterus or vaginal wall on those areas of the fetal head that border the caput.
- Causes:
- 1. normal delivery
- 2. Vacuum application
- 3. Prolonged or obstructed labor

Caput Succedaneum

Clinical Manifestations

- soft swelling is usually a few millimeters thick (pits on pressure) .
- with overlying petechiae, purpura, orecchymoses.
- across the midline of the skull and across suture lines.
- caput may obscure various sutures and fontanelles.

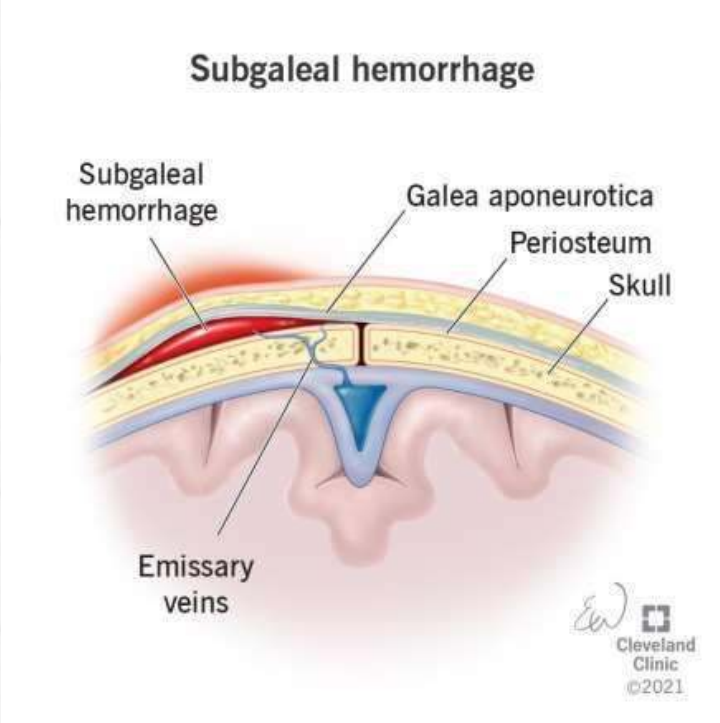
Treatment

A caputsuccedaneum usually resolves within several days. Usually , no specifictreatment is indicated.
Rarely, ahemorrhagic caput mayresultin shock and require blood transfusions .

Subgaleal Hemorrhage :

- Subgaleal Hemorrhage Subgalealhemorrhageis a collection of blood in the soft tissue space between the galea aponeurotica and the periosteum of the skull .
- The most common predisposing factor is difficult operative vaginal delivery, particularly mid forceps delivery and vacuum extraction.13The riskfor subgalealhemorrhagemaybe reduced by the use of softer silicone vacuum cups instead of theoriginalrigid metallic ones.
- **The major risk factors:**

  include coagulopathies, prematurity, macrosomia, fetal dystocia, precipitous labor, intrapartumhypoxia, male sex, cephalopelvicdisproportion, prolonged labor, and nulliparity.



vacuum traction pulling the scalpaway fromstationary bony calvarium

open the subgalealspace and causing the bridging vessels to tear and bleed into the subgaleal space.

The loose connective tissue of the subgalealspace is extremely expansive and extends over the entire area of the scalp.

The spacecan accommodate the entire neonatal blood

volume(250 mLormoreina term baby)

leading to hypovolemic shock, disseminated intravascularcoagulation, and multiorganfailure, resultingindeathinupto 14% of the cases

- Early manifestations may be limited to pallor, hypotonia, and diffuse swelling of the scalp. The development of a fluctuating mass straddling cranial sutures, fontanelles, or both is highly suggestive of the diagnosis
- Blood accumulates beneath the aponeurotic layer, ecchymoticdiscoloration of the scalp is a later finding. This is often associated with pitting edema and progressive posterior spread toward the neck and lateral spread around the ears, frequently displacing the ears anteriorly . Periorbitalswelling and ecchymosis also are commonly observed.

- Eventually, hypovolemic shock, multiorganfailure, and signs ofcerebral irritationdevelop.Massivelesionscancause extracranialcerebral compression, which may lead to rapid neurologic decompensation

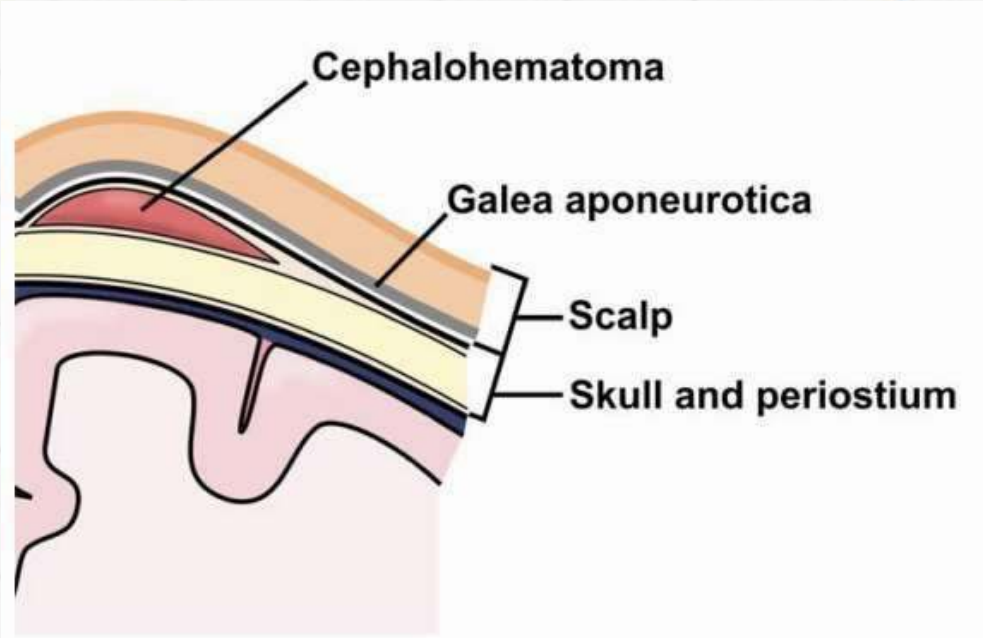
Treatment :

- Prompt restoration of blood volume with fresh frozen plasma or bloodisessential. In thepresence of continued deterioration, neurosurgery may be considered as a lastresort . A bicoronalincision allows for exposure of the subgalealspace. Bipolar cauterization of anybleeding points canthenbe accomplished, and adraincanbeleft in the subgalealspace.
- 14% of infants with subgalealhemorrhage —> die .
- long-term prognosis for survivors is generally good.

Cephalhematoma :

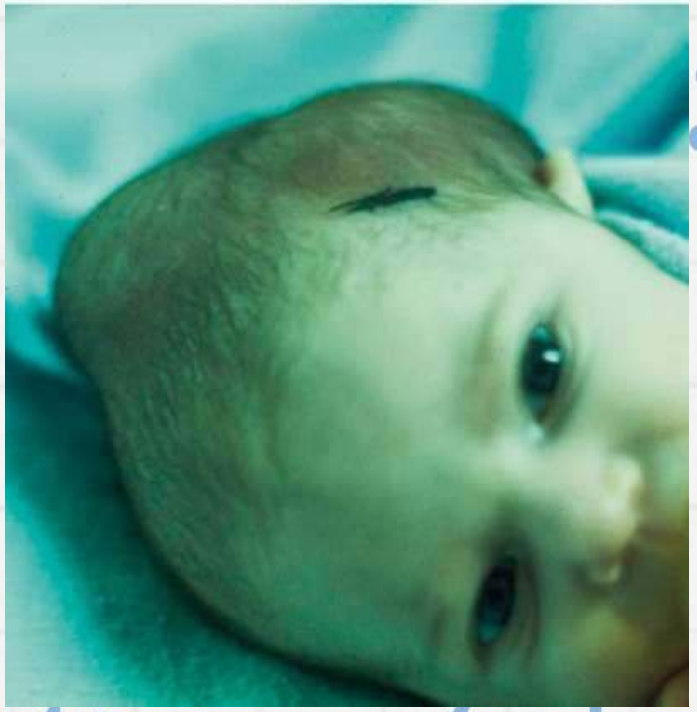
- Cephalhematoma is an infrequently seen subperiosteal collection of blood overlying a cranial bone.

- A cephalhematoma is caused during labor or delivery by a rupture of diploic blood vessels that traverse from skull to periosteum. Repeated buffeting of the fetal skull against the maternal pelvis during a prolonged or difficult labor and mechanical trauma caused by use of forceps and vacuum suction devices in delivery have been implicated.



Clinical Manifestations :

- The bleeding is sharply limited by periostealattachments to the surface of one cranial bone; there is no extension across suture lines.
- The overlying scalp is not discolored.
- Because subperiostealbleeding is slow, the swelling may not be apparent for several hours or days after birth. The swelling is often larger on the second or third day , when sharply demarcated boundaries are palpable.
- The cephalhematomamay feel fluctuant and often is bordered by a slightly elevated ridge of organizing tissue that gives the false sensation of a central bony depression.
- It may be associated with an underlying linear, non depressed skull fracture in a small percentage of infants.
- may be infected, calcified ,lead to hyperbilirubinemia(blood break down)



•Radiographic manifestations :

- Vary with the ageof the cephalhematoma. During the first 2 weeks, bloody fluid results in a shadow of water density. At the end of the second week ,bone begins to form under the elevated pericranium at the margins of the hematoma; the entire lesion is progressively overlaid with a complete shell of bone.

Treatment :

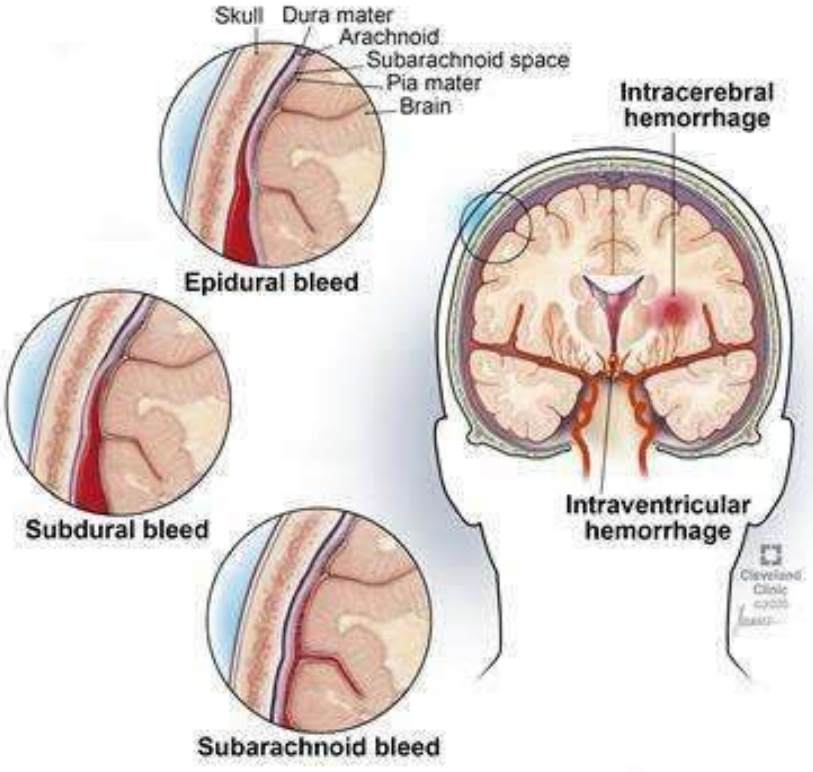
No therapy isindicated for the uncomplicated cephalhematomabecause more than 80% resolve by gradual hemolysis and resorption in 3 to 4 weeks. When the hematoma does not resolve spontaneously, it may get organized, and calcification may be seen. It may still get absorbed slowly and often disappears over 3 to 6 months. Persistent calcification that is not resolved by time may be an indication for surgical excision.

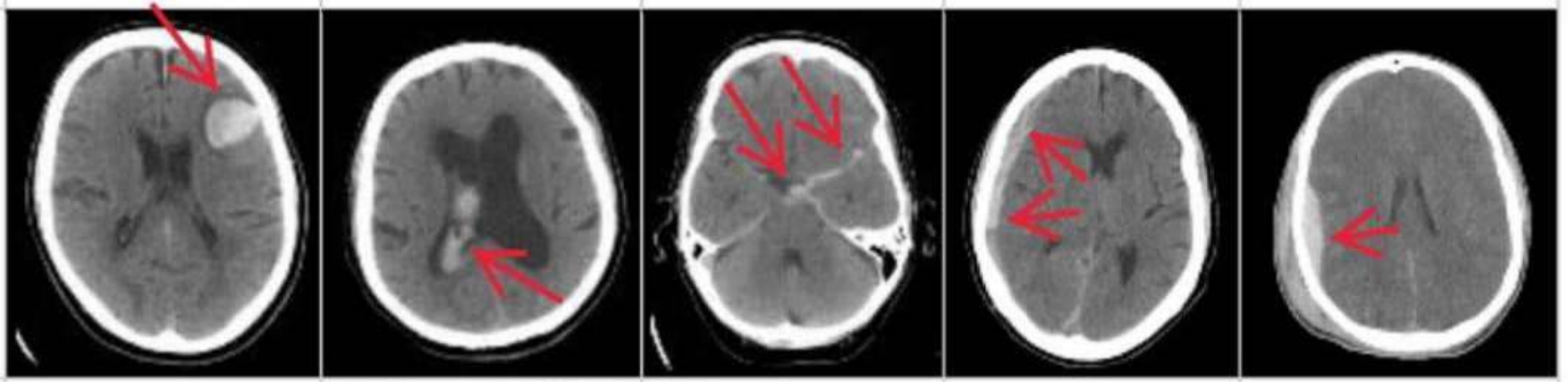
Infants intracranial hemorrhage (Brain bleeds)

- Infant intracranial hemorrhages (otherwise known as brain bleeds) are birth injuries that range from minor to extremely severe.
- They can be caused by birth asphyxia (oxygen deprivation during or around the time of birth) or birth trauma (injuries caused by excessive mechanical force to the baby's head)

- In many cases, may these complications stem from medical negligence

Intracranial injuries: Epidural, Subdural, Subarachnoid, Intracerebral& Intraventricular



	Intraparenchymal	Intraventricular	Subarachnoid	Subdural	Epidural
Location	Inside of the brain	Inside of the ventricle	Between the arachnoid and the pia mater	Between the Dura and the arachnoid	Between the dura and the skull
Imaging					
Mechanism	High blood pressure, trauma, arteriovenous malformation, tumor, etc	Can be associated with both intraparenchymal and subarachnoid hemorrhages	Rupture of aneurysms or arteriovenous malformations or trauma	Trauma	Trauma or after surgery
Source	Arterial or venous	Arterial or venous	Predominantly arterial	Venous (bridging veins)	Arterial
Shape	Typically rounded	Conforms to ventricular shape	Tracks along the sulci and fissures	Crescent	Lentiform
Presentation	Acute (sudden onset of headache, nausea, vomiting)	Acute (sudden onset of headache, nausea, vomiting)	Acute (worst headache of life)	May be insidious (worsening headache)	Acute (skull fracture and altered mental status)

Facial Nerve Palsy

Etiology

- Compression of the peripheralportion of the nerve either near the stylomastoid for men through which the nerve emerge or where the nerve travels the Ramus of the mandible

- The nerve may be compressed by forceps

- Or after spontaneous delivery in which prolonged depression was apply by the maternal sacral promontort

Clinical picture

Clinical picture:

- Absence of nasolabial fold
- Loss of wrinkling of the forehead
- Impaired closure of the eye
- Mouth does not move down the same way on both sides while crying

Treatment

Tx: Observation. In themeantime, provide the infant w/ lubricating eye drops. Typically this will resolve within a week. If it doesn't, consult peds neuro; sx that persist may be due to an absence of the facial n. or a congenital syndrome.

Facial nerve injury

Neonatal brachial plexus palsy:

Erb paralysis result from injury of the fifth and sixth cervical roots of the brachial plexus

Klumpke or lower arm paralysis results from injury of the eighth cervical and first thoracic roots

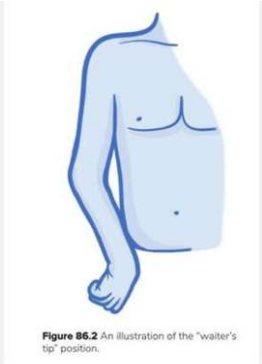
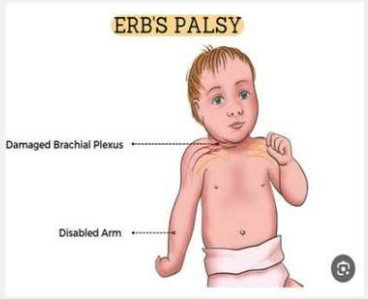
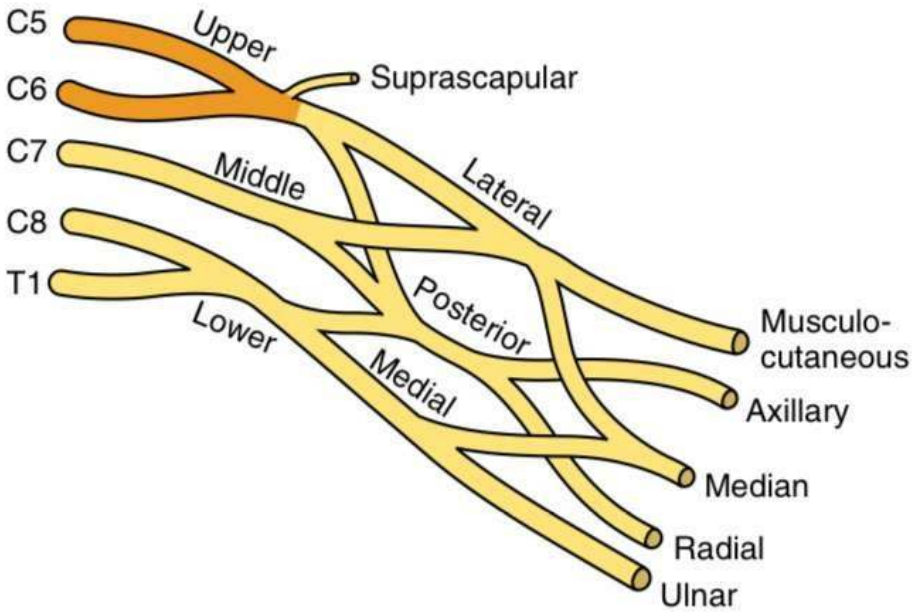


Figure 86.2 An illustration of the "waiter's tip" position.



Paralysis of the entire arm



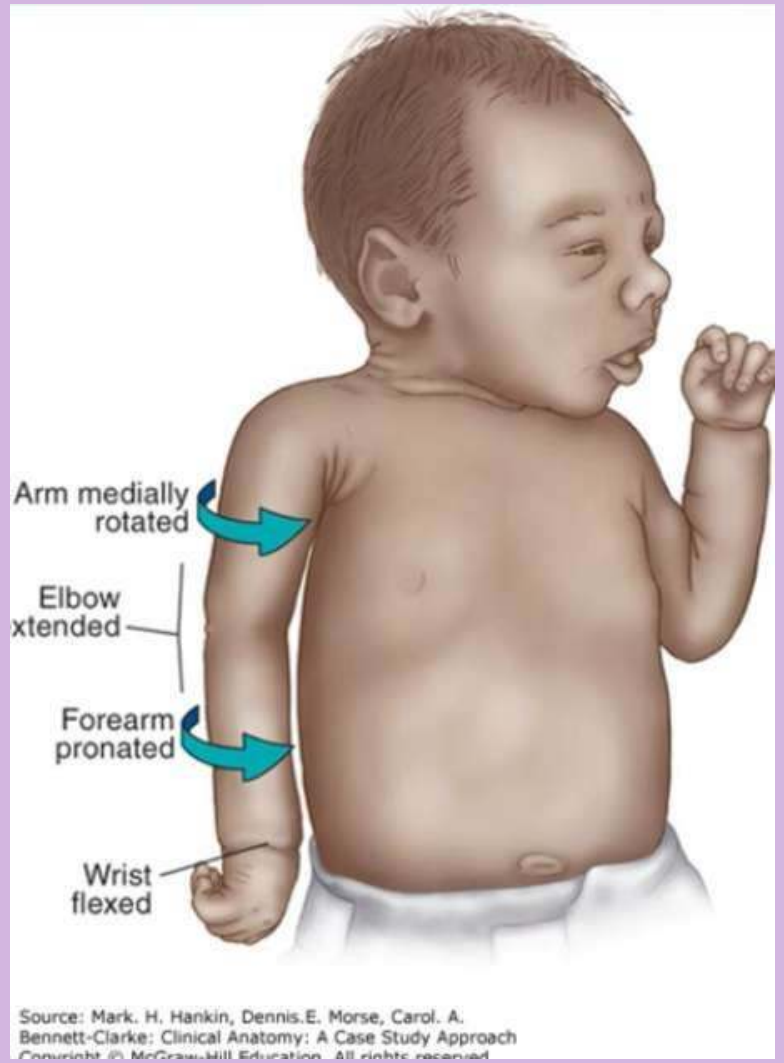
Erb's palsy (C5 -C6)

Excessive lateral traction on the neck during delivery.

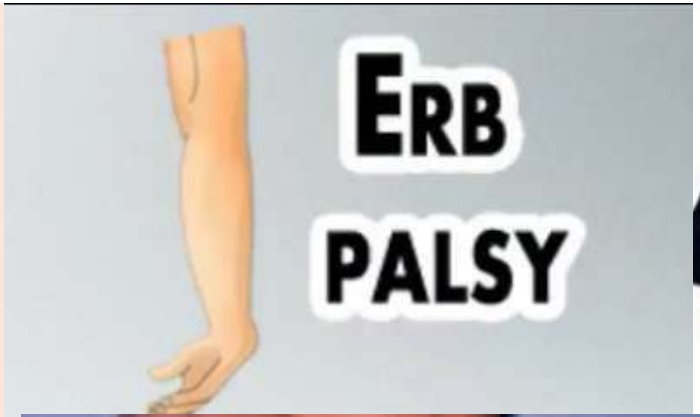
Injury to the upper trunk of the brachiales.

erb's palsy

- The arm is adducted and internally rotated, with extension at the elbow, pronation of theforearm, andflexionof the wrist.
- Moro, biceps, and radial reflexes are absent on the affected side.
- The grasp reflex is usually present.



Source: Mark. H. Hankin, Dennis.E. Morse, Carol. A. Bennett-Clarke: Clinical Anatomy: A Case Study Approach



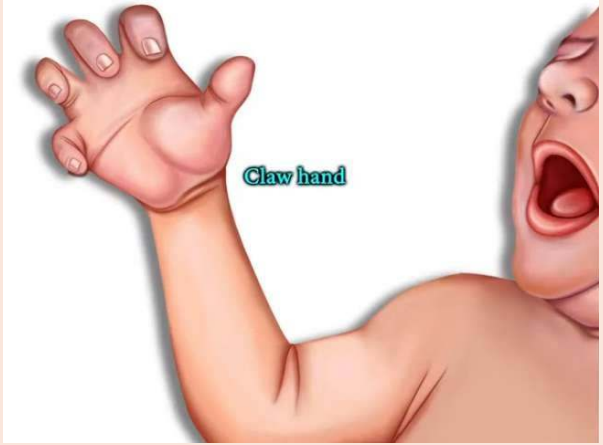
The Moro reflex is a normal reflex for an infant when he or she feels like they are falling

Klumpke's paralysis (C8, T1)

- Excessive traction of the arm during delivery i injury to the lower trunk of the brachial plexus klumpke's palsy

- Lower arm paralysis involves the intrinsic muscles of the hand and the long flexors of the wrist and fingers.

- **The grasp reflex is absent;**



- **Brachial plexus injury is associated with shoulder dystocia, which more commonly leads to Erb palsy than Klumpke palsy.**

KLUMPKE PALSY

-upward force on arm
or grabbing a tree branch

-Tear of Lower Trunk

-Total clawing of hand

ERB PALSY

-lateral traction of neck

-Tear of Upper Trunk

-waiter's tip arm

Shou lder dystocia

Definition:
.Difficulty with delivery of the fetal shoulders, after delivery of fetal head

Risk factors:

1. Large baby
2. Small mother
3. Maternal obesity
4. Diabetes mellitus
5. Postmaturity
6. Previous shoulder dystocia
7. Prolonged first and second stage of labour
8. Assisted vaginal delivery.

Complication

A –Fetal:

1.Hypoxia and cerebral damage: due t occlusion of the vessels in the fetal neck after 5 minutes, if the baby is already compromised, this may occur earlier.

2.Nerve and brachial plexus damage (Erb's palsy): due to inappropriate traction on the head causing lateral flexion of the head on the neck.

3.Fetal death

4.Bone fractures: like humerus and clavicular fracture.

B –Maternal:

Postpartum hemorrhage is the major maternal risk from shoulder dystocia,
usually from uterine atony, but also from vaginal and cervical lacerations,
trauma to the genital tract, uterine rupture and puerperal sepsis.

Diagnosis: the head recoils against the perineum after delivery (turtle's sign) with failure of restitution

Management:

Avoid it

Prophylactic caesarean section is indicated when:

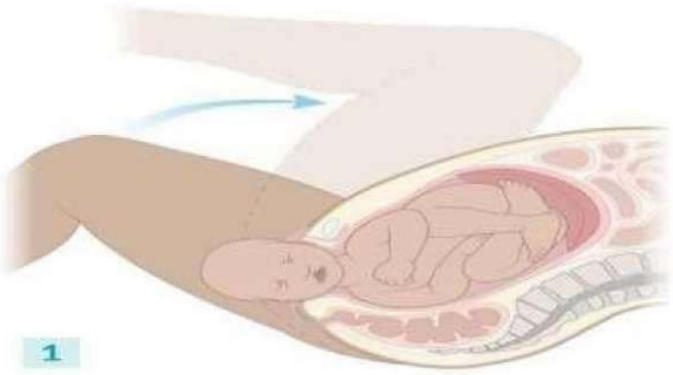
Estimated fetal weight > 5 kg in women without DM.

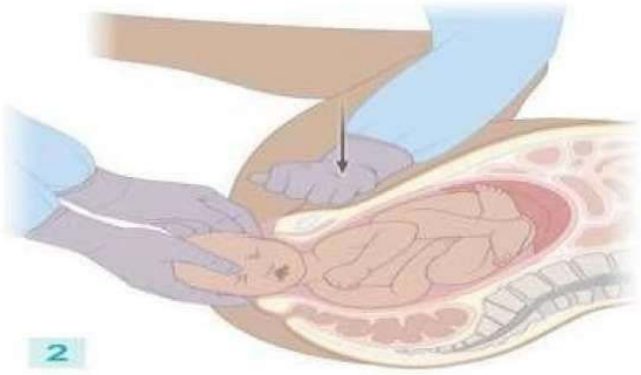
Estimated fetal weight > 4.5 kg in women with DM

HLPEER

1.**H**elp: senior Obstetrician, anesthesiologist and pediatrician
2.**L**egs: Hyperflex and abduct the hips (Mc Robert's position)
3.**P**ressure: Apply suprapubic pressure
These will be successful in most of the cases, if failed then:
4.**E**pisiotomy
5.**E**nter: Rotate the shoulders by internal manipulation (Wood's screw)
Deliver the posterior arm, posterior arm sling can be done by NG tube
5.**R**oll: Turn the patient into (all four) position

More dramatic techniques as fracture of the fetal clavicle, symphysiotomy
replacement of the fetal head and delivery by caesarean section
(Zavanelli maneuver) are traumatic and rarely necessa





McRoberts maneuver and suprapubic pressure (Rubin I maneuver) in shoulder dystocia

1. The fetal head is partially delivered but has retracted against the perineum (Turtle sign). Both maternal hips are abducted, externally rotated, and maximally flexed (McRoberts maneuver).
2. Suprapubic pressure is applied to the impacted anterior shoulder (Rubin I maneuver).
3. The anterior shoulder passes under the pubic symphysis, and delivery can be completed.

Soft tissue injuries

1. Bruising and ecchymosis :

-Causes : difficult delivery may lead to bruising especially on the head and face , frompressureagainstthe mother'spelvisorpressure-caused by forceps

-no need for treatment, spontaneous resolution in 1 week

2) Subcutaneous fat necrosis

-causes: use of instruments during delivery and stress on newborn can injure the fat under the skin

Clinical picture:

appear in 1st 2 weeks of life
irregular, hard, non-pitting, subcutaneous plaque with overlying dusky, red purple discoloration

sites: cheeks, arms, back, buttocks, thigh

No treatment is necessary

Nasal septal dislocation in neonates :.

Definition

The most frequent nasal injury is dislocation ofthecartilaginous partoftheseptum from the vomerine groove and columella.

Presentation

- Presentation :

1. deviation of the nose to one side
2. airway obstru ction
3. an asymmetrical appearance of the nose.
4. noisy breathing (stridor)

Causes

persistent pressure on the nose by fetal small parts or during delivery from pressure on the nose by the symphysis pubis,

during forceps application and delivery

Definitive diagnosis by Rhinoscopy

Treatment: manual reduction within 3 days of age

.: Nasal septal dislocation in neonates

Ocular Injuries:

- retinal, subconjuctival hemorrhage <vaginal delivery>
  - ocular, periorbital injury <forceps delivery>
    - local laceration
    - palpebral edema

Uterus

FRACTURES

Clavicle

- most common (occurring in 2% of normal births)

Causes

- difficult delivery

of the shoulders in vertex presentations and extended arms in breech deliveries. Vigorous, forceful manipulation

2

Clinical Manifestations

movement of

- the arm on the affected side is decreased or absen

- discoloration may be visible over the fracture site

- Passive movement of the arm elicits cries of pain

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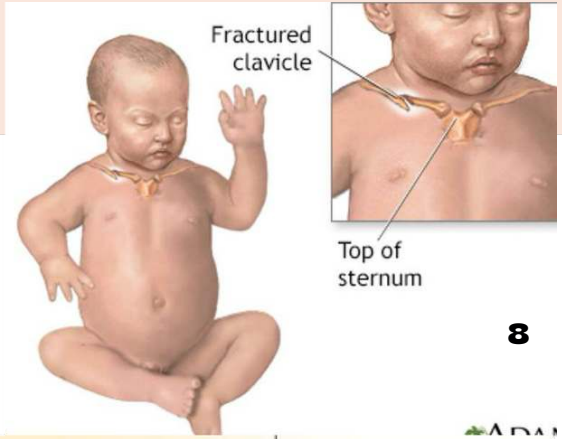
- Palpation reveals tenderness, crepitus,
- Moro reflex absent



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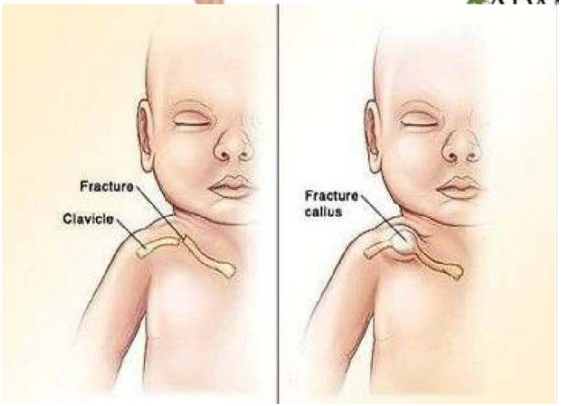


management

x-raystudiesforchest,shoulders and cervical spines

Skull Fractures

Etiology

Come on inbreechpositionandshoulderdystociainmacrosomicinfant forceps delivery

types of fracture and management

Linear fractur

soft tissue changes and the infant'sbehaviorisnormalunlessthere is an associated neurologicalsymptoms

iflinearfracturewithoutCNSmanifestation observation

Depressed fractures

visible, palpable indentations The infant may be entirely free of symptoms unless there is an associated intracranial injury.

surgicalelevation oftheindentedsegment

Basal fractures carry a poor prognosis

x-ray and CT scan for diagnosis

complications:

seizure, disruptions of blood vessels, brain contusions, death

Humerus, Femur:

etiology

Fracture of the Humerus

difficult
delivery of extended arms in breech presentations

Fracture of the Femur

femur usually follows a breech delivery when the leg is pulled down improperly held by one thigh during delivery

presentation

immobilityl/. tenderness / crepitation/ swelling/pain

management: splinting

Injuries to Intra-Abdominal Organs

Theconditionusually occurs in largeinfants, infants with hepatomegalyinfantswith erythroblas- fetalis and infants of diabetic mothers), and infants who underwent breech delivery.

Types:

Rupture or subcapsular hemorrhage into liver, spleen or adrenal glands.

*clinical presentation

Abdominal distention

poor feeding

pallor & shock.

jaundice, tachypnea

*management

1.clinical examination and serial hematocrit levels.
2. abdominal ultrasound.
3.paracenthesis in case of intraperitoneal bleeding.

Immediate management consists of transfusion with packed red blood cells, as well as recognition and correction of any coagulation disorder.

NEONATAL RESUSCITATION

DEFINITION

is the seriesof actionsused to assistnew born babies who have difficulty with making the physiological transition from the intrauterine to extra uterine life

FACTORS ASSOCIATED WITH AN INCREASED RISK OF A NEED FOR STABILIZATION / RESUSCITATION AT BIRTH

Category	Ante-partum Factors	Intrapartum Factors
Fetal Factors	- Intrauterine growth restriction	- Evidence of fetal compromise (non-reassurin
	- Gestation < 37 weeks	- Meconium-stained amniotic fluid
	- Multiple pregnancy	- Vaginal breech delivery
	- Serious congenital abnormality	- Forceps or vacuum delivery
	- Oligo- or polyhydramnios	- Significant bleeding
Maternal Factors	- Infection	- Cesarean section before 39 weeks
	- Gestational diabetes	- Emergency cesarean section
	- Pregnancy-induced hypertension	- General anesthesia
	- Pre-eclampsia	
	- High BMI	
	- Short stature	

THE BASIC NEEDS OF A BABY AT BIRTH

The four basic needs of ALL babies at the time of birth (and for the first few weeks of life) are:

i. Warmth

ii. Normal breathing

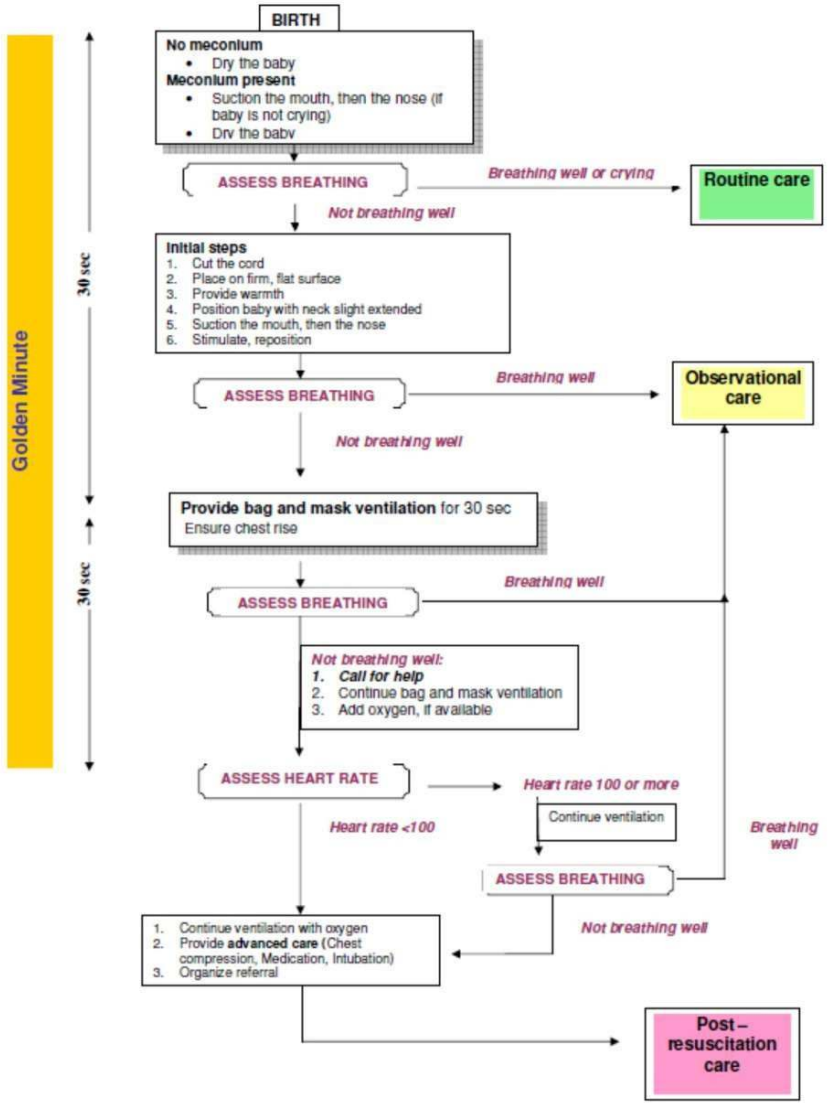
iii. Mother’s milk

iv. Protection from infection

STEPS OF R ESUSCITATION

If the baby need resuscitation
-cut the cord.
- Tell the mother that her baby is having difficulty beginning to breathe and that you are going to
help him. Tell her quickly but calmly.
- Transfer the baby to a warm clean, flat and dry surface.
- Provide warmth
- Position the baby
- Clear the airway
- Stimulate and reposition

Flow Diagram for Basic Neonatal Resuscitation



1.**Provide warm environment :**

A baby's skin temperature falls within seconds of being born. If the temperature continues to fall, the baby will become ill and may even die.

This is why a baby MUST be dried immediately after birth and delivered onto a warm towel or piece of cloth, and loosely wrapped before being placed (naked) between the mother's breasts.
This first skin-to-skin contact should last uninterrupted for at least one hour after birth or until after the first breastfeed. The mother and baby should be covered with a warm and

drycover, especially if the room temperatureislowerthan250C.The steps of prevention of heat loss are
explained in the lesson on 'Thermal protection'.

'Warm chain'

1. At delivery:

- Ensure the delivery room is warm (25° C), with no draughts.
- Dry the baby immediately; remove the wet cloth.
- Wrap the baby with clean dry cloth.
- Keep the baby close to the mother (ideally skin-to-skin) to stimulate early breastfeeding.

- Postpone bathing/sponging for 24 hours.

2. After delivery:

- Keep the baby clothed and wrapped with the head covered.
- Minimize bathing especially in cool weather or for small babies.
- Keep the baby close to the mother.
- Use kangaroo care for stable LBW babies and for re-warming stable bigger babies

How to keep baby warm :

Use dry, warm towel to hold the baby at birth. Remove wet towel after cleaning
ii. Adequate and appropriate clothing
iii. Skin-to-skin contact or next to mother (Rooming in)
iv .Radiant warmer in nursery
v. Keep the room temperature of baby care area 25°C
* Using a 200 watt bulb may not be sufficient to keep the baby warm. There is also a risk of breakage of bulb.

2. Open the baby's airway : place baby on his back , head is slightly extend , place folded of cloth under the baby shoulder (help to maintain position) the folded cloth should not too thick this may cause overextension or flexion which close the airway then suction the mouth then nose **open the airway** : suction the mouth then nose

Suctioning some time stimulate breathing , if this happend place the baby with mother and provide **observational care** :

Keep baby with mother: Do not separate the mother and the newborn. Allow the newborn skin-to-skin contact with the mother.

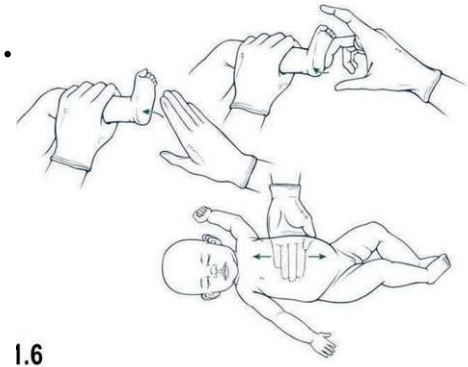
- Observe breathing and temperature.

- Watch for complications (convulsions, coma, etc);

- Initiate breastfeeding, if well

2. Stimulate to breath : if baby doesn't cry after birth position the baby and stimulate for breathing also remove wet clothes , safe methods used to provide tactile stimulation:

- 1) slapping or flicking the soles of the feet
- 2) gently rubbing the newborn back or extremity.
- - some harmful action like slapping the back , squeezing the rib cage ,Forcing thighs into abdomen Dilating anal sphincter , shaken should be avoided .
- if baby is still not breathing or breath abnormally at the end of 30 seconds after providing initial steps after resuscitation >> immediately ventilation with bag & mask .



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PREPERATION FOR VEN WITH BAG & MASK

1. selection of mask : it depend on how the mask fit the newborn face , the rim should cover the tip of the chin , mouth & nose but not the eye (may cause eye damage) .
2. Position the baby head : should be placed in sniffing positions to maintain open airway .
3. Position your self at the bed side or head of the baby : if you’re right handed you probably will feel most comfortable controlling the bag with your right hand and mask with your left hand.

Start ventilation by squeezing the bag to deliver breath

- remember the fetal lung is filled with fluid so the first birth require high pressure and longer inflation times than will subsequent breaths.
- Adequate pressure required to squeeze the bag should enough to produce gentle chest rise as it happens in normal breathing
- breath should be deliverd at rate 40 to 60 beat/ min and help to maintain it.
- try saying to yourself as you ventilate the newborn: “Breathe – Two – Three, Breathe – Two – Three”.
- If you squeeze the bag on “Breathe” and release while you say “Two, Three”, you will probably find you are ventilating at a proper rate And insure chest rise

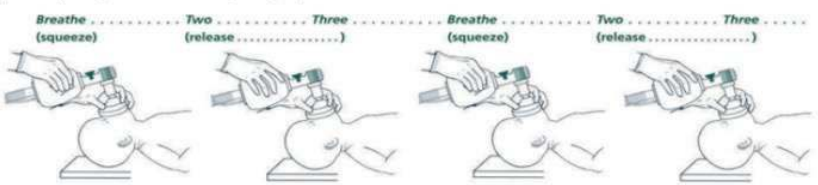


Fig. 1.11 Counting out loud to maintain a rate of 40 to 60 breaths per minute

Reasons for inadequate or absent chest movements are

- The seal is inadequate
- The airway is blocked
- Not enough pressure is being given.

You should immediately take following “Steps to improve the ventilation”

Reapply the mask to the face and try to form a better seal

Check the baby’s position and extend the neck a bit farther.

Check the mouth, oropharynx, and nose for secretions c l e a r

Try ventilating with the baby’s mouth slightly open.

Increase the pressure to squeeze the bag until there is perceptible movement of chest

Evaluate success of ventilation :

By **spontaneous breathing** if the baby improves gradually reduced rate and volume of breath and watch for baby breath . baby who is breathing well will be crying or breathing quietly and regularly (chest is rising symmetrically with frequency 30-60 /minute, and there is no chest in drawing and no grunting for one minute). A baby who is not breathing well (gasping or not breathing at all) after 30 seconds of adequate ventilation needs continued ventilation and further evaluation.

If **there’s no chest rise or adequate ventilation :**

Call for help. A more skilled worker will be required to evaluate and assist in resuscitation.

- **Ø Continue bag and mask ventilation.**
- **Ø Provide oxygen through bag and mask if available.**
- **Ø Assess the heart rate.**

Evaluate heart rate :

By feeling the umbilical cord pulse (while you attach to baby abdomin)or listening to the heart beat with stethoscope while you stop ventilation for 6 sec. If no pulse can be felt in the cord, you or your helper must listen over the left side of chest with the stethoscope and count the heart beat. It may be necessary to stop ventilation for few seconds to listen with stethoscope.

- heart rate above 100 beats per minute is normal.
- A heart rate less than 100 beats per minute is slow.

If you are unable to count the heart rate then minimize the time without ventilation by listening to the heart rate :

If the heart rate sounds faster than your own pulse – probably the heart rate is normal .

If the heart rate sounds slower than your own pulse - probably the heart rate is slow.

If the heart rate is normal (above 100 bpm) but the baby is still not breathing well continue to provide bag and mask ventilation and reassess after every 30 seconds until the baby is breathing well .

If the heart rate is slow make sure that you have taken all the steps to improve the ventilation.

The chest should move gently with each breath. Continue to do bag and mask ventilation and reassess heart rate approximately after every 30 seconds.
The baby may need more advanced support such as endotracheal intubation, chest compressions and medications

The procedure of bag and mask ventilation should be continued until the baby establishes spontaneous breathing; however, if there are no signs of life (breathing / heart rate) even after 20 minutes of birth, ventilation may be stopped.

POST RESUSCITATION CARE

Keep the baby warm

- Check breathing, temperature, colour and CFT
- Monitor blood sugar
- Watch for complications
- Initiate breastfeeding if well

FOLLOW UP CARE AFTER SUCCESSFUL RESUSCITATION :

For the baby

- The mother and baby should be kept together with the baby in skin-to-skin contact.
- Encourage the mother to breastfeed her baby as soon as it is ready. This will help to prevent hypoglycemia (a low blood sugar).
- Assess the baby's attachment at the breast, can you hear him swallow? Help the mother breastfeed
if needed.
- Good suckling is a sign of recovery. If the baby is unable to suck effectively help the mother to express colostrum**.**

For the mother and family

- After resuscitation, explain to the mother and family what has happened and how the baby is now.
- Keep the mother and baby in the delivery room and DO NOT separate them.
- NEVER leave the woman and newborn alone. Monitor them every 15 minutes during the first hour.

RECORD THE EVENTS

EXAMINE THE BABY BEFORE DISCHARGE

S. No	Steps
1.	**Deliver the baby on to mother's abdomen**
2.	**Note the time of birth and dry the baby- If no meconium-**
3.	**Assess the baby's breathing:** o Baby breathing or crying – no further action o Baby gasping or not breathing – start initial steps
4.	Cut cord quickly; transfer baby to a firm warm surface and **START resuscitation**. Provide warmth Position the baby Suction first mouth and then the nose Stimulate, reposition
5.	If still not breathing, **VENTILATE** o Use correct sized mask o Ensure proper seal o Squeeze 2-3 times and observe the chest rise o If chest rise is adequate, ventilate for 30 seconds and reassess o If chest rise is NOT adequate, take steps to improve ventilation
6.	Assess heart rate after 30 seconds of ventilation, if not breathing well: If > 100/min: assess breathing; if breathing well, **STOP VENTILATION** If <100/min or not breathing well: continue ventilation with oxygen, provide advanced care if available or organize referral.

MATERNAL BIRTH INJURIES

- Perineal and vaginal wall tears
- Uterine rupture
- Vulvar hematoma

01.

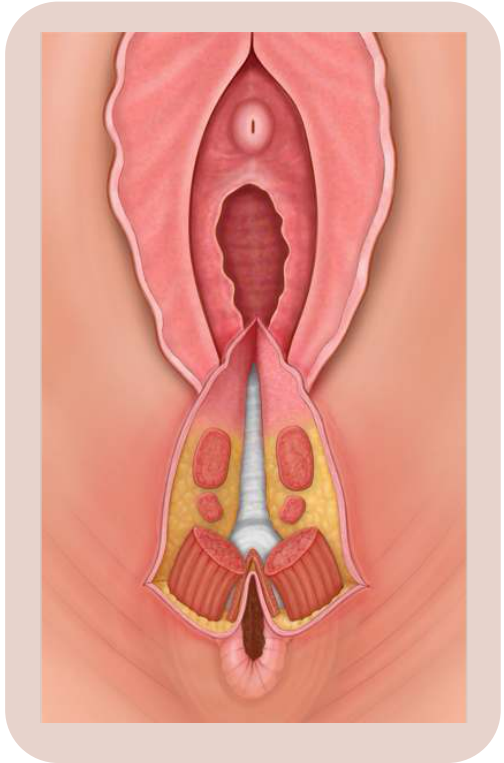
PERINEAL TEAR

PERINEAL AND VAGINAL WALL TEAR

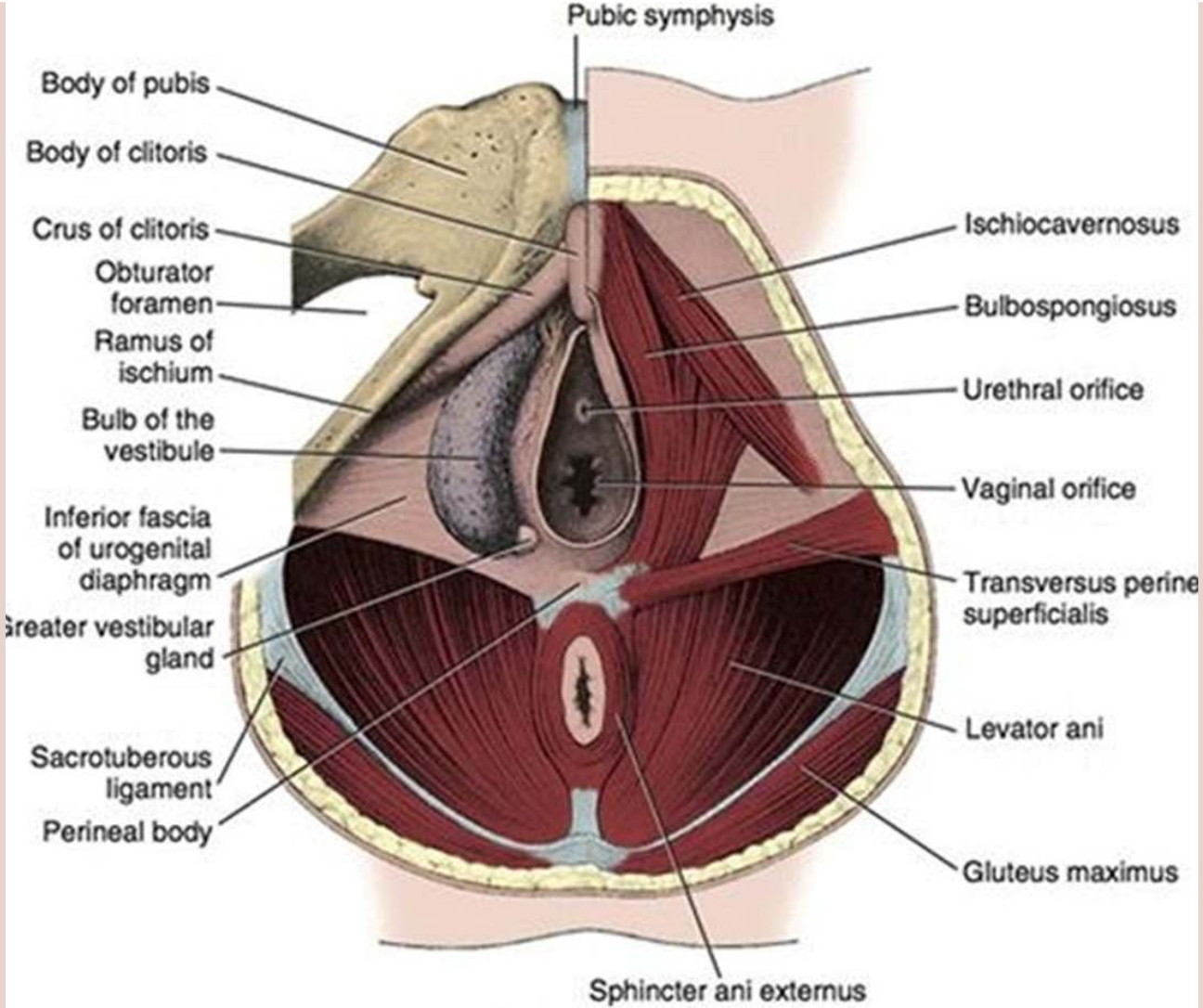
•**Perineal tear** : A perineal tear is a tear or laceration that occurs in the perineum, due to significant or rapid stretching forces during labor and delivery.

•All women undergoing vaginal delivery are at risk of experiencing obstetric anal sphincter injuries (**OASIS**).

•Consequently, a systematic examination, including a digital rectal examination, is essential to evaluate the extent of any damage, particularly before suturing.



PERINEAL STRUCTURES:



GRADING OF PERINEAL TEAR:

First-Degree

- Injury to perineal skin and/or vaginal mucosa.
- Cutaneous to subcutaneous tissue tear with no involvement of the perineal muscles.

Second-Degree

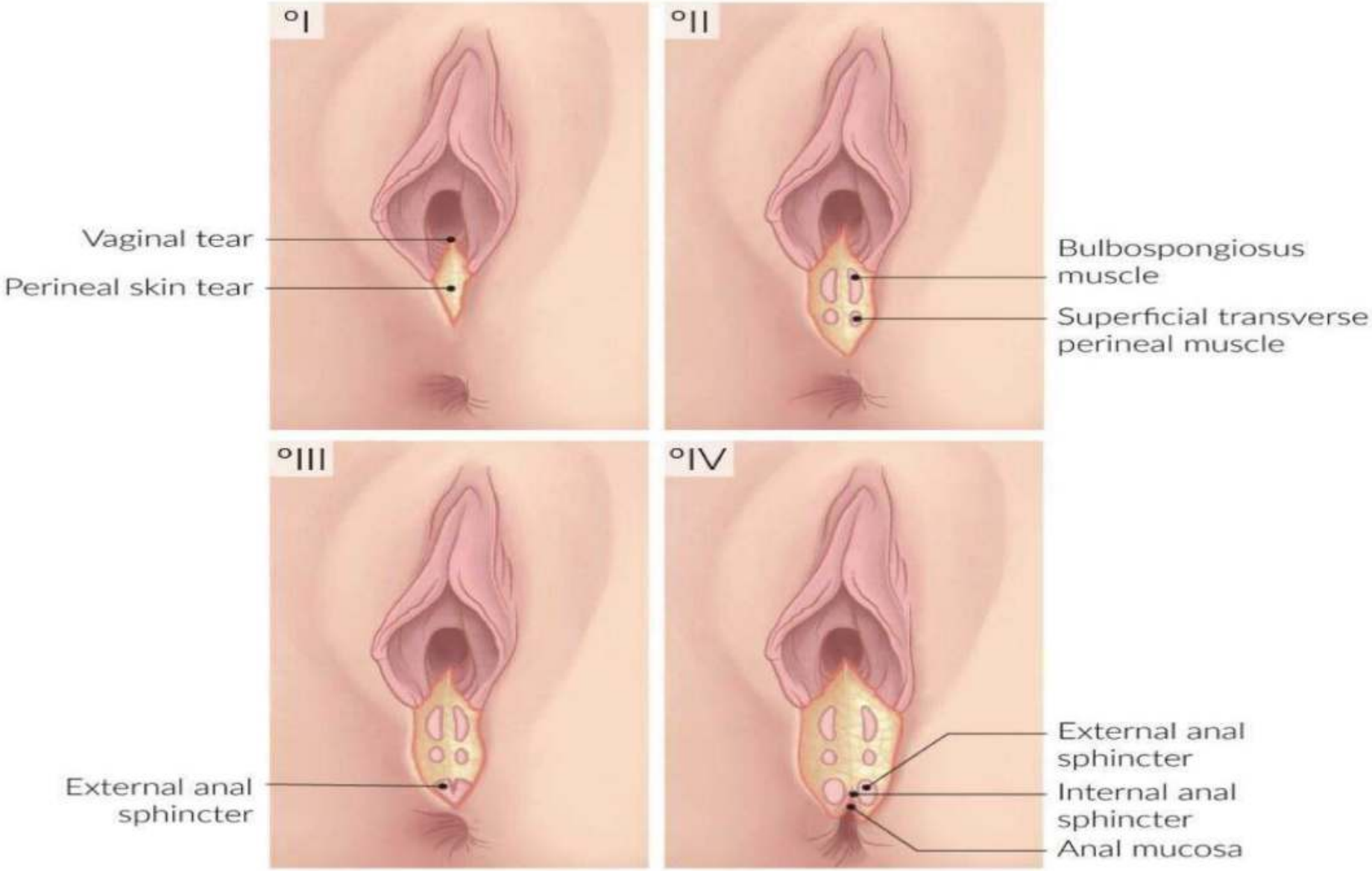
- Injury to perineum involving perineal muscles but not involving the anal sphincter.

Third-Degree

- Injury to perineum involving the anal sphincter complex:.
  - **Grade 3a tear:** <50% of external anal sphincter (EAS) thickness torn.
  - **Grade 3b tear:** >50% of EAS thickness torn.
  - **Grade 3c tear:** Both EAS and internal anal sphincter (IAS) torn

Fourth-Degree

- Injury to perineum involving the anal sphincter complex (EAS and IAS) and anorectal mucosa.


°I
°II
°III
°IV
Vaginal tear
Perineal skin tear
Bulbospongiosus muscle
Superficial transverse perineal muscle
External anal sphincter
External anal sphincter
Internal anal sphincter
Anal mucosa

RISK FACTORS

MATERNAL

- Nulliparity (mother has not given birth before)
- Vaginal birth after caesarean section
- Shortened perineal length (<25 mm)

FETAL

- Large fetal weight (>4000 g)
- Shoulder dystocia
- Fetal head is oriented OP (occiput posterior, i.e. face forward)

INTRAPARTUM

- Instrumental delivery (eg forceps, vacuum)
- Prolonged second stage of labour
- Epidural use
- Oxytocin use
- Midline episiotomy
- Delivery in lithotomy

PREVENTION

1

PERINEAL MASSAGE

This practice can help increase the flexibility and elasticity of the perineal tissues, potentially reducing the risk of tears during delivery

2

WARM COMPRESS

especially during second stage of labour, it can help relax the tissues and make them more supple.

3

PERINEAL PROTECTION

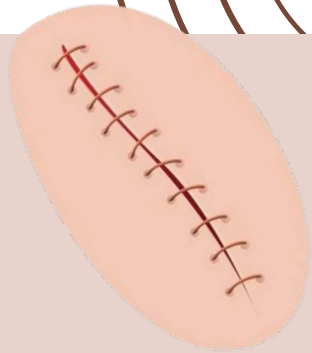
Often referred to as "hands-on birth", this may involve manually supporting and guiding the perineum as the baby's head crowns, and the mother is advised not to push.

4

EPISIOTOMY

Surgical incision to widen the vaginal opening to facilitate the delivery of fetus during the 2nd stage of labor. Recommending an angle of 45 to 60 degrees from the midline.

MANAGEMENT



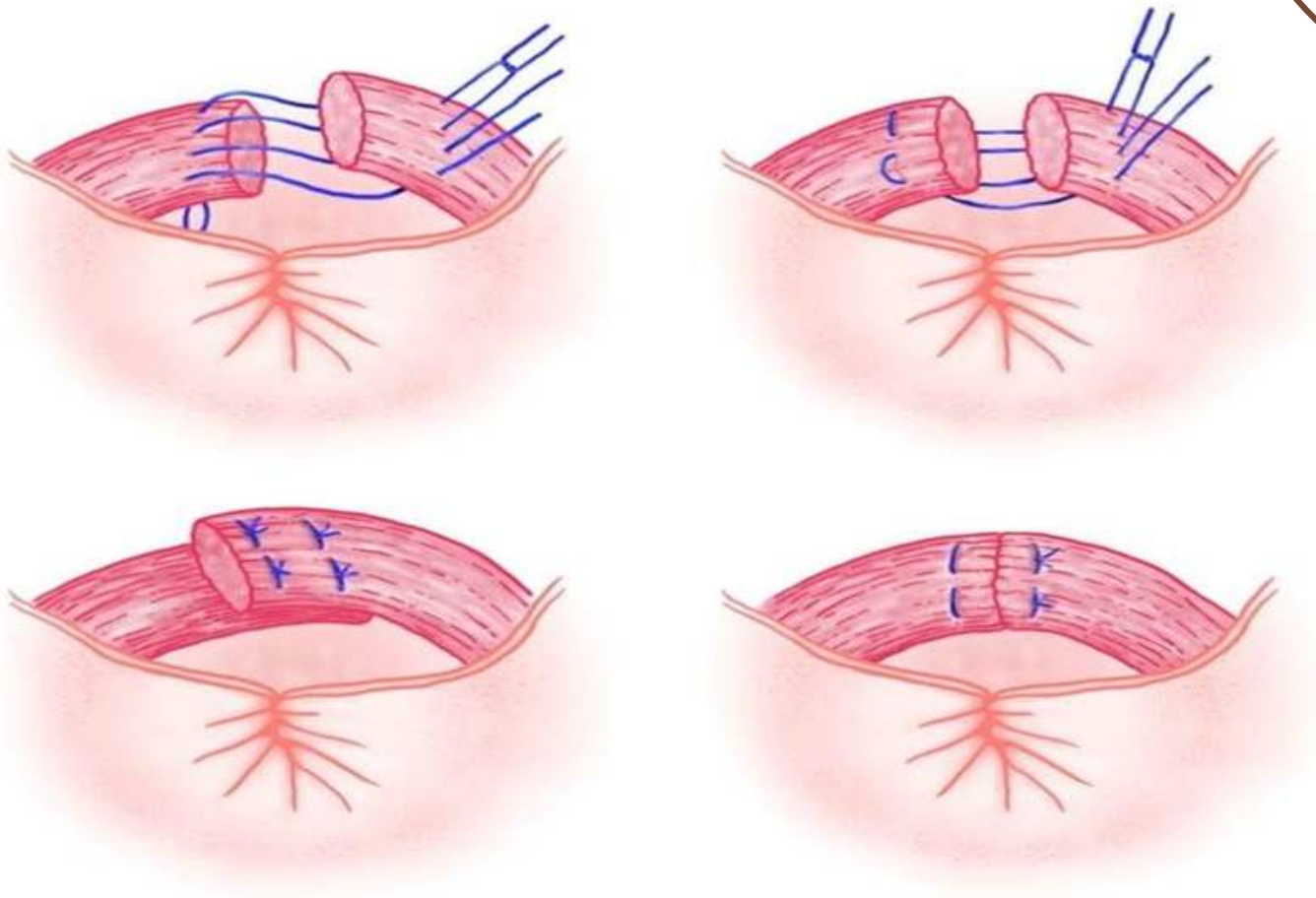
1ST AND 2ND

- First-degree tears or minor lacerations with minimal or no bleeding may not require surgical repair.
- Offer **analgesia** (local or epidural)
-
- Check the extent of lacerations with a **vaginal** and **DRE**.
- Assessment is improved following positioning in **lithotomy.**

3RD AND 4TH

- Repair is more complex and may require consultation with a specialist, such as a colorectal surgeon.
- Repair is done in an operating room, under regional or general **anaesthesia**.
- It is important to ensure that the muscle is correctly approximated with **long-acting sutures** so that the muscle is given adequate time to heal.
- Some surgeons opt for an **end-to-end** repair, while others use an **overlap** technique; current evidence suggests that the outcome is similar with both methods
- It is helpful to insert a **vaginal pack** to prevent blood loss.

SURGICAL REPAIR



POSTOPERATIVE MANAGEMENT

1. **Broad-spectrum antibiotics.**
2. **Laxatives**
3. **Bulking agents**

- Usually, they should be reviewed at **6 –12** weeks postpartum.

- Following surgical repair, it is important to convey to women that there is a favorable prognosis, with 60–80% reporting asymptomatic outcomes 12 months after delivery and EAS repair.

COMPLICATIONS

1. **Rectovaginal Fistula**
2. **Infection**
3. **Wound dehiscence**
4. **Hemorrhage**

02.

VULVAR HEMATOMA

VULVAR HEMATOMA

•Hematomas can occur anywhere from the vulva to the upper vagina because of delivery trauma.

• Hematomas may also develop at the site of **episiotomy** or perineal **laceration**.

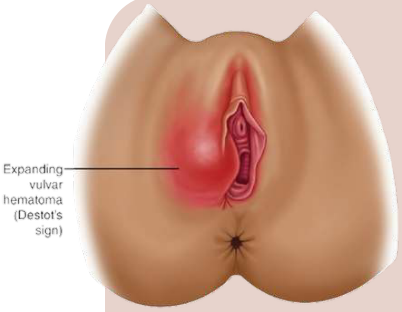
•Vulvar or vaginal hematomas are characterized by exquisite pain with or without signs of shock.

•If the hematoma is at the site of episiotomy, the sutures should be removed and a search made for the actual bleeding site, which is then ligated.

•If it is not at the episiotomy site, the hematoma should be opened at its most dependent portion and drained, the bleeding site identified, If possible, and the site closed with interlocking hemostatic Sutures.

• Drains and vaginal packs are often used to prevent re-accumulation of blood.

VULVAR HEMATOMA



SIGNS & SYMPTOMS

- Tense and tender **swelling** to one side of the vagina.
- Sever **pain** unrelieved with painkillers.
- **Difficulty in passing urine**, if the swelling presses on the urethra.
- **Rectal** pressure can occur.
- The bleeding can be severe enough to cause the patient to go into hemorrhagic shock.

MANAGEMENT

- Hematomas that are ≤5 cm in diameter and are not enlarging can usually be managed expectantly by frequent evaluation of the size of the hematoma and close monitoring of vital signs and urinary output.
- Application of **ice** packs can also be helpful.
- Larger and enlarging hematomas must be managed surgically.

03.

UTERINE RUPTURE

UTERINE RUPTURE

• **Uterine rupture**: Complete separation of all uterine layers leading to possible fetal or maternal compromise (A uterine rupture is a frank opening between the uterine cavity and the abdominal cavity)

• **Uterine scar dehiscence**: Often an occult scar separation with intact uterine serosa; does not lead to fetal or maternal compromise (A uterine dehiscence is a "window" covered by the visceral peritoneum)

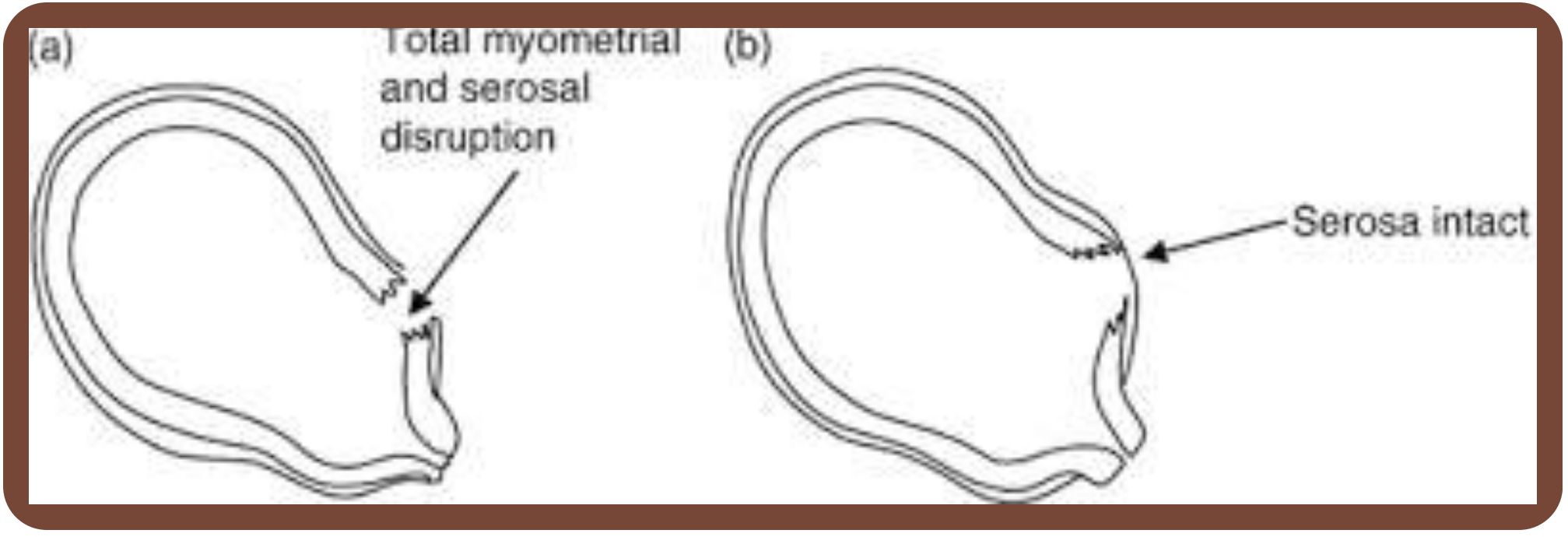
•Significantly higher rates of maternal and fetal morbidity, and even maternal mortality, occur in cases of overt rupture

•Rupture can occur at the site of a previous cesarean delivery or other surgical procedure involving the uterine wall—from intrauterine manipulation or trauma, or from congenital malformation (small uterine horn), or spontaneously. Abnormal labor, operative delivery, and placenta accreta can lead to rupture.

•The overall incidence is **0.5%.**

•A prior uterine scar is associated with 40% of cases. With a prior lower-segment transverse incision, the risk for rupture is less than 1%, whereas the risk with a high vertical (classical) scar is 4-7%.

UTERINE RUPTURE



DIAGNOSIS AND MANAGEMENT

- The signs and symptoms of uterine rupture are highly variable.
- Typically, rupture is characterized by the sudden onset of intense abdominal pain.
- The patient may or may not have vaginal bleeding, and if it occurs, it can range from spotting to severe hemorrhage so if it severe may develop hypovolemia .
- Impending rupture may be heralded by hyperventilation, restlessness, agitation, and tachycardia.
- Non-reassuring FHR pattern with decelerations or bradycardia.
- After the rupture has occurred, the patient may be free of pain momentarily and then complain of diffuse pain thereafter.
- The most consistent clinical finding is an abnormal fetal heart rate pattern.
- The presenting part may be found to have retracted on pelvic examination, and fetal parts may be more easily palpable abdominally. (Loss of station)
- Abnormal contouring of the abdomen may be seen.
- Fetal distress develops commonly, and fetal death or long-term neurologic sequelae may occur in 10% of cases.

- A high index of suspicion is required, and immediate laparotomy is essential. In most cases, total abdominal hysterectomy is the treatment of choice, although debridement of the rupture site and primary closure may be considered in women of low parity who desire more children.

PREVENTION

• Active **management of the third stage** of labor, which involves immediate manual removal of the placenta and the administration of a uterotonic agent, has been shown to reduce the incidence of hemorrhage. In addition to preventing many cases of uterine atony.

•Finally, all obstetric units and practitioners must have the facilities, personnel, and equipment in place to manage PPH properly. Clinical drills to enhance the management of maternal hemorrhage are also recommended.

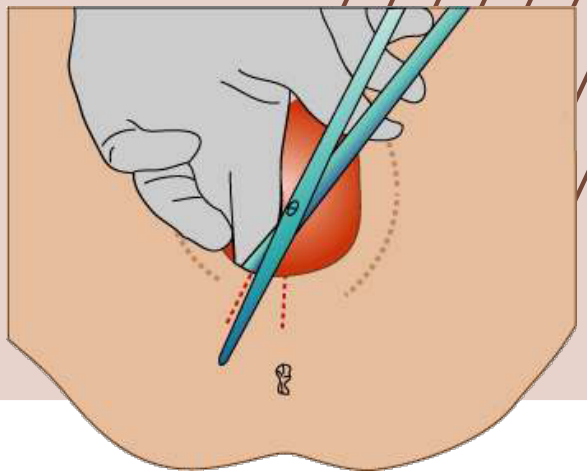
PROGNOSIS

Delay in management of uterine rupture places both mother and child at significant risk. The major risk to the mother is **hemorrhage and shock**. Although the associated maternal mortality rate is now less than 1%, if the mother is left untreated, she will almost certainly die.

For the fetus, rapid intervention will minimize morbidity and mortality. The associated fetal mortality rate is still about **30%**.

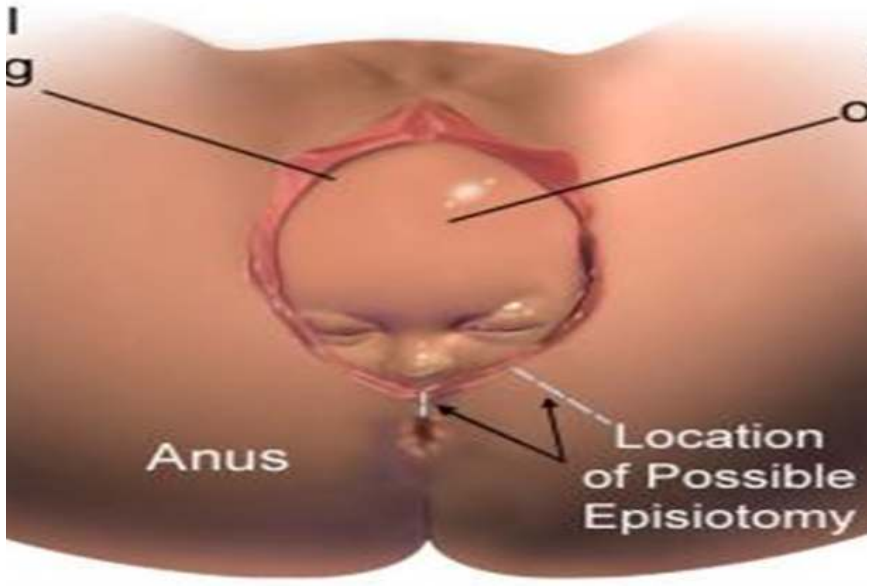
04.

EPISIOTOMY



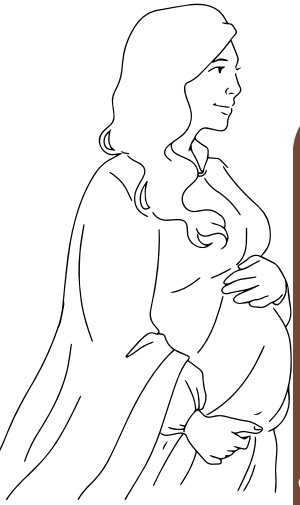
Episiotomy:

- is a surgical incision of the perineum performed to widen the vaginal opening to facilitate the delivery of fetus during the 2nd stage of labor.
- Episiotomy is one of the most common operations performed on women .



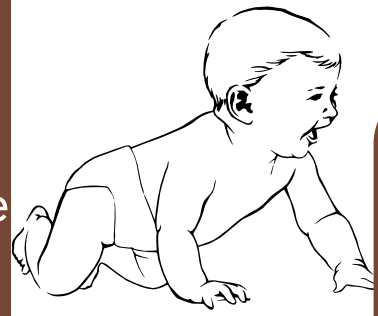
Incidence:

- The WHO recommends an episiotomy rate of 10% for all normal deliveries.
- The rate of episiotomy was found to be higher in primipara than multipara women.



Maternal benefits:

- Facilitating repair compared to a spontaneous perineal laceration that might occur otherwise.
- Decreased postpartum pain.
- Avoiding severe degrees of lacerations.
- Shortening the time for which the perineum was stretched during birth.
- Prevention of trauma to the pelvic floor muscles



Neonatal benefits:

- Prevention of asphyxia, cranial trauma and cerebral hemorrhage & shoulder dystocia.
- It is also suggested that episiotomy increases the APGAR score of the baby.

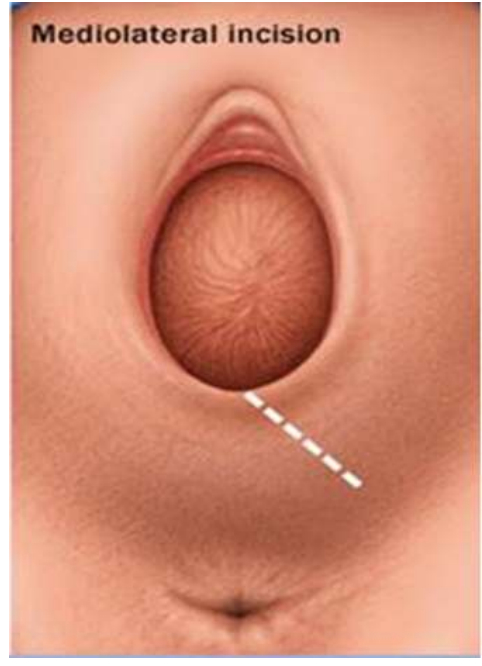
INDICATIONS:

1. **Primigravida** with Threatened-perineal injury
2. **Anticipated Perineal Tear**; big-size baby (macrosomia), shoulder dystocia, breech delivery or face to pubis delivery.
3. **Rigid Perineum.**
4. **Instrumental** Vaginal Delivery as Forceps and Vacuum.
5. **Previous Perineal Surgery**; Pelvic Floor Repair or Perineal Reconstructive Surgery.

TYPES OF EPISIOTOMY

1) **Median/Midline**:
The incision commences from the center of the fourchette and extends posteriorly along the midline towards the anus.

2) **Mediolateral**:
The incision extends from the center of the vaginal opening mediolaterally at 5 or 7 o'clock towards the direction of the ischial tuberosity.



	Type of Episiotomy	
Characteristic	Midline	Mediolateral
Surgical repair	Easy	More difficult
Faulty healing	Rare	More common
Postoperative pain	Minimal	Common
Anatomical results	Excellent	Occasionally faulty
Blood loss	Less	More
Dyspareunia	Rare	Occasional
Extensions	Common	Uncommon

PROCEDURE

For anesthesia, it is normal to use lidocaine at a concentration of 0.5% in 10ml, or at a higher concentration of 1% in 5ml.

To protect the fetal head, the midwife will insert two fingers into the vagina, which should follow the proposed incision line.

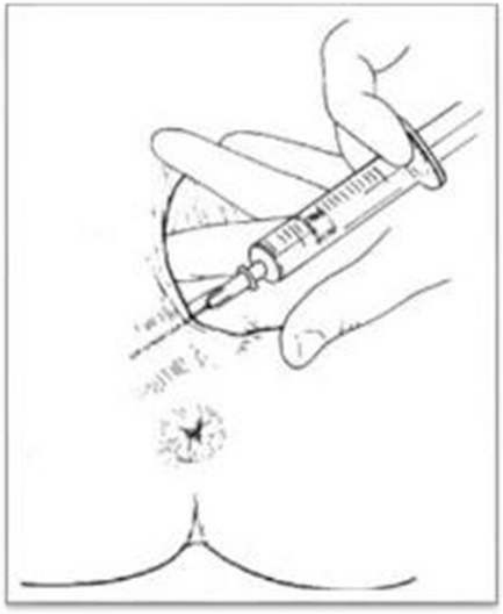
Aspirate to be sure that no vessel has been penetrated.

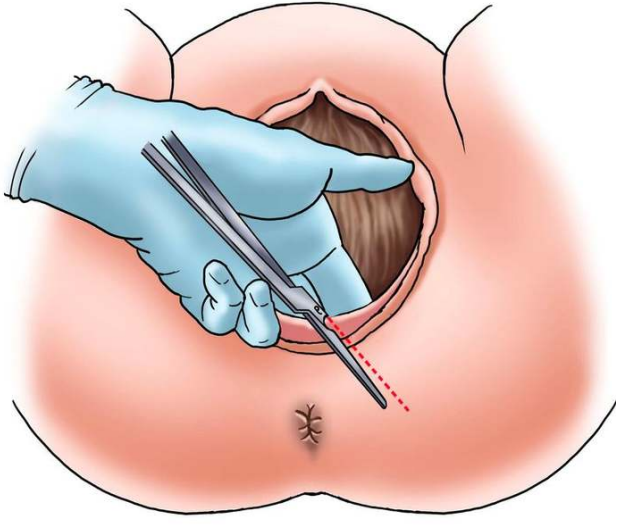
After sufficient time for the anesthesia to take effect, the incision should be made.

A single cut should be made.

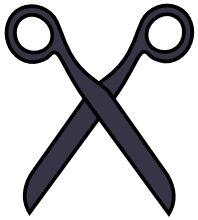
This should be 3-4 cm in length.

Ideally the incision is made during a contraction, when there is a clear view and a reduced likelihood of severe bleeding.





STRUCTURES CUT:



- Skin & Subcutaneous tissue
- Superficial perineal fascia (Colles' fascia)
- Bulbospongiosus muscle
- Superficial transverse perineal muscle
- Perineal branches of pudendal nerve and vessels
- Deep perineal fascia (perineal membrane)
- Deep transverse perineal muscle & part of Levator ani
- Posterior vaginal wall (mucosa)

COMPLICATIONS OF EPISIOTOMY

Early	Late
I.Extension to involve the rectum. II.Vulval hematoma. III.Infection. IV.Wound dehiscence. V.Rectovaginal fistula	I.Dyspareunia . II.perineal lacerations. III.Scar endometriosis (rare).

•NSAID agent as diclofenac is used as an **analgesic** for the first 72 hours.
•Local antiseptic lotion and **antibiotic** powder or spray is used for 7 days.
•Apply **ice** pack whenever swelling present .
•**Kegel's exercise** (squeeze the perineal muscles as if you are trying to stop the flow of urine 5-10 s then relax several times)
•Eat high **fiber** diet to avoid constipation
•Avoid squatting position
•Sit in a tub of **warm** water
•Change sanitary pads at least every 4 h to help prevent infection, AND always keep the wound clean and **dry** after each urination or defecation (***perineal hygiene***).

-https://youtu.be/v9TzFy69Nac?si=tvEOUcsVkqC9i4wW

POSTPARTUM CARE

THANK YOU :D

Do you have any questions?