

Posterior axilla sling traction for intractable shoulder dystocia

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Background

Shoulder dystocia is an unpredictable^{1,2} and dangerous complication for both baby and mother.³ The clinical manoeuvres to overcome shoulder dystocia and the sequence in which they should be attempted have not yet been systematically evaluated,¹ and remain empirical. Recent reports have emphasised the dangers of traction on the baby's head and neck,⁴ or of cephalic replacement,⁵ and the value of direct rotational manipulation of the baby⁴ during early efforts to deliver the baby's posterior arm.⁶ In 2006 a new technique for delivery of the posterior arm, using finger traction in the posterior axilla, was described.⁷ We reported another new technique in which standard methods of delivery including finger traction in the posterior axilla had failed, but the shoulder dystocia was overcome by traction with a soft plastic catheter sling around the posterior axilla.⁸ Both the cases we reported were undertaken in the event of intrauterine death. The editorial comments on the paper raised the possibility of nerve injury from the sling, and added: 'Further case reports are needed that evaluate the use of posterior axillary sling retraction in the setting of intractable shoulder dystocia and result in live births to clarify the speed, efficacy, and safety of this new technique'.⁹ We report on the first three cases of use of this method to deliver healthy babies.

Case reports

1 A 34-year-old woman at 39 weeks of gestation with one previous caesarean section in 1997 for pre-eclampsia was admitted at 13:00 hours with labour pain. The labour pain started at 01:00 hours, and she reported spontaneous rupture of membranes at 08:00 hours. Her pregnancy course and clinical examination were unremarkable. At

16:15 hours her cervix was fully dilated, but she had a deep transverse arrest (right occipitolateral), with caput succedaneum and moulding. At 16:55 hours a 6-cm metal vacuum cup was applied, and the head was delivered easily with anterior rotation during one contraction. This was followed by severe shoulder dystocia. The McRoberts' manoeuvre was attempted with posterior head traction. Suprapubic pressure was then applied, followed by rotation attempts that were also unsuccessful. The posterior arm could not be swept down and finger traction in the posterior axilla was unsuccessful. A size 12 French suction catheter was folded over the operator's right index finger, fed around the posterior axilla, and the loop retrieved with the left index finger and pulled through, creating a sling around the posterior shoulder. The ends of the catheter were clamped, and with moderate traction the posterior shoulder was easily pulled down. While maintaining traction on the catheter with the left hand, the right hand was reinserted into the posterior vagina, and it was now possible to reach the posterior arm and sweep it over the baby's chest and out. Delivery of the anterior shoulder followed easily at 17:03 hours. The mother sustained a posterior vaginal laceration that was repaired under local analgesia, and she was discharged well after 24 hours. The baby weighed 3720 g, and had Apgar scores of 3 and 8 at 1 and 5 minutes, respectively. There was no soft tissue or nerve injury of the right (posterior) arm. There was a mild Erb's palsy of the left (anterior) arm, thought to have resulted from the initial attempt to deliver the anterior shoulder, which was expected to recover completely. The baby showed no evidence of central nervous system injury.

2 A 20-year-old woman, with one previous birth by caesarean section in 2007 for failure to progress in labour, and an unremarkable antenatal course, was admitted at 06:00 hours with a history of labour pain

since the previous day. Her early pregnancy mass was 83 kg, and the symphysis–fundal height of the uterus was 42 cm. Her cervix was fully dilated, and cardiotocography showed a reactive pattern. There was neither caput succedaneum nor moulding. The position was right occipitoanterior, well flexed. As no further spontaneous descent of the head occurred, a 6 cm metal vacuum cup was applied, and the head was delivered during the next two uterine contractions, followed by shoulder dystocia. The McRoberts' manoeuvre plus suprapubic pressure and posterior head traction were unsuccessful, as were attempts to reach the posterior arm, rotate the shoulders and to pull down the posterior shoulder with bidigital finger traction, as the pelvis was extremely narrow. A size 14FG × 50 cm suction catheter loop was fed with the right index finger under the posterior axilla and retrieved with the left index finger, the tip pulled through and the ends clamped. Moderate traction with the left hand pulled down the posterior shoulder low enough for the posterior arm to be reached by the right hand, swept in front of the baby's chest and out. A fracture of the posterior humerus was clearly felt during this latter maneuver, not during the sling traction. The delivery of the anterior shoulder followed easily. The time taken for delivery of the shoulders was approximately 5 minutes. The baby weighed 3420 g and had Apgar scores of 2, 2 and 6 at 1, 5 and 10 minutes. The baby required head cooling for neonatal encephalopathy and X-ray showed a greenstick fracture of the right mid-humerus. There was mild Erb's palsy of the left arm, which resolved completely with physiotherapy. The baby was discharged in good condition on day 8, breastfeeding well.

- 3 A 15-year-old nulliparous woman was admitted in early labour. Her antenatal course was uneventful other than for extensive condylomata accuminata. The symphysis–fundal height was 38 cm. At 08:50 hours her cervix was 4 cm dilated, with mild caput succedaneum. Labour progress was slow but steady, and at 17:00 hours her cervix was fully dilated, with marked caput succedaneum and mild moulding, in the left occipitolateral position. A 6 cm metal vacuum cup was applied at 17:30 hours for deep transverse arrest. The head was delivered in 6 minutes with moderate traction. Shoulder dystocia ensued. The McRoberts' manoeuvre with posterior head traction was unsuccessful. The posterior arm could not be delivered, nor could the shoulders be rotated nor the posterior shoulder pulled down with digital axillary traction. A plastic suction catheter was fed around the posterior axilla as in the previous cases. With catheter traction the posterior shoulder was easily pulled down, but the posterior arm could still not be delivered. The direction of traction on the catheter was changed to a left lateral then

anterior direction, and with digital pressure on the posterior aspect of the anterior shoulder, the shoulders were easily rotated in a counter-clockwise direction till the erstwhile posterior shoulder delivered under the symphysis pubis. The baby weighed 3.69 kg with Apgar scores of 5, 7 and 9 at 1, 5 and 10 minutes, and suffered no sequelae.

Discussion

In shoulder dystocia the shoulders are too wide to pass through the pelvic inlet simultaneously. They need to be tilted so that one can pass through followed by the other. This case series supports the modern concept that delivery of the posterior shoulder or arm first is preferable, as this was achieved in all three cases after unsuccessful routine attempts to deliver the anterior shoulder. The occurrence of transient Erb's palsy in the anterior arm of two of the cases was thought to be the result of initial attempts to deliver the anterior shoulder with posterior head traction, as this is the typical manoeuvre associated with stretching of the brachial plexus. However, it cannot be stated with certainty that the posterior axillary traction did not cause these injuries.

Secondly, finger traction in the posterior axilla tends to distract the humerus from the chest, and widen the shoulder girdle, because of the space occupied by the fingers. The catheter sling, which occupies minimal space, should be able to bring the posterior shoulder down with less traction force than would be required digitally, as happened in all of these cases.

Thirdly, because the catheter did not take up space, it was possible in the first two cases to re-insert the right hand once the shoulder had descended, while maintaining traction, and retrieve the posterior arm. In the third case, the sling was used to rotate the posterior shoulder through 180°, a manoeuvre not previously described.

The mid-humeral greenstick fracture in the second case was clearly felt to occur during the manual retrieval of the posterior arm, not during sling traction. In no case was there soft tissue or nerve damage to the posterior axilla or arm. A fracture of the posterior humerus also occurred in one of the two previously reported cases.⁸

The size 12 and 14 suction catheters used in these cases were those that were available at the time for possible suctioning of the baby at birth. In principle, the widest catheter that could be comfortably fed around the posterior axilla would be ideal for minimising possible pressure effects from the catheter.

As cases of shoulder dystocia unresponsive to all conventional methods of delivery are extremely rare, it would be difficult to evaluate this method in a prospective study.

We suggest that posterior shoulder sling traction be considered as an option when all other recommended methods fail, and that successful and unsuccessful cases should be reported to provide a more precise estimate of the effectiveness of this new method. We would be happy to receive reports of such attempts.

Disclosure of interest

None.

Contribution to authorship

Prof Hofmeyr performed the deliveries using the posterior axilla sling traction technique. He wrote the first draft of the manuscript. Dr Cluver helped draft and edit the manuscript. She is the corresponding author.

Details of ethics approval

None. The women signed consent for the publication of information from their hospital records.

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References

- 1 Gherman RB, Chauhan S, Ouzounian JG, Lerner H, Gonik B, Goodwin TM. Shoulder dystocia: the unpreventable obstetric emergency with empiric management guidelines. *Am J Obstet Gynecol* 2006;195:657–72.
- 2 Gottlieb AG, Galan HL. Shoulder dystocia: an update. *Obstet Gynecol Clin North Am* 2007;34:501–31, xii.
- 3 Randrianantoanina F, Fenomanana S, Ravelosoa E, Andrianampalinarivo H, Ravelomanana N, Rasolofondraibe A, *et al*. Neglected shoulders reported at the Befelatana Maternity Hospital (Antananarivo, Madagascar) [in French]. *Bull Soc Pathol Exot* 2007;34:365–85.
- 4 Gurewitsch ED, Allen RH. Shoulder dystocia. *Clin Perinatol* 2007;34:365–85.
- 5 Ross MG, Beall MH. Cervical neck dislocation associated with the Zavanelli maneuver. *Obstet Gynecol* 2006;108:737–8.
- 6 Beer E. History of extraction of the posterior arm to resolve shoulder dystocia. *Obstet Gynecol Surv* 2006;61:149–51.
- 7 Menticoglou SM. A modified technique to deliver the posterior arm in severe shoulder dystocia. *Obstet Gynecol Surv* 2006;108:755–7.
- 8 Cluver CA, Hofmeyr GJ. Posterior axilla sling traction: a technique for intractable shoulder dystocia. *Obstet Gynecol* 2009;113:486–8.
- 9 German R. Posterior axillary sling traction: another empiric technique of shoulder dystocia alleviation? *Obstet Gynecol* 2009;113:478–9.