Shoulder Dystocia

A Safer Way Forward

NYSPQC/NYSPRP Obstetrical Improvement Project

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Disclosures

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Learning Objectives

• Identify the maternal and fetal risk factors associated with shoulder dystocia

• Describe the maneuvers used to relieve shoulder dystocia

• Discuss possible newborn complications and long-term outcomes associated with shoulder dystocia

• Identify strategies to improve infant outcomes and reduce liability after shoulder dystocia
Shoulder Dystocia (SD)

- An obstetric emergency
- Occurs when the anterior shoulder of the fetus becomes lodged behind the superior symphysis pubis, preventing delivery
Shoulder Dystocia

• Unpredictable and unavoidable
• Relative rarity can lead to uncoordinated teamwork
• Risk of maternal and fetal injury
• Medicolegal risk from:
  o Persistent injury
  o Insufficient communication
  o Insufficient or inappropriate documentation
Incidence

• Reported to be 0.5 - 1.5%

• “True” incidence dependent upon:
  o How it is defined
  o How it is documented
Is the Rate Increasing?

• Increased incidence of large babies since the 1970s
• Marked increase in BMI indices over last decade
• Increased prevalence and incidence of diabetes in pregnant women
• Increased reporting of SD due to heightened physician awareness
The majority of shoulder dystocias can neither be predicted nor prevented.
## Maternal Risk Factors

<table>
<thead>
<tr>
<th>Antepartum</th>
<th>Intrapartum</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Small maternal pelvis</td>
<td>• Post-term pregnancy</td>
</tr>
<tr>
<td>• Obesity</td>
<td>• Induction of labor</td>
</tr>
<tr>
<td>• Diabetes, type I or II</td>
<td>• Epidural</td>
</tr>
<tr>
<td>• Multiparity</td>
<td>• Prolonged 2nd stage</td>
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<tr>
<td>• Fetal macrosomia or birth weight &gt;4 kg</td>
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<tr>
<td>• Prior SD, instrumented delivery or LGA baby</td>
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Risk Factors *Most Associated with SD*

- History of previous SD
  - Recurrence rates as high as 17%*

- Maternal diabetes type I
  - Fetuses have increased body fat distribution in chest/shoulders

- Macrosomia >4.5 kg
Induction? C-Section?

• Induction for macrosomia
  o No reduction in frequency of SD
  o Increased risk of c-section

• Only 20% of SD cases could be prevented by c-section for infants of non-diabetics with weights >4.5 kg

• Planned c-section may be considered when the EFW exceeds 5 kg in a non-diabetic woman and 4.5 kg in a diabetic woman
What Can We Do?

Use resources to provide guiding information to inform and help standardize practices regarding SD

- ACOG and current literature
- Root cause analysis of SD cases
- Malpractice insurers
Antepartum Clinical Management

- Perform pelvic assessment for adequacy
- Calculate patient’s BMI (height/weight)
- Obtain EFW with ultrasound and/or Leopold’s
- Identify & discuss potential risk factors for SD with patient
- Document discussion in patient’s medical record
Intrapartum Management

- Clearly state your concern for SD
- Call for additional help - initiate an “OB code”
- Assign a scribe for documentation
- Stay calm; avoid pulling or pushing on the fetal head
- Direct maternal pushing efforts and focus
- Identify anterior shoulder and direct suprapubic pressure
- Call-out maneuvers as performed
McRobert’s Maneuver

• Facilitates straightening of the sacrum relative to the lumbar spine and rotation of the symphysis pubis towards the maternal head

• This pelvic rotation can free the fetal shoulder

• Can also be done by squatting
Suprapubic Pressure

• Suprapubic pressure should ideally be applied to the anterior shoulder towards the fetal chest

• Internally rotates the shoulder, narrowing the diameter
Episiotomy

- Allows room for maneuvers
- In severe cases, can consider a procto-episiotomy
- Use when perineal space is constricted
- Not always needed
Rubin’s Maneuver

Push the most accessible shoulder (generally anterior) towards the anterior chest wall to allow:

- Adduction of the shoulders
- Rotation to 45 degrees
- Reduction of the shoulder’s diameter
- Freeing of the impacted shoulder
Wood’s Screw Maneuver

- The provider’s hands are placed on the front and back of the infant
- The infant is rotated progressively 180 degrees in a corkscrew manner
Delivery of Posterior Arm

- Provider’s hand follows the posterior humerus, splinting this as the arm is swept across the chest, keeping the elbow flexed.
- The fetal hand is grasped and extended along the side of the face, delivering the posterior arm.
Gaskin Maneuver - “All Fours”
When Previous Maneuvers Fail

• **Repeat the maneuvers!!**
  - They can be successful on the second or even the third attempt as the infant becomes more relaxed

• **Fracture the clavicle**
  - Break outwards to prevent internal injury

• **Fracture the humerus**

• **Perform a symphysiotomy** (rarely done in the US)

• **Perform a Zavanelli maneuver**
  - Cephalic replacement into the pelvis for c-section
Shoulder Dystocia Algorithm

Recognize SD

- Instruct patient to stop bearing down; Stop delivery attempt
- Communicate with staff and patient
- Call for help and begin timekeeping
- Initiate McRobert’s maneuver; Instruct patient to bear down; Apply gentle guidance to fetal vertex; Perform episiotomy (if needed)

Instruct patient to bear down; Apply appropriate guidance to fetal vertex
Shoulder Dystocia Algorithm

- Apply **suprapubic pressure** (can combine with Rubin’s and McRobert’s maneuvers)
- Attempt **delivery of posterior arm** *
- Perform **Wood’s screw or Rubin’s maneuver** *
- Repeat above steps as needed
- Perform **Gaskin’s maneuver** *
- Repeat above steps as needed
- Perform **Zavanelli maneuver and c-section**

* Order of performing secondary maneuvers may vary
Pitfalls in Intrapartum Management

- Inappropriate positioning
- Inappropriate application of force
- Incorrectly performed maneuvers and uncoordinated efforts
COMPLICATIONS OF SHOULDER DYSTOCIA
## Complications

<table>
<thead>
<tr>
<th>Maternal</th>
<th>Newborn*</th>
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<tbody>
<tr>
<td>• Post partum hemorrhage</td>
<td>• Clavicular or humeral fractures</td>
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<tr>
<td>• Lacerations of the cervix, vaginal canal, rectum, bladder and urethra</td>
<td>• Brachial plexus palsy</td>
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<tr>
<td>• Hematoma of the pelvis and vulva</td>
<td>• Diaphragmatic paralysis</td>
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<td>• Hypoxia</td>
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<td>• Fetal death</td>
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*4 - 40% of SD’s are associated with newborn injuries, usually with the brachial plexus
Brachial Plexus Palsy

**Nerves (muscles):**
- Musculocutaneous (upper arm)
- Axillary (shoulder)
- Radial (lower arm, hand)
- Median (hand)
- Ulnar (lower arm, hand)

**Injury type** | **Description**
--- | ---
**Rupture** (more common) | - Peripheral nerve lesion
- Stretching or tearing of nerve fibers

**Avulsion** (more severe) | - Central nerve lesion
- Tearing of spinal nerve root
- Injury to motor or sensory nerves

**Upper lesion:**
- **C5, C6:** Upper lesion: Erb Palsy
  - Shoulder function - poor
  - Hand function - variable

**Lower lesion:**
- **C8, T1:** Lower lesion: Klumpke Palsy
  - Shoulder function - good
  - Hand function - poor

**Total lesion:**
- **C5-T1:** Total lesion
  - Entire limb function - poor
Brachial Plexus Palsy

- Can occur in the absence of SD
- Can occur even with cesarean deliveries
- Theorized to be secondary to pressure between the fetal arm and maternal sacral prominence

**Outcomes**
- Peripheral nerves re-myelinate at a rate of 1 mm/day
- 70 - 90% resolve within the first year of life
- 10 - 30% are permanent
  - 20% of upper lesions and 60 - 70% of total lesions
- Infants who recover biceps function by 1 month of life will likely recover full function
Brachial Plexus Palsy – Infant Care

Recovery of arm and hand function is important for cognitive development and motor skills

- **Non-Surgical Treatment**
  - Family communication and counseling
  - Active and passive range of motion exercises
  - Avoidance of additional trauma to the nerves
  - Short-term partial immobilization (for total lesion)

- **Surgical Treatment**
  - Exploration and reconstruction of brachial plexus, autologous nerve grafts
HOW DO WE IMPROVE INFANT OUTCOMES AND REDUCE LIABILITY?
Documentation Issues

• Incomplete
• Inaccurate
• Discrepancies between physician and nursing notes
• Discrepancies between OB and Peds notes
• Use of descriptors, rather than objective terminology
  o Mild, moderate or severe SD
  o Excessive traction
### Best Clinical Practice Review

| Before | • Identify risk factors from patient history  
• Communicate risks with staff and formulate a team plan  
• Discuss concerns and possible interventions with patient |
| --- | --- |
| During | • Treat like an emergency --- Get additional resources!  
• Remain calm: Stop, assess, assemble team  
• Identify an event manager/scribe  
• Communicate with patient during event  
• Call-out maneuvers  
• Identify anterior shoulder and direct suprapubic pressure to staff  
• Obtain cord gases |
| After  | • Assess initial newborn status  
• Discuss with patient what was done and why  
• Answer patient’s concerns  
• Document sequence and time of events, personnel involved, newborn status and conversation with patient |
Improving Outcomes, Reducing Liability

• **Staff education**
  - Didactic teaching on SD
  - Simulation for team training and skills drills

• **Documentation**
  - Standardized documentation among staff
  - Standardized forms and code sheet

• **Quality Improvement**
  - Team debriefings after SD
  - Review of maternal and newborn records before, during and after SD for complete and congruent documentation
Simulation-Based Team Training

- Allows practice in a safe environment
- Engages adult learners
- Reinforces cognitive, behavioral and technical skills
  - Leadership
  - Teamwork: Situational awareness, mutual support
  - Communication with team and patient
  - Maneuvers
- Promotes team reflection, sharing, and feedback
- Low or medium fidelity mannequins are adequate
QA Documentation Tool

Shoulder Dystocia Code Sheet

OB Service

**Times:**

Head: ________ (minutes, seconds)  
Delivery: ________ (minutes, seconds)

Discovery of shoulder dystocia: ________  
Anterior shoulder: right left

Decision to call NICU: ________  
Patient disclosure: yes no deferred

NICU arrival: ________  
Names of obstetrical team members involved in the case:

Time of OB TEAM activation: ________

OB TEAM arrival: ________

<table>
<thead>
<tr>
<th>Time</th>
<th>McRoberts</th>
<th>Supracubicular Pressure</th>
<th>Anterior Rubin's (Internal rotation toward fetal chest)</th>
<th>Posterior Rubin's (External rotation toward fetal back)</th>
<th>Delivery of Posterior Arm</th>
<th>Woods Corkscrew Maneuvers</th>
<th>Other</th>
</tr>
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<tbody>
<tr>
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Maneuver performed by (use numbers from above:  


ObWatch - Delivery StopWatch

00:00:53

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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<tbody>
<tr>
<td>Head/Start</td>
<td>00:00:00</td>
</tr>
<tr>
<td>Shoulder Dystocia Dx</td>
<td>00:00:38</td>
</tr>
<tr>
<td>McRoberts/Suprapubic</td>
<td>00:00:43</td>
</tr>
<tr>
<td>Woods/Rubin</td>
<td>00:00:52</td>
</tr>
<tr>
<td>Body / Stop</td>
<td>00:00:53</td>
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Post Event Team Debriefings

• **Huddle for 1-2 minutes immediately after each event**
  - Purpose is not to “get our story straight”
  - Opportunity to fill-in gaps in knowledge of different team members before documenting

• **Debrief for 5-10 minutes for major events**
  - Provide positive feedback by identifying what went well
  - Identify complications and discuss improvement opportunities
  - Discuss team dynamics
  - Allow team members to express any frustrations or other emotions, especially for poor outcomes
  - Keep team dynamics from being expressed in front of family
In Summary

• Identification of maternal and fetal risk factors associated with SD can assist with antepartum and intrapartum management

• Close follow-up of infants with brachial plexus palsies helps to optimize recovery of arm and hand function for long-term cognitive and motor development

• Strategies to improve infant outcomes and reduce risk for liability include:
  o Staff education on SD
  o Simulation-based team training
  o Review of documentation
  o Performance of team debriefings after SD events
Future Webinars... Coming Soon!

• April 2013
  Coming to the Table: Debriefing for Patient Safety

• June 2013
  Improving Team Function through Simulation-Based Learning

• October 2013
  Linking Simulation and Debriefing to Quality Improvement
Tools and Additional Resources

• Please go to the NYSPQC website ([www.nyspqc.org](http://www.nyspqc.org)) for resources on SD and the tools mentioned during today’s webinar:
  o Shoulder dystocia algorithm
  o Shoulder dystocia documentation tool

• Please contact the presenters if you are interested in:
  o Learning more about how to use simulation-based learning for SD training
  o Participating in a simulation instructor course
Thank You!

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References


