Childbirth skills workshop

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Objectives

• Overview of the normal birth
• Examples of dealing with 4 problems:
  – Maternal: postpartum hemorrhage
  – Infant: shoulder dystocia
  – Breech Delivery
  – Maternal and infant: symphysiotomy for obstructed labor
  – Manual removal of placenta
• Resources for further learning
Infant mortality

- 10.7 million children under the age of five years die — 4 million during the first four weeks of life.
- Another 3.3 million are stillborn.
- Half the women in the world still give birth at home without skilled care.
- Not all institutions that offer maternity services meet the minimal standards for safe childbirth and newborn care.
Categories of causes of neonatal deaths

- Preterm birth
- Asphyxia
- Trauma during birth
- Infections
- Severe malformations
Resources

Advanced Life Support in Obstetrics course
http://www.aafp.org/also

WHO IMPAC manual
http://www.who.int/reproductive-health/impac/index.html
Managing Complications in Pregnancy and Childbirth
A guide for midwives and doctors

Department of Reproductive Health and Research (RHR), World Health Organization

10MB download
Advanced Life Support in Obstetrics
ALSO

• 2-day course
• Lectures and workshops covering antenatal, intrapartum and postpartum urgencies and emergencies
• Taken by over 55,000 worldwide
• Taught in 28 countries
Normal Birth Mechanism
Postpartum hemorrhage
Postpartum Hemorrhage

- 3-5% of vaginal deliveries
- Definition: >500 ml blood loss
- Potentially serious complications for mother
- Common cause of maternal morbidity and mortality worldwide
**PPH Risk Factors**

**Antepartum**
- Preeclampsia
- Nulliparity
- Multiple gestation
- Previous postpartum hemorrhage
- Previous cesarean section

**Intrapartum**
- Prolonged third stage (>30 min)
- Arrest of descent
- Episiotomy
- Lacerations: cervical, vaginal, perineal
- Assisted delivery: forceps, vacuum
- Augmented labor
PPH Prevention

- Treat anemia during prenatal care
- Avoid routine episiotomy
- Actively manage third stage
- Re-examine after delivery
Third Stage Management

Expectant
- Await separation
- Leave cord uncut
- Spontaneous placental delivery
- Oxytocin / breast after placental delivery

Active
- Oxytocin with shoulder delivery
- Cord clamped and cut early
- Controlled cord traction
PPH: Resuscitative Measures

- Call for help
- **Airway**, **Breathing**, **Circulation**
- Two large-bore IVs
- Oxygen
- Stat labs: type & cross, hgb, coags
- Consider transfusion
Treatment Approach for PPH

- Uterine massage
- Inspect for lacerations
- Oxytocics
- Surgical intervention
Causes of PPH: The Four “T’s”

- Tone (70%)
- Trauma (20%)
- Tissue (10%)
- Thrombin (1%)
**Tone - Uterine Atony**

- Most common cause of PPH
- Initial step = bimanual uterine massage and compression
- Oxytocic agents
  - Oxytocin
  - Methylergonovine
  - Prostaglandins
Bimanual Uterine Compression and Massage
Oxytocin

- Drug of choice
- 10 - 40 units in 1 liter at 250 cc/hr
- IM (10 units) or IV infusion
- No contraindications
- Hypotension with IV push
Ergot Alkaloids

- Metylergonovine 0.2 mg
- Ergometrine 0.25 mg
- IM only
- Contraindicated in hypertension
Prostaglandins

- 15-methyl prostaglandin F2α
  - carboprost, Hemabate®
- 0.25 mg IM or intramyometrial
- Side effects: nausea, diarrhea, flushing, headache
- Contraindication: hypersensitivity
- Caution: asthma, HTN, cardio-pulmonary disease
Misoprostol (cytotec)

• Prostaglandin
• Tablet form
• $1 per 100 mcg tablet
• Can be given orally, rectally or vaginally
• 400-800 mcg causes tetanic uterine contraction
• (Also used for “cervical ripening” in MUCH smaller doses – 25-100 mcg)
PPH Summary

- Unpredictable - be prepared!
- Uterine atony is the main cause
- Remember 4-Ts:
  - Tone, Trauma, Tissue, Thrombin
- Consider active management of the third stage
Shoulder dystocia
Background

- Impaction of the anterior shoulder against the symphysis after delivery of the fetal head
- Incidence - varies by birthweight
  - 0.3% in infants weighing 2500-4000 grams
  - 5-7% in infants weighing 4000-4500 grams
- ≥50% occur in normal weight infants
Impacted Shoulder
Risk Factors

- Prior shoulder dystocia
- Gestational diabetes
- Postdates pregnancy
- Macrosomia
- Maternal short stature
- High prepregnancy weight and weight gain
- Abnormal pelvic anatomy
- 1st stage protraction or arrest disorders
- Prolonged 2nd stage
- “Head bobbing” in 2nd stage
- Instrumented vaginal delivery
**Complications**

- **Maternal**
  - soft-tissue injuries
  - anal sphincter damage
  - postpartum hemorrhage
  - uterine rupture
  - symphyseal separation

- **Neonatal**
  - brachial plexus palsy
  - clavicle fracture
  - humeral fracture
  - fetal acidosis
  - hypoxic brain injury
Recognition

- Fetal head retracts against perineum ("turtle sign")
- Gentle traction does not effect delivery
- Proceed to HELPERR
HELPERR mnemonic

- **H** = Help (call for additional assistance)
- **E** = Evaluate for episiotomy
- **L** = Legs (McRoberts Maneuver)
- **P** = Pressure (suprapubic)
- **E** = Enter the vagina
- **R** = Remove the posterior arm
- **R** = Roll the patient (to hands and knees)
H = Help

- Activate institutional protocol
  - Appropriate notification
  - Additional nursing staff
  - Additional back-up
    - neonatal resuscitation personnel
    - obstetrical / surgical backup
    - anesthesia
E = Evaluate for Episiotomy

- Shoulder dystocia is not a soft-tissue dystocia
- Consider when additional room needed for advanced maneuvers
- Decision based on clinical judgement and response to initial maneuvers
L = Legs

- McRoberts Maneuver:
  - Flex maternal hips so that thighs are on abdomen
- Effects:
  - Straightens the lumbosacral lordosis
  - Increases AP diameter of pelvis
  - Flexes the fetal spine
- Reduces >40% of shoulder dystocia
P = Pressure

• Suprapubic pressure by assistant:
  • CPR-style hand position
  • Force should act to adduct anterior shoulder
  • Initially continuous, but can involve a rocking motion
  • Attempt for 30-60 seconds
McRoberts and Suprapubic Pressure
Rubin Maneuver

- Approach *anterior* fetal shoulder *from behind*
- Exert pressure on scapula to adduct most accessible shoulder and rotate to oblique position
- Continue McRoberts maneuver
- Woods Screw Maneuver
  - Approach *posterior* fetal shoulder *from the front*
  - Gently rotate shoulder toward symphysis
  - Combine with Rubin maneuver
    - Birth attendant has one hand on each shoulder, rotating together
Reverse Woods Screw maneuver:

- Approach *posterior* shoulder *from behind*
- Rotate fetus in opposite direction from Rubin or Woods Screw maneuvers
- May be successful when previous maneuvers fail
Rubin Maneuver

Reverse Wood’s Screw

180°
R = Remove the Arm

- Follow posterior arm down to elbow
  - usually anterior to fetal chest
- Flex arm at the elbow
- Sweep forearm across fetal chest
  - grasping hand directly and pulling outward may lead to fractures
R = Roll the Patient

- Roll patient to “all-fours” position
- Increases pelvic diameters
- Movement and gravity may also contribute to dislodging the impaction
- Deliver *posterior* shoulder with gentle downward traction
R = Roll the Patient

Attempt to deliver posterior shoulder first
May attempt all “Enter maneuvers” in this position
Maneuvers of Last Resort

- Deliberate clavicle fracture
- Zavanelli maneuver
- Muscle relaxation
- Abdominal surgery with hysterotomy
- Symphysiotomy
Zavanelli Maneuver

- Cephalic replacement followed by emergency cesarean delivery
- Flex fetal head to replace
- Requires anesthesia, OR team, tocolysis
- Do not attempt if nuchal cord clamped and cut
Zavanelli Maneuver
Abdominal Replacement

Tocolysis helpful
Immediate cesarean required
Summary

- Shoulder dystocia is common and life-threatening emergency
- Risk factors helpful, but difficult to predict
- Anticipation and preparation are keys to successful management
- Institutional protocol is recommended
- HELPERR provides a structured approach
Breech Delivery
Abnormalities of labor

- Malpresentations
- Dystocias
  - Latent labor
  - Active labor
  - Shoulder
- Macrosomia
Malpresentations: Breech

- Types--Frank, complete, incomplete/footling
- Diagnosis--Leopold’s, vaginal exam, ultrasound
- Management--version, vaginal breech delivery, C-section
Vaginal breech delivery

- Must be frank/complete breech
- 1500-3800 grams
- Fetal head must be flexed
- Adequate pelvis
- No maternal/fetal indication for C-section
- Ideally: Anesthesia in attendance, provider familiar with delivery technique
- Assistant present
Spontaneous vaginal breech delivery

The fetus emerges spontaneously (A), while uterine contractions maintain cephalic flexion. Premature aggressive traction (B) encourages deflexion of the fetal vertex and increases the risk of head entrapment or nuchal arm entrapment. Reproduced with permission from: Gabbe, SG, Niebyl, JR, Simpson,
After spontaneous expulsion to the umbilicus, external rotation of each thigh (A) combined with opposite rotation of the fetal pelvis results in flexion of the knee and delivery of each leg (B). Reproduced with permission.
Spontaneous vaginal breech delivery

When the scapulae appear under the symphysis, the operator reaches over the left shoulder, sweeps the arm across the chest (A), and delivers the arm (B). Reproduced with permission from: Gabbe, SG, Niebyl, JR, Simpson, JL (Eds).
Spontaneous vaginal breech delivery

Cephalic flexion is maintained by pressure (heavy arrow) on the fetal maxilla (not mandible)! Often, delivery of the head is easily accomplished with continued expulsive forces from above and gentle downward traction. Reproduced with permission from: Gabbe, et al.
Breech presentations

- Increased perinatal morbidity & mortality
  - anomalies (particularly CNS)
  - birth trauma
  - birth asphyxia/hypoxia
Breech head entrapment

• Treatment
  – Breech maneuvers
    • Mauriceau-Smellie-Veit (back anterior)
    • Prague (back posterior)
  – Forceps (Piper, Laufe)
  – Duhrssen incisions
  – Nitroglycerin
  – Zavanelli
  – Symphysiotomy
WHO reproductive health library
complicated delivery techniques

http://video.who.int/streaming/rhl/bre
ech_web.wmv
Face presentation

- Hyperextension of fetal head such that the fetal face--between chin and orbits--is presenting part
- 1/500 deliveries
- Risk factors: high parity
- Diagnosis usually made at time of labor with palpation of mouth, nose, malar bones and orbital ridges
- 75% will deliver vaginally--only if mentum anterior. Can try to rotate mentum posterior
Retained placenta

- Contributing factor to PPH
- Enter vagina
- Ascend into uterus
- Find plane between placenta and wall
- Remove intact if possible using waving or scraping motion

www.dkimages.com/discover/previews/967/15013811.jpg
Symphysiotomy

- Increases pelvic diameter (up to 2 cm) by surgically dividing the ligaments of the symphysis under local anesthesia.
- Carried out only in combination with vacuum extraction.
- A life-saving procedure in areas where cesarean section is not feasible or immediately available.
- Leaves no uterine scar and the risk of ruptured uterus in future labors is not increased.

Source: WHO IMPAC manual
Position and local anesthesia

Source: WHO IMPAC manual
Insert urethral catheter and pull urethra to one side

Source: WHO IMPAC manual
Cut through cartilage and ligament of pubic symphysis

Source: WHO IMPAC manual
Workshop

- Normal vaginal birth mechanics
- Management of the third stage of labor
- Maneuvers to reduce shoulder dystocia
- Breech Delivery
Resources

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WHO Reproductive Health Library