Shoulder Dystocia Part II: Management Maneuvers

Nursing Considerations

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Introduction: This monograph presents risk management strategies to reduce the risk of harm from shoulder dystocia (SD). These strategies are drawn from peer reviewed literature, practice guidelines including those of the American College of Obstetricians and Gynecologists (ACOG), Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN), and professional liability claims data. Part I reviewed SD risk factors and strategies for reducing risk up to the point of diagnosis. Part II begins at the moment of diagnosis and provides a review of SD management maneuvers and interventions. Specific nursing considerations are included.

Diagnosis is made when the delivering practitioner detects these signs of shoulder dystocia (SD):

1. “Turtle sign” = retraction of the fetal head against the maternal perineum
2. Difficulty or failure to accomplish external rotation of the head after it has passed the perineum
3. Resistance to the delivery

When this occurs, minutes count. In the time between delivery of the head and trunk of an infant, the umbilical artery pH declines at a rate of 0.04 units per minute. A fetus with a pH of 7.20, typical after several hours of active second stage, will become acidotic within 5 minutes of SD diagnosis. Resuscitation is difficult if SD lasts longer than 7 minutes (Wood et al., 1973; ACOG District II, 2013).

In a group of New York Hospitals, several steps are initiated when the signs of shoulder dystocia appear: the practitioner announces the diagnosis to the perinatal team members present, calls for an assistant to help with the delivery, requests notification of Anesthesiology and Perinatology and the assembling of resources for an emergent cesarean section (ACOG District II, 2013). A team member is assigned to record the time and begin SD documentation. This set of events marks the initiation of a protocol.

Nursing Tip: Practice nursing readiness. Being prepared is the best offense against negative patient outcomes. Be alert to clinical conditions that may trigger SD at delivery.
Guidelines and Protocols, What’s the Difference?

Professional practice guidelines are broad recommendations of best practices for populations of patients (but not prescriptions for what must be done in an individual case). They are based on expert review of the best and latest evidence. Practitioners should be familiar with one or more of the professional guidelines for the general management of shoulder dystocia. Examples include the ACOG Practice Bulletin #40 Shoulder Dystocia, the SD management guidelines of the American Academy of Family Physicians (AAFP), and those of the Royal College of Obstetricians and Gynecologists or RCOG.

Protocols are a type of action plan, a set of procedures to be followed in a defined situation or condition, typically adopted by a hospital and adapted to the circumstances and resources of that hospital. They provide an expected sequence of events and may incorporate standardized order sets, required supplies, checklists, and defined personnel roles. In 2013, ACOG District II published Optimizing Protocols in Obstetrics: Managing Shoulder Dystocia. This document may be used as a template for hospitals and practitioners to create or update their own SD protocols. The citations and links to this and other resources may be found at the end of this monograph.

Guidelines may present evidence for the advantages and disadvantages of certain maneuvers, and some, like those of the AAFP, may designate first and second line maneuvers. But guidelines and protocols are not the “standard of care” (a legal term applied to an individual claim of malpractice). Selection of SD maneuvers is not subject to a prescribed algorithm; it’s done at the discretion of the delivering practitioner and will depend on the presenting clinical circumstances and the experience and skill of the practitioner. Every case is unique.

Nursing Tip:

Participate in policy, guidelines, and protocol development at your hospital. Perform a literature review, evaluate national recommendations and guidelines, and offer clinical expertise on how to improve patient safety during SD events.

Be a unit resource. Become familiar with the hospital SD protocol and offer guidance during SD events.
Shoulder dystocia maneuvers may include one or more external maneuvers and if needed, one or two internal maneuvers. In general, external maneuvers are applied before internal maneuvers, and internal maneuvers are applied before surgical options. A list of internal and external SD maneuvers is shown below. Labor and delivery nurses have skill in external maneuvers and support physicians who may perform internal maneuvers.

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**Fundal Pressure**

Note that fundal pressure is NOT a maneuver for shoulder dystocia; it is contraindicated. It increases the risk of further impaction, brachial plexus injury, fractures of the humerus and clavicle, perineal lacerations, and uterine rupture (ACOG, 2013a & 2013b).

Fundal pressure combined with external traction on the fetal head is associated with brachial plexus injuries and fractures of the fetal humerus and clavicle. Fundal pressure combined with vacuum extraction and episiotomy may lead to significant maternal perineal lacerations.

**Nursing Tip:**

If asked to perform fundal pressure, offer alternatives that are more successful and less invasive such as suprapubic pressure or the McRobert’s maneuver.
Suprapubic Pressure
This basic maneuver assists with displacement of anterior shoulder dystocia but has not been shown to improve posterior shoulder dystocia. Suprapubic pressure may be administered independently or in combination with other maneuvers.

Suprapubic pressure may be administered externally with various techniques to the area directly above the pubic bone:
1. Pressure may be applied by fist, preferably with locked elbows
2. Side of one hand
3. Heel of one hand
4. Layered fingers

Pressure by fist may be performed with greater force and stability when upper body strength is incorporated. A registered nurse typically performs this maneuver while the physician, resident, or midwife focuses on the perineum.

The nurse or perinatal team member applies pressure over the suprapublic area directly above the symphysis. Pressure is first applied downward or posteriorly towards the maternal spine. This frequently dislodges the fetal anterior shoulder under the pubic bone. Depending on fetal position, pressure administered downward and laterally may be indicated.

No contraindications or complications have been associated with suprapubic pressure, however performing this maneuver on an obese patient may be challenging.
McRoberts’ Maneuver
McRoberts’ Maneuver or extreme lithotomy is frequently employed. This maneuver consists of hyperflexion and minor abduction of the patient’s legs equivalent to a supine squat. This maneuver alone has an estimated success rate of 40% (Gherman, 2002; Gherman et al., 1997; Ross & Beal, 2006).

Why does McRoberts’ Maneuver work so well? It flattens the maternal lumbar spine and ventrally rotates the pelvis and symphysis. This typically removes the sacral promontory as an obstruction. With marked cephalad rotation, the symphysis acts as a lever, pushing the anterior fetal shoulder down while forcing the posterior shoulder past the sacral promontory into the pelvic outlet (Gehrman, 2002; Gherman et al., 2000; Gonik et al., 1983).

With the McRoberts’ Maneuver, the symphysis pubis rotates superiorly, increasing the anterior-posterior pelvic diameter by 1.75 cm. Pelvic rotation from lithotomy to McRoberts’ raises the symphysis pubis 0.9 cm, creating a 10.5-cm pelvic inlet. This moves the symphysis pubis in a cephalad direction by 2.8 cm, creating a 10.5-cm pelvic inlet (Cunningham et al., 2010; Poggi et al., 2003). These seemingly small gains often make the difference in enabling vaginal delivery.

The McRoberts’ Maneuver also has the effect of increasing intrauterine pressure during the second stage of labor by 97%, increasing the amplitude of uterine contractions, and increasing maternal expulsive forces during active pushing (Buhimschi et al., 2001).

Disadvantages: The McRoberts’ Maneuver requires two assistants to achieve optimal hip hyperflexion, and it relies on traction. It has limited effectiveness for obese patients because of soft tissue dystocia (Gherman et al., 1998; Heath & Gherman, 1999; Poggi et al., 2003).

Prolonged use of the McRoberts’ Maneuver can lead to the complications listed below:

- Symphyseal separation
- Dislocation of the sacroiliac joint
- Lower extremity neuropathy

Note that the combination of suprapubic pressure and McRobert’s Maneuver results in the resolution of 50% of shoulder dystocia events (Ross & Beall, 2006).

**SP Pressure + McRoberts’ Maneuver = Resolves 50% of Shoulder Dystocia**
Assisting a maternal patient onto her hands and knees for the purpose of relieving shoulder dystocia is known as Gaskin’s Maneuver, “All Fours”, or the “Hands & Knees” position. It was first described and documented by Ina May Gaskin in 1976 after she witnessed success with its use by indigenous midwives in Guatemala.

Gaskin’s Maneuver provides multiple advantages. It is particularly helpful during posterior shoulder impaction by shifting fetal weight off the maternal spine and releasing the sacrum, displacing impaction. Gravity then pushes the posterior shoulder anterior, allowing it to slide over the sacral promontory. Once in position, instructing the patient to arch or round her lower spine towards the ceiling (“cat’s pose”) further assists fetal descent with benefits similar to McRobert’s Maneuver. Gaskin’s Maneuver may be particularly helpful with obese patients by shifting excess abdominal weight by gravity. Rotational maneuvers may also be completed in this position.

Gaskin’s was rarely utilized in the US until recently. The introduction of combined spinal epidurals improved maternal mobility during labor and birth, making this maneuver a more accessible option and a reasonable alternative to more invasive options (ACOG, 2013e).

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**Nursing Tip:**

The two most used and successful maneuvers are typically performed simultaneously by a labor and delivery nurse. Clinical conditions may require that several maneuvers be performed at once. Don’t be afraid to call in reinforcements, more nurses or a family member, to help.

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Nursing Tip:

The Gaskin’s maneuver may be the most underutilized external and internal maneuver of all. Become familiar with this option and offer to patients regularly. Delivering in this position may offer new challenges. During birth, assist both the patient and the delivering practitioner with this maneuver. Patients will require support and as much privacy as possible. Rearrange the delivery table to the meet the needs of the physician since the stirrups will not be used. Following birth, assist the patient to a semi-recumbent position and set up the stirrups at the discretion of the physician.
Internal maneuvers may be performed after or in combination with external options. Direct fetal manipulation techniques have not been found to be associated with an increased rate of bone fracture or brachial plexus injury (Gherman et al., 1998).

**Wood’s Corkscrew Maneuver**

In 1943, Dr. Woods popularized a maneuver using two hands to manipulate the fetus into an oblique plane, similar to removing a corkscrew. The delivering practitioner’s anterior fingers push towards the fetal chest while the lower fingers push towards the fetal back (ACOG, 2013b; Creasy & Resnick, 2009). The maneuver is shown here.

Abduction of the posterior fetal shoulder often releases the impaction. Clinical conditions and individual practitioner skill and preference will guide the decision to employ this maneuver. There is a risk of excessive torsion on the fetal spine with the corkscrew maneuver.

**Rubin’s Maneuver**

Concerns over the risk of Wood’s Corkscrew maneuver prompted the introduction of an option to adduct rather than abduct fetal shoulders, decreasing torsion of the fetal spine. Rubin’s maneuver includes rotation of the fetal shoulders into an oblique position by inserting the fingers of one hand vaginally behind the most accessible shoulder, usually posteriorly, and adducting or pushing the shoulder toward the fetal chest (ACOG, 2013b; Creasy & Resnick, 2009).
**Posterior Arm Release/Barnum Maneuver**

The posterior arm release or Barnum maneuver is depicted below.


Insert one hand posteriorly + Grab elbow and draw arm across chest

The Barnum Maneuver has several advantages (Poggi et al., 2003):
- No assistant needed
- Allows for a near 20% reduction in shoulder diameter
- Permits better assessment of the degree of shoulder dystocia
- Reduces obstruction twofold in comparison with the McRoberts’ Maneuver

Disadvantages: Few researchers recommend use of this maneuver early in SD management. Inexperience may be a limiting factor. This maneuver may increase risk of injury to the posterior extremity if performed too abruptly (ACOG, 2013b; Creasy & Resnick, 2009).

**Posterior Arm Release - Modified**

This maneuver requires two practitioners. One supports the fetal head while the second applies traction on the posterior axilla. This is not performed routinely, but it is another option when additional perinatal team members are available (Mentiglou, 2006).

**#1 Assistant:** Holds head upward

**#2 Primary Practitioner:**
- 4th & 5th fingers flexed and pressed against perineum
- Both middle fingers locked in the axilla: front & back
- Traction downward and outward = plane of shoulders
Episiotomy
ACOG discourages the routine use of episiotomy in shoulder dystocia, noting that impaction is due to bony obstruction, not soft tissue. However, ACOG recognizes that it may be required to facilitate the performance of SD maneuvers. Benefits of the maneuver include cranial protection (during preterm delivery), less risk of perinatal asphyxia and fewer complications (ACOG, 2013d).

Median episiotomies are associated with a greater risk of extension into the rectum, whereas spontaneous tears have less risk of postpartum pain, blood loss or dyspareunia (Thacker & Banta, 1983).

Proctoepisiotomy
An intentional proctoepisiotomy involves a laceration from the vagina to the rectal mucosa and through the internal and external anal sphincters. This maneuver may lead to postpartum anal incontinence (Leeman et al., 2003; Wai et al., 2008).

Cleidotomy
In extraordinary cases of shoulder dystocia, the delivering practitioner may choose to cause a deliberate fracture of the anterior clavicle. This reduces the shoulder width and facilitates disimpaction. Several methods are listed below.

*Techniques for Deliberate Fracture of the Anterior Clavicle (Gabbe et al., 2007):*
  - Manual pressure against the pubic ramus
  - Utilization of sponge forceps or manual compression against the clavicle
  - Incision: cutting the clavicle with scissors or scalpel, typically in the case of a fetal demise

Note that a broken clavicle in a neonate typically heals quickly without surgical intervention or longterm morbidity.

Symphysiotomy
There is little supporting literature regarding the use of symphysiotomy in the US, but it is used widely in other parts of the world. Obstructed labor causes the death of 50,000 women each year in low-resource countries where cesarean section is not always available (Bjorklund, 2002). Evidence supports the use of this maneuver during extreme shoulder dystocia cases (ACOG, 2013b). There are conflicting reports regarding maternal morbidity. No direct fetal affects have been documented.
Symphysiotomy enlarges the pelvic diameter by separation of the symphysis pubis with a scalpel. A study of 5,000 cases showed that symphysiotomy is generally safe for the mother, confers a permanent enlargement of the pelvis facilitating future vaginal deliveries, and is life saving for the infant (Bjorklund, 2002; Ersdal et al., 2008). The ACOG District II SD Protocol notes this should be performed by practitioners who are knowledgeable and experienced in it (2013).

**Zavanelli Maneuver**

The Zavanelli maneuver may be utilized in the event of failed vaginal delivery (ACOG, 2013b). It consists of replacement of the partially delivered fetus into the vagina, reversing all the fetal cardinal movements, and performance of an emergent cesarean section.

The maneuver is uncommon, difficult to perform, and is associated with increased risk of fetal morbidity and mortality and maternal morbidity. However in a study of 94 such deliveries, done most often as a last resort by practitioners having no prior experience of the procedure, it was successful 84 times out of 92 instances, a success rate over 91% (Sandberg, 1999).

**Maneuver: Reversal of Fetal Cardinal Movements**

1. Engagement
2. Descent
3. Flexion
4. Internal Rotation
5. Extension
6. External Rotation
7. Expulsion

Administration of uterine relaxants or anesthesia may assist the practitioner in this difficult maneuver (O’Leary, Cuva, 1992).

- **Administration of Uterine Relaxant**
  - Terbutaline
  - Anesthesia

- **Cesarean Delivery**
  - After maneuver or concurrent with maneuver
  - Hysterotomy for disimpaction
Hysterotomy

Another option outlined in the literature is performance of a hysterotomy to assist in disimpaction of the anterior shoulder followed by a successful vaginal delivery.

Nursing Tip:

All internal maneuvers are performed at the discretion of the delivering practitioner. Clinical conditions and skill will guide selection. The nurse’s main responsibility is supporting the midwife or physician. The delivering practitioner is the SD team leader. He or she must be organized and methodical. Requests for additional maneuvers or resources must be anticipated by the labor and delivery nurse(s). Considerations for surgical birth must be anticipated.

Duration of SD Management

How long should shoulder dystocia management continue?

- 2 Contractions?
- Limit head-body delivery time
- Fetal pH drops 0.04/minute
- Goal: 5 minutes or 2 completed contractions

Evidence is abundant that fetal head–to-body delivery time should be minimized to limit morbidity and mortality (ACOG District II, 2013; Iffy et al., 2003; Beall et al., 2003; Stallings et al., 2001). Delivery in the course of 2 uterine contractions has been established as a treatment goal in practice.

During the second stage of labor, if the duration of a contraction averages 80 seconds with a frequency of every 2 minutes, then treatment during 2 contractions could equal up to 4.74 minutes. Recall that fetal pH drops at a rate of 0.4 per minute with hypoxia occurring at approximately 5 minutes, making resuscitation very difficult after 7 minutes. A reasonable limit for shoulder dystocia treatment is 5 minutes or less, with best results anticipated within 2 contractions or upon the completion of 2 contractions (Iffy et al., 2003). If successful delivery is not achieved within this time frame, advanced maneuvers should be considered.
CONCLUSION AND RISK MANAGEMENT RECOMMENDATIONS

Shoulder dystocia is largely unpredictable and unpreventable, and harm can result even when the delivering practitioner does everything right. And yet shoulder dystocia is the second most common cause of claims against obstetricians and the perinatal team (CRICO, 2010). What recommendations can be drawn from malpractice claims to reduce the risk of incurring or losing a claim of negligence?

Be familiar with professional SD guidelines
As discussed, SD management guidelines are general and do not prescribe a step by step algorithm of SD maneuvers. But they do summarize evidence for the advantages and disadvantages of the maneuvers, and practitioners should be familiar with them. Avoid having to say “no” when asked by a plaintiff attorney, “Are you familiar with the guidelines of your own professional society for managing shoulder dystocia?” One must also be equipped to testify that professional guidelines are guidelines, not the legal standard of care and not a prescription for what must be done in an individual case.

Document SD Events and Measures Taken
A peer reviewed study of 26 obstetrical claims involving shoulder dystocia found that in 54% of the cases where plaintiffs were awarded payment, the primary reason for practitioners losing the claim was poor documentation (Clark et al., 2008). These findings also included hospital documentation performed by nurses.

The authors noted, “In such cases, experience dictates that the theoretical presumption of innocence does not apply to healthcare providers, who, in reality, must document that their care could not have caused the injury.”

Incomplete documentation, conflicting documentation or lack of documentation will be portrayed by plaintiff attorneys as part of a pattern of carelessness, or even a cover-up. Documentation should reflect the personnel present, when the dystocia was observed, what

**Nursing Tip:**
Keeping time is an important aspect of a nurse’s role during SD. Note the exact time SD is diagnosed, remain mindful of time during management, and document in the patient record. All timekeepers should coordinate their watches or agree to use one clock to document timing of interventions.
maneuvers were performed by whom over what period of time, and the presence or absence of pulling or traction (Shimmel, 2013). SD events that did or did not occur should be recorded in a consistent fashion. One way to do this is to create or adapt a standardized form for SD documentation. A template for adapting such a form is available from ACOG (ACOG, 2012).

Give credit to the perinatal team for a job well done. Document all successful and unsuccessful SD events. Data retrieved from both events more accurately depicts a hospital’s true SD rate and may reflect quality improvement measures.

**Have an SD Action Plan**
ProAssurance performed a study of 61 cases of shoulder dystocia claims (Zylstra et al., 2004). The authors concluded that the single best defense against malpractice claims for shoulder dystocia is having a multidisciplinary action plan for SD.

Obstetricians and delivering practitioners should take the lead in designing action plans. Creating or updating the hospital’s SD protocol is one way to do this. ACOG District II offers a template that may be used in developing an SD protocol. It is intended to be adapted and tailored in accordance with the needs and circumstances of the particular hospital (ACOG District II, 2013). For a multidisciplinary approach, nurses should be included in these efforts. Bedside nurses offer clinical expertise while nurse managers offer insight to hospital policy. Both are important in the development of a successful protocol.

**Rehearse the Action Plan: Skills and Drills in SD Management**
Physicians, delivering practitioners, and labor and delivery nurses are advised to be familiar with and practice SD maneuvers to continuously build their skills. The ACOG Simulations Consortium (2013c) outlines physician learning objectives to be met during SD simulation training. This resource is available as a guide for periodic assessment and maintenance of skill in physicians, residents, and midwives. Hospitals may use resources from AWHONN or ACNM to develop roles and responsibilities of nurses during SD management. The Advanced Life Support in Obstetrics (ALSO) program offers additional recommendations for all members of the perinatal team.

Similarly, all members of the perinatal team benefit from SD simulation training or practice drills. Effective SD management may be carried out more efficiently when routine SD Drills are performed regularly to acquaint staff members with their roles during this emergency.
Summary of Shoulder Dystocia Management Strategies for Nurses

1. Be prepared for SD at every delivery.
2. Participate in SD protocol development and be a champion supporter and unit resource.
3. Perform the Gaskin’s maneuver to assist with fetal descent during second stage.
4. Consider performing the Gaskin’s maneuver prior to other invasive internal options.
5. Participate in SD simulation drills.

Post Script: Interview with a retired obstetrician, age 83

Q. You delivered over 7,000 babies in your career. How many times did you encounter shoulder dystocia?
A. About 6 times. But if you are counting shoulder dystocia cases, you are counting the wrong thing. Some OBs will not document it, believing it could get them in trouble. You need to count the cases of brachial plexus injury that turn up later and work your way back.
Q. How do they turn up later?
A. At the 6 week postpartum check. The mother would tell me the pediatrician had found the baby’s shoulders were paralyzed and had asked her if the birth was difficult.
Q. How did you handle it?
A. Well here’s the difference. If you say to the mother, “What are you getting at? It wasn’t anything I did”—it’s a good way to get sued. I asked a lot of questions, “When did you discover this? How is the baby doing? How are you doing? I’m so sorry this happened. Yes, this is something that can happen. The widest part of a baby is normally the head but in rare cases, it’ll be the shoulders. It’s hard to know that in advance. When it happens, it takes some careful maneuvering to get the baby delivered quickly.” And I discuss the particulars of her delivery such as whether the baby weighed more than her previous babies or if she had said she didn’t want a c-section. I said I will try to learn if there was anything that could have been done differently or could be done differently next time. I talk to her pediatrician to learn more about the injury. I ask the mother to keep me informed on the baby’s progress. I was sued several times in my career but fortunately not for shoulder dystocia.

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KEY RESOURCES & LINKS
Web links were accessed May 13, 2015.

2. Fetal Macrosomia. ACOG Practice Bulletin #22.
   http://www.acog.org/Search?Keyword=fetal+macrosomia

CITATIONS