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Case Report

Two Cases of Posterior Uterine Rupture After Foetal Pillow Use; Is It Time To Think Twice About Using the Foetal Pillow?

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Abstract

Introduction: The incidence of caesarean section at full dilatation is increasing, with 10% being emergency cases. The Fetal Pillow device helps elevate the foetal head during such caesarean sections, potentially reducing blood loss and neonatal complications, however the evidence for this has recently been called into question. The authors presented 2 cases of possible complications associated with fetal pillow use.

Case 1: A 40-year-old woman with a history of one previous caesarean section opted for vaginal birth after caesarean. After induced labor, the patient experienced fetal distress during pushing, leading to an emergency caesarean section using a Fetal Pillow. During the surgery, a 10cm vertical full-thickness posterior uterine wall rupture was noted, but the baby was delivered safely. The woman recovered well, but in future pregnancies, the patient was advised to have a planned caesarean section at 37 weeks.

Case 2: A 36-year-old woman with two previous vaginal deliveries presented in spontaneous labor and ruptured membranes. An emergency caesarean section using a Fetal Pillow was performed due to a delay in the second stage of labour. Intraoperatively a 6cm vertical partial thickness posterior wall dehiscence was noted. The patient delivered a healthy baby boy with an uneventful recovery and was advised for a planned caesarean section in future pregnancies.

Discussion: Posterior uterine wall ruptures are very rare but known to occur in labour. The authors reported the first 2 cases in the literature following Fetal Pillow use, raising the question as to whether the Fetal Pillow had any role in causing this rare uterine injury. Evidence on the efficacy and safety of Fetal Pillow remains

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limited and recent concerns have led to a recall of a significant study. These complications should be reported to ensure patient safety and regulatory awareness.

Conclusion: This report presents two cases of posterior uterine wall rupture following the use of Fetal Pillow. It calls for a larger, well run, randomized control trial to analyze the safety of Fetal Pillow use and suggests that all Obstetricians should be educated on alternative strategies for foetal head disimpaction during cesarean sections.

Keywords: Foetal pillow; Uterine Rupture; Labour; Pregnancy.

Introduction

The incidence of caesarean section at full dilatation is increasing. About 10 % of all emergencies caesarean sections happen at full dilatation. Delivery of the impacted foetal head at full dilatation caesarean section can be technically challenging and can pose significant risks to the mother and baby, including brain injury, and is a common cause of litigation [1]. A deeply impacted foetal head can be encountered at 16% of full dilatation caesarean sections [2].

The Fetal Pillow® (Cooper Surgical) is a device that is inserted vaginally before starting a fully dilated caesarean section to elevate the foetal head for delivery. This contains a soft silicone balloon that is steadily inflated in an upward direction from a platform below the balloon. The evidence suggests that it can reduce uterine angle extensions, thereby reducing blood loss [3] and reduces neonatal complications as evidenced by higher APGAR scores and reduced NICU admissions [3,4] The authors described two similar cases of a posterior uterine wall rupture identified at caesarean immediately after Fetal Pillow use.

Case 1

A 40-year-old woman of Asian origin, G3P1(one first trimester spontaneous miscarriage) presented with spontaneous rupture of membranes at 36+6/40 weeks of gestation. The patient was admitted to labour ward after 24 hours of SROM for induction of labour. The patient had a history of a previous caesarean section seven years ago due to failure to progress. The patient made an informed decision and opted for vaginal birth after a caesarean section. In this pregnancy the patient developed gestational hypertension but did not require antihypertensive medication. There were no other significant risks noted antenatally throughout the course of pregnancy. The patient was induced with Oxytocin. The patient's first stage of labour lasted 8 hours. There were no CTG concerns, and labour progressed smoothly until the patient became fully dilated. After 20 minutes at full dilatation (cervix 10cm dilated, station -1, left occiput transverse position), the patient had an urge to push, and active pushing commenced. During active pushing CTG concerns (foetal bradycardia and decreased variability) arose, so, a decision was made to deliver baby in theatre via instrumental delivery or caesarean section.

In theatre, reassessment was done, vaginal examination findings were cervical dilatation 10cm, station at 0 and left occiput transverse position. As the station was still high and there were CTG concerns (ongoing foetal bradycardia), so a decision was made to proceed with a category 1 caesarean section. After spinal anesthetic, a Fetal Pillow was placed in the vagina as per the manufacturer's

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guidelines. Intraoperatively hemoperitoneum was noted. The anterior uterine wall was intact. After the delivery of the baby through the lower segment transverse incision, the uterus was exteriorized. A 10cm vertical full-thickness uterine posterior wall rupture was noted on the left side medial to the broad ligament.

A live male infant weighing 2865gm was delivered in good condition (APGAR 8 and 10) with normal cord blood gases. Surgical repair of the posterior uterine wall was done with 2 layers of continuous polyglactin sutures. Total estimated blood loss was 1000ml. The patient's immediate and long-term recovery was uneventful. The patient has been advised a consultant led antenatal care and an elective caesarean section at 37 weeks of gestation in future pregnancies.

Case 2

A 36-year-old woman of African origin, G3P2+0 presented with spontaneous onset of labour and ruptured membranes at 40+1 weeks. The patient's obstetric assessment demonstrated cervical dilatation of 3cm, regular uterine contractions of 4 in 10 minutes, and ruptured membranes with thin meconium. The patient had two previous vaginal deliveries. The patient's HIV status was positive, with an undetectable viral load otherwise, the patient's current pregnancy was uneventful antenatally. The patient was not using any medications antenatally. Oxytocin was not used at any stage of the patient's labour. There were no CTG concerns noted throughout the labour. The first stage of labour lasted for 4 hours and 30 minutes. After reaching full cervical dilatation, 1 hour was allowed for passive head descent. Reassessment after 2 hours of active pushing, demonstrated the foetal head to be in direct occiput anterior position, station at ischial spines and caput+2. A decision for a trial of instrumental delivery in theatre or emergency caesarean section was made. In theatre, reassessment was done (vaginal examination findings demonstrated cervical full dilated, station -1, direct occiput anterior position and caput+2), so, a decision was made to proceed with an emergency caesarean section. After giving spinal anesthesia, a Fetal Pillow was placed vaginally as per the manufacturer's guidelines. Intraoperatively blood-stained peritoneal fluid was observed on entering the abdominal cavity. The anterior uterine wall was intact. The baby was delivered through a lower-segment transverse incision. After exteriorization of the uterus, a 6cm vertical partial thickness posterior wall dehiscence (intact serosal layer) was noted on the right side medial to the broad ligament.

A live male infant weighing 3960gm was delivered in good condition (APGAR 9 and 10) with normal cord blood gases. Surgical repair of posterior wall dehiscence was performed in two layers with polyglactin sutures. Total estimated blood loss of 1300mls was due to trauma. The patient's immediate and long-term recovery was uneventful. The patient has been advised a consultant led antenatal care and an elective Caesarean section at 37 weeks of gestation in future pregnancies.

Discussion

There have been previous case reports of posterior uterine wall ruptures in labour [5,6] but these are the first cases reported in the literature of a posterior uterine wall rupture after the use of a Fetal Pillow (FP). The Fetal

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Pillow is intended to provide a gentle and controlled elevation of the foetal head, resulting in a safer and simpler foetal delivery [7]. The only other case reported of an anterior uterine rupture after fetal pillow use [8] suggested a possible mechanism of injury, in that elevation of the foetal head would have caused a 3-4 cm cephalad displacement and could thus shift the intrauterine pressure to the weakest point of the uterus, in these cases through the posterior uterine wall, resulting in rupture of an already fragile and stressed uterine wall [8]. In a systematic analysis evaluating the use of procedures to deliver a severely impacted foetal head at full dilatation, [9] found that there is presently insufficient evidence to warrant the use of Fetal Pillow and when alternative techniques were evaluated, reverse breach extraction has been determined to be safer than when compared to the push approach. There is also currently very little evidence of the use of FP in women with a previous caesarean section. The NICE IPG515 in 2015 stated that the insertion of a FP "should only be used with special arrangements for clinical governance and audit" as the "evidence on efficacy and safety was inadequate in quantity and quality" [10]. The second largest RCT into FP use at full dilatation was subsequently published in 2016 which recommended its use; however, this has recently been recalled due to significant concerns about the results validity. It is uncertain whether the posterior uterine wall ruptures in the patients were caused by an increase in intra-uterine pressure secondary to Fetal Pillow use or due to the fragility of the uterus during labour. However, considering the recent concerns raised about the safety of FP use, it is important that these potential complications are reported both in the literature and to the MHRA, which researchers have done.

Conclusion

The authors reported the first 2 known cases of posterior uterine wall rupture after Fetal Pillow use and at present, there seems to be insufficient data to routinely recommend FP use in all women undergoing a caesarean at full dilatation. Therefore, FP usage is not without risk and expense. The researchers would urge a bigger prospective randomized controlled trial to look more closely at the safety data for FP usage and in particular, the subgroup of women who have had a previous caesarean. What these cases demonstrate, if nothing else is that clinicians should also be regularly taught alternate strategies for foetal head disimpaction during CSFD.

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