

A New (Old) Maneuver for the Management of Shoulder Dystocia

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The problem of shoulder dystocia has received increasing attention in the medical literature in recent years, probably because of the tremendous potential for litigation that accompanies this disastrous complication. It has been estimated that at least 8% of malpractice claims alleging fetal damage involve a birth complicated by shoulder dystocia.¹ True shoulder dystocia has been defined as any birth in which maneuvers in addition to lateral traction and episiotomy are required to deliver the shoulders.² The reported incidence of shoulder dystocia ranges from 0.15% to 1.50% of all births, 2-5 but the morbidity 5-7 and mortality 5 are high, with perinatal mortality ranging from 21 per 1000 to 290 per 1000, and morbidity ranging from 16% to 48%. The most common fetal complications include asphyxia, seizures, brachial plexus palsy, and fractures of the humerus and clavicle.⁸

Maternal risk factors have been studied extensively in an effort to predict and possibly prevent this complication (Table 1).⁴ Numerous authors (2-4, 9-11) have pointed out that shoulder dystocia occurs frequently in patients with few or no risk factors. Even in women with more than one risk factor, the cost of preventing all, or even most, shoulder dystocias would be prohibitive, both in dollars and in the number of cesarean sections performed.

Attention has thus been turned to techniques for managing a shoulder dystocia when it occurs. Several different techniques have been proposed for freeing the impacted shoulders in this situation.¹² These have included lateral traction in conjunction with fundal pressure (sometimes condemned as ineffective and dangerous to both mother and fetus),^{6, 9, 13-16} suprapubic pressure on the anterior shoulder, various rotational maneuvers involving either abduction (Woods') or adduction (Rubin's) of the fetal shoulders, delivery of the posterior arm, intentional fracture of the clavicle, and symphysiotomy.¹² Two recent additions to this list are the McRoberts maneuver⁸ and the Zavanelli maneuver.¹²

The McRoberts maneuver, or hyperflexion of the mother's thighs onto her abdomen, is an elegantly simple maneuver that releases the infant's impacted anterior shoulder and causes cephalad rotation of the mother's pubic bone and a subsequent decrease in its angle of inclination. This maneuver has been reported to be quite successful, but may not work in all cases, especially in those involving severe impaction of both shoulders. Because it is fast, simple, and can be done in any situation, however, it should probably be the first maneuver attempted when gentle traction fails to deliver the shoulders.

The Zavanelli maneuver involves reversing the mechanism of delivery of the vertex by rotation to the occiput anterior position and flexion of the head, returning it to the vagina with upward pressure, followed by immediate extraction of the infant by emergency cesarean section. Of the nine shoulder dystocias known to have been managed this way so far,¹⁷ one infant was stillborn, with resulting maternal sepsis and hysterectomy, one was born with an Apgar score of 1/4 but is currently normal at age 7 years, and one currently has some degree of mental retardation.¹⁷ The other six were apparently delivered in healthy condition with no maternal or fetal complications. This maneuver is indeed a revolutionary concept and will undoubtedly prove to be of value in rare cases of severe shoulder dystocia when used as a method of last resort. It may have minimal applicability, however, to the situation of a family physician who encounters a shoulder dystocia in a remote rural area without immediate access to obstetrical backup. In addition, the Zavanelli maneuver involves an emergency procedure that is not without risks of its own. What childbirth attendants need is a simple maneuver that can be performed quickly, with no special equipment or expertise, and that will result in the prompt delivery of an uninjured infant with no maternal or fetal complications.

Table 1. Factors Predisposing to Shoulder Dystocia

- Obesity
- Multiparity
- Postdates
- Prior history of macrosomic infant
- Midpelvic delivery
- Prolonged 2nd stage
- Macrosomia
- Diabetes mellitus

Case Report

A 22-year-old woman, GIPO, presented to the labor and delivery unit at 41 weeks' gestation with ruptured membranes, precipitous labor, and cervical dilation to an anterior rim. Her pregnancy had been uncomplicated except for obesity; she weighed 255 1/2 pounds at admission. A 2-hour postprandial glucose at 29 weeks was 88 mg/dL (4.9 mmol/L). Her fundal height was 40 cm the day before admission. The cervix quickly became completely dilated after admission, and the vertex of the infant was born after 15 minutes of second stage labor, but the infant's anterior shoulder was not deliverable by gentle traction. The McRoberts maneuver was tried without success, and as the patient was still in a labor bed because of her precipitous labor, she was asked to get onto her hands and knees for delivery of the shoulders. This she did with minimal assistance and surprising agility. Downward traction was then employed in an attempt to

deliver the posterior shoulder first, but this was also unsuccessful. A hand was then inserted into the vagina with the intent of delivering the posterior arm, but at that moment the patient pushed again and the 8 lb 11 oz (3940 g) male infant literally squirted out onto the bed, over (or under, as it were) an intact perineum. The infant had no injuries and had an Apgar score of 4/9 at 1 and 5 minutes. Total time from delivery of the head to completed delivery of the infant was estimated to be less than 2 minutes.

Discussion

The inspiration for the use of the all-fours maneuver in this case, which was managed by the principal author, came from an informal article written by Ina May Gaskin on the results of a previously unpublished series of shoulder dystocias in which the maneuver had proven to be extremely effective.¹⁸ This case series was accumulated by a group of direct-entry midwives at the Farm Midwifery Center, Summertown, Tennessee, who learned the maneuver from Ms. Gaskin, director of the birth center. She had, in turn, learned it from indigenous midwives while visiting the highlands of Guatemala in 1976. The midwives of the Farm Midwifery Center, with physician backup, operate a home birth service and free-standing birth center, and have participated in a nationwide multicenter study of low-intervention birth practices and outcomes.¹⁹ From 1971 to the present, the midwives have attended 1750 births. Thirty-five of these were complicated by shoulder dystocia, and all of them were managed by midwives (Table 2). Three early births were managed with traditional maneuvers, resulting in some birth injuries. The remaining 32 were managed by having the mother assume the all-fours position, with no mortality, no birth injuries, and with excellent Apgar scores. All the babies for whom follow-up was possible (29 of 35) were developmentally normal (ages 9 months to 15 years). These statistics compare favorably with the reported mortality rates of 21% to 29% and morbidity rates of 16% to 48%. In addition, despite frequent recommendations that any maneuvers to deliver the shoulders be preceded by a generous episiotomy or proctoepisiotomy,^{2 23} of the babies were delivered over an intact perineum, and there were no 3rd or 4th-degree lacerations. Finally, though some authors recommend the time-consuming step of administering general anesthesia to the mother before attempting alternative maneuvers,^{2 23} these babies were all delivered without anesthesia.

The incidence of shoulder dystocia in this series was 2.0% of all births, which is higher than the reported incidence, but probably partially explained by the lower cesarean section rate of 1.45%, as an increase in cesarean section rate in any series of births will lower the incidence of shoulder dystocia as a percentage of all births. It might also be said that there is a potential for over diagnosis of shoulder dystocia in any series of births, and that overdiagnosis of any condition would result in adverse outcomes being diluted and favorable outcomes becoming more frequent.

In the case of shoulder dystocia, it is certainly true that the amount of lateral traction that a practitioner is willing to apply in attempting to deliver the anterior shoulder before resorting to alternative maneuvers would significantly affect the frequency of diagnosis, in addition to affecting the outcome for the baby. In this series, however, the complete lack of morbidity and mortality suggests that all of the cases that were indeed true shoulder dystocias had a favorable outcome, and that no babies were harmed by unnecessary use of the maneuver.

The all-fours maneuver, described in George Engelmann's classic work, *Labor Among Primitive Peoples*,²⁴ has been mentioned only once, briefly, in recent medical literature, and promptly dismissed as not very likely to be useful.²⁵ To date there has been no documentation of the effectiveness of this technique in the mainstream medical literature, and practitioners who have heard anecdotal reports of its usefulness have undoubtedly been reluctant to try an unproven maneuver, especially one that represents such a radical departure from the traditional approach to shoulder dystocia.



The explanation for the success of this maneuver probably lies in movement at the sacroiliac joints at term, which can result in a 1-cm to 2-cm increase in the sagittal diameter of the pelvic outlet.²⁶ The lithotomy position restricts posterior movement of the sacrum, while placing the mother on her hands and knees with weight evenly distributed over all four extremities allows rotational movement around a transverse axis through the sacroiliac joints (Figure 1). Additional benefit is probably obtained from the movement involved in the actual change of position, which may help to disimpact the shoulders, and the addition of gravity to the forces tending to push the posterior shoulder anteriorly, allowing it to slide over the sacral promontory. This would make it particularly useful in severe bilateral shoulder impactions. Indeed, babies who were tightly wedged in the lithotomy position have been known to literally fall out of the vagina once this position is assumed. This position is not to be confused with the knee-chest position, which has been mentioned in recent texts,^{16,27} although its effectiveness in treating shoulder dystocia has not been documented.

Critics of the all-fours position will claim such a change in position is time-consuming and difficult to accomplish, precluding the use of other maneuvers. In the unlikely event that this maneuver is not successful, several other suggested maneuvers can be performed in this position, including attempting to rotate either shoulder toward the fetal back or chest, and attempting to deliver the posterior arm. Although delivery of the

posterior arm in the lithotomy position has been reported to be difficult in some cases because of inability to insert a hand into the vagina,^{7,12,20} the all-fours position offers the potential for increased space between the shoulder and the vaginal wall because of the mobility of the sacrum and the fact that the weight of the maternal abdomen and fetus are not resting directly on the posterior arm. In the case reported here, it is quite possible that the simple act of inserting a hand between the sacrum and the posterior shoulder provided the leverage to lift the sacrum posteriorly and allow the baby to be born spontaneously. Though fundal pressure and suprapubic pressure would be difficult if not impossible in this position, they are not likely to be necessary or useful in attempts to deliver the posterior shoulder. Deliberate fracture of the clavicle would be no more difficult in this position, and as a last resort even the Zavanelli maneuver can be performed in this position.

It takes surprisingly little time (as little as 30 seconds) to get a patient to her hands and knees, even in the event of an unexpected shoulder dystocia, such as the one reported here, and it can be accomplished even more quickly in a patient with more than one known risk factor if the following precautions are taken in advance:

1. Encourage the mother to assume the all-fours position at intervals during labor. It is a very comfortable position, especially when the baby is occiput posterior, and it is useful for facilitating rotation and descent. Admittedly, not all mothers will be comfortable in this position, or it may be one of many different positions assumed by the patient during the course of her labor, but it will help if she becomes familiar with this position in advance of the birth. Advise her that it may become necessary to assume this position again for delivery of the shoulders.
2. Avoid intravenous lines. A heparin lock can provide emergency venous access without the restrictions of dangling IV lines.
3. For the same reason, avoid continuous electronic fetal monitoring equipment, or remove the belts as the vertex is delivered. Belts and cables are also restrictive, and studies have shown that auscultation of the fetal heart tones every 5 minutes during the second stage of labor is sufficient.^{23,30}
4. Along the same lines, avoid stirrups and extensive sterile drapes, and for obvious reasons, avoid epidural anesthesia.
5. Have at least two assistants present at the birth. Labor coaches can be helpful in facilitating rapid changes in position if necessary.
6. Finally, deliver the baby in a bed, not on a narrow delivery table. Consider using the lateral decubitus position, or better yet, complete the

entire delivery in the all-fours position in those patients at high risk for a shoulder dystocia (Table 1).

Admittedly, these recommendations run counter to the whole technological approach to childbirth that has been developed over the past 20 years, and they are not likely to be adopted in large traditional centers. Although anecdotal reports indicate the maneuver has been used successfully in high-tech settings,¹⁸ we expect it to prove most useful in the context of the low-intervention approach to obstetrics that is most familiar to family physicians.

Clearly, maintaining a high level of alertness to this problem and avoiding panic when shoulder dystocia is encountered will prevent the obstetrical disasters that occur when excessive fundal pressure and lateral traction are used in desperation by unprepared birth attendants. An orderly plan of management, which should be initiated as soon as shoulder dystocia is suspected, would include a quick McRoberts maneuver, followed immediately by the all-fours position and an attempt to deliver the posterior shoulder first by gentle downward traction and, failing that, the posterior arm, by flexing it at the elbow and drawing it out across the fetal chest and face. Use of this maneuver appears to be a safe and costeffective way of dealing with shoulder dystocia for all birth attendants, but particularly for those who practice in rural areas.

Acknowledgment

An instructional program showing an actual shoulder dystocia delivery in the all-fours position is available. For more information, write to:

Video, Farm Midwifery Center, 12, The Farm, Summertown, TN 38483.

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Source:

The Farm Midwifery Center

<http://www.thefarm.org/lifestyle/dystocia.html>

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