Obstetric Emergencies

Shoulder Dystocia
Abnormal Placentation
Umbilical Cord Prolapse
Uterine Rupture
TOLAC
Diabetic Ketoacidosis

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Objectives

- Highlight abnormal conditions that contribute to the severity of obstetric emergencies
- Describe how nurses can implement recommended protocols, procedures, and guidelines during an OB emergency aimed to reduce patient harm
- Identify safe-guards within hospital systems aimed to provide safe obstetric care
- Identify triggers during childbirth that increase a women’s risk for Post Traumatic Stress Disorder and Postpartum Depression
- Incorporate a multidisciplinary plan of care to optimize care for women with postpartum emergencies
Obstetric Emergencies

- Shoulder Dystocia
- Abnormal Placentation
- Umbilical Cord Prolapse
- Uterine Rupture
- TOLAC
- Diabetic Ketoacidosis
Risk-benefit analysis

Balancing 2 Principles

1. Maternal
   - Benefit should outweigh risk
2. Fetal
   - Optimal outcome
Obstetric Emergencies

Shoulder Dystocia

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TOLAC

Diabetic Ketoacidosis
Shoulder Dystocia

### Incidence
- 0.2 to 3% of births

### Definition:
- Diagnosed when the fetal head emerges and there is a **failure of the shoulders to deliver** spontaneously or with gentle traction
- **Prolonged** head to body delivery time
  - > 60 seconds and/or the necessitated use of ancillary obstetric maneuvers

Shoulder Dystocia

- Generally due to *impaction* of the anterior shoulder behind the symphysis, above the pelvic inlet

- Classified as *mild if only* McRobert’s maneuver and/or suprapubic pressure is needed

- Classified as *severe* if other maneuvers required

Cardinal movements

- Engagement
- Descent
- Flexion
- Internal rotation

1. Before engagement
2. Engagement, flexion, descent
3. Descent, rotation
4. Complete rotation, early extension
Cardinal movements

- Extension
- External rotation
- Expulsion
# Risk Factors associated with Shoulder dystocia:

<table>
<thead>
<tr>
<th>Maternal</th>
<th>Fetal</th>
<th>Labor Related</th>
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<tbody>
<tr>
<td>Abnormal pelvic anatomy</td>
<td>Suspected macrosomia</td>
<td>Operative vaginal delivery</td>
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<tr>
<td>Gestational or Pre-Gestational Diabetes</td>
<td></td>
<td>Protracted active phase</td>
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<tr>
<td>Post-term pregnancy</td>
<td></td>
<td>Prolonged second stage</td>
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<tr>
<td>Previous shoulder dystocia</td>
<td></td>
<td>Precipitous delivery</td>
</tr>
<tr>
<td>Short stature (less than 5 feet tall)</td>
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<td></td>
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<tr>
<td>Obesity (&gt;200lbs)</td>
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<td></td>
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<tr>
<td>Previous large infant (&gt;4000grams)</td>
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<tr>
<td>Excessive weight gain</td>
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</tbody>
</table>
Think Ahead….Recognize Risk Factors

- Diabetic mom
- Suspected macrosomia?
- Previous shoulder dystocia?
- Gut feeling?
- Abnormal labor (such as prolonged or precipitous second stage)
- “Turtle-heading” of infant
- Confluence of risk factors
Shoulder dystocia cannot be accurately predicted or prevented

Elective induction reported mixed results to prevent shoulder dystocia for women with suspected fetal macrosomia is discouraged

Consider planned elective CB
• EFW > 5000 grams in women without diabetes
• EFW >4500 grams in women with diabetes

Simulation education is recommended

Checklists and standardized documentation tools are suggested to ensure critical birth information is noted
Be calm

- **B** Breathe, do not push
- **E** Elevate legs into a McRoberts position
- **C** Call for help
- **A** Apply suprapubic pressure
- **L** Enlarge the vaginal opening (episiotomy)
- **M** Maneuvers ( Rubin, Woods, Gaskin)
How does McRoberts work?

- **Flattens** the sacrum
- **Aligns** the sacrum with the lumbar spine
- **Rotates** the symphysis pubis to a blunt angle
- **Elevates** the anterior shoulder.
- **Facilitates** the passage of the shoulder underneath the pubic bone
Suprapubic pressure

Push down and angled against posterior shoulder
Gaskin maneuver

Opens the pelvis 25% more.

Sometimes just the act of changing position dislodges the shoulder.

Suprapubic pressure
(Mazzarti Maneuver)
Suprapubic pressure with Mc Roberts
Zavanelli Maneuver

- Cephalic replacement first described in 1976 and first performed in 1985

- Done as a last resort

- Tocolytic is given and patient is taken for immediate Cesarean delivery
Rotate head to direct OA and flex

Firm pressure is applied to the vertex as it is replaced into the vagina as far as possible.
Extraordinary Maneuvers

- Fracture of the clavicle
- Cephalic Replacement (Zanvanelli)
- Abdominal rescue
- Symphysiotomy

https://youtu.be/vxrZq7hCw8o
Complications following Shoulder Dystocia

**Mom:**
- Postpartum hemorrhage
- 3rd or 4th degree lacerations
- Symphysis separation
- Uterine rupture

**Fetus:** 5% of fetus’s will sustain injury following SD
- Brachial plexus palsy (3-16% transient)
  - **Endogenous** forces of labor and birth
  - **Exogenous** forces by birth attendant
- Fractured clavicle or humerus (0.1 to 42%)
- Hypoxic brain injury (0.3%)
- Death (0.35%)
Risk Factors Are Not Predictive

- Approximately 50-60% of cases of shoulder dystocia occur in infants weighing <4000 grams

- The majority of shoulder dystocias occur in women of average size, with average size babies, normal pregnancies, and a normal labor course...

Naef & Morrison 1994, Gurewitsch 2007
What NOT to Do

- Fundal pressure
- Rotate fetal neck
- Excessive traction on fetal neck

These maneuvers do two things:
1. Increase the risk for **brachial plexus** injury
2. **Further impact** the anterior shoulder behind the symphysis
Avoid Excessive Lateral Traction on the Fetal Neck

Gurwitsch 2007, Allen 2007
Patient Safety Checklist

Documenting Shoulder Dystocia

Date __________ Patient ___________________________ Date of birth _______ MR # __________

Physician or certified nurse–midwife ________________________ Gravidity/Parity____________

Timing:
Onset of active labor _______ Start of second stage _______
Delivery of head _______ Time shoulder dystocia recognized and help called _______
Delivery of posterior shoulder _______ Delivery of infant _______

Antepartum documentation:

- Assessment of pelvis
- History of prior cesarean delivery: Indication for cesarean delivery: __________________________
- History of prior shoulder dystocia
- Largest prior newborn birth weight _______
- Cesarean delivery offered if estimated fetal weight greater than 4,500 g (if the patient has diabetes mellitus) or greater than 5,000 g (if patient does not have diabetes mellitus)
- History of gestational diabetes
- Estimated fetal weight _______
Summary

BE CALM

Note exact time

Call out each passing minute time

Ensure the bladder is empty

Clear room of obstacles/step stool
Obstetric Emergencies

Shoulder Dystocia

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TOLAC

Diabetic Ketoacidosis
Placenta Anatomy and Physiology

- Circulation by 17th day of gestation
- Placenta completely develops and functions by 10th week but continues forming until the end of the 16th week of gestation.
- 3 weeks after fertilization, small projections appear and form the chorionic villi.
- These villi erode the walls of the maternal blood vessels and open sinuses where maternal blood pools.
- It is a temporary endocrine organ and has a blood flow of 1000 mL per minute.
Placenta Anatomy and Physiology

- The maternal surface has **15-20 cotyledons** each containing major branches of the umbilical blood vessels.

- The **villi** hang in the **intervillous space** inside the uterine wall that is filled with mom’s blood. This is where the exchange of nutrients, oxygen, and waste products occur.

- It serves as an organ for **respiration, nutrition, excretion**, and protection as well as secreting **hormones** to stabilize pregnancy.
(Normal) Placenta “Stats” at Term

- Weight: 400-470 gm
- Diameter: 20-22 cm
- Thickness: 2.5 cm
- Umbilical cord length: 49-52 cm
- Umbilical cord thickness: 2.5 cm
Abnormal Placentas

- Abnormal structures
- Abnormal shapes
- Placental malperfusions
- Extrachorialis placentas
- Infarcts/Calcifications
- Accreta family of abnormalities
Placental Abruption

- Premature separation of a normally implanted placenta
- Occurs in 1% of all births
- Abruption is a leading cause of antepartum hemorrhage
Placental Abruption

- Abruption can be occult or visible
- Abruption of more than 50% of the placenta is associated with fetal death
Abruption: Grading

0  Asymptomatic – a small clot is discovered

1  Vaginal bleeding, uterine tetany & tenderness possible, no signs of maternal shock or fetal distress

2  External vaginal bleeding may or may not be present, no signs of maternal shock, signs of fetal distress present

3  External bleeding may not be present. Marked uterine tetany, persistent abdominal pain, maternal shock and fetal demise present
   Coagulopathy possible in up to 30% of cases

Konje JC, & Taylor DJ, High risk pregnancy 2000
Risk Factors for Placental Abruption

- Prior abruption
- Smoking
- Cocaine use
- Trauma
- Hypertension

- Thrombophilias
- Older age
- PPROM
- Intrauterine infections
- Hydramnios
Clinical Presentation of Placental Abruption

- What are the two hallmark signs and symptoms of placental abruption?
Diagnosis of Placental Abruption

- Diagnosis is generally clinical
- Ultrasound may be helpful depending on the extent of the abruption and duration
  - An acute retroplacental or preplacental hemorrhage may not be detected on ultrasound
  - If an abruption is not detected on ultrasound, it may still be there
  - If an abruption is detected on ultrasound, it is diagnostic
Management of Placental Abruption

- Management is dependent on fetal status and presence or absence of labor

- Initial evaluation should include:
  - Kleihauer-Betke Test?
    - if RH - administer RhoGAM
  - Continuous monitoring
  - IV, Type and crossmatch
  - Foley catheter??

- If the etiology is not trauma or cocaine, watch B/P, pre-eclampsia is the next leading cause of abruption
Fetal Monitoring
Fetal Monitoring

Source: Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY: 

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Chronic vs Traumatic Abruption
Vasa Previa

Diagram showing the umbilical cord, fetal vessels, internal os, and placenta.
Vasa Previa

- Rare, potentially catastrophic complication.
- Often associated with a velamentous insertion of the umbilical cord.
- Fetal vessels run through the fetal membranes.
- Vessels are at risk of rupture with consequent fetal exsanguination.
- Affects 1:1,300 to 8,300 pregnancies.
Yikes!

midwifemuse.wordpress.com
Velamentous Insertion
Placenta Previa

- Placenta previa refers to the presence of placental tissue overlying or proximate to the internal cervical os

- The main complication of placenta previa is bleeding

- Several forms of the disorder have been described

Sakornbut E 2007
Types of Placenta Previa

All of these are considered placenta previa
Placenta Previa
Risk Factors for Placenta Previa

- What is the biggest risk factor for placenta previa?
  - Number of prior cesarean sections –
  - Incidence is 10% after 4 or more C/S

- Additional independent risk factors include:
  - Maternal smoking
  - Residence at higher altitudes
  - Male fetus
  - Multiple gestation
  - Hx of uterine curettage
  - Older age and multiparity

Sakornbut E 2007
Clinical Manifestations of Placenta Previa

- Painless vaginal bleeding in 70 to 80% of patients
- 10 to 20% of women present with uterine contractions associated with bleeding
- Initial bleeding episode usually at approximately 34 weeks
- Emergency or scheduled delivery usually at a mean gestational age of 36 weeks
- Absence of abdominal pain and uterine contractions has been the distinguishing feature between placenta previa and placenta abruptio
Acute Care Woman with Symptomatic Placenta Previa (24-37 weeks)

- Admit to L&D
- Two IVs with large bore needle (16-18 gauge)
- Stabilize X24 hours if possible
  - NPO
  - Strict bedrest
  - Continuous FHR monitoring
  - Type and screen
  - RhoGAM if RH negative
  - Steroids
  - Tocolytics are controversial
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Indications for Delivery

- An abnormal fetal heart rate tracing unresponsive to standard measures
- Life threatening refractory maternal hemorrhage
- Bleeding after 34 weeks in the presence of known or suspected fetal pulmonary maturity – consider delivery
- Individualized management
Placenta Accreta

- In placenta accreta, the placenta appears contiguous with the bladder wall.
Placenta Accreta

MRI Helps Detect Placenta Accreta

MRI shows placenta overlying the cervix, with irregular outer contour and an abnormal appearance, indicating uterine invasion.

MRI shows placenta overlying the cervix, with a normal, smooth outer contour. There is no evidence of uterine wall invasion.
FIGURE 1 Ultrasound is an excellent screening test for accreta, with a sensitivity of 77%–93% and a specificity of 71%–91%.
Risk Factors for Placenta Accreta

- 13% risk if placenta previa is present
- 25-30% of women with placenta previa and history of one prior cesarean section will have placenta accreta
- 50% of women with ≥ two prior cesarean deliveries develop placenta accreta if they have a placenta previa, with 82% of these women requiring hysterectomy
- Additional risk factors include: previous uterine surgery, previous D&C, previous multiple pregnancy, AMA, > 3 prior pregnancies

Placenta Accreta: Preparation and Delivery

- Amniocentesis at 36 weeks to assess pulmonary maturity and treatment with betamethasone if indicated
- Counseling and consent for hysterectomy, interventional radiology, and blood products
- Blood products available for delivery
- Delivery in main OR
- Surgical instruments for a cesarean hysterectomy available as there is a 5 to 10% risk of placenta accreta
- Notify blood bank for potential of massive hemorrhage and ensure immediate availability of 4-6 units of PRBC, FFP, and platelets
C-hyst required for this woman. First pregnancy, no history of uterine surgery. Cesarean was for “failure to progress.” MD recognized issue, performed an unplanned C-hyst. Woman received only 2 units of blood products.
Uterine/Placental Issues

- Prior myomectomy or classical cesarean section: Deliver ~ 36-37 weeks
- Placenta previa: Deliver ~ 37 weeks
- Placenta accreta: Deliver ~ 34-35 weeks
- Vasa previa: Deliver ~ 35 weeks
Placental Abnormalities Antenatal Testing

- Placenta previa
  - Weekly at 32 weeks
- Vasa previa
  - Weekly at 32 weeks (unless admitted)
Background Information

- Mary Smith
- 22 yo G₃P₀ at 39 weeks
  - Transfer to clinic at 36 weeks
  - Breech presentation, declined version, desired primary cesarean
  - OB Hx significant for D&C X’s 2
    - 2nd trimester Molar Pregnancy 2 years prior
  - BMI = 55 (Class III)
  - She is a Jehovah's Witness and has a signed refusal of blood products
    - She had given specific permission to allow for intraoperative cell saver blood and human albumin
Tranexamic acid (TXA)

- For women with established PPH
  - Not responsive to medications or treatments
  - Considered an adjunct treatment
  - Most effective if used within first 3 hours
  - Dose: 1 gram – infuse with piggyback normal saline
  - may repeat in 30 minutes if bleeding persists

Obstetric Emergencies

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Abnormal Placentation

Umbilical Cord Prolapse

Uterine Rupture

TOLAC

Diabetic Ketoacidosis
Prolapsed umbilical cord

- Overt
- Occult

- Sudden protracted FHR deceleration
- Palpable on VE
- Seen at or out of vagina
What to do?

- Help woman into a “knee-chest” position
- Perform vaginal exam and find the presenting part.
- Elevate the presenting part
- Pulsating cord is reassuring
- Do not compress it to check the pulse!
- Cold causes vessels in cord to spasm
- Keep moist with saline and plastic wrap
Umbilical Cord Prolapse

- Outcome is generally good. Perinatal mortality is 0-3%

- Most common risk factors include
  - Prematurity
  - Malpresentation
  - High station with SROM or AROM
  - Multiple gestation

Lin MG 2006
Case Presentation
40 yo G2 P1

- Seen in clinic – noted to have variable deceleration in office
- Admitted as out-pt for “observation” → more decelerations noted
- Admitted to L&D for IOL
  VE:1-2/50/presenting part high
- U/S to confirm vertex presentation
- Pitocin started at 1mu
Obstetric Emergencies

Shoulder Dystocia

Umbilical Cord Prolapse

Amniotic Fluid Embolism

Uterine Rupture

Diabetic Ketoacidosis
Uterine Rupture

- **Uterine Rupture:**
  - a defect involving the *entire thickness* of the uterine wall

- **Dehiscence:**
  - Asymptomatic scar dehiscence or *separation of the uterine scar* which does not necessitate operative intervention
Risk Factors for Uterine Rupture

1. Previous uterine surgery
2. Previous difficult deliveries
3. Rapid, spontaneous, tumultuous delivery
4. Prolonged labor with oxytocin
5. Stretched uterine muscles (multiparity, multiple gestation, polyhydramnios)
6. Congenital uterine anomaly
7. Prostaglandins for induction of labor in TOLAC
8. Previous cesarean section

Walsh CA 2007
Hallmark Sign of Uterine Rupture

- Antepartum:
  - Abdominal pain may be the presenting symptom

Hallmark Sign of Uterine Rupture

- **Intrapartum:**
  - Cardinal sign is acute FHR **bradycardia**
  - Some authors have reported ↑ variable and late decels and others have not found any difference in the number of decels when UR is compared to women in labor without UR

Uterine Rupture

- **Excessive** bleeding usually occurs with uterine *rupture*
- **Minimal** bleeding with *dehiscence*
- No decrease in uterine tone or cessation of contractions

- **FHR Pattern evolutionary** pattern
  - Decreased variability
  - Recurrent variable decelerations
  - Prolonged or late variables followed by bradycardia
Uterine Rupture

- Continuous fetal monitoring
- IV access
- Close attention to:
  - Labor progress
  - Patient’s perception of pain—suprapubic/stabbing
  - Unmasked by epidural analgesia
- Significant neonatal morbidity after 18 minutes
- Maternal and fetal survival depends on prompt recognition and surgical intervention
Uterine Rupture

• Warning signs of Uterine Rupture
• FHR Tracing abnormality classic v/s other
• Severe, acute, constant abdominal pain
• Loss of fetal station
• Heavy vaginal bleeding
• Maternal tachycardia and/or hypotension
Uterine Rupture

- Variable decelerations
  - ↓
- Recurrent deep decelerations
  - ↓
- Loss of variability
  - ↓
- Bradycardia
Surgical Emergency

- STAT Cesarean
  - No counts
  - No standard prep
- 2nd IV
- Blood transfusion
- GYN/Onc Surgeon
- Baby to NICU – cooling
- Emotional support for partner/ family
Unplanned Hysterectomy: Postoperative Course

- Transfer from ICU
- Weak but stable
- Loss of choice
- Hbg Hct
  - Iron—IV (sucrose)
  - Rh-Erythropoeitin
  - Heparin

➢ Discharge home with support
Assess the likelihood of VBAC including individual risks
Review Risks and Benefits of TOLAC in various clinical settings
Provide practical guidelines for counseling patients and managing women who desire vaginal birth after cesarean delivery
Table 1. Composite Maternal Risks From Elective Repeat Cesarean Delivery and Trial of Labor After Previous Cesarean Delivery in Term Patients

<table>
<thead>
<tr>
<th>Maternal Risks</th>
<th>ERCD (%) [One CD]</th>
<th>TOLAC (%)</th>
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</thead>
<tbody>
<tr>
<td>Infectious morbidity</td>
<td>3.2</td>
<td>4.6</td>
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<tr>
<td>Surgical injury</td>
<td>0.30–0.60</td>
<td>0.37–1.3</td>
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<tr>
<td>Blood transfusion</td>
<td>0.46</td>
<td>0.66</td>
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<tr>
<td>Hysterectomy</td>
<td>0.16</td>
<td>0.14</td>
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<tr>
<td>Uterine rupture</td>
<td>0.02</td>
<td>0.71</td>
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<tr>
<td>Maternal death</td>
<td>0.0096</td>
<td>0.0019</td>
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### Table 2. Composite Neonatal Morbidity From Elective Repeat Cesarean Delivery and Trial of Labor After Previous Cesarean Delivery in Term Infants

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<th>Neonatal Risks</th>
<th>ERCD (%)</th>
<th>TOLAC (%)</th>
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<tr>
<td>Antepartum stillbirth</td>
<td>0.21</td>
<td>0.10</td>
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<tr>
<td>Intrapartum stillbirth</td>
<td>0–0.004</td>
<td>0.01–0.04</td>
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<tr>
<td>HIE</td>
<td>0–0.32</td>
<td>0–0.89</td>
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<tr>
<td>Perinatal mortality</td>
<td>0.05</td>
<td>0.13</td>
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<tr>
<td>Neonatal mortality</td>
<td>0.06</td>
<td>0.11</td>
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<td>NICU admission</td>
<td>1.5–17.6</td>
<td>0.8–26.2</td>
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<tr>
<td>Respiratory morbidity</td>
<td>2.5</td>
<td>5.4</td>
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<tr>
<td>Transient tachypnea</td>
<td>4.2</td>
<td>3.6</td>
</tr>
</tbody>
</table>
ACOG PB # 184
Vaginal Birth after Cesarean Delivery 2017

- Most published findings demonstrate 60-80% successful VBAC
- No prediction model has been shown to improve pt outcomes
- External cephalic version is not contraindicated
- 2 prior LT cesarean deliveries is reasonable
- An upper oxytocin limit has not been established
- Epidural is not considered necessary
- Continuous fetal monitoring by staff who are familiar with complication of TOLAC
- Postpartum bleeding or signs of hypovolemia may indicate uterine rupture and requires complete MD evaluation of genital tract
Uterine Rupture: Medical Legal Risks

• Many VBAC lawsuits hinge on alleged:
  ➢ Inappropriate use of oxytocin
  ➢ Failure to interpret the FHR tracing
  ➢ Failure to perform a timely C/S
Traumatic Childbirth

“process that involves actual or threatened serious injury or death to the mother or her infant. The birthing woman experiences intense fear, helplessness, loss of control and horror”.

- Dehumanizing experience
  - High level of medical interventions, extreme pain
- Stripped of their dignity
- Powerless
- Lack of caring and support from perinatal staff
- Fear of dying

Case Study

- Infant discharged to home on hospital day #8
  - Normal MRI
  - No seizure activity on EEG
  - Normal eye exam
  - Breast and bottle feeding

- Patient seen in clinic at 6 week PP visit
  - Appears sad, worried about formula feeding
  - Verbalized hostility toward husband
    - “It was all his idea, I was fine with a repeat C/S”

- Patient seen at 10 weeks
  - Accompanied with a friend
  - Appeared to be coping more effectively than previous
  - Continued concern re breastfeeding and formula feeding
Clinicians should be mindful of birth environment and how their behaviors influence the patient perspective of safety during birth.

At least one team member should focus on emotional support during emergency birth to mitigate the potential for negative experiences that lead to emotional harm.
TOLAC Uterine Rupture: Summary

- National guidelines are beneficial but **not perfect**
- Malpractice **costs** and higher C/S **revenue** are factors
- Optimal care should be provided for **all women**
- **Informed consent**, appropriate candidate selection is key for women choosing TOLAC
- **Most** women can have **successful** VBAC
- There is **no reliable way to predict** TOLAC failure or UR
- Highly skilled staff readily available to execute an emergency C/S in a **well rehearsed organized fashion** will promote and protect women and their unborn babies
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Diabetic Ketoacidosis
Case Presentation:

15:20 - 38 y.o. Gravida 2 Para 1 at 38+5 Previous C/S (fetal distress)
    Admitted TO OBED GDMA2, had audible deceleration in office
    - NPH Insulin 18 units HS

- Plan admit for a repeat cesarean section for the indication of prior cesarean section.
  - Patient has ERCS scheduled in 2 days.

- Blood glucose 256 on admission

- 16:07 Insulin 5 units Regular ordered to be given subcutaneous

- 16:15 Insulin order Dced

- 16:19 New order - Insulin gtt, I unit/100mL

- 16:30 Variable Decel

- 16:40 IV started by anesthesiologists
Obstetric Patients with Diabetic Ketoacidosis

- Involves a multidisciplinary approach that requires prompt specialty consultation which may include, but is not limited to: maternal fetal medicine, obstetric anesthesia, intensivist, and endocrinology

Goals of Therapy

- A. Rehydration
- B. Correction of acidemia
- C. Normalization of serum glucose
- D. Restoration of electrolyte homeostasis
- E. Elimination of the underlying cause
Obstetric Management of DKA

1. Assess maternal vital signs including temperature every 15–60 minutes in accordance with patient condition - continuous oxygen saturation via pulse oximetry

2. Obtain initial STAT labs: CBC with differential, serum electrolytes, BUN, creatinine, glucose, bicarbonate, ketones, arterial blood gases, urinalysis with culture if indicated

3. Other assessment labs may include: serum or capillary beta-hydroxybutyrate level, liver function tests, search for source of infection or sepsis work-up: serum lactate, paired blood cultures, chest x-ray, sputum culture

4. Close hemodynamic monitoring should be performed for the first four hours that includes trending vital signs and lab results
DKA Rehydration

1. Goal is to replace 75% of fluid deficit during 24 hours (6-8 liters)
2. Administer 1–2 L of .9% NS over the first hour (500-1000mL/hour)
3. Administer 500 mL/hour over next 2 hours (250mL/hour)
4. Continue with 250 mL/hour over next 4–6 hours
5. Once serum glucose level is less than 250 mg/dL
   - Administer IV solution with 5% dextrose based on
     ▪ hydration
     ▪ serum electrolyte results
     ▪ hemodynamic stability
DKA Fetal and Uterine monitoring

1. With viable, live fetus, continuous monitoring is recommended

2. During acute DKA - FHR tracing may reveal
   • minimal or absent variability, recurrent variable or late decels
   • The fetal biophysical profile may also be abnormal

3. It may take 4-8 hours for fetal recovery depending on the severity and duration of DKA

4. Emergent delivery prior to maternal stabilization
   • increases maternal morbidity and mortality
   • may lead to an unnecessary delivery of a hypoxic, acidotic, preterm infant in poor condition

5. Maternal lateral positioning

6. Monitor for uterine activity

7. Avoid Terbutaline and corticosteroids while DKA is being corrected

8. Consider delivery of compromised fetus **only after** maternal metabolic stabilization
DKA: Procedure for the IV Insulin Infusion

- Prepare a standardized solution of regular insulin
  - Suggested Mixture: 100 units of regular human insulin to 100 mL of 0.9\% normal saline
    - 1 mL = 1 unit regular insulin and
      - flush 20-30 mL through the IV tubing
- Administer insulin solution solo via infusion pump
  - through 2nd IV line
    or
  - most proximal port of main IV line at prescribed rate
- Monitor serum glucose levels every hour during IV insulin infusion. Titrate insulin drip to serum glucose levels as prescribed
• “A critical incident has been described as any sudden unexpected event that has the power to overwhelm the usual effective coping skills of an individual or a group and can cause significant psychological distress in usually healthy persons”

- Roesler and Short, 2009
Critical Incident: Debriefing

What it is:

• An Opportunity for the Team:
  - To talk about what happened
  - To support each other
  - To begin to recover

• An opportunity for the nurse leader
to identify ongoing needs
Coping With serious Events at Work: A Study of Traumatic Stress Among Nurses

Nurses encounter serious events that can lead to traumatic stress

69 Nurses
- Serious events are frequently encountered by nurses
- 98% reported traumatic stress after these events
- Coping styles were identified
- Nurses at ↑ risk of compassion fatigue and burn out
- More research needs to be conducted
Summary

- Normal physiologic changes of pregnancy should be considered when assessing a decompensating obstetric patient.

- Nurses play an essential role to risk assess, recognize, and correctly respond during an emergency

- Attention to risk, rapid recognition, and the ability to mobilize a multidisciplinary team during a crisis will optimize women’s survival during childbirth.
Nurses are a valuable source of information and support for women and their families.

Thank You!

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