Shoulder dystocia is a birth complication in which the anterior fetal shoulder impacts the maternal pubic symphysis after the delivery of the fetal head. (Less often, the posterior shoulder gets caught on the maternal sacrum.) Some definitions include a time factor: a head-to-body time of 60 seconds or more is considered abnormal.1

**Goals:**

The goals of this CPM are threefold:

- **To increase awareness** of the risk factors and implications of shoulder dystocia.
- **To improve management** of this complication by offering an orderly sequence of steps to effect a timely delivery that can reduce injuries.
- **To improve documentation** of shoulder dystocia.

**Why focus on shoulder dystocia?**

Although the overall incidence of this obstetric emergency is not high (see table 1), shoulder dystocia warrants increased attention due to these factors:

- **Potential for serious injury.**
  Although most cases can be resolved without permanent injury, shoulder dystocia does present serious fetal and maternal risks. Risks to the fetus include brachial plexus injuries, fractures of the clavicle and humerus, hypoxia, and even death. Mothers are at increased risk for hemorrhage, rectovaginal fistula, fourth degree laceration, syphysisal separation or diathesis, and uterine rupture.2

- **Proven opportunity to improve care.** A well-rehearsed sequence of maneuvers to manage shoulder dystocia—such as that outlined in this CPM—can minimize fetal trauma.3

**Litigation.** Lawsuits related to shoulder dystocia deliveries result in the second largest category of indemnity payments in obstetrics (exceeded only by birth asphyxia).4

**Assessing Risk**

Shoulder dystocia usually cannot be predicted or prevented.6-7 The most significant risk factors are previous shoulder dystocia and fetal macrosomia. However, most cases of shoulder dystocia occur in the absence of risk factors (listed in table 2). Nevertheless, good care demands an assessment of risk before delivery.

- **Prenatal history.** Risk assessment before delivery involves obtaining a thorough prenatal history (with attention to risk factors listed in table 2).

- **Estimated fetal weight (EFW).** Diagnosis of fetal macrosomia is imprecise. Estimated fetal weight (EFW) can be used to predict macrosomia, but neither elective induction nor elective cesarean section are automatically recommended if macrosomia is suspected. Planned cesarean delivery may be considered when:
  - EFW is greater than 5,000 grams in women without diabetes
  - EFW is greater than 4,500 grams in women with diabetes5

**Table 1: Incidence of shoulder dystocia5**

<table>
<thead>
<tr>
<th>Birth weight (gm)</th>
<th>Non-diabetic %</th>
<th>Diabetic %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 4,000</td>
<td>0.1–1.1%</td>
<td>0.6–3.7%</td>
</tr>
<tr>
<td>4,000–4,449</td>
<td>1.1–10.0%</td>
<td>4.9–23.1%</td>
</tr>
<tr>
<td>4,500 or more</td>
<td>4.1–22.6%</td>
<td>20.0–50.0%</td>
</tr>
</tbody>
</table>

**Table 2: Risk factors for shoulder dystocia**

The predictive value of these risk factors—even the most significant (previous shoulder dystocia and macrosomia)—is poor. Most cases involve no risk factors at all.

**Maternal risk factors**

- Previous shoulder dystocia1,5,6,9
- DM or GDM1,5,6
- Previous macromomastic birth1,5,6
- Obesity, high weight gain during pregnancy1,5,6
- Maternal birth weight over 4,000 grams6
- Post-term pregnancy1,5,6
- Short stature (less than 4’10”)5
- Fetal shoulder/maternal pelvic disproportion, abnormal pelvic anatomy5
- Multiparity1,5,6,9
- Advanced maternal age5

**Fetal risk factors**

- Macrosomia1,5,6,7,9
- Male sex5

**Labor-related risk factors**

- Assisted vaginal delivery (forceps or vacuum)1,5,6,8
- Induction of labor6,8
- Epidural analgesia6,8
- Protracted active phase of first-stage labor2
- Protracted second-stage labor1
Preparing for delivery when shoulder dystocia is anticipated...

- Before labor, the delivery team should review the protocol outlined here.
- Educate the patient and family about the steps that may be taken in case of shoulder dystocia.
- Recommend an epidural for labor. In the event of shoulder dystocia, this will facilitate maneuvers and expedite c-section.
- During labor, physicians may elect to use the “head and shoulder” maneuver to “deliver through”—continuing the momentum of the fetal head delivery until the shoulder is visible.

With all maneuvers:

- Do NOT apply fundal pressure.
- Do NOT apply excessive force to the head or neck.

If shoulder dystocia occurs, ACT QUICKLY AND CALMLY

1. Time initiated: ____________

   - **Summon help** from an expanded delivery team, while immediately moving into the sequence outlined in the steps below.

   **Document timing** and events of this delivery on this sheet. Expanded team may include an obstetrician, nurse, pediatrician, and/or anesthesiologist.

   **Shoulder impacted**  □ Left  □ Right

   **Enter the time of day the following assistance was requested:**

   - **Additional obstetrician:**
     Name: __________________________
     Time requested: ________________
     Time arrived: ________________

   - **Anesthesia provider:**
     Name: __________________________
     Time requested: ________________
     Time arrived: ________________

   - **Pediatrics provider:**
     Name: __________________________
     Time requested: ________________
     Time arrived: ________________

   - **Additional nurse(s):**
     Name: __________________________
     Time requested: ________________
     Time arrived: ________________

   - **Others present:**
     ____________________________

2. Time attempted: ____________

   - **Initiate McRoberts maneuver.**
     Two assistants hyperflex the mother’s hips against her abdomen. This maneuver rotates the symphysis pubis anteriorly and decreases the forces needed to deliver the fetal shoulders. If necessary, add **suprapubic pressure** with moderate traction (see below).

   - **Apply suprapubic pressure** maneuver (with or without the McRoberts maneuver).
     Have assistant add gentle posterolateral suprapubic pressure with the hand or fist while continuing moderate posterior traction on the fetal head.

   Combining the McRoberts maneuver with suprapubic pressure may relieve more than 50% of shoulder dystocia cases.²
While the safe amount of time in which to deliver is unknown; studies show that an increased risk of asphyxial injury occurs within minutes.\textsuperscript{10,11} \textbf{Try these maneuvers for 5 minutes before initiating c-section.}

\begin{itemize}
  \item \textbf{Initiate internal rotation maneuver(s).}
  Rotation (and other following) maneuvers may require \textit{episiotomy} to gain vaginal space for the hand. Tell the patient to \textbf{stop pushing} during these and other attempts to reposition the fetus.

  Indicate which maneuvers were tried:
  \begin{itemize}
    \item \textbf{Perform Rubin II maneuver (can be done with or without McRoberts):}
      Insert the fingers of one hand vaginally behind the posterior aspect of the anterior shoulder. Rotate the shoulder toward the fetal chest.
      Time attempted: \\
      \begin{itemize}
        \item \textbf{Try or add Woods corkscrew (can be done with or without Rubin II):}
          Place at least 2 fingers on the anterior aspect of the fetal posterior shoulder, applying gentle upward pressure around the circumference of the arc in the same direction as Rubin II.
          Time attempted: \\
        \item \textbf{Try reverse Woods corkscrew:}
          Slide fingers down the back of the posterior shoulder, then rotate fetus in the opposite direction as Rubins II and Woods corkscrew.
          Time attempted:
      \end{itemize}

    \item \textbf{Perform Barnum maneuver. (Delivery of the posterior arm).}
      \begin{enumerate}
        \item Placing hand (and possibly wrist and forearm) inside the vagina, locate the posterior fetal arm, which is sometimes displaced behind the fetus and must be nudged forward.
        a. Placing hand (and possibly wrist and forearm) inside the vagina, locate the posterior fetal arm, which is sometimes displaced behind the fetus and must be nudged forward.
        b. Flex the fetal elbow.
        c. Deliver the forearm in a sweeping motion over the anterior chest wall of the fetus. Do NOT grasp and pull the upper arm directly, as this may fracture the humerus.
      \end{enumerate}
  \end{itemize}

  \item \textbf{These maneuvers of last resort may be attempted.}
    \begin{itemize}
      \item \textbf{Fracture the fetal clavicle with direct upward pressure on the mid-portion of the bone.}
      \item \textbf{Perform symphysiotomy.}
      \item \textbf{Perform the Zavanelli maneuver (cephalic replacement) if team capable of performing a c-section is present AND if nuchal cord has not been clamped/cut.}
    \end{itemize}
\end{itemize}
Other Documentation Notes

Prenatal Information

- Diabetic: □ Yes □ No □ Gestational on insulin or oral agent □ Medical
- Estimated pre-pregnancy weight: ____________
- Weight gain total: ____________
- Estimated fetal weight: ____________
- EDD: □ by ultrasound □ by Leopold's

Labor and Delivery

- Enter the time of day the following occurred:
  - Onset of active labor: ____________
  - Delivery of posterior shoulder: ____________
  - Start of second stage: ____________
  - Delivery of infant: ____________
  - Delivery of head: ____________

- Oxytocin used for:
  □ Induction □ Augmentation □ Not used

- Forceps used?
  □ Yes □ No
  Station at time applied: ____________ # tries: ____________

- Vacuum used?
  □ Yes □ No
  Station at time applied: ____________ # tries: ____________

Fetal Outcome

- Apgar score:
  1 min: ____________
  5 min: ____________
  If less than 7 also include 10 min: ____________

- Birth weight: ______ pounds ______ ounces or ______ grams

- Pediatric evaluation performed by: ____________ at (time) ____________

- Brachial plexus palsy present?
  □ Yes □ No
  ______ Erb’s ______ Klumpke’s (includes forearm and small muscles of the hand)

- Horner’s facial palsy present?
  □ Yes □ No

- Fracture present?
  □ Yes □ No
  Other injuries: ____________

- Umbilical artery gas
  PCO₂: ____________
  PO₂: ____________
  pH: ____________
  Base Excess: ____________

References


