

Shoulder dystocia: Clarifying the care of an old problem

Should maternal pushing stop once dystocia is diagnosed? Here's light on the standard of care.

Brachial plexus injury is a dreaded sequela of shoulder dystocia, one that lies at the root of many medical liability disputes. Although brachial plexus injury cannot be prevented, most of the commonly used maneuvers for freeing a stuck shoulder are designed to maximize fetal safety and minimize injury.

What is the standard of care when dystocia occurs? Several respected sources have offered conflicting recommendations, particularly in regard to maternal pushing once dystocia is diagnosed. My aim in this article is to clarify the issue.

Endogenous force versus exogenous force

The introduction to the American College of Obstetricians and Gynecologists' practice bulletin on shoulder dystocia, published in November 2002, provides a useful summary of much of our current knowledge:

Shoulder dystocia is most often an unpredictable and unpreventable obstetric emergency. Failure of the shoulders to deliver spontaneously places both the pregnant woman and fetus at risk for injury. Several maneuvers to release impacted shoulders have been developed,

but the urgency of this event makes prospective studies impractical for comparing their effectiveness.¹

Because prospective studies are unlikely ever to be performed, some investigators have turned to mathematical modeling to learn more about the forces exerted on the fetal neck overlying the roots of the brachial plexus when a shoulder is impacted against the symphysis pubis.

Gonik and colleagues² performed elegant modeling of the pressure between the base of the fetal neck and symphysis pubis during dystocia. They utilized data on birth forces gathered by Caldeyro-Barcia and Poseiro³ in their classic work on intrauterine pressure. Gonik and colleagues also used data from Allen and associates,⁴ who measured the force of clinician-applied traction after delivery of the head by having clinicians wear sensory gloves that recorded the force of traction applied.

Gonik and associates² concluded that the pressure resulting from endogenous forces is four to nine times greater than the pressure generated by a clinician. "Neonatal brachial plexus injury is not a priori explained by iatrogenically induced excessive traction," they wrote. "Spontaneous endogenous forces may contribute substantially to this type of neonatal trauma."

CONTINUED

Steven R. Goldstein, MD

Dr. Goldstein is Professor of Obstetrics and Gynecology at New York University School of Medicine in New York City.

The author reports no financial relationships relevant to this article.

IN THIS ARTICLE

I How confusion crept into the literature

Page 58

I Putting it all into perspective

Page 60

FIGURE

Maternal pushing may contribute to injury



When shoulder dystocia occurs, the progress of labor is interrupted and brachial plexus injury can result, a common cause of litigation. Until now, plaintiff's attorneys have tended to blame these injuries on the obstetrician and "excess" traction, but it now appears that maternal pushing contributes as well—possibly, to a greater degree than any effort by the physician.

FAST TRACK

Erb's palsy was associated with rapid delivery and unusually forceful expulsive effort in one third of cases

How an understanding of endogenous forces alters management

Although fewer than 10% of cases of shoulder dystocia result in permanent brachial plexus injury,¹ such injuries are a major source of malpractice litigation in obstetrics, as I noted at the beginning of this article. In most such cases, injury is blamed on excessive traction by the physician (FIGURE). Newer data, such as the study by Gonik and colleagues,² may implicate expulsive force (ie, maternal pushing) as another, perhaps greater, cause.

As long ago as 1988, Acker and colleagues³ reported on their experience with Erb's palsy, which was associated with rapid delivery and unusually forceful expulsive effort in one third of cases. Their findings suggest that, when shoulder dystocia occurs and additional maneuvers are necessary to deliver the impacted anterior shoulder, the contribution of potentially harmful endogenous forces should be kept in mind.

Counterintuitive strategies, including having the mother stop pushing until the anterior shoulder is freed, may help limit injury.

How confusion crept into the literature

The 21st (current) edition of *Williams Obstetrics*,⁶ in the section on management of shoulder dystocia, states that "an initial gentle attempt at traction assisted by maternal expulsive efforts is recommended." There is no reference for this statement. However, a look at the 19th edition of the textbook⁷ reveals identical wording, and the reference cited is ACOG Technical Bulletin No. 152 (August 1991), entitled *Operative Vaginal Delivery*. A subsequent version of the same bulletin (no. 196 from August 1994) contains identical wording. By the time that version was replaced by ACOG Practice Bulletin No. 17 (June 2000), however, it no longer contained any information on shoulder dystocia. Instead, ACOG published Practice Pattern No. 7 (October 1997), entitled *Shoulder Dystocia*. This document did not recommend maternal expulsive force after a diagnosis of shoulder dystocia—in fact, maternal force was not even mentioned. Nor is it mentioned in the current practice bulletin (no. 40 from November 2002), which replaced the previous version of *Shoulder Dystocia*.

Confusion doesn't end there

In its section on shoulder dystocia, ACOG's publication *Precis* (1998) states:

Management of shoulder dystocia involves both anticipation of and preparation for problems. The key to preventing fetal injury is avoidance of excess traction on the fetal head. When shoulder dystocia is diagnosed, a deliberate and planned sequence of events should be initiated. Pushing should be halted and obstructive causes should be

2007 © Todd Buck

considered. Aggressive fundal pressure or continued pushing will only further impact the anterior shoulder.

We are left with the paradox that the current edition of *Williams Obstetrics*, in its discussion of shoulder dystocia, carries a statement recommending maternal pushing based on a 1994 ACOG document—a statement that subsequent ACOG documents no longer contain. In fact, one of those documents—*Precis*—tells us that pushing should be halted, an instruction supported by the mathematical modeling of Gonik and colleagues.² And a popular online text (UpToDate.com) advises: “The mother should be told not to push during attempts to reposition the fetus.”⁸ Once the fetus is successfully repositioned, maternal pushing or traction, or both, can be reinstated.

Putting it all into clinical perspective

The current ACOG practice bulletin on shoulder dystocia (no. 40 from November 2002) observes that “retraction of the delivered fetal head against the maternal perineum (turtle sign) may be present and may assist in the diagnosis of shoulder dystocia.” When present, the turtle sign strongly suggests that the anterior shoulder is already impacted against the symphysis pubis. Maternal expulsive forces may have already put enough pressure on the nerve roots of the brachial plexus to cause damage. Any degree of traction or continued maternal pushing is likely to compound an already potentially serious problem.

In such cases, it is prudent to resort to known maneuvers, avoid encouraging continued maternal pushing, and simply support and guide the head without supplying any real traction.

When the turtle sign is absent, shoulder dystocia can be diagnosed only after the head is delivered, when the usual methods (ie, downward traction and continued maternal pushing) fail to advance delivery. Diagnosis in these cases requires recognition on the part of the delivering physician that shoulder dystocia is present. At that point, continued expulsive force and any real degree of traction no longer are appropriate. ■

References

1. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 40: Shoulder dystocia. Washington, DC: American College of Obstetricians and Gynecologists; 2002.
2. Gonik B, Walker A, Grimm M. Mathematic modeling of forces associated with shoulder dystocia: a comparison of endogenous and exogenous sources. *Am J Obstet Gynecol.* 2000;182:689–691.
3. Caldeyro-Barcia R, Poseiro JJ. Physiology of the uterine contraction. *Clin Obstet Gynecol.* 1960;3:386–392.
4. Allen R, Sorab J, Gonik B. Risk factors for shoulder dystocia: an engineering study of clinician-applied forces. *Obstet Gynecol.* 1991;77:352–355.
5. Acker DB, Gregory KD, Sachs BP, Friedman EA. Risk factors for Erb-Duchenne palsy. *Obstet Gynecol.* 1988;71:389–392.
6. Dystocia: abnormal presentation, position, and development of the fetus: shoulder dystocia. In: Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hauth JC, Wenstrom KD (eds). *Williams Obstetrics*. 21st ed. New York: McGraw-Hill; 2001:459–464.
7. Dystocia due to abnormalities in presentation, position, or development of the fetus: shoulder dystocia. In: Cunningham FG, MacDonald PC, Gant NF (eds). *Williams Obstetrics*. 19th ed. Norwalk, Conn: Appleton & Lange; 1993:509–514.
8. Rodis JF. Management of fetal macrosomia and shoulder dystocia. UpToDate [serial online]. Waltham, MA; November 7, 2007.

FAST TRACK

When the “turtle sign” is present, avoid encouraging maternal pushing, and simply support and guide the head without supplying any real traction

Did you see these articles on shoulder dystocia?

They can be found in our archive at www.obgmanagement.com

■ **Shoulder dystocia: What is the legal standard of care?**

By Henry M. Lerner, MD—August 2006

■ **Cutting the medicolegal risk of shoulder dystocia**

By Samuel Zylstra, MD, MPH, and colleagues—September 2004