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Cesarean Delivery of the Deeply Impacted Fetal Head at Full Dilation; A Modified Technique with Major Advantage

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ABSTRACT

Background: Delivery of the fetal head in an emergency second stage caesarean section is technically challenging, and the procedure carries increased risk to the mother and neonate compared to cases performed prior to the second stage. Many techniques have been described but no consensus exists of the superior method.

Technique: We suggest a simple method where after the hysterotomy is made at delivery, the surgeon changes the orientation of his body and hands in order to extract the fetal head. Once the head is brought to the uterine incision, the fetus is delivered in the usual fashion.

Experience: This method has been employed for a number of years by one of the authors and, apart from being expeditious and requiring no additional personnel, carries virtually no increased risk to the mother or baby.

Conclusion: At the time of second stage caesarean section this approach is a viable alternative and may be superior in terms of simplicity, speed and safety, for mother and baby.

INTRODUCTION

As the number of caesarean sections performed in the second stage of labor has increased in recent years in keeping with the rising caesarean section rates internationally [1], the difficulties and morbidity, as a result of delivery of the impacted fetal head during a second stage caesarean section have become more topical [4]. Various methods have been described to assist with delivery; these include the classic "Push" method, Reverse Breech extraction [6], the Patwardhan method [2,3], and more recently, the use of the Fetal disimpacting system, manufactured by Safe Obstetrics Systems UK Ltd. (Fetal Pillow™). There is currently no consensus as to which of these is superior, and the decision is left up to the individual Obstetrician based on skill level, training, experience, and access to new medical devices.

We seek to describe another technique, which we have used successfully in our practice and has been passed on to junior obstetricians in training for the past 2 decades.

TECHNIQUE

Our method utilizes simple adjustments in orientation of the accoucheur to the patient, which we believe has significant beneficial effects. Abdominal entry is carried out in the usual fashion, at the surgeon's preference. The lower uterine segment is opened via lower uterine transverse incision; emphasis being made at this point that the incision should be "high" at least 3-4 cm superior to the utero-vesical fold, and should be a generous "smile", as this may reduce extension into the lateral vascular areas of the gravid uterus in the situation of a thin lower segment associated with the second stage of labor.

The following steps are then employed:

1. Posterior Approach: Having opened the uterus, the delivering surgeon then positions himself so that his posterior i.e. back, faces the anesthesiologist at the top of the operating table. This takes his dominant hand out of the operating field.
2. Replacement of the dominant with his non-dominant hand in the surgical field: (i.e. for the right-handed

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surgeon standing on the patient's right, the left hand, and for the left-handed surgeon, the right hand) in preparation for the next step.

3. Advancement of the non-dominant hand: this hand is advanced inferiorly, through the uterine incision, dorsum anterior, between the anterior wall of the lower uterine segment and the fetal head, until the fingers are below the level of the fetal head, in the vagina
4. Knit the fingers of the non-dominant hand firmly around the fetal head, to achieve a good grip, then draw the head up in the axis of the utero-vaginal canal, keeping the elbow fixed, so dislodging the fetal head from the pelvis, and elevating it up to the level of the uterine incision. The body weight of the surgeon can be used to assist with traction at this stage.
5. Interchange hands again: At this point, the delivering surgeon switches hands, so that his dominant hand is now below the fetal head, at the uterine incision and he has corrected his "Posterior" approach of (1) above. He is now facing the anesthesiologist again.
6. Extract the fetal head in the usual manner

This 6-point (P-R-A-K-I-E) technique does not require the use of a 'vaginal assistant' as in the "Push method" and avoids extraneous (sometimes expensive) devices like the "Fetal Pillow"; it is much quicker and less traumatic to the fetus and mother, in our opinion, compared to all other approaches including the Patwardhan method and the Reverse Breech extraction.

EXPERIENCE

In our experience of using this technique, there has been no extensions of the uterine incision into the broad ligament or inferiorly into the vagina, with a subsequent low incidence of hemorrhage or hematoma formation; and no bladder trauma. In addition, we find that in our practice, the replacement of the delivering hand (step 5) is not associated with any increased rates of infection (postpartum endometritis, wound infection).

DISCUSSION

In the literature, there are currently four (4) methods described for delivery of the impacted fetal head in the second stage of labor. The first, the "push" method, involves a separate assistant placing a hand into the vagina and using this to elevate the fetal head to the surgeon's hand at the hysterotomy site. This method, however carries risks of vaginal and cervical lacerations, and while the incidence of serious fetal injury is low, may place excessive pressure on the fetal head. The second method is the "Pull" method, which involves delivery by reverse breech - surgeon advances their hand cephalad and extracts the fetal breech first through the lower segment incision, followed by the fetal head. There is some body of evidence which supports the notion that the reverse breech extraction (Pull) method is associated with less maternal and neonatal morbidity than the "push" method [7,9]. The third method for delivery of the impacted head is the Patwardhan method [2,3], in which the fetal shoulders and arms are delivered first, followed by the breech and then the head.

However, depending on the position of the fetus, different techniques are required and this contributes to further complexity of this technique, especially to those not exposed to this maneuver as part of their basic training. In addition, there is little scientific literature comparing its efficacy and safety to more traditional methods. In more recent times, the Fetal Pillow™ [8] has been gaining popularity among the international obstetric community, and there is some evidence to suggest that this device may result in lower serious maternal and fetal morbidity, and shorter hospital stays.

However, a major drawback is that this device has a significant cost attached (roughly USD $500 per pillow) and as such, may not be accessible to all groups of patients and providers. The cost of this would certainly be prohibitive in the Third World setting. In addition, further large-scale clinical trials will be needed to show its comparability with traditional techniques.

The major advantages of the 'PRAKIE' technique is that it is quick, can be easily learnt by residents and requires no purchase of additional equipment. In the usual method of delivering the fetal head at Caesarean Section using the dominant hand to elevate the fetus, the tendency is to place undue force on the lower edge of the uterine incision, almost using it as a fulcrum to achieve elevation. It is this downward force which causes tearing of the lower uterine segment inferiorly to the vagina and laterally into the broad ligament, with disastrous consequences. The "Posterior" approach of the 'PRAKIE' method, together with the use of the non-dominant hand to achieve dis- impaction and elevation of the fetal head, makes pressure on the lower edge of the uterine incision physically impossible. It is this single fact, which may prove this technique to be superior to all others.

While we have not evaluated this technique in comparison to the other described methods in a clinical study, and we report solely based on personal experience, we feel this approach makes logical sense. Furthermore, the technique requires minimal adjustment for incorporation into surgical practice, no need for the purchase any new devices and virtually no learning curve. Obstetric outcomes are often the result of the skill of the accoucheur, and we believe this technique should be added to the armamentarium of the modern obstetrician, as the number of second stage caesarean sections continue to rise. We believe that it is likely to have great potential for significant improvements in maternal and neonatal outcomes.

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