

Feto-maternal Outcome of Reverse Breech Extraction versus Cephalic delivery of Fetal Head in Caesarean Section for Obstructed Labour

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Abstract

Introduction: Obstructed labour is an obstetrical emergency with adverse feto-maternal consequences and caesarean delivery in such cases requires skillful handling of impacted fetal head.

Objective: To guide clinician about caesarean technique that facilitates the delivery with least complications for mother and baby.

Materials and Methods: It was a randomized clinical trial with non-probability consecutive sampling conducted at Pakistan Ordinance Factories Hospital, Wah cantt from 1st July 2018 – 30th June 2020. Patients who underwent emergency cesarean section were randomized to undergo either Cephalic delivery technique for delivery impacted fetal head (Group A) or reverse breech extraction method (Group B) via lottery method. The data of 60 patients who fulfilled the inclusion criteria was analyzed using SPSS version 19. Maternal outcome measured were extension of uterine incision, blood transfusion, postpartum pyrexia, wound infection, postpartum hemorrhage and length of hospital stay. Fetal outcome measured were 5 minutes Apgar score, birth weight and NICU admission.

Results: This study showed statistically significant difference between extension of uterine incision (p-value=0.015), blood transfusion during surgery (p-value=0.021) and postpartum hemorrhage (p-value=0.020) in two groups with reverse breech extraction technique associated with less traumatic extension of uterine incision, less intraoperative transfusion and less PPH than cephalic delivery technique. Length of hospital stay was also significantly less in reverse breech extraction group (p-value=0.001). More patients had postpartum pyrexia, wound infection, low 5-min Apgar score and NICU admissions in cephalic delivery group but results were not statistically significant.

Conclusion: The results of our study recommend reverse breech extraction technique to be a safe alternative to conventional vaginal pushing of fetal head especially regarding maternal outcomes during caesarean section of patients with obstructed labour for fetal delivery.

Keywords: Obstructed labour, impacted fetal head, reverse breech extraction, caesarean section.

Introduction

Obstructed labour is an obstetrical emergency with fatal fetomaternal consequences, with caesarean section being the optimal mode of delivery in most cases.¹ Most fearsome complications of obstructed labor are uterine rupture, postpartum hemorrhage, puerperal sepsis, Vesico-Vaginal fistula (VVF), recto-vaginal fistula, all can lead to maternal death. Fetal complications include birth asphyxia, still birth, neonatal jaundice and umbilical sepsis.² Compared with vaginal delivery, however, CS is associated with higher risks of adverse fetomaternal outcome.³ Caesarean section is the delivery of fetus through surgical incision in abdominal and uterine wall, with complication rate less than 10%. The major source of morbidity and mortality can be related to sequel of excessive blood loss, infection, thromboembolic disease, anesthesia and surgical injuries.⁴

Obstructed labour is defined as no progress in labour as evident by failure of cervical dilatation or descent of presenting part through birth canal or both despite adequate uterine contractions. The surgical dilemma encountered by obstetricians in such cases is how to keep fetal and maternal morbidity to a minimum.⁵

Dystocia which complicates about 20% of all vaginal births is often diagnosed in second stage of labour when fetal head is engaged. Further impaction of fetal head may occur while attempting instrumental delivery. Therefore delivering a deeply impacted fetal head during caesarean section is associated with various complications, including fetal trauma, extension of uterine incision, excessive blood loss, bladder trauma and infection. Management of impacted fetal head during second stage caesarean requires careful and gentle technique so as to avoid adverse fetomaternal outcome. Conventional teaching suggests that inferior pole of fetus should be delivered first through lower uterine segment incision.⁶ Unfortunately obstetricians in many under resourced countries commonly face this obstetrical emergency in which lower uterine segment is markedly thinned out, which results in higher incidence of various complications.⁷

Performing a caesarean section with deeply impacted fetal head is technically challenging even for most experienced obstetricians due to lack of space between fetal head and pelvic bone.⁸ There are different techniques used by surgeons to deliver deeply engaged fetal head. Most conventional approach is push method which involves an assistant disengaging and pushing fetal head upwards vaginally. The

alternative approach is pull technique described by Patwardhan in 1956 with fetal delivery via reverse breech extraction.^{9, 10, 11, and 12,13,14,15.} Without caesarean section obstructed labour can end up in serious fetomaternal morbidity and mortality so it's a lifesaving intervention for such patients but requires expertise.^{16,17,18}

The purpose of this study was to compare two delivery techniques of fetal delivery for patients undergoing caesarean section for obstructed labour in our target population and encourage the obstetricians to adopt the method with least fetomaternal morbidity.

Materials and Methods

We conducted a randomized control study in obstetrics and gynaecology department of POF Hospital, Wah Cantt. This study included 60 patients that have been submitted for emergency lower segment caesarean section with diagnosed obstructed labour and deeply engaged fetal head over a period of two years from 1st July 2018 till 30th June 2020. Participants of study were divided into two groups A & B depending upon method used for delivery of fetus via lottery method. Ethical approval was taken. Written informed consent was obtained from all the participants and confidentiality was ensured.

Inclusion criteria:

- Term Singleton pregnancy
- Cephalic presentation
- Second stage duration of labour more than 1 hour for multigravida and more than 2 hours for primigravida without epidural analgesia.

Exclusion criteria:

- Multiple pregnancy
- Preterm labour < 37 weeks
- Non-cephalic presentation
- Previous uterine scar
- Antepartum hemorrhage
- Intrauterine fetal death
- Congenital fetal anomaly
- Chorioamnionitis

Caesarean section was carried out by senior registrar or above under regional anesthesia after antibiotic cover. Fetus was immediately handed over to pediatrician for resuscitation. Procedure notes were written by the surgeon. Postoperative hemoglobin was checked 24hrs after surgery. Similar postoperative care plan was carried out for all patients including antibiotic for 7 days, prophylactic anticoagulation,

early ambulation and analgesics. Oral intake allowed 12 hours after surgery.

Foleys catheter was retained for specific patients with bladder trauma, prolonged second stage or significant extension of uterine incision for 7-14 days.

GROUP A: (CEPHALIC DELIVERY)

Fetus was delivered by pushing the deeply engaged head through the vagina out of pelvis by assistant (pushing method) and included 30 patients.

GROUP B: (REVERSE BREECH EXTRACTION)

Fetus was delivered by surgeon who introduces his hand through uterine incision towards the upper segment, grasp a fetal leg and extract the fetus by reverse breech extraction (pulling method) and included 30 patients.

The patients were then compared regarding maternal morbidity by extension of uterine incision, intra and postoperative blood transfusion, postpartum hemorrhage, postoperative fever after first 24 hours, wound infection and duration of hospitalization. Neonatal morbidity was assessed by Apgar score at 5 minutes and admission to neonatal intensive care unit. Data will be entered and analyzed using SPSS version 19. Mean and standard deviation will be calculated for quantitative variables and frequencies will be calculated for qualitative variables. Comparison in both groups will be done by independent student t-test and chi-square test for quantitative and qualitative

variables respectively. P-value of less than 0.05 will be taken as significant.

Results

Total sixty patients with obstructed labour who fulfilled the inclusion criteria were enrolled into the study and compared for fetomaternal outcomes.

The baseline characteristics of both groups didn't differ between two groups. Fetal weight was comparable between two groups with no statistically significant difference as shown in Table 1.

Table 1: Baseline characteristics of two groups

Baseline characteristics	Group A (Cephalic delivery) Mean \pm SD	Group B (Reverse breech extraction) Mean \pm SD	P-value
Age of patient	28.63 \pm 7.75	27.63 \pm 6.74	0.128
Gestational age at delivery	2.70 \pm 2.35	2.36 \pm 2.29	0.824
Fetal weight	<3kg=04 (13.3%) 3-4kg=19 (63.33%) >4kg=07 (23.33%)	<3kg=03 (10%) 3-4kg=21 (70%) >4kg=06 (20%)	0.852

Table 2: Maternal outcome in two groups

Maternal outcomes	Number of patients in Group A (n)=30	Group A (Cephalic delivery) Mean \pm SD	Number of patients in Group B (n)=30	Group B (Reverse breech extraction) Mean \pm SD	P-value
Extension of uterine incision	YES=16 (53.33%) NO=14 (46.66%)	-	YES=06 (20%) NO=24 (80%)	-	0.015
Blood transfusion during surgery	YES=10 (33.33%) NO=20 (66.66%)	-	YES=02 (6.66%) NO=28 (93.33%)	-	0.021
Postpartum pyrexia	YES=09 (30%) NO=21 (70%)	-	YES=04 (13.33%) NO=26 (86.66%)	-	0.209
Wound infection	YES=06 (20%) NO=24 (80%)	-	YES=04 (13.33%) NO=26 (86.66%)	-	0.731
Postpartum hemorrhage	YES=11 (36.6%) NO=19	-	YES=04 (13.33%) NO=26	-	0.020

Hospital stay(days)	(63.33%) -	3.56±1.19	(86.66%) -	2.53±0.68	0.001
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Discussion

The aim of this randomized control trial was to find an alternative safe approach for fetal delivery in obstructed labour against the routinely practiced cephalic delivery technique(push method) for better fetomaternal outcome.

There was no statistically significant difference between baseline characteristics of two groups as shown in table 1.

Extension of uterine incision was observed in 16 (53.33%) patients in group A, who underwent and 6 (20%) patients in group B which was statistically significant with p-value being 0.015. Another prospective randomized control trial of 192 patients conducted by Nooh A et al in 2017 showed traumatic elongation of uterine incision in 47.9% in cephalic delivery group and 18.8% of women who underwent reverse breech extraction.¹⁹ These findings were supported by another retrospective trial done by Lenz F et al on 137 patients which showed extension of uterine incision in 35.4% of patients who underwent cephalic delivery versus 9.1% in women who had reverse breech extraction.²⁰ In contrast another study showed incision extension in 5(25%) of patients who underwent cephalic delivery compared to 2(10%) patients who underwent reverse breech extraction with p-value of 0.21.⁵

Blood transfusion was done in 10 (33.33%) of patients in group A and only 02(6.66%) of patients in group B in our study with statistically significant p-value of 0.021. A prospective randomized control trial by Saleh et al. showed incidence of hemotransfusion to be 5% in reverse breech extraction and 25% in abdominovaginal technique.²¹ Likewise Nooh et al reported blood transfusion in 2.1% of reverse breech extraction group and 11.5% of cephalic delivery group.¹⁹ Another study showed intraoperative blood transfusion to be done in 10 patients (50%) in cephalic delivery and 2patients (10%) in reverse breech extraction group with p-value of 0.005.⁵

In our trial 09(30%) patients developed pyrexia 24hours after surgery in patients who underwent push technique and 04 (13.33%) in patients with pull technique for fetal delivery with p-value being 0.209. In another retrospective on 59 cases Bastani P et al. showed incidence of postpartum hyperthermia to be 10.3% in reverse breech extraction group and 53.3% in abdominovaginal delivery group.²² Levy et al. in his

retrospective study on 48 patients showed 5% and 46% incidence of postpartum pyrexia in reverse breech extraction and cephalic delivery patients respectively.²³

In our study 06(20%) patients developed wound infection in group A and 04 (13.33%) patients in group B with no statistically significant difference in two groups. In contrast Ashraf Mohamed et al in their study showed statistically significant difference between two groups regarding wound infection with (10)50% in cephalic delivery and (2)10% in reverse breech extraction with p-value of 0.005.²⁴ Another study showed incidence of wound infection to be 20% in cephalic delivery and 8% in reverse breech group.⁴ Statistically significant difference in postpartum hemorrhage was seen between two groups with p-value of 0.020 and pull technique associated with less incidence. Another study showed incidence of PPH being 35% in cephalic delivery group and 20% in reverse breech extraction group with p-value of 0.288.²⁴ Another trail showed 7 patients (28%) had PPH in cephalic delivery group and 3 patients (12%) in reverse breech extraction group.⁴ In contrast one study showed 7 patients(35%) had PPH in cephalic group and 4 patients (20%) in reverse breech extraction group with p-value being 0.288.⁵

Length of hospital stay was 3.56±1.19 days in push technique and 2.53±0.68 days in pull method with p-value of 0.001 due to more complications associated with push method of fetal delivery. Our findings were consistent with another study which showed mean length of hospital stay to be 5.40 days in cephalic delivery group and 3.95 days in reverse breech delivery group with p-value of 0.018.⁵

13 (43.33%) of neonates got admitted in NICU in group A compared to 6 (20%) in group B with non-significant p-value. Birth weight was comparable between two groups with no statistically significant difference. Another study showed NICU admission to be 25% in cephalic delivery group and 10% in reverse breech extracted babies with p-value being 0.211.²⁴ One other study on 50 patients showed 8 babies got admitted in NICU of cephalic delivery group and 3 in reverse breech extraction group.⁴

5-minute Apgar score less than 7 was seen in 12 (40%) of neonates in group A compared to 7 (23.33%) in group B. Our findings were in contrast to one previous study which showed statistically significant difference between 5-minutes Apgar score with p-value of 0.003 in favour of reverse breech delivery ²⁴. In contrast

another study showed 5-minutes Apgar score of < 7 in 8(32%) of babies who got delivered by cephalic method and 4(16%) of babies who underwent reverse breech extraction with p-value of 0.185.4

Conclusion

The results of our study recommend reverse breech extraction technique to be a safe alternative to conventional vaginal pushing of fetal head especially regarding maternal outcomes during caesarean section of patients with obstructed labour for fetal delivery.

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