

CASE REPORT

The Inverse Shoehorn Maneuver for the Management of Obstetric Shoulder Dystocia

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Abstract

The standard maneuvers taught to obstetric practitioners are not always successful in relieving shoulder dystocia. The “inverse shoehorn” is a manual technique not previously described in the literature.

Case Report

A 24-year-old patient, gravida 1, para 0 at 39 4/7 weeks' gestational age presented with the spontaneous rupture of membranes and onset of early labor (cervix was 2 cm dilated). She was athletic and had a prepregnancy body mass index of 21. Her prenatal care was uncomplicated, including normal laboratory workup and diabetes screen. Her estimated fetal weight by Leopold's maneuvers was 7.5 lb.

She was admitted and observed on labor and delivery for approximately 2 hours at which point she was having minimal contractions. The patient was offered pitocin augmentation and accepted. She then progressed steadily and was completely dilated and ready to push at approximately 10 hours from admission. The fetal head was in left occiput anterior position and after 90 minutes of pushing was beginning to crown. At that point, some turtling of the fetal head was recognized. The certified nurse-midwife attending the delivery called for nursing support and OB/GYN backup.

Following delivery of the fetal head, a tight shoulder dystocia was immediately recognized. The fetal right shoulder was anterior and seemed deeply impacted behind the maternal symphysis pubis.

The patient was instructed to refrain from pushing, help was called for, the patient's hips were hyperflexed (McRobert's), supra-pubic pressure was performed, and rotational maneuvers were attempted, but delivery of the anterior shoulder was not accomplished. An unsuccessful attempt was also made to deliver the posterior fetal arm.

At that point, the OB/GYN performed a novel technique to redirect the vector of descent of the anterior fetal shoulder and asked the mother to “push hard.” The anterior fetal shoulder slid along the physician's first 2 fingers, under the maternal pubic bone, when the mother pushed. Once the delivery of the anterior shoulder was recognized, the remainder of the baby was delivered uneventfully. The umbilical cord was rapidly cut, and the baby was passed to the awaiting

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pediatric practitioners. The Apgar scores were 5 and 8, and the baby was flexing both upper extremities. The birth weight was 8 lb 2 oz. Umbilical cord blood pH was 7.31. An x-ray of the neonate's chest performed later was negative for clavicular fracture or other injury.

Both mother and baby had an otherwise uncomplicated postpartum course, and they were discharged on postpartum day 2.

Discussion

Shoulder dystocia is one of the most emergent occurrences in obstetrics. Although there are identified risk factors for shoulder dystocia, the majority of cases still occur in patients without risk factors. Depending on the duration and severity of dystocia, fetuses risk severe morbidity including brachial plexus injury and hypoxic ischemic encephalopathy among other injuries.

Currently described and promoted interventions for an identified shoulder dystocia include McRobert's maneuver, suprapubic pressure, rotational maneuvers (e.g., Rubin's and Wood's screws), posterior arm delivery, and repositioning of the patient to hands-and-knees position.^{1,2}

One common characteristic of all these techniques is that the mother is primarily a passive participant in the maneuvers; in fact, it is often critical that the patient abstain from continued expulsive efforts as this may further impact the fetus' anterior shoulder behind the symphysis pubis. Getting the mother to abstain from pushing during this period can be nearly impossible given the exigencies of the moment.

The amount of force a practitioner can safely generate during shoulder dystocia maneuvers (often with only 1 to 2 fingers) compared to that which can be generated by the patient is often nominal. The ability to modify the dynamics of the shoulder dystocia to allow for safe enlistment of pushing by the patient even when other techniques have been unsuccessful in delivering the anterior shoulder would be quite advantageous if able to be performed in a fashion that protects the fetal brachial plexus while minimizing time from recognition of dystocia to accomplishment of delivery.

As such, a novel technique to safely accomplish delivery of the anterior shoulder is described. This

technique has been employed in the author's clinical practice for the last 15 years, and it has proven quite effective, even when traditional maneuvers have been unsuccessful.

This approach has been characterized as the "inverse shoehorn" in reference to its vector altering similarity to shoe fitting.

The procedure is as follows:

1. The practitioner slides the first 2 fingers of their hand between the posterior aspect of the impacted anterior fetal shoulder and the inferior aspect of the symphysis pubis. Of note, the inferior aspect of the pubic bone will scrape the posterior knuckles of the entering digits, and when done correctly is often painful for the practitioner.
2. When the practitioner is assured that their digits are intervening between the anterior shoulder and pubis, the patient is asked to push with maximum force. The fetal anterior shoulder should then slide under the pubic symphysis along the guiding plank generated by the practitioner's digits. The practitioner may concurrently exert downward pressure (toward the birth parent's rectum) on the posterior and lateral aspects of the fetal anterior shoulder (see Figures 1 and 2).
3. At this point, the anterior shoulder is usually delivered and the remainder of the delivery can follow routinely. If the anterior shoulder is not fully delivered, it is usually advanced forward enough along the practitioner's digits that one may hook the fingers into the fetal axilla in a posterior to anterior direction. Rubin's II screw maneuver is often easily accomplished at this point.

Of note, there are some similarities between the "inverse shoehorn" procedure and Rubin's rotational maneuver, namely, that the practitioner places their fingers on the posterior aspect of the impacted shoulder. The essential difference is that the inverse shoehorn is not "rotational" in nature; the practitioner's fingers create a subpubic linear vector to protect the fetal brachial plexus while then reengaging patient pushing to accomplish delivery of the anterior shoulder. Once the practitioner's fingers are correctly placed, the patient may safely push without further impacting the fetal shoulder. The negative incline of the practitioner's fingers will act as a guiding plank/vector to redirect the expulsive force under the pubis, without requiring rotation of the anterior fetal shoulder. It

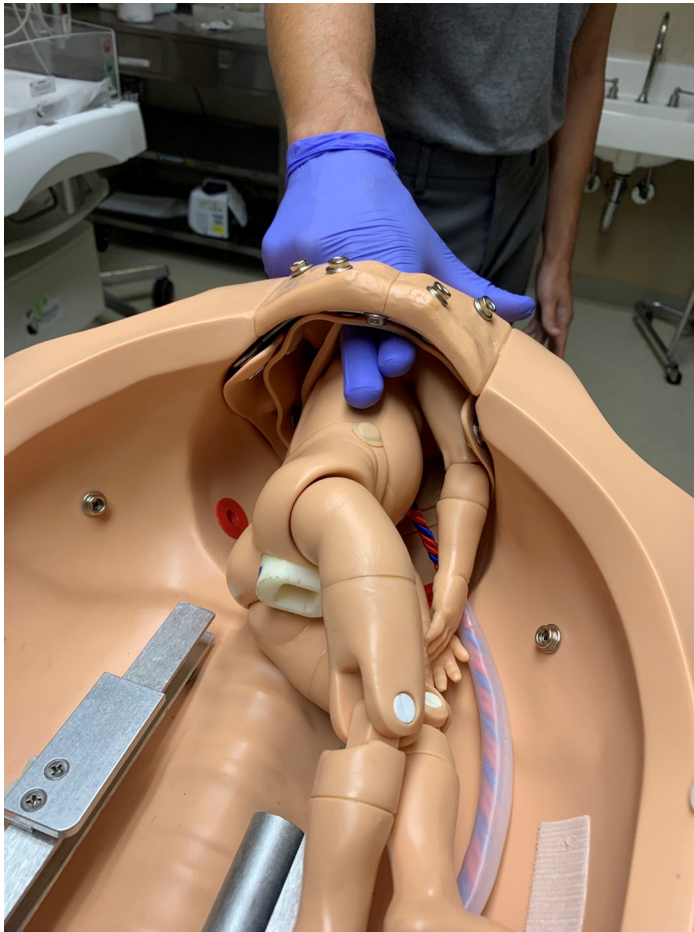


Figure 1: The inverse shoehorn maneuver looking from a superior to inferior perspective. Note that the practitioner's fingers intervene between the posterior aspect of the fetal anterior shoulder and the underside of the symphysis.

is the author's experience that once the anterior shoulder has advanced past the symphysis, rotational maneuvers can be employed more effectively. In practical terms, utilizing the "inverse shoehorn" often changes the order of intervention from "rotate and then have the patient push" to "have the patient push, and if still necessary, rotate."

Conclusion

This technique is intended as an adjunct for the already existing and codified shoulder dystocia maneuvers and not as a replacement. As all experienced obstetricians realize, sometimes the initial and typical methods for relieving a severe shoulder



Figure 2: The inverse shoehorn looking from an inferior to superior perspective.

dystocia can be ineffective. Knowledge of the "inverse shoehorn" provides an additional tool in the arsenal to combat the potential morbidity of shoulder dystocia.

Consideration should be given to further research to objectively evaluate the effectiveness of this and other shoulder dystocia interventions. Last, the "inverse shoehorn" may be included in obstetric simulations of the management of shoulder dystocia.

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