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ORIGINAL ARTICLE

Reverse Breech Extraction Versus Disimpaction Of The Head During Cesarean Section For Obstructed Labor

Abdel-Mageed Mohamoud Sarhan¹, Hussein Mohamed El-Sayed Abdel-Dayem¹, Marwa Mokhtar Farag Attia^{2*}⁽¹⁾ Egypt, Zagazig University, Faculty of Medicine, Obstetrics and Gynecology Department⁽²⁾ Libya, Sirt University, Faculty of Medicine, Obstetrics and Gynecology Department***Corresponding author:**Marwa Mokhtar Farag Attia
Libya, Sirt University, Faculty
of Medicine, Obstetrics and
Gynecology Department
e-mail:drmarwa8181@gmail.com

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ABSTRACT

Background: Obstructed labor with the fetal head impacted in the pelvis is an obstetric complication that requires cesarean delivery with skillful handling to avoid serious maternal and neonatal outcomes complications. So, the extraction and delivery of the fetal head can be done by reverse breech extraction. **Objective:** The objective of this study was to compare the maternal and fetal outcome of the reverse breech extraction versus standard method in Caesarean section for obstructed labor with deeply engaged fetal head. **Methods:** This prospective study was carried out at Zagazig University Hospital, Egypt during the period from January 2017 to October 2017, and this study included (40) patients submitted in emergency caesarian section with deeply engaged fetal head. **Results:** showed that complication was statistically significant decrease in reverse breech extraction in comparison to standard group with intra operative and postoperative maternal complication, mean length stay in hospital and wound infection. **Conclusion:** Reverse breech extractions is an attractive and safe alternative to the standard method for intra-operative disengagement of a deeply impacted fetal head in reducing maternal and fetal morbidity.

Keywords: Reverse breech extraction; caesarean section; obstructed labor

INTRODUCTION

Obstructed labor is defined as no progress in labor as shown by the failure of cervix to dilate or failure of fetal presenting part to descend through the birth canal or both despite adequate uterine contractions [1 - 3].

Obstructed labor is most frequently due to the mechanical causes: a mismatch between fetal size and the mother's pelvis (feto-pelvic disproportion) or, more precisely, the size of the fetal presenting part and the mother's pelvis [4]. Malposition of the fetal head as in occipito-posterior and deep transverse arrest positions may also cause obstruction.

Malpresentations, in particular a brow presentation or a shoulder presentation in a transverse or oblique lie, are further causes of obstruction. In rare cases, pathological enlargement of fetal head (as in hydrocephalus), locked twins or pelvic tumors can cause obstruction. Failure of the cervix to

dilate during labor despite adequate uterine contractions is rarely secondary to cervical scarring causing stenosis. This could be the result of cervical amputation or cone biopsy. Different causes of obstructed labor may co-exist. However, the common causes of this condition are cephalopelvic disproportion (CPD), fetal malpositions and malpresentations [5].

In cases of obstruction, late in second stage of labor, the dilemma which obstetricians frequently encounter is how to keep the maternal and neonatal morbidity, as well as mortality, to a minimum when given a choice between difficult instrumental delivery and caesarean section (CS). In these circumstances, instrumental delivery may fail, or cause fetal and maternal complications at the time when CS stands as a relatively safer option, and the proportion of second stage CS is, therefore, on the rise [6].

However, late in second stage of labor, emergency CS is risky as the fetal head is deeply impacted with limited space for trying to disengage it abdominally. This makes it difficult for the surgeon to safely deliver the fetal head, especially when the lower uterine segment is already edematous, thin and overstretched [7, 8]. There was a high risk in inadvertent extension of uterine incision and injury to uterine vessels, ureters and urinary bladder with the resultant increased blood loss and prolonged operative time when more operative steps are performed [6].

Two distinct techniques have been suggested to avoid the difficulty of the fetus delivery and reduce the fetal and maternal risks during CS for late obstruction in 2nd stage labor; the 'standard approach' or the 'reverse breech extraction approach' [9].

The aim of this study was to compare the maternal and fetal outcome of the reverse breech extraction versus standard method in Caesarean section for obstructed labor with deeply engaged fetal head

PATIENTS AND METHODS

This prospective study was carried out at Zagazig University Hospital, Egypt during the period from January 2017 to October 2017, this study included (40) patients submitted in emergency caesarian section with deeply engaged fetal head.

All the patients had singleton pregnancies in the second stage of labor ≥ 1 h (multigravida) or ≥ 2 h (Primigravida). Fully dilated cervix without epidural analgesia. All patients had a continuous fetal monitoring and CTG reading during 2nd stage of labor till delivery.

All patients were diagnosed as having obstructed labor which requires abdominal delivery (CS). All patients were subjected to complete history (age, last menstrual cycle, ante natal care ,parity, all investigation (HB), clinical examination, abdominal examination , per vaginal examination , vital sign (BP, temperature, and the pulse).

Written informed consent was obtained from all participants and the study was approved by the research ethical committee of Faculty of Medicine, Zagazig University. The work has been carried out in accordance with

The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans

Patients were divided into 2 groups

Group1 (control): (n=20) (push method) in whom extraction of fetus was done by push method and extracted as vertex.

Group2 (study group): (n=20) is (pull method) consists of all cases in which extraction of fetus was done by reverse breech extraction technique.

Inclusion criteria:

Pregnant women with singleton, term (37-42 weeks), with cephalic presentation, actively pushed with uterine contractions in the second stage of labor takes ≥ 1 h (multigravida) or ≥ 2 h (primigravida) with obstructed Labor whom failed for instrumental vaginal delivery and required abdominal delivery with CS.

Exclusion criteria:

Women with multiple pregnancy, preterm (<37 weeks gestation), non-cephalic presentation or previous uterine scar excludes, intrauterine fetal death, congenital fetal anomaly.

Preoperative preparations and anesthetic techniques were similar in all cases in both groups.

The decision for the performance of the reverse breech extraction or to go on with push approach was taken in the operating room by the operating surgeon.

Reverse breech extraction Technique (Pull Method) [9, 10]

After opening the uterus, the surgeon introduces a hand through the uterine incision towards the upper segment, grasps both feet, and gently pulls the fetus up to extract it. In most of the circumstances, the fetal feet can be easily reached through a transverse uterine incision.

Push method [10 – 12]

After opening the uterus, the patient is positioned in the supine position with the knees flexed and the lower legs abducted by two assistants. One of the assistants under sterile condition introduces his gloved finger into the vagina and then pushes the head up disimpacting it. The surgeon then introduces his hand into the uterus between the fetal head

and the uterine wall, maneuvering his hand downwards to get beneath the fetal head as the assistant disimpacts the fetal head from below. The patient's legs are then returned to normal position. The Surgeon then delivers the fetal head and the rest of the fetus as it is performed in routine caesarean section

After fetal delivery and clamping of the umbilical cord, each woman received antibiotic prophylaxis (1 g of intravenous [IV] cefazolin). The placenta was then removed via gentle traction and exterior massage of the uterus; it was removed manually only if retained for more than 5 minutes.

The uterine cavity was closed in (2) layers with Vicryl No. zero sutures. Subcutaneous tissue was irrigated thoroughly with sterile saline before closure. After skin closure, the incision was dressed with a sterile bandage, which was removed on the second postoperative day. Per hospital policy, patients received 1 g of IV cefazolin 8-hourly (the first dose was administered intraoperatively after delivery). Patients without complications were discharged on the third or fourth postoperative day 0

We observed the operation time and intraoperative complications such as uterine rupture and extension of the incision tear. Blood loss, postpartum hemorrhage fetal birth weight, gender, Apgar score and neonatal morbidity were noted. Blood hemoglobin Post-operative care was similar in both groups if needed woman were given anti-thromboembolic measures, according to hospital protocol. Hemoglobin checked 24h postoperatively.

Factors which determined the need for blood transfusion included hemodynamic state (blood pressure, heart rate and urine output) as well as nature, the rate and amount of blood losses.

Primary outcome measure was to assess effectiveness of the reversed breech extraction in caesarean section for obstructed labor, and compare it with the standard approach of pushing the fetal up through the vagina.

Secondary outcome measures included extension of uterine incision, Intraoperative and postoperative blood loss, blood

transfusion, total operative time (from skin incision to skin closure), extent of fall in maternal hemoglobin postoperatively, fetal birth weight, Apgar score < 7 at 1 and 5 minutes, admission to special care baby unit (SCBU), other maternal and fetal morbidity and mortality and finally length of hospital stay, fetal injury during Cs.

Statistical analysis

Data were collected, tabulated and analyzed by SPSS 20, software for PC. $P < 0.05$ was considered as the significance level.

RESULTS

Table (1), showed that there was a statistical significant increase in gestational age and HB post operation in control group compared with reverse breech extraction, but there was no statistical significant deference according to sex, age and HB pre-operation in the studied groups. **Table (2)**, showed that there was no statistically significant deference regarding CPD and malposition in the studied groups. **Table (3)**, showed that there was a statistical significant increase in blood transfusion in control group compared to reverse breech extraction but there was no statistical significant deference regarding extension of uterine incision, uterine artery laceration, brood ligament hematoma, bladder injury, atonic PPH, need for hysterectomy, blood lose, operative time and total complication in the studied groups. **Table (4)**, showed that there was a statistical significant decrease in reverse breech extraction group regarding mean length of hospital stay. There was a statistical significant increase in wound infection and mean length of hospital in control group in control group, but there was no statistical significant deference regarding postpartum hemorrhage, blood transfusion, pyrexia and wound infection in the studied groups. **figs (1,2)**, showed there was a statistical significant decrease in apgar score at 1 and 5 min in reverse breech extraction group compared to control group, but that there was no statistical significant difference regarding birth weight, still birth, admission, fetal injury, fetal distress, meconium stained and death in the studied groups.


Table (1): Comparison between control group and reverse breech extraction as regards demographic data.

	Control group (N0.=20)				Reverse breech extraction (N0.=20)				Independent t-test/ Chi square test	
	Mean	SD	Min	Max	Mean	SD	Min	Max	t/X ²	P-value
Fetal sex										
Female	10		50.0%		10		50.0%		0.000	1.000
Male	10		50.0%		10		50.0%			
Gestational age(wks)	38.95	1.64	37	41	37.45	1.96	34	40	2.627	0.012
Mother age(yr)	29.45	6.07	23	41	30.85	7.34	20	44	-0.657	0.515
HB pre operation (g %)	10.70	1.56	8	13	11.20	1.15	9	13	-1.153	0.256
HB post operation (g %)	9.9	1.07	8	10	11.45	0.82	10	13	-5.126	<0.001
Parity										
Nil	10		50.0%		10		50.0%		5.778	0.216
Once	5		25.0%		4		20.0%			
Twice	4		20.0%		2		10.0%			
Three time	1		5.0%		0		0.0%			
Four times	0		0.0%		4		20.0%			

HB: Hemoglobin

Table (2): Comparison between control group and reverse breech extraction as regards CPD and mal position.

	Control group (N0.=20)		Reverse breech extraction (N0.=20)		P-value
	PG 10	MP 10	PG 10	MP 10	
	No. (%)	No. (%)	No. (%)	No. (%)	
CPD	3 (30%)	4(40%)	2 (20%)	7 (70%)	0.120
Mal position	7 (70%)	6 (60%)	8 (80%)	3 (30%)	

CPD; cephalo-pelvic disproportion, MP; multipara , PG; primigravida

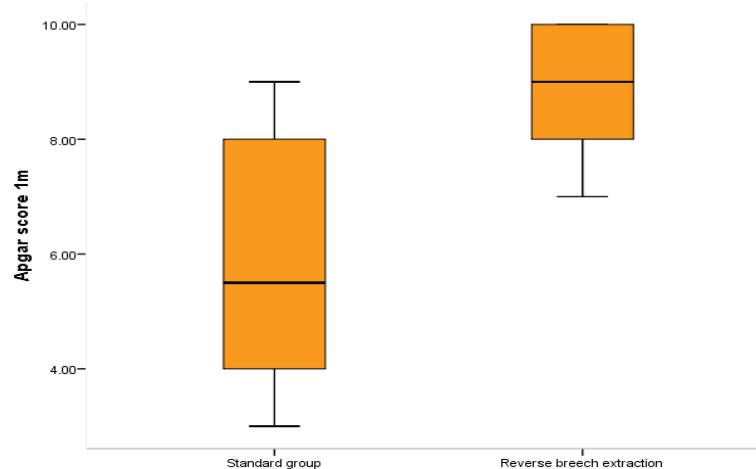
Table (3): Comparison between control group and reverse breech extraction as regards intra operative data.

	Control group (N0.=20)		Reverse breech extraction (N0.=20)		Independent t-test/ Chi square test	
	No.	%	No.	%	t/X ²	P-value
Extension of uterine incision	5	25%	2	10%	1.558	0.211
Uterine artery laceration	3	15%	1	5%	1.111	0.291
Brood ligament hematoma	1	5%	0	0%	1.026	0.311
Bladder injury	1	5%	0	0%	1.026	0.311
Atonic PPH	5	25%	2	10%	1.558	0.211
Blood transfusion needed	10	50%	2	10%	7.619	0.005
Need for hysterectomy	1	5%	0	0%	1.026	0.311
Blood lose	11	55%	6	30%	2.558	0.110
Total complication	12	70%	10	50%	0.404	0.525
No complication	8	30%	10	50%	0.404	0.525
Operative time						
Mean ±SD	33.00	11.85	29.50	5.83	1.185	0.243
Range	20	55	20	40		

CS: cesarean section

Table (4): Comparison between control group and reverse breech extraction as regards post-operative data.

	Control group (N0.=20)		Reverse breech extraction (N0.=20)		Independent t-test/ Chi square test	
	No.	%	No.	%	t/X ²	P-value
Post-partum hemorrhage	7	35.0%	4	20.0%	1.129	0.288
Blood transfusion	5	25.0%	3	15.0%	0.625	0.429
Pyrexia	3	15.0%	1	5.0%	1.110	0.291
Wound infection	10	50.0%	2	10.0%	7.619	0.005
Mean length stay in hospital (day)						
Mean ±SD	5.40	2.09	3.95	1.61	2.463	0.018
Range	3	10	2	7		

**Figure (1):** Apgar score at 1 min regarding standard group and reverse breech extraction group

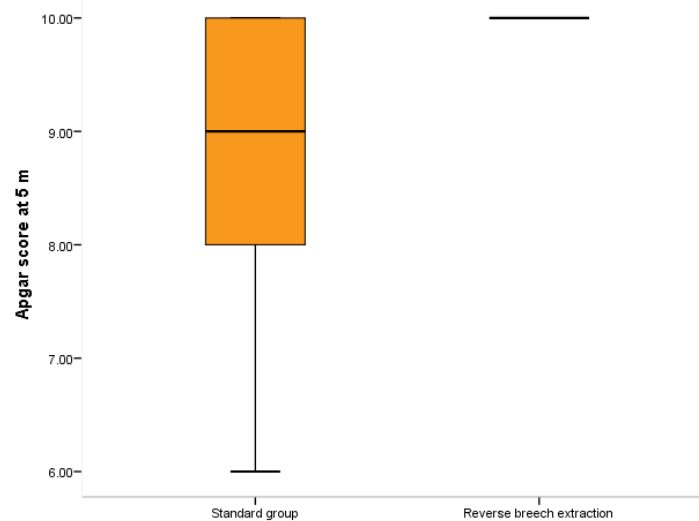


Figure (2): Apgar score at 5 min regarding standard group and reverse breech extraction group

DISCUSSION

The pushing of a fetal head through a vagina might prevent extension of the uterine incision and tears at the lower segment by avoiding manipulation of surgeon's hand when attempting to disengage the impacted fetal head from the pelvis, but this technique was associated with higher rate of extension of uterine segment, bleeding, requirement of blood transfusion and higher incidence of postpartum hemorrhage, also a non-sterile nature of this technique is associated with high rate of ascending infection also it associated with increased period of hospitalization [13].

Our study revealed that there was no significant difference in the studied groups according to the age where the obstructed labor mostly occurred in women between 25 year and > 40year and this was in agreement with the study of **levy et al. [10]**.

According to the parity, there was no significant difference in the studied groups 40year and this was in agreement with the study of **Levy et al. [10]**.

The main cause of obstructed labor in this study is CPD, where in reverse breech extraction groups it was (90%) but in control groups it was (70%), which agree with the study of **Bhosale et al. [14]** and **Nooh et al. [15]**.

In our study, there was a significant difference in the intraoperative complications as extension to the lower uterine segment and cervix in the pushing method) compared to the (pulling method), this mostly due to manipulation in the thin elongated lower uterine segment, this was in agreement with **Levy et al. [10]** and **Berhan and Berhan [16]**.

In the present study, the reverse breech extraction group was associated with statistically significant lower mean blood loss intra-operatively than control group, this results was in agreement with the study of **Frass et al. [3]** and **Bastani et al. [17]**. The mean fall in HB postoperatively was less in the in reverse breech extraction approach group than in standard approach group (mean 11.45 VS mean 9.9 respectively), and the difference between two groups was statistically significant ($p < 0.001$), which agreement with the study of **Frass et al [3]** and **Nooh et al. [15]**.

In our study, there was a shorter mean operative time was reported in reverse breech extraction approach group of this series in comparison to the standard approach group (33.0 ± 11.85 min VS 29.50 ± 5.83 min) and the difference between two groups was statistically highly significant ($p = 0.243$). This matches very well with the study of **Frass et al. [17]** and **Veisi et al. [18]**.

In this study, pyrexia developed in 1(5%) case in the reverse breech extraction approach group VS 3cases (15%) in the standard approach group, and the difference between two groups was statistically highly significant ($p= 0.291$). This agreement with the study of **Fasubaa et al. [19]**.

Regarding Wound infection there was a highly statistical significant difference between the studied groups which coincide with the study of **Baloch et al. [20]**.

In this study, regarding the mean length of hospitalization period was (3.95 ± 1.61 days) in the reverse breech extraction group VS (5.40 ± 2.09 days) in the control group, and there was a highly statistical significant difference in the studied groups ($p=0.018$), which was also reported by **Fasubaa et al. [19]**. While **Frass et al [3]**, reported that there was no statistical significant difference in the length of hospital stay between the two groups of their study, this difference may be due to the reference treatment or standard of care in their study.

This study reported one case fetal injury (hip dislocation) in reverse breech extraction approach group which agreement with the study of **Fasubaa et al. [19]** and disagree with study of **Frass et al. [3]** and **Kadham [21]**, which they reported no fetal injury in their studies.

As regard the apgar score, this study showed that a high statistical significant decrease in reverse breech extraction in comparison to the control group, where the apgar score <7 at 1 minutes was (mean ± 9 VS mean ± 5.5 respectively) ($p=0.001$), and at 5 minutes was (mean ± 10 VS mean ± 9 respectively), and there was a statistical significant difference in the studied groups ($p=0.003$), which in agreement with the study of **Nooh et al. [15]**.

This current study showed that postpartum hemorrhage decrease in the level of HB, which was more in the control group than the reverse breech extraction group and this may be due to the increase in the intra partum hemorrhage and blood loss in the control group, which in agreement with the study of **Frass et al. [3]**.

CONCLUSION

Reverse breech extractions is an attractive and safe alternative to the standard method for intraoperative disengagement of a deeply impacted fetal head in reducing maternal and fetal morbidity.

No Conflict of Interest

No financial disclosure

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