

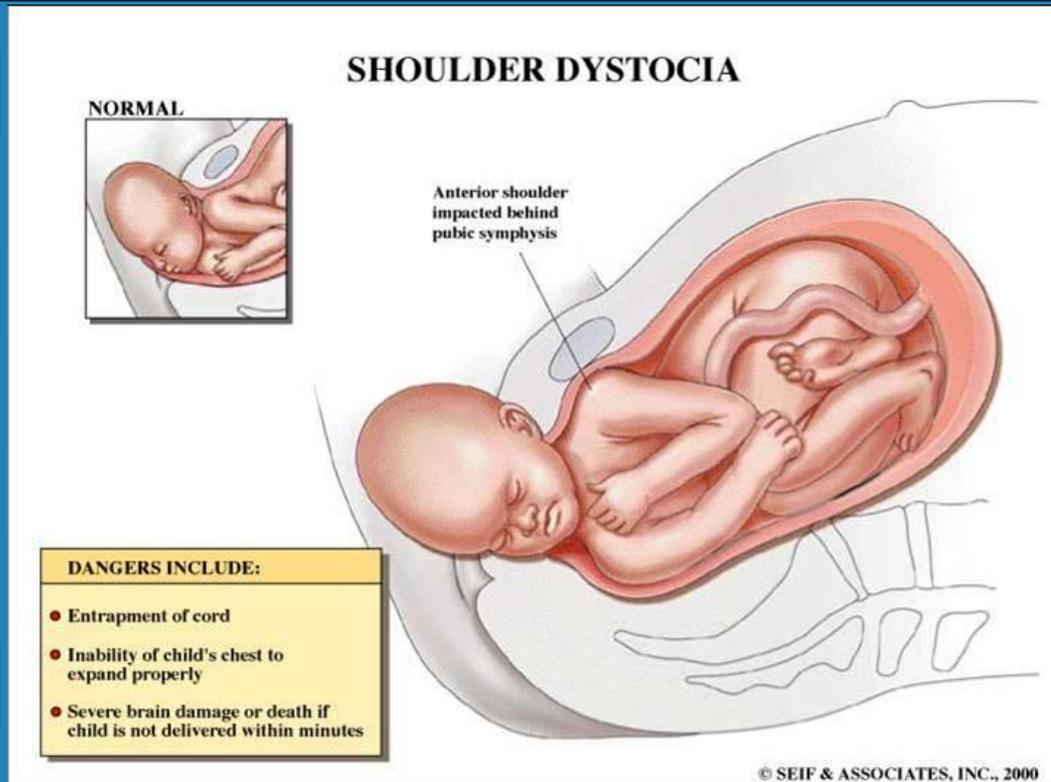


Shoulder Dystocia

Mrs. Prasuna J
College Of Nursing
AIIMS, Rishikesh.

Shoulder Dystocia

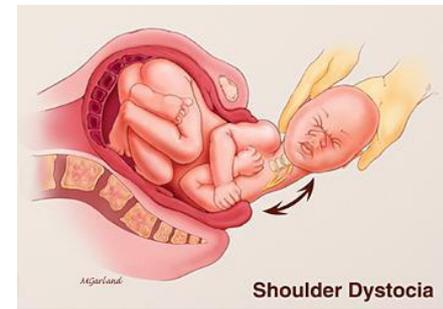
“Making the Best of a Bad Situation”



Introduction

- ❑ Shoulder dystocia refers to difficulty in delivery of the fetal shoulders.
- ❑ It occurs in 0.2 to 2 % of births and can be a **devastating obstetric emergency**.
- ❑ The goal of management is to prevent fetal asphyxia, while avoiding physical injury (eg, Erb's palsy, bone fractures).
- ❑ The overall **incidence** of shoulder dystocia varies based on **fetal weight**

DEFINITION



- Shoulder dystocia can be defined as failure of the shoulders to spontaneously traverse the pelvis after delivery of the fetal head.
- In practice, the diagnosis of shoulder dystocia is subjective; it is considered when the routine practice of gentle, downward traction of the fetal head fails to accomplish delivery.

PATHOPHYSIOLOGY

- ❑ Increased fetal bisacromial diameter (diameter of shoulder girdle)
- ❑ A “mismatch” between fetal size and maternal pelvic capacity
- ❑ Positional variations – vertical rather than oblique orientation of shoulders

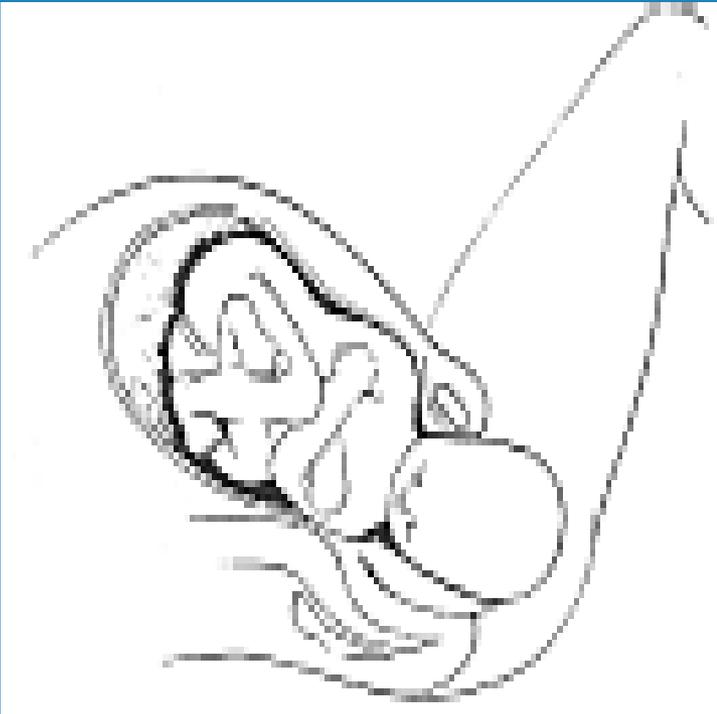


Unilateral Shoulder Dystocia



- Unilateral shoulder dystocia is usually easily dealt.

Bilateral Shoulder Dystocia



- The posterior shoulder is not in the hollow of the pelvis. This presentation often requires a cephalic replacement.

Risk Factors

Remember, many cases of shoulder dystocia occur with no readily identified risk factors!!!!

ANTEPARTUM FACTORS

- ❑ Maternal Obesity
- ❑ Maternal Diabetes Mellitus
- ❑ Postterm Pregnancy
- ❑ Excessive Weight Gain

INTRAPARTUM FACTORS

- ❑ Prolonged Second Stage of Labor
- ❑ Oxytocin Induction
- ❑ Midforceps and Vacuum Extraction

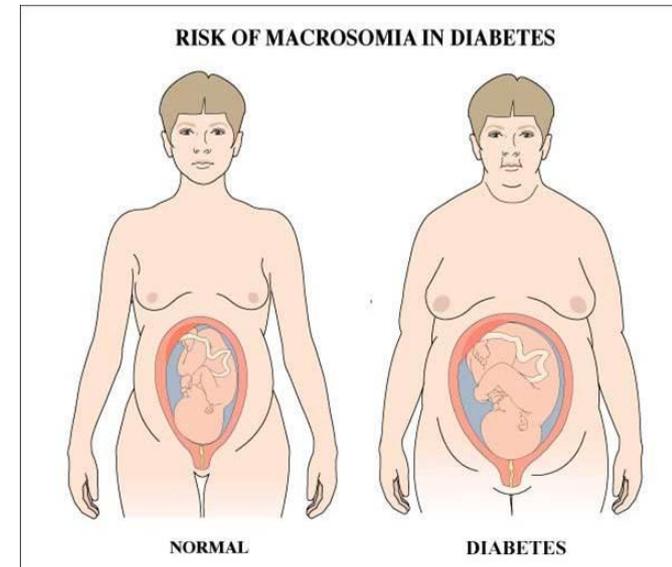
Risk Factors for Shoulder Dystocia

□ Maternal

- Abnormal pelvic anatomy
- Gestational diabetes
- Post-dates pregnancy
- Previous shoulder dystocia
- Short stature

□ Fetal

- Suspected macrosomia
- Male sex



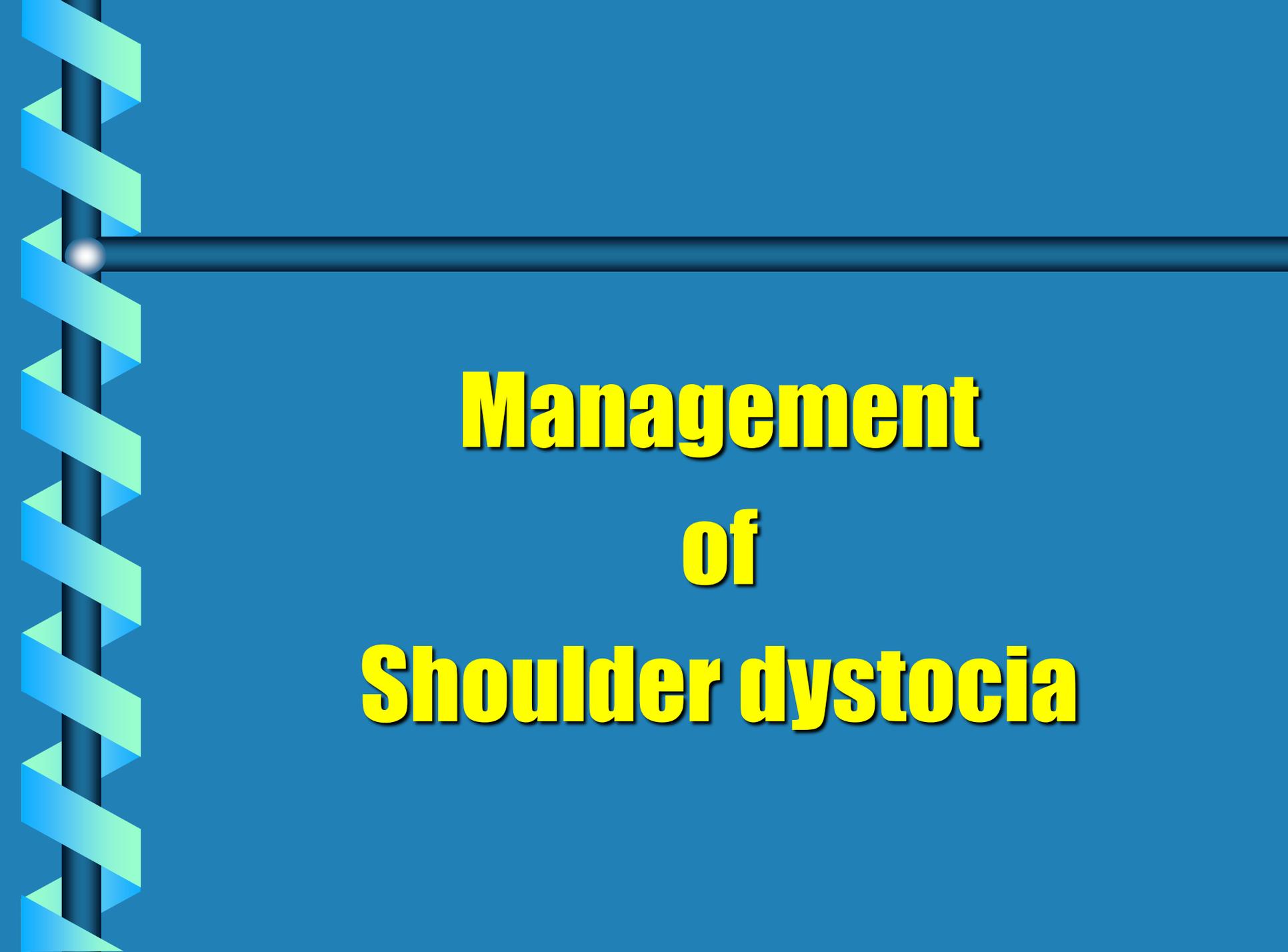
Diagnosis

- ❑ Inadequate spontaneous restitution.
- ❑ Fetal face becomes plethoric.
- ❑ Definite recoiling of the head back against the perineum (turtle - neck sign)



Turtle Neck Sign





Management of Shoulder dystocia



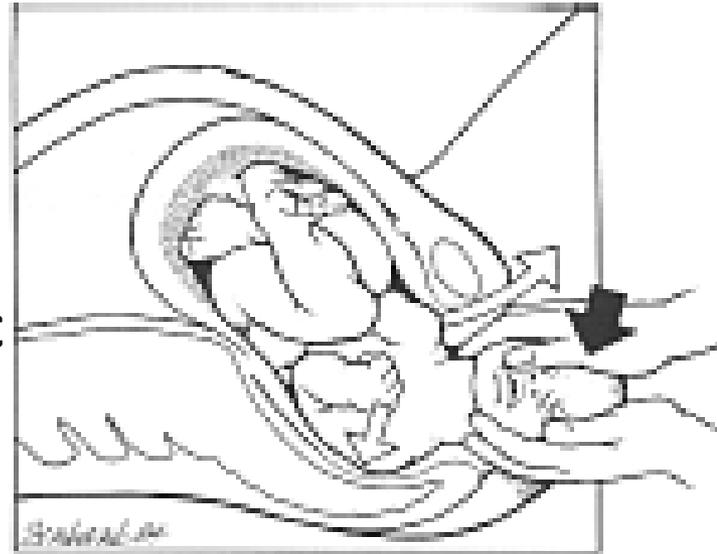
HELPERR Pneumonic

- **H** – Help
 - Call for additional assistance
- **E** – Evaluate for episiotomy
- **L** – Legs hyper flexion (McRobert’s Maneuver)
- **P** – Pressure (suprapubic)
- **E** – Enter internal rotation
- **R** – Remove the posterior arm
- **R** – Roll the patient
 - To hands and knees

Preliminary Measures

□ Gentle pressure on fetal vertex in a dorsal direction will move the posterior fetal shoulder deeper into the pelvic hollow, resulting in easy delivery of the anterior shoulder.

□ Excession angulation (>45 degrees) is to be avoided.



(Gabbe, et al., Obstetrics: Normal and Problem Pregnancies, Churchill Livingstone, New York, 1986)

HELPERR Mnemonic



- **H Call for Help:**

This refers to activating the pre-arranged protocol or requesting the appropriate personnel to respond with necessary equipment to the labor and delivery unit.



HELPERR Mnemonic

□ E Evaluate for episiotomy:

- Episiotomy should be considered throughout the management of shoulder dystocia but is necessary only to make more room if rotation maneuvers are required.

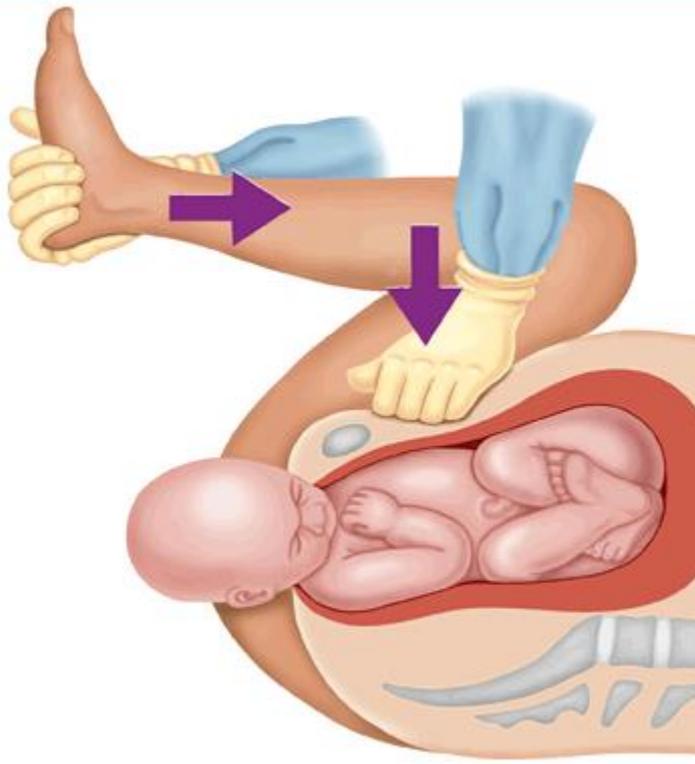


HELPERR Mnemonic

□ L Legs hyper flexion (the McRoberts maneuver):

- Patient positioned with hips at edge of the bed
 - Both hips are sharply flexed with knees remaining flexed (“knees to shoulders”)
- This maneuver assists delivery by:
- Straightening maternal lumbar lordosis
 - Rotates symphysis superiorly and anteriorly
 - Improving angle between pelvic inlet and direction of maximal expulsive force
 - Elevates anterior shoulder allowing posterior shoulder to descend

McRobert's Maneuver



Before McRoberts Positioning

McRoberts Position

Diagonal orientation of symphysis makes shoulder delivery difficult

Pelvis tilts, orienting symphysis more horizontally to facilitate shoulder delivery

Sacrum

McRobert's maneuver and suprapubic pressure

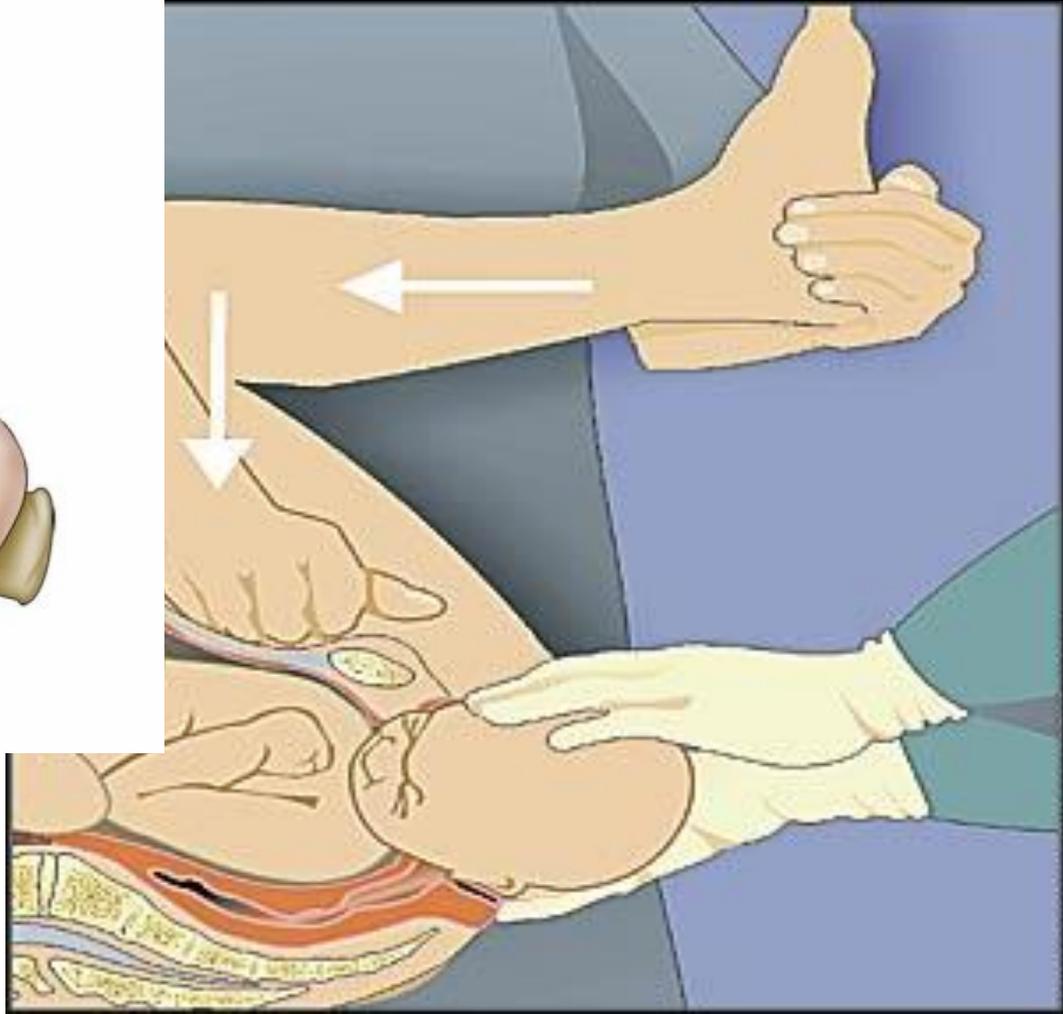


HELPERR Mnemonic

□ P Pressure (Suprapubic):

- The hand of an assistant should be placed suprapubically over the fetal anterior shoulder, applying pressure downward and lateral motion on the posterior aspect of the fetal shoulder.

Suprapubic Pressure



HELPERR Mnemonic

□ E Enter maneuvers (internal rotation):

- These maneuvers attempt to manipulate the fetus to rotate the anterior shoulder into an oblique plane and under the maternal symphysis.



"Enter" Maneuvers

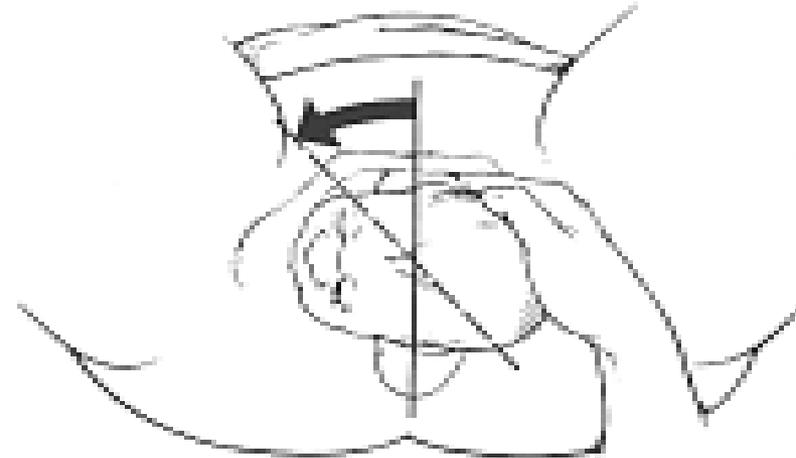
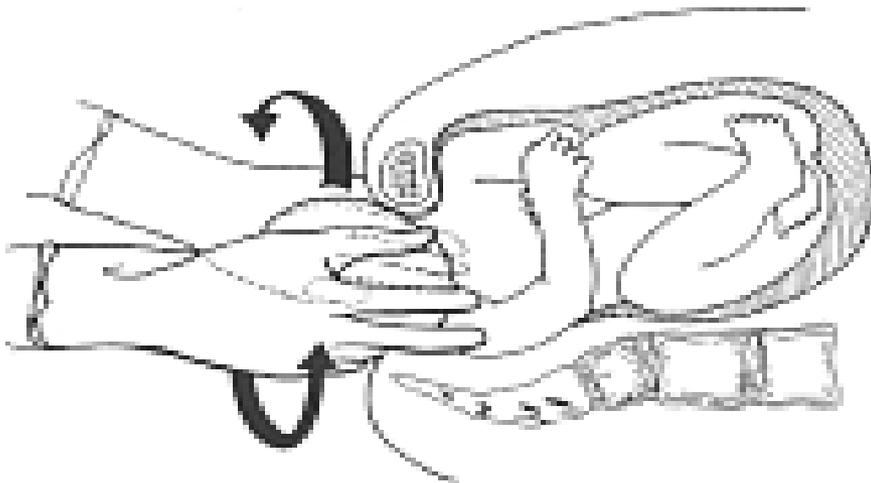
- **1. Rubin's maneuver:**

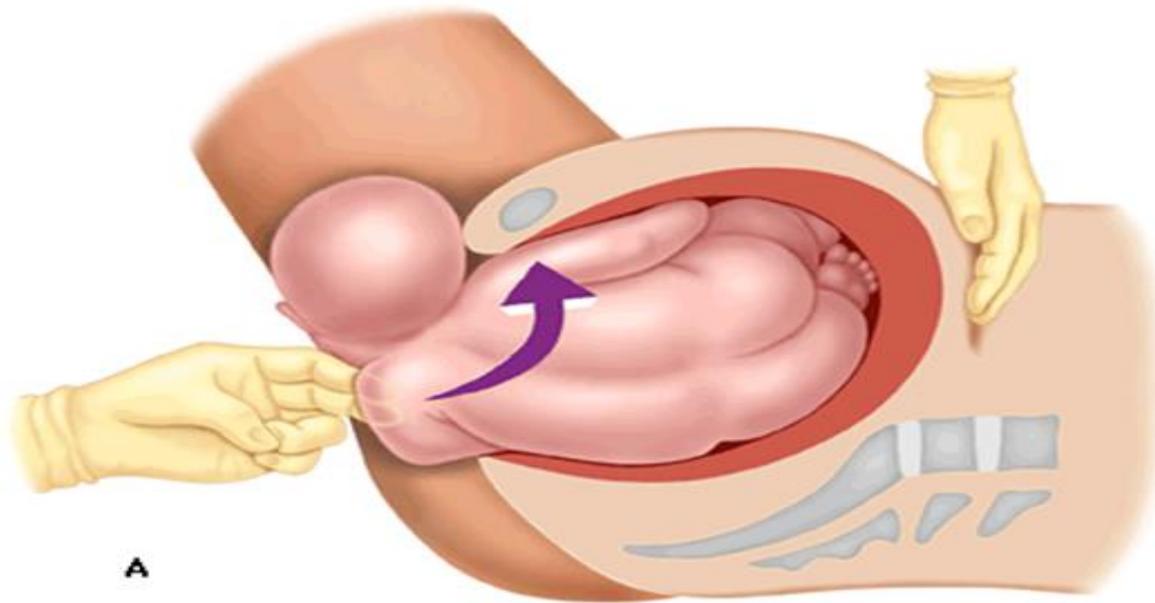
At vaginal examination apply pressure and **push the presenting fetal shoulder toward the chest**. If shoulders move into the oblique diameter, attempt delivery.

"Enter" Maneuvers

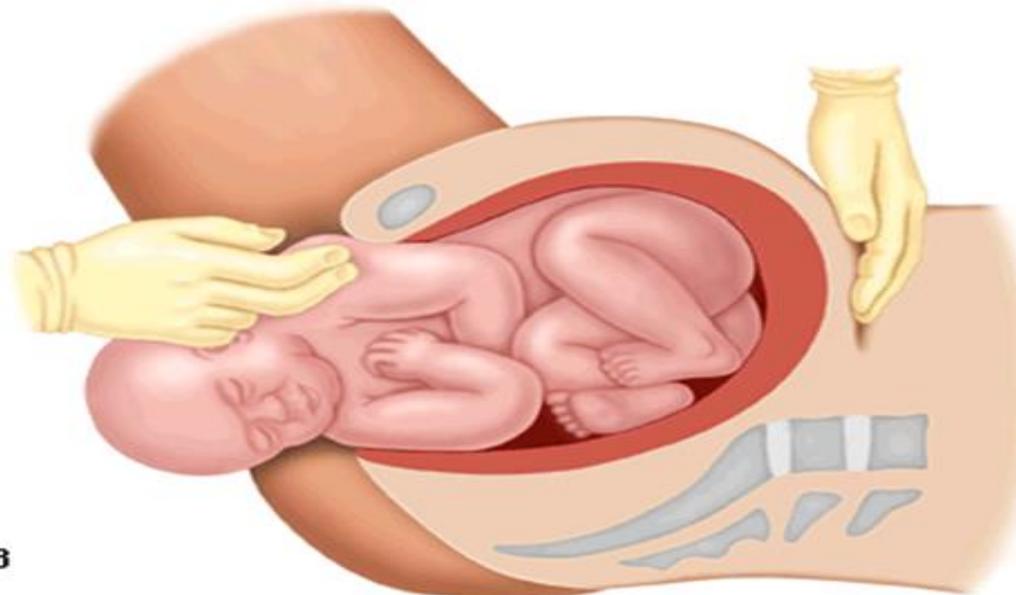
Woods corkscrew maneuver

- The shoulders must be rotated utilizing pressure on the scapula and clavicle.
- Continue rotation 180 degrees and deliver.





A



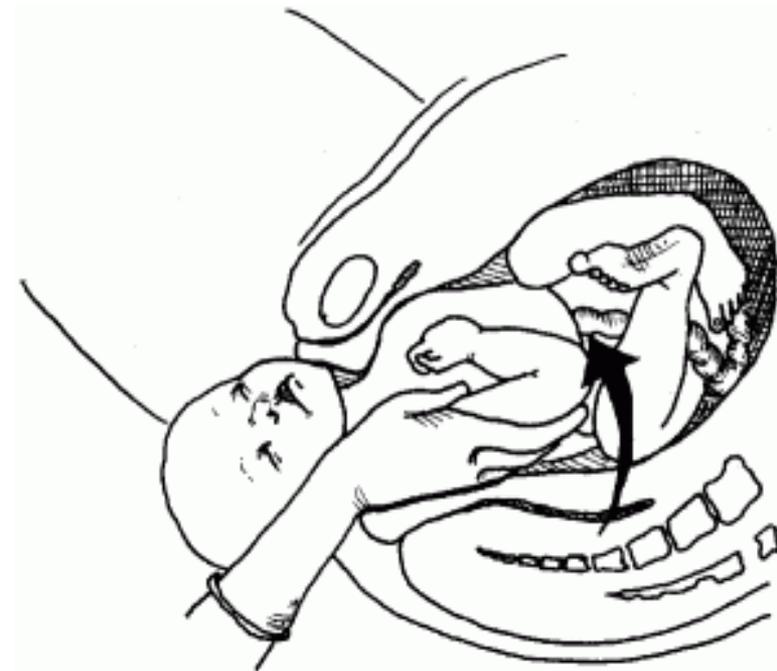
B

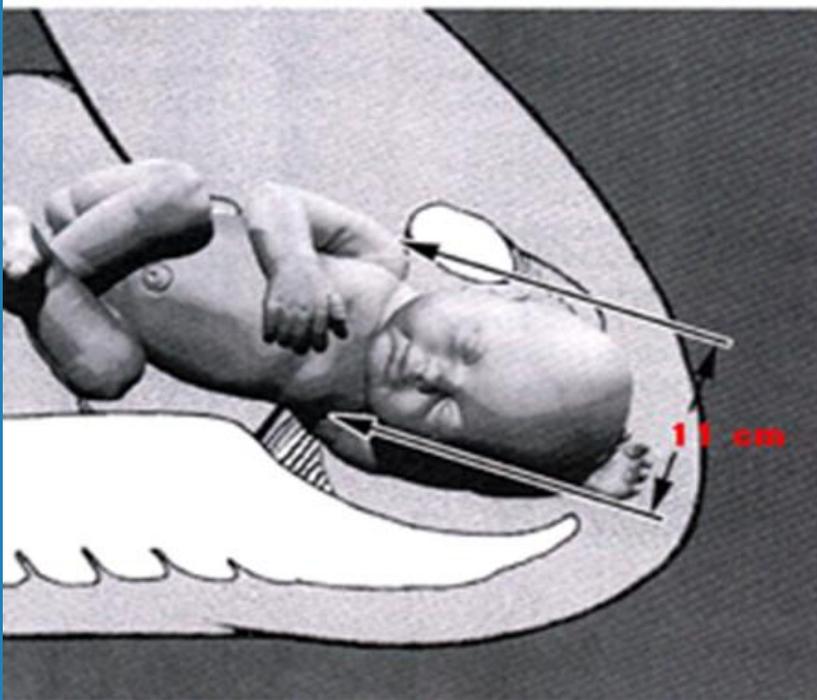
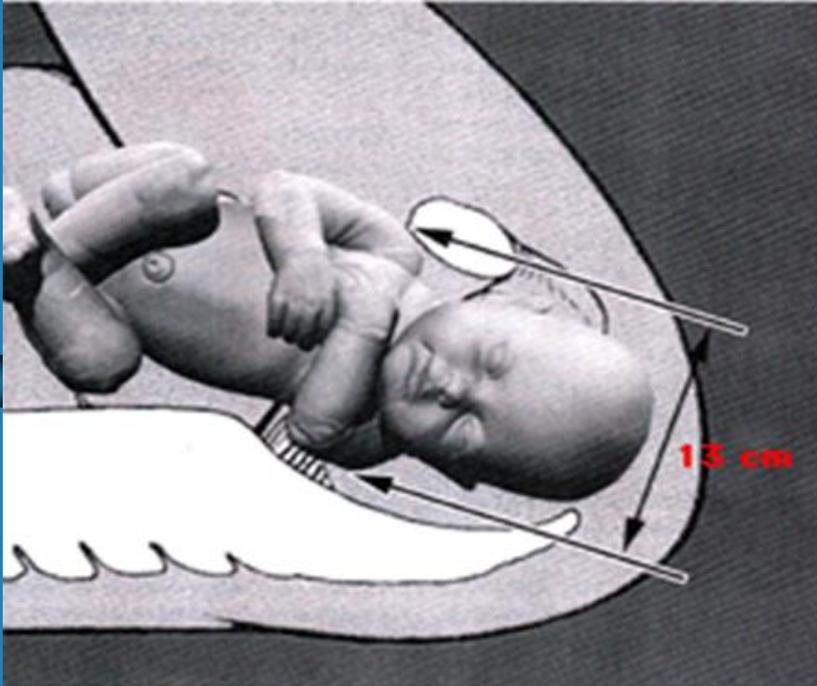
Wood's corkscrew maneuver (A) The posterior shoulder is rotated counterclockwise until (B) it becomes anterior. The anterior shoulder rotates out from under the symphysis pubis and descends during this process.

HELPERR Mnemonic

□ R Remove the posterior arm:

- Removing the posterior arm from the birth canal also shortens the bisacromial diameter, allowing the fetus to drop into the sacral hollow, freeing the impaction.





The effect of the Barnum maneuver in reducing the obstructing part of the fetal shoulder The operator has already inserted a hand into the vagina and delivered the posterior arm by sweeping it across the fetal chest, and thus delivered the posterior shoulder as well. A 13-cm bisacromial diameter becomes an 11-cm axillo-acromial diameter upon delivery of the arm. Reproduced with permission from: Poggi, SH, Spong, CY, Allen, AH. Prioritizing posterior arm delivery during severe shoulder dystocia. *Obstet Gynecol* 2003; 101:1068. Copyright © 2003 American College of Obstetricians and Gynecologists.

HELPERR Mnemonic

□ R Roll the patient:

- The patient rolls to the all-fours position.
- Often, the shoulder will dislodge during the act of turning, so that this movement alone may be sufficient to dislodge the impaction.



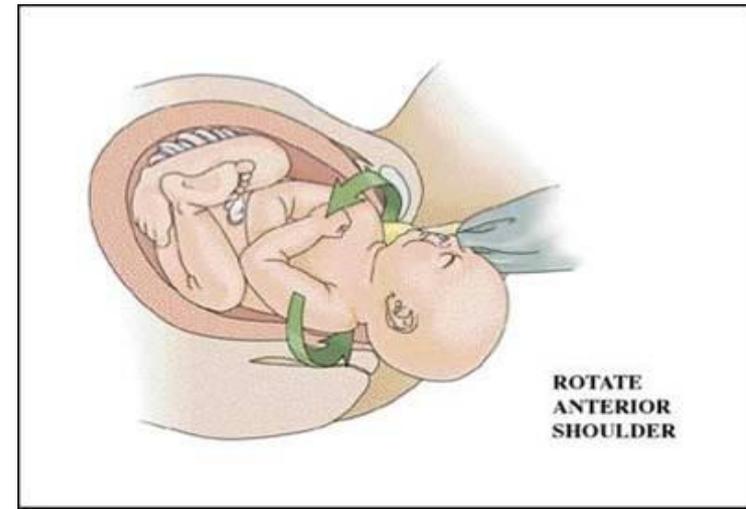
Still not out?!

What now???

Final Steps

□ Zavanelli maneuver (cephalic replacement)

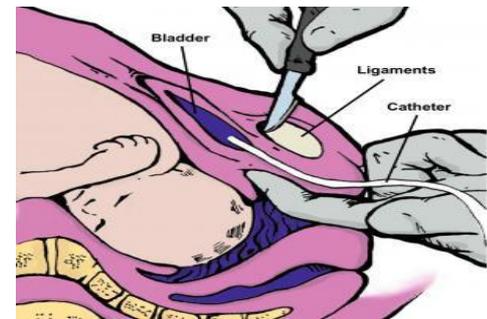
- Relax uterus with terbutaline
- Rotate head back to OA (“reverse restitution”)
- Flex neck
- Upward pressure
- To OR



Final Steps

□ Symphysiotomy

- Not common since cesarean is available
- Last effort
 - Insert Foley catheter
 - Use vaginal hand to laterally displace urethra to avoid injury
 - Incise symphysis through mons pubis



Intentional clavicular fracture (Cleidotomy)

- Apply pressure over mid-clavicle AWAY from the lung
- May be difficult to perform
- If successful, may reduce the diameter of the shoulder girdle
- Applicable in **anencephaly, dead fetus**





Complications of Shoulder Dystocia

□ Maternal

- Postpartum hemorrhage
- Rectovaginal fistula
- Symphyseal separation
- 3rd - 4th degree episiotomy or tear
- Uterine rupture



Complications of Shoulder Dystocia

□ Fetal

- Brachial plexus palsy
- Clavicle fracture
- Fetal death
- Fetal hypoxia
- Fracture of the humerus





OPEN FETAL SURGERIES

History of fetal surgery

- 1965-first **intrauterine transfusion** for hydrops due to Rh incompatibility by A.W.Liley
- 1974- **fetoscopy** to obtain fetal samples by Hobbin
- 1981- **fetoscopic transfusion** by Rodeck
- 1982-first **open fetal surgery** for obstructive uropathy by Dr. Michael Harrison (father of open fetal surgery), University of California,





Fetal surgery

- It is application of established surgical techniques to the unborn baby
- The allure of Fetal Surgery is the possibility of interrupting the in utero progression of an otherwise treatable condition

Indications For Fetal Surgery

1. Anatomic lesions that interfere with development:

- lower urinary tract obstruction
- Obstructive hydrocephalus
- Congenital diaphragmatic hernia(CDH)
- Cardiac anomalies
- Neural tube defects
- Skeletal defects
- Thoracic space occupying lesions
- Giant neck masses
- Tracheal atresia-stenosis
- Congenital cystic pulmonary adenomatoid malformation(CCAM)
- Cleft lip and palate



2. Anomalies associated with twins

- TTTS-twin-twin transfusion syndrome
- TRAP-twin reverse arterial perfusion

3. Anomalies of placenta, cord or membranes

- Amniotic band
- Chorioangioma



Contraindication for fetal surgery

- Conditions incompatible with life
 - Chromosomal and genetic disorders
 - Other associated life threatening abnormalities



Advantages of fetal surgery

- rapid post-operative healing In utero environment
- Rapid healing, fostered by fetal growth factor
- Infections are combated by passage of maternal immune factors
- Umbilical circulation meets nutritional and respiratory needs

Some Abnormalities Amenable to Fetal Surgery

surgery

corrections

Open Fetal Surgery

- Cystic adenomatoid malformation
- Extralobar pulmonary sequestration
- Sacrococcygeal teratoma, Spina bifida

Fetoscopic Surgery

- TTTS: laser of placental anastamoses
- Diaphragmatic hernia: fetal endoscopic tracheal occlusion (FETO)
- Posterior urethral valves: cystoscopic laser
- Congenital high airway obstruction: vocal cord laser
- Amnionic band release

Some Abnormalities Amenable to Fetal Surgery

surgery

corrections

Percutaneous Procedures

- **Shunt therapy**

Posterior-urethral valves/bladder outlet obstruction

Pleural effusion: chylothorax or sequestration

Dominant cyst in congenital cystic adenomatoid malformation (CCAM)

Radiofrequency ablation

Twin-reversed arterial perfusion (TRAP) sequence

Monochorionic twins with severe anomaly(ies) of 1 twin

Chorioangioma

Some Abnormalities Amenable to Fetal Surgery

surgery

correction

• Fetal intracardiac catheter procedures	Aortic or pulmonic valvuloplasty for stenosis Atrial septostomy for hypoplastic left heart with restrictive atrial septum
---	--

Ex-utero-intrapartum-treatment(EXIT) procedures

- Congenital diaphragmatic hernia after FETO
 - Congenital high airway obstruction sequence (CHAOS)
 - Severe micrognathia
 - EXIT-to-resection
- Resection of fetal thoracic or mediastinal mass
Tumors involving airway/neck
- congenital diaphragmatic hernia (if no fetal surgery)



Types of fetal surgery

- **Open surgery-** the most definitive
- **FETENDO-** Fetal endoscopic surgery or fetoscopy or minimally access fetal surgery (MAFS)
- **FIGS-** Fetal image guided surgery
- **EXIT-** Ex-utero intrapartum treatment procedure

Open surgery

- Most definitive and most invasive
- Performed – middle of pregnancy
- Mother anaesthetised by GA
- Uterus opened similar to LSCS
- Intraoperative sonography – locate the placenta
- Incision taken close to the area of interest
- Fetal part is exteriorized
- Surgical repair of fetus done

Defect	Treatment
CCAM (Congenital cystic adenomatous malformation of lung)	Lobectomy
SCT (Sacro-coccygeal teratoma)	Resection
MMC (Meningomyelocele)	Repair
CDH	Temporary tracheal occlusion
Obstructive hydronephrosis	Vesicostomy, ureterostomy

FETENDO-fetal endoscopic surgery or MAFS

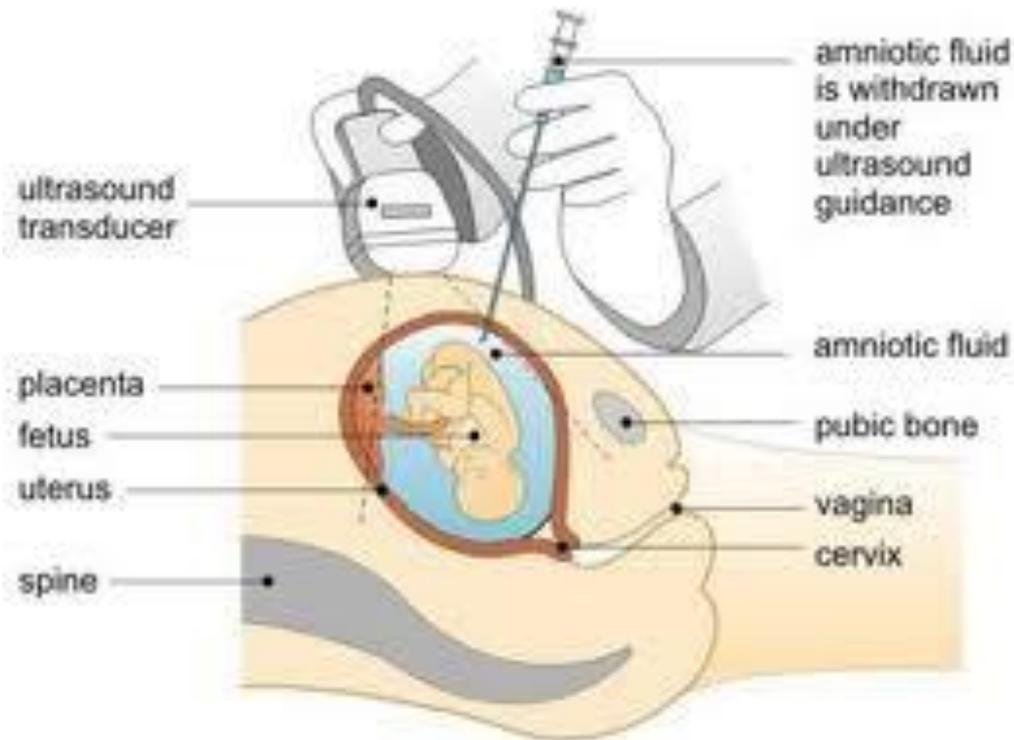


- Fetoscopic access to the fetus
- Real time visualisation of the Fetus
- During or after the 18th week of pregnancy
- Useful for treating placental problems
- Technically difficult

Defect	Treatment
TTTS (Twin-twin transfusion syndrome)	Laser coagulation of vessels
Acardiac twins in TRAP sequence (twin reverse arterial perfusion)	Cord ligation
ABS-Amniotic band syndrome	Division of amniotic bands
BOO-Bladder outlet obstruction	Vesicoamniotic shunt

FIGS - Fetal Image Guided Surgery

- Ultrasound image guided procedure
- Done under RA or LA
- Needle or a Trocar-Canula – Shunt introduced



□ Both diagnostic and therapeutic uses

Diagnostic

- Chorion villus sampling
- Amniocentesis
- Cordocentesis
- Fetal skin biopsy

Therapeutic

- RFA (Radiofrequency ablation) of anomalous twins
- Cord cauterization in twins
- Vesical/pleural shunts/catheter
- Balloon dilatation of aortic stenosis



Ex-utero intrapartum treatment (EXIT) procedure

OOPS- Operation On Placental Support

- At the time of delivery
- Used in airway requires surgical intervention
- Provide with patent airway that can provide oxygen to the lungs after separation of placenta
- Starts as a routine LSCS but under GA
- Head of the baby is delivered, but placenta is in situ
- Baby gets oxygen from placenta via cord



EXIT.....



- ❑ If unsuccessful, then tracheostomy tube below the level of airway blockage is placed
- ❑ Oxygen delivery to lungs confirmed
- ❑ Umbilical cord is clamped
- ❑ Baby delivered



Defect	Treatment
CHAOS - Congenital high airway obstruction syndrome	Tracheostomy
Giant cervical neck masses	Resection
CCAM (Congenital cystic adenomatous malformation)	Resection



Pre-operative evaluation

- Counselling of families
- Assessment for fitness for anaesthesia
- Assessment of fetus
- Pre-operative preparation
- Relief of anxiety
- Adequate analgesia
- Prevention and treatment of preterm labour
- Anaesthetic techniques

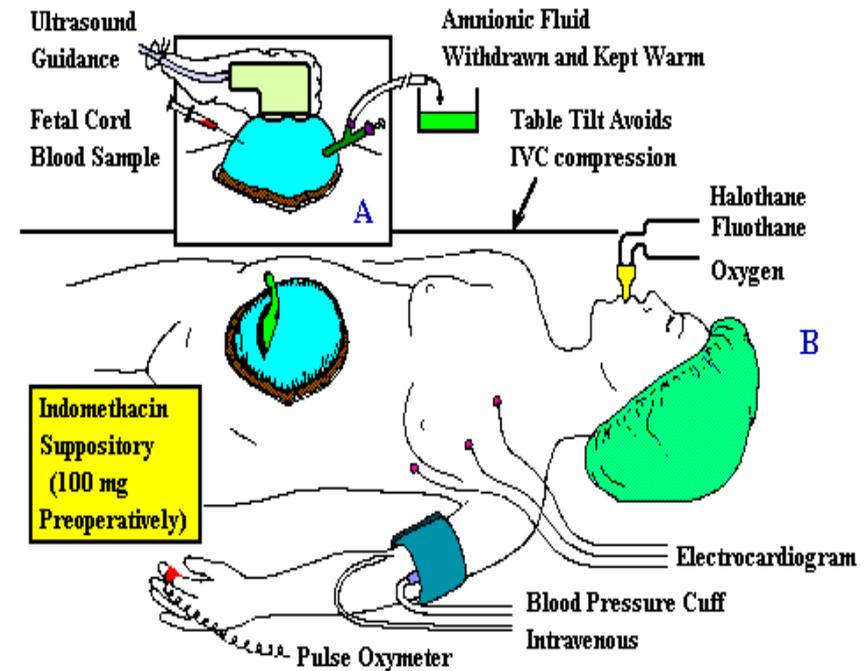


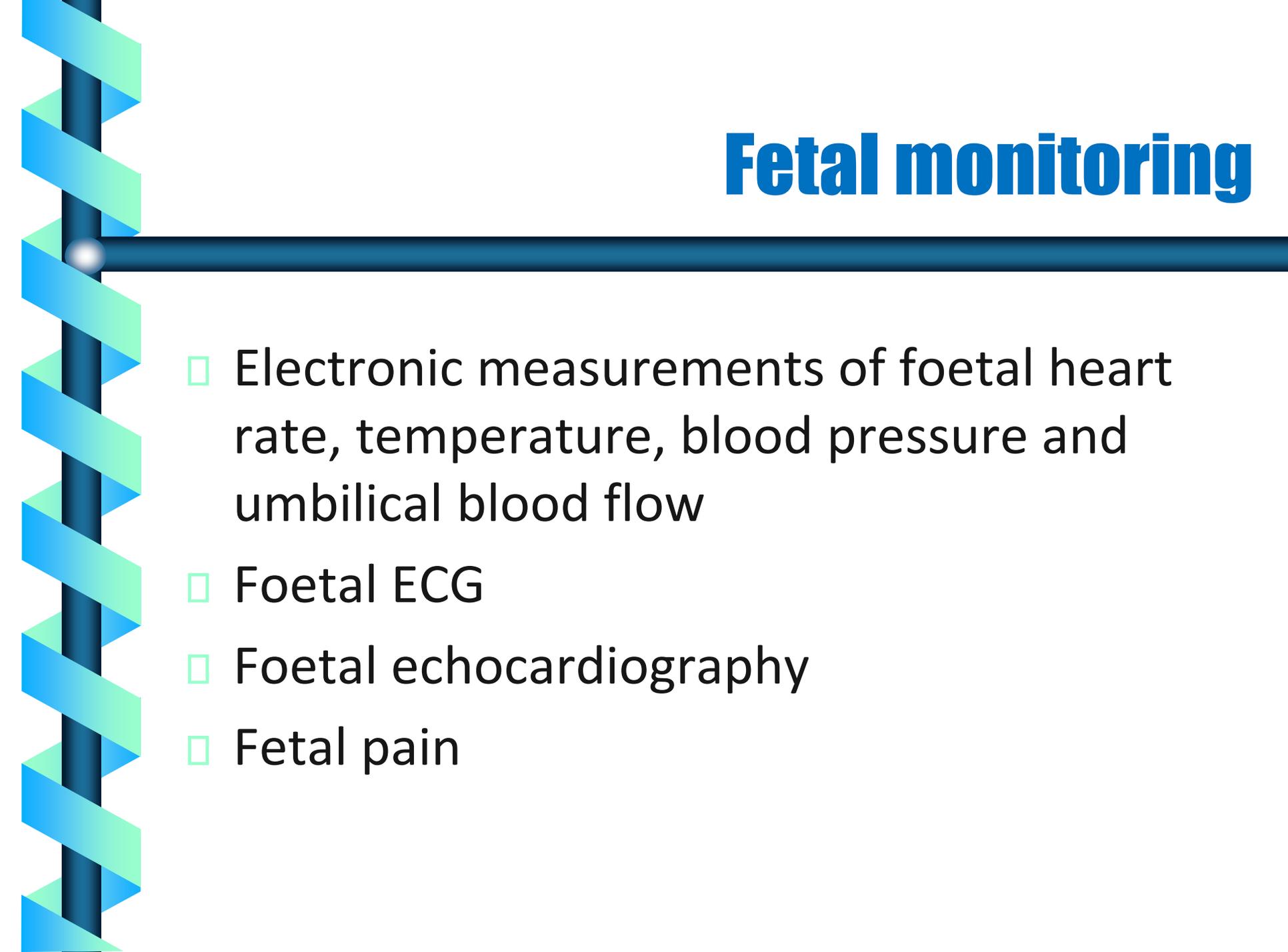
Challenges before the field of fetal surgery

- Ethical dilemma
- Maternal risk
- Fetal risk
- Maternal anaesthesia
- Fetal anaesthesia
- Post surgical tocolysis

Maternal monitoring

- Pulse oximetry
- ECG
- HR
- BP monitoring
- Temperature





Fetal monitoring

- Electronic measurements of foetal heart rate, temperature, blood pressure and umbilical blood flow
- Foetal ECG
- Foetal echocardiography
- Fetal pain



Future possibilities

- Stem cells or DNA to treat sickle cell anaemia or other genetic conditions
- More potent tocolytics to control preterm labour
- Improved techniques of fetoscopic visualisation



**The key in fetal surgery is not
when to operate, but to know
when NOT to operate!!!**



VAGINAL BIRTH AFTER CESAREAN SECTION



Trial of Labor After Previous Cesarean Delivery “TOLAC”

A trial of labor in women who have had a previous cesarean delivery, regardless of the outcome.

TOLAC MAY LEAD TO SUCCESSFUL VBAC

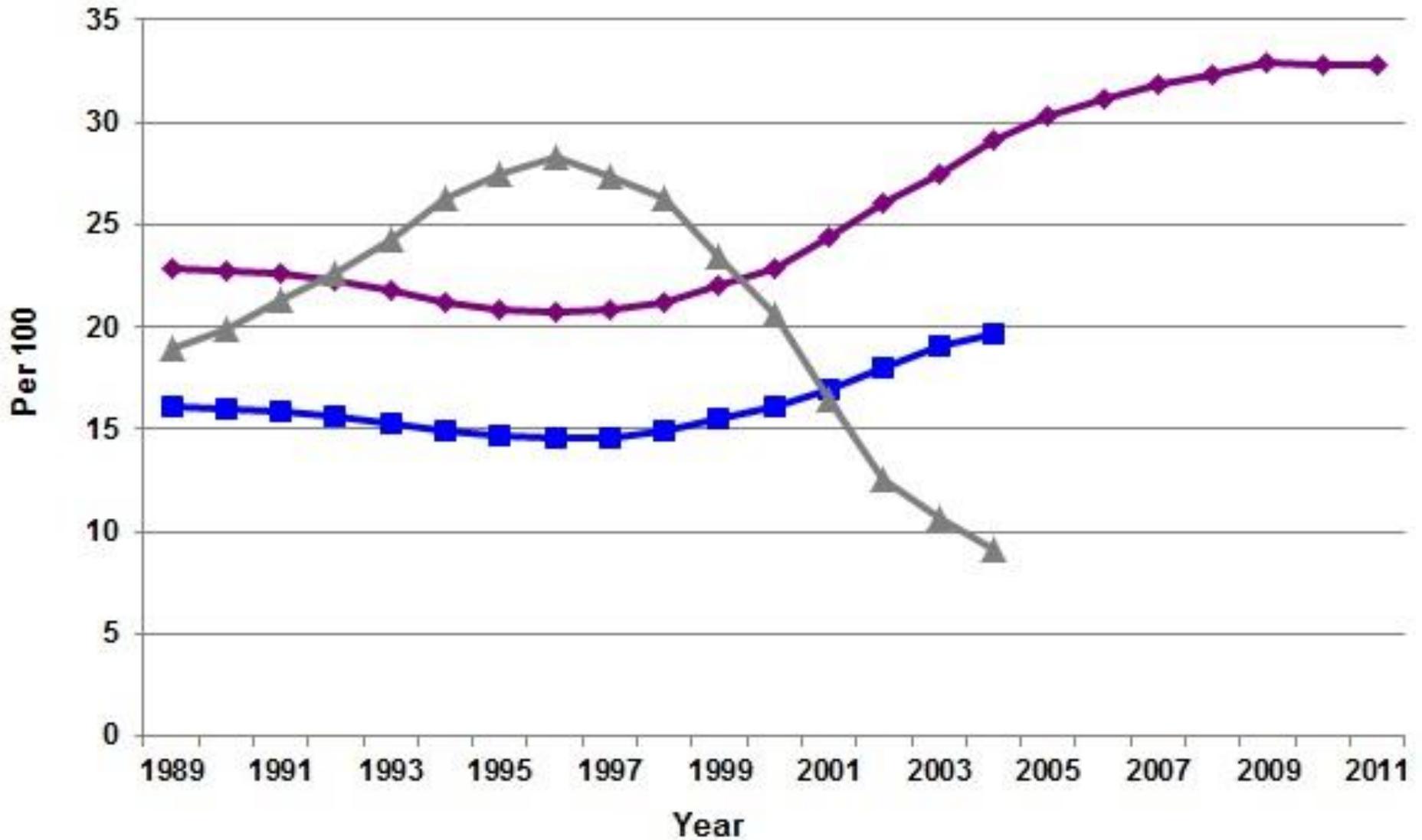
Introduction

“once cesarean always cesarean” Cragin,1916

- ▶ Low transverse uterine incision –by Kerr,1920
- 1980-1988 Cs rate rises ,17% - 24%
- In 1988 ACOG– women with one previous LTCS should be counseled to attempt TOLAC.
- 1996 VBAC rate ↑dramatically, almost a third women with prior LTCS delivered vaginally.
- But comparing **various risks VBAC rates** again decreased gradually & reduced to 10% in 2004 in US

Recent trends of VBAC

- ◆ Total cesarean section
- Primary (first-time) cesarean section
- ▲ Vaginal birth after cesarean section (VBAC)





Definitions

- A trial of labor after cesarean (TOLAC) is a planned attempt to labor by a woman who has previously undergone a cesarean delivery and desires a subsequent vaginal delivery.
- A VBAC is a “successful” trial of labor resulting in a vaginal birth.
- A TOLAC may result in either a “successful” VBAC or a “failed” trial of labor resulting in a repeat cesarean delivery.



Candidates for Vaginal Birth after Cesarean Delivery (VBAC)

Classic candidates

- ❑ One previous or Maximum of 2 previous LTCS
- ❑ Pelvis adequate for the fetus
- ❑ Vertex fetal presentation
- ❑ No other uterine scars
- ❑ Clinically adequate pelvis
- ❑ Continuous labour monitoring possible
- ❑ Ability to perform emergency C-section



Contraindications for VBAC

- Prior classical or T-shaped uterine incision or extensive transfundal uterine surgery(eg, myomectomy)
- **Previous uterine rupture**
- Pelvis contracted or suspected CPD
- Medical or obstetrical complications
- Inability to immediately perform emergency cesarean



Benefits of VBAC

- Lower rates of maternal morbidity
 - Postpartum fever
 - Wound infection
 - Hysterectomy
- Reduced Length of hospital stay
- Blood transfusion
- Maternal discomfort
- Fewer cases of neonatal respiratory distress

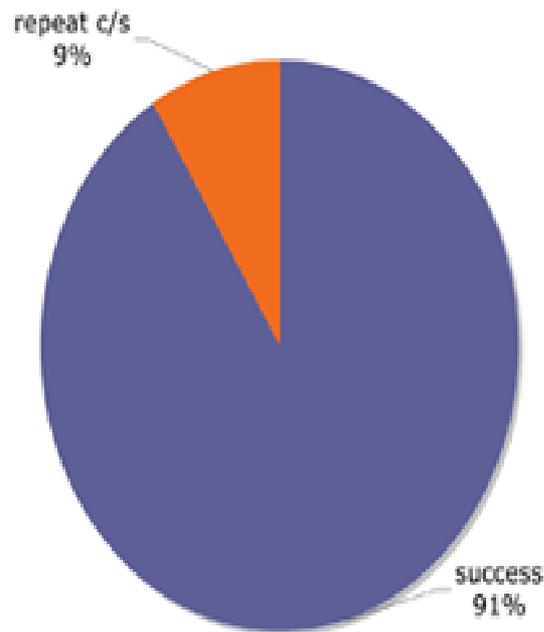
Complications of unsuccessful VBAC - TOL

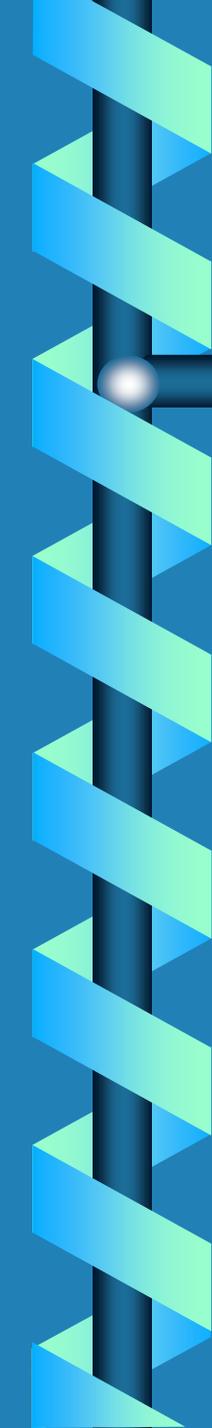
- resulting in repeat cesarean delivery (RCD) (emergency) in about 20 to 40%
- Uterine wound dehiscence
- Increased rates of uterine rupture: 0.2% for ERCS vs 0.4% for TOL (hysterectomy)
- Increased blood transfusion
- Increased rates of perinatal death: 0.3% for ERCS vs 0.6% for TOL
- Increased Perinatal risks

Success rates for attempted VBAC

- 50-70% of attempted VBACs result in successful vaginal birth

VBAC Attempts





PROTOCOL FOR VBAC

Pregnant women with previous transverse lower segment cesarean section

Review with Obstetrician before or at 36 weeks

- Discuss maternal preference
- Consider capabilities of the facility
- Individualize risk benefits
- Document counselling
- Document plan of care
- Consider anesthetic review

Is planned vaginal birth appropriate ?

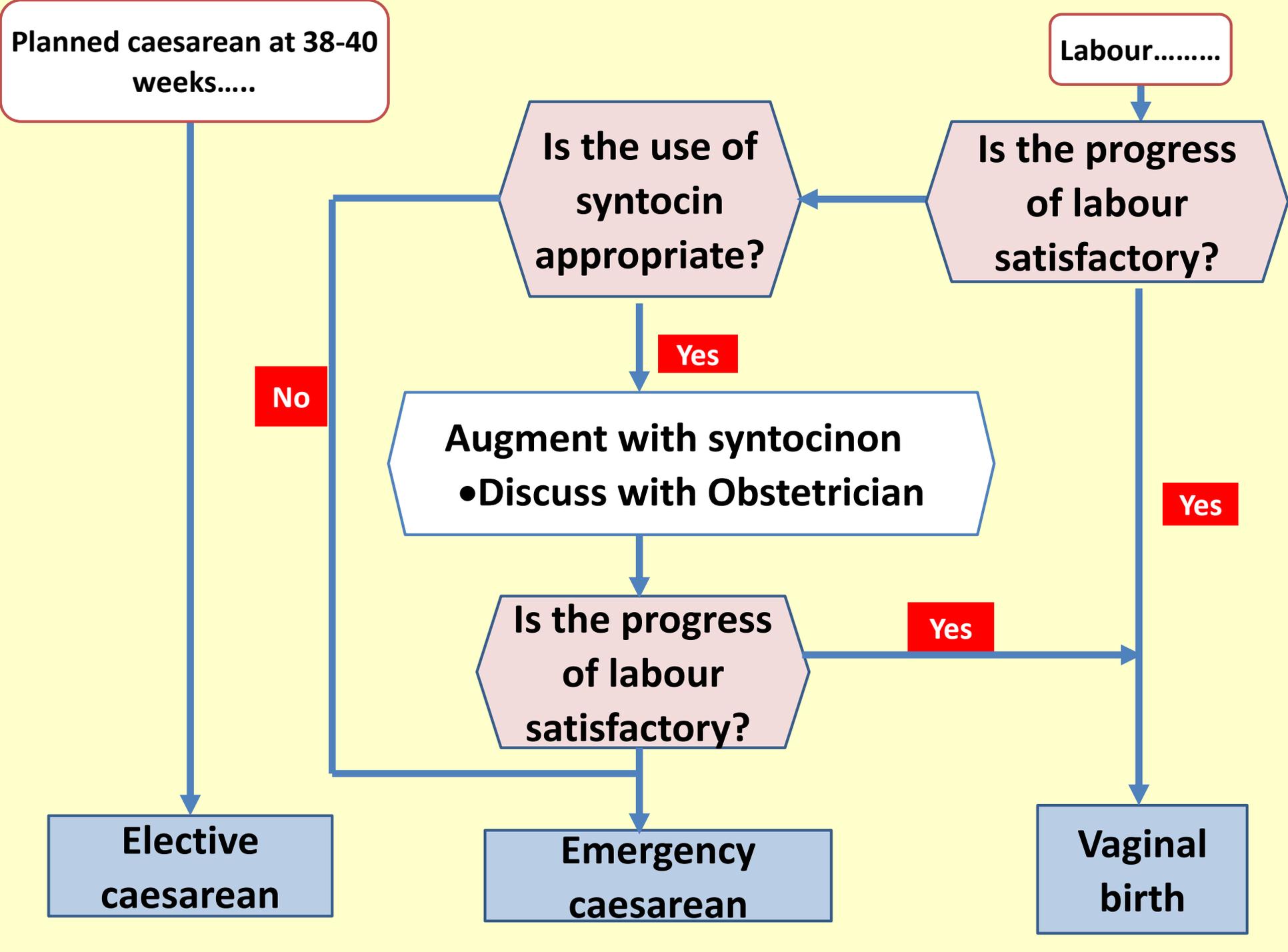
No

Planned caesarean at 38-40 weeks

Yes

Labour

- Insert an IV (recommender)
- Collect blood for group & CM
- Fetal monitoring
- Continuous maternal clinical surveillance





Induction of labor in attempted VBAC

- Spontaneous labor is most successful & has lowest rate of uterine rupture

Misoprostol should never be used

- Rates of rupture shown in U.W. study (2001 NEJM) differed by method of induction:
 - Spontaneous labor - 0.52%
 - Induction without prostaglandins - 0.72%
 - Induction with prostaglandins – 2.45%

Induction of labor in attempted VBAC...

- Prostaglandins for cervical ripening is associated with increased risk of scar rupture during VBAC

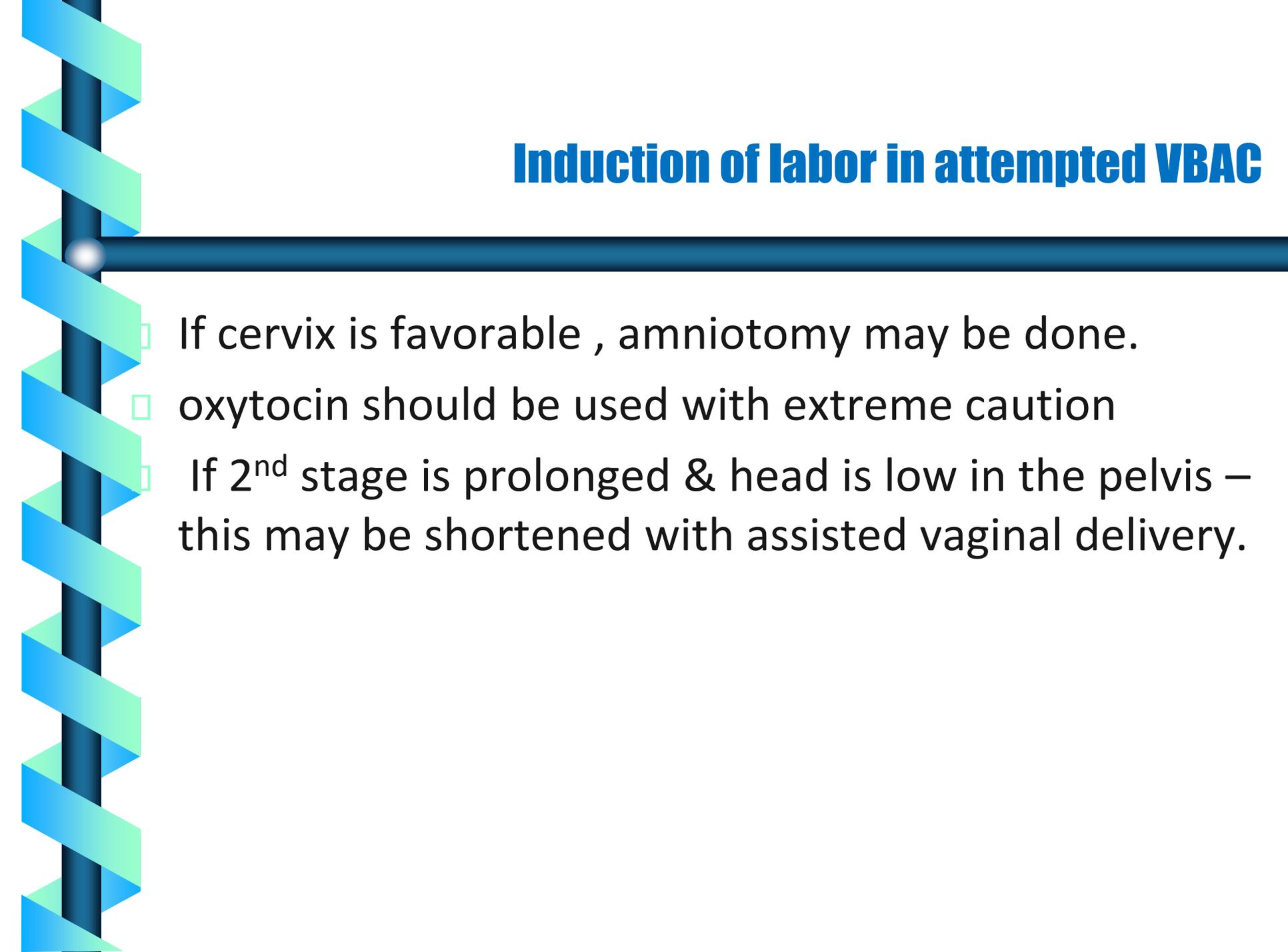
- Rupture rate clearly higher than spontaneous labor in most of the studies.

- (2.9% Vs 0.9% in PGE2 gel Vs spontaneous, RAVASIA ET AL, 2000)
Thus ACOG(2004), discourages the use of prostaglandin analogues for cervical ripening or labor induction during VBAC.



Induction of labor in attempted VBAC

- I.V drip with Ringer's solution maintained.
- Blood should be sent for Hb%, Grouping and CM
- Continuous intrapartum monitoring and advanced neonatal resuscitation.
- Epidural analgesia can be used safely during labour(ACOG,2007)
- Spontaneous onset of labor is most desirable



Induction of labor in attempted VBAC

- If cervix is favorable , amniotomy may be done.
- oxytocin should be used with extreme caution
- If 2nd stage is prolonged & head is low in the pelvis – this may be shortened with assisted vaginal delivery.

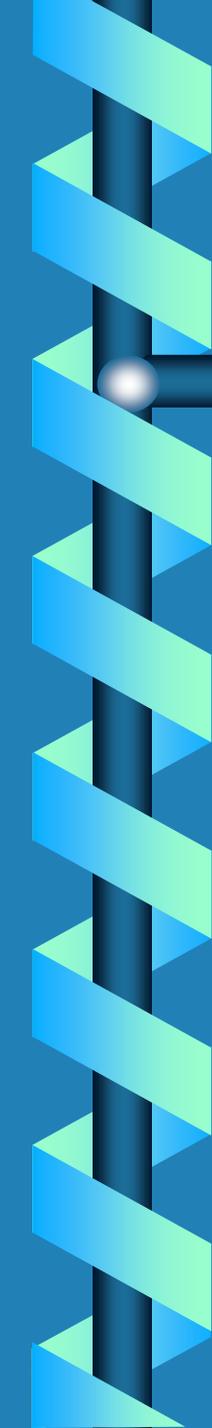
Last word

- “Best answer” for a given woman with a prior C.S is probably unknown.
- The decision to attempt VBAC is complex, requires careful counseling & should take into consideration :
 - Maternal preferences & priorities
 - plans for future pregnancies
 - Presence of factors that influence likelihood of success Vs scar rupture



Recommendations to Midwives Doing Home VBACs

□ IS MIDWIFERY IS ALIVE IN INDIA
TODAY?



Bibliography & References

- ❑ D. C. Dutta, Text Book Of Obstetrics:6th Edition, Culcutta:New central Book Agency(P) Ltd, 2004,Pp.145-153.
- ❑ Annamma Jacob, Clinical Nursing Procedures: The Art of Nursing Practice,2nd edition, New Delhi: Jaypee Brothers Medical publishers(P)LTD, 2010,Pp.602-606.
- ❑ Myles, Text Book For Midwives, 13th Edition, London: Harcourt publishers Ltd.,2000, Pp. 187-614.
- ❑ Abrams B, Selvin, S. Maternal weight gain pattern and birth weight. Obstet Gynecol 1995 (1);86;163-169.
- ❑ Abrams B, Carmichael S, Selvin S. Factors associated with the pattern of maternal weight gain during pregnancy. Obstet Gynecol 1995 (2);86:170-176.
- ❑ Shoulder Dystocia (Practice Bulletin 40). American College of Obstetricians and Gynecologists. November 2002.

References

- Mark AR. Anaesthesia for fetal surgeries and other intrauterine procedures. Chestnut. 4th edition. Pg 123-140.
- Mark AR. Anaesthesia for fetal procedures and surgery. Shnider and Levinsons Anaesthesia for obstetrics. Pg 257-282.
- Gupta S. Anaesthesia for fetal surgery. Obstetric Anaesthesia. Pg 627-635.
- Saxena KN. Anaesthesia for fetal surgeries. Indian J Anaesth 2009 October;53(5):554-9.
- Maternal haemodynamics and lung water content during percutaneous fetoscopic interventions under general anaesthesia. Br J Anaesth 2009;102:523-7.

Time for discussion





Thank

You