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# Techniques for Assisting Difficult Delivery at Caesarean Section

**A.A.A.Elshaarawy, N.G.ElOrabi, M.A.Mahmoud and Y.S.Idris**
Obstetrics & Gynecology,Dept.,Faculty of Medicine, Benha Univ., Benha, Egypt
Email: ahmedshaarawy189@gmail.com

**Abstract**

Background: In order to perform a caesarean section, incisions are made in the mother's abdominal wall and uterus. C-sections are more dangerous than natural deliveries, yet they are still the norm. And because of the shorter recovery time, mothers may go home after a vaginal birth sooner. However, C-sections may save the lives of mothers who are at risk for problems and assist them escape potentially fatal circumstances during childbirth. Since the introduction and refinement of various methods, problems during childbirth have been mitigated and the rate of birth defects decreased. The purpose of this study was to evaluate the efficacy of various foetal delivery aids and the risks they pose to the woman and baby in the event of a caesarean section birth. Methods: One hundred mothers who had planned or unexpectedly difficult caesarean births were included in this prospective, observational, clinical research. Patients were chosen from the Benha University Hospitals Obstetrics and Gynecology Inpatient Clinic between April 2021 and September 2021. There were two categories of women: Fifty women in Group I had a breech baby removed from the back. Fifty ladies in Group 2 had their heads pushed on. In terms of intra-operative results, the percentages of group II (50%) and group I (20%) were substantially greater than those of group I (0%). Group II had double the rate of intraoperative blood transfusion as Group I (60% vs. 20%). As expected, the average blood loss in group II (1062 ml) was much larger than in group I (501 ml) (982 ml). Additionally, the mean operating time in group II was 61 minutes, which was almost twice as long as group I's 27 minutes (52 minutes). When comparing the bladder damage rates between the two groups, there was no discernible difference. When comparing groups I and II based on postoperative outcomes, group II had a considerably longer median hospital stay (3 days vs. 2). (2 days). No differences were seen between the groups in terms of postpartum bleeding, need for a blood transfusion, or wound infection. The variation in Apgar scores at 1 minute was substantially larger in group I (6-9) than in group II (0-5). (5 – 8). Group I also had a far wider range of Apgar scores at 5 minutes (6-9 vs. 0-5) than Group II did (4 – 9). Regarding admittance to a neonatal intensive care unit, there was no discernible difference between the two groups. When it comes to extracting a severely impacted baby head during intrapartum caesarean delivery, the reverse breech approach is linked with less maternal morbidity than the head pushing method. Since the reverse breech surgery has been shown to have positive outcomes for both the mother and the baby, it is recommended for usage during late-stage pregnancies when the fetus's head is profoundly affected after a caesarean section.

**Key words**: Techniques - different assistive methods - Difficult Delivery - Caesarean Section.

## 1. Introduction:

While obstructed labour (OL) is not a significant cause of death among mothers in industrialised nations, it is a serious problem in low-income regions.

In poor nations, OL is responsible for around 8% of maternal deaths.

The prevalence of OL, however, varies greatly from one region to another, from 0.8% to 12.2%.

Among all diseases and disorders, OL accounted for 0.5% in GBD 1990, and it was responsible for 22% of all maternal problems.

One of the three leading causes of perinatal death, with a case fatality rate of 87-100%, it accounts for 39% of all obstetric patients admitted to hospitals in resource-poor nations [1].

C-section, or caesarean delivery, is a surgical operation used when a vaginal birth cannot be achieved for medical reasons.

During caesarean section, incisions are made in the lower abdomen and uterus to facilitate the delivery of the baby.

The decrease in maternal and infant mortality over the last decade has contributed to its rising incidence in both developed and developing nations [2].

The use of caesarean sections is on the rise, and this procedure has been linked to serious psychological and physical problems for mothers later on.

It is not known how surgical vaginal births and CS at full dilation compare in terms of morbidity, although both procedures have serious issues that need expert ability and understanding to minimise possible adverse effects.

With ongoing demands to lower elective CS rates, both are likely to remain a regular concern for obstetricians for the foreseeable future.

Due to a lack of supporting data, no one method of CS delivery at complete dilatation can be endorsed [3].

Numerous methods have been suggested to aid in the delivery of the foetal head during a term caesarean section (37 to 41 weeks of pregnancy).

The method used is determined on where the foetal head is.

Both the head push and the reverse breech extraction methods are used [4].

Even for seasoned obstetricians, it might be technically difficult to perform a caesarean section including the extraction of a severely impacted foetal head from the maternal pelvis.

Since the highly affected foetal head fits so closely against the bone and muscular maternal pelvis, it is difficult for the surgeon to disengage it by hand.

Unintentional extension of the uterine incision into the vascular wide ligament, longer operation durations, and postpartum haemorrhage are only some of the

increased maternal hazards connected with this treatment.

Also discussed are the causes of increased neonatal hospitalisation rates, including significant problems such as skull injuries leading to cerebral haemorrhage and infant hypoxia [5].

The obstetric emergency of a profoundly impacted foetal head necessitates a safe delivery method to avoid negative maternal and newborn outcomes.

When it comes to a challenging foetal birth, head pushing is the most usual method used [6].

This study aimed to examine the effects of caesarean section problems on both the mother and the foetus by comparing the outcomes of various assisted foetal delivery techniques.

## 2. Patients and Methods

**Sample size calculation:**

- 100 pregnant women
- This prospective, observational, clinical study was carried out on 100 women whose Women undergoing a caesarean birth with anticipated/possible difficulty in delivering the fetus.

**Types of interventions**

**Use of reverse breech extraction for obstructed labour:**

Performed by opening the uterus high to reach into the upper segment for a fetal leg, and by applying gentle traction on the leg until another leg appeared. Then both legs are held together and the body of fetus could be delivered in a way similar to breech delivery.

**Head push at caesarean section for obstructed labour:**

Could be tried by either slipping of surgeon hand deeply into the lower uterine segment between the symphysis pubis and fetal head with gentle elevation of fetal head with the fingers and palm through the incision, with accepting the probability of lower uterine segment tears. However, if the need for assistance with a hand from below is recognized before the Cesarean is taken, the legs of the lady can be placed in a supine frog-leg or modified lithotomy position. The assistant pushing the head up from the vagina (push technique) should try to flex the fetal head. If possible, three or four fingers or a cupped hand or the palm of the hand should be used to apply force widely across the presenting part to avoid the risk of fetal skull fracture.

**Inclusion criteria :**

- Advanced labor with cervical dilatation and impacted fetal head in maternal pelvis.
- All woman were diagnosed as having obstructed labor that require abdominal delivery by cesarean section.

**Exclusion criteria :**

- Maternal medical disorders as: hypertension, diabetes mellitus, hepatic, cardiac, renal, autoimmune diseases (antiphospholipid syndrome, Systemic lupus erythematosus) & anemia with pregnancy.
- Previous Uterine Scar.

**Methods:**

The study was approved by local ethics committee of Benha faculty of Medicine and written informed consent was obtained from all patients with singleton living fetuses with vertex presentation then they were subjected to the following:

**A detailed history taking**: personal, menstrual, obstetric, past, present and family history.

**2- Physical examination:** general, abdominal (obstetric) & pelvic examinations were done

**3- Routine baseline investigations**: complete blood picture, Rhesus Factor (Rh), fasting blood sugar, 2-hour postprandial blood sugar, liver functions, kidney functions & urine analysis.

**Ultrasound:**

**Ultrasound in order to assess the following:**

- Gestational age determination.
- Fetal weight estimation.
- Placental site and grading.
- Fetal Biophysical profile scoring system.
- Aminotic fluid volume (oligohydraminos was diagnosed if the largest vertical pocket < 2cm)

-Parameters of biophysical profile (fetal movements, fetal tone, fetal breathing and amniotic fluid volume) was assessed

**Types of outcome measures**

**Primary outcomes**

Infant birth trauma (any of: subdural or intracerebral haemorrhage, spinal cord injury, basal skull fracture, other fracture, and peripheral nerve injury).

**Secondary outcomes**

**Intraoperative maternal complications**

- Extension of uterine incision
- Injury of urinary bladder
- Rupture of uterus
- Intraoperative Blood transfusion
- Mean blood loss at caesarean (mL)
- Operative time (duration of Surgery)

**Postoperative maternal complications**

- postpartum hemorrhage
- Blood Transfusion
- Mean fall in Hb/dl
- Wound infection
- Mean hospital Stay

**Outcome measures for the infant**

- Average Apgar score 1min, 5min
- Admission to neonatal special care or intensive care unit

**Results and statistics analysis:**

Analysis of data was done by IBM computer using SPSS (statistical package for social science version 20) as follows: Description of quantitative variables as mean, SD and range. Description of qualitative variables as number and percentage. **Chi-square test**, **Fisher exact test, Unpaired t-test, Correlation coefficient test**, **ROC (receiver operator characteristic)** curve were used. **Sensitivity** = true +ve /true +ve + false –ve = ability of the test to detect +ve

cases. **Specificity** = true -ve/true-ve+ false +ve = ability of the test to exclude negative cases. **PPV** (**positive predictive value**) = true+/true+ve+false +ve = % of true +ve cases to all positive. **NPV (negative predictive value)** = true-/true-ve + false –ve = % of the true –ve to all negative cases. A probability value (p value) more than 0.05 was considered to be not significant , P value less than 0.05 was considered to be statistically significant & p value less than 0.001 was considered to be statistically highly significant.

**3. Results**

Birth trauma and extension of uterine incision were significantly higher in group II (50.0% for each) than group I (20.0% for each). P-value was 0.002. Also, intraoperative blood transfusion was significantly higher in group II (20.0%) than group I (6.0%); P-value was 0.037. The mean blood loss was significantly higher in group II (1062 ml) than group I (982 ml); P-value was 0.046. In addition, the mean operative time was significantly higher in group II (61 minutes) than group I (52 minutes); P-value was <0.001. No significant difference was observed between both groups regarding bladder injury (P-value = 0.495) **Table (1).**

**Table (1)** Intra-operative findings in both groups.

| | | **Group I (n = 50)** | **Group II (n = 50)** | **P-value** |
|---|---|---|---|---|
| **Birth trauma** | n (%) | 10 (20.0) | 25 (50.0) | **0.002** |
| **Uterine incision extension** | n (%) | 10 (20.0) | 25 (50.0) | **0.002** |
| **Bladder injury** | n (%) | 0 (0.0) | 2 (4.0) | 0.495 |
| **Rupture of uterus** | n (%) | 0 (0.0) | 0 (0.0) | - |
| **Intra-op blood transfusion** | n (%) | 3 (6.0) | 10 (20.0) | **0.037** |
| **Blood loss (ml)** | Mean ±SD | 982 ±138 | 1062 ±242 | **0.046** |
| **Operative time (min)** | Mean ±SD | 52 ±5 | 61 ±5 | **<0.001** |

Chi-square or Fisher's exact test was used for categorical data. Independent t-test was used for numerical data

The median hospital stay was significantly higher in group II (3 days) than group I (2 days). P-value was <0.001. No significant differences were noted between both groups regarding post-partum hemorrhage (P-value = 0.487), blood transfusion (P-value = 0.218), and wound infection (P-value = 1.0) **(Table 2)**

**Table (2)** Post-operative findings in both groups

| | | **Group I (n = 50)** | **Group II (n = 50)** | **P-value** |
|---|---|---|---|---|
| **Post-partum hage** | n (%) | 3 (6.0) | 6 (12.0) | 0.487 |
| **Blood transfusion** | n (%) | 4 (8.0) | 8 (16.0) | 0.218 |
| **Wound infection** | n (%) | 1 (2.0) | 2 (4.0) | 1.0 |
| **Hospital stay (days)** | Median (range) | 2 (2 - 4) | 3 (2 - 5) | **<0.001** |

Chi-square or Fisher's exact test was used for categorical data. Mann Whitney U test was used for hospital stay

The range of Apgar score at 1 minute was significantly higher group I (6 – 9) than group II (5 – 8); P-value was < 0.001. Also, the range of Apgar score at 5 minutes was significantly higher group I (6 – 9) than group II (4 – 9); P-value was 0.023. No significant difference was observed between both groups regarding NICU admission (P-value = 0.218) **Table (3) & fig (1)**.

**Table (3)** Fetal outcome in both groups

| | | **Group I (n = 50)** | **Group II (n = 50)** | **P-value** |
|---|---|---|---|---|
| **Apgar 1m** | Median (range) | 8 (6 - 9) | 8 (5 - 8) | **<0.001** |
| **Apgar 5min** | Median (range) | 9 (6 - 9) | 9 (4 - 9) | **0.023** |
| **NICU admission** | n (%) | 4 (8.0) | 8 (16.0) | 0.218 |

Mann Whitney U test was used for Apgar score. Chi-square test was used for NICU admission

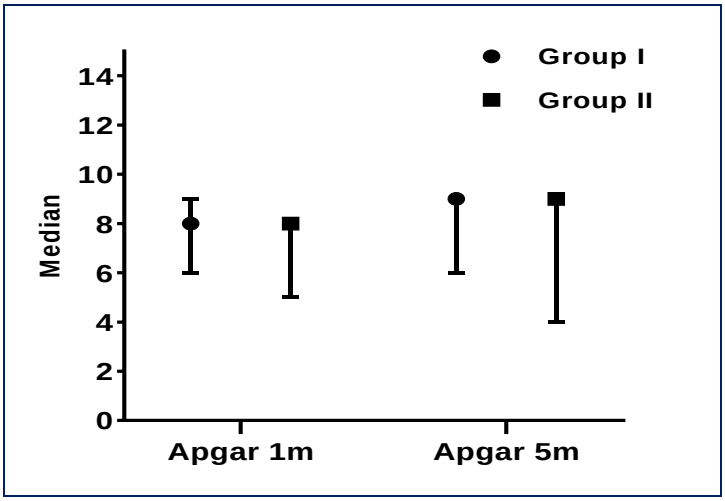


**Fig. (1)** Apgar score in both groups

**4. Discussion**

When comparing groups I and II, this study indicated that intra-operatively, group II had considerably more birth trauma (50.0%) and uterine incision extension (20.0%) than group I (100.0%).

Group II had double the rate of intraoperative blood transfusion as Group I (60% vs. 20%).

As expected, the average blood loss in group II (1062 ml) was much larger than in group I (501 ml) (982 ml).

Additionally, the mean operating time in group II was 61 minutes, which was almost twice as long as group I's 27 minutes (52 minutes).

When comparing the bladder damage rates between the two groups, there was no discernible difference.

Consistent with the findings of Lenz et al. [7], who conducted a retrospective cohort study on the mother and newborn outcome of reverse breech extraction of an impacted foetal head after caesarean section at a more advanced stage of labour.

Maternal and newborn risks are greatly increased during difficult foetal head extractions.

When compared to the head-pushing approach, the reverse breech technique was shown to have much lower rates of uterine incision extensions, shorter operation times, and less operating blood loss.

Thus far, there have been no reports of any statistically significant variations in newborn outcomes.

Two infants in the group of babies born by difficult foetal delivery using the head-pushing approach had perinatal skull fractures; one of these babies died shortly after birth.

Further, Frass et al. [8] conducted a comparative research of head pushing and caesarean section for obstructed labour in Yemen, where both procedures are often used.

To lessen the risk of complications for both mother and child during delivery, he discovered that performing a reverse breech extraction is a viable option.

The results of this research showed that the median length of hospital stay was three days for group II patients, which is substantially longer than the one day for group I patients (2 days).

No differences were seen between the groups in terms of postpartum bleeding, need for a blood transfusion, or wound infection.

These findings corroborated those of Cornthwaite et al. [9] who conducted a retrospective cohort analysis of emergency caesarean section for the treatment of impacted foetal head.

Maternal complications were lower after breech extraction than following the attempted head-pushing approach, and newborn problems were not higher.

The Apgar score is a simple method for gauging a baby's well-being at 1 and 5 minutes after birth, as well as in response to resuscitation, and this study showed that, with respect to foetal outcome, the range of Apgar score at 1 minute was significantly higher in group I (6-9) than in group II (0-5). [5 – 8].

Group I also had a far wider range of Apgar scores at 5 minutes (6-9 vs. 0-5) than Group II did [4 – 9].

Regarding admittance to a neonatal intensive care unit, there was no discernible difference between the two groups.

Ezra et al. [10] found similar outcomes when comparing cephalic extraction to breech extraction during the second stage of caesarean procedure, and their findings jive with ours.

The rates of low 1-minute Apgar ratings, NICU hospitalisation, and limb fractures from head pushing were all greater in cases of unsuccessful cephalic extraction than in cases of successful cephalic extraction or breech extraction, he discovered.

According to these findings, breech extraction during a second caesarean section is related with a lower risk of maternal difficulties compared to attempted cephalic extraction, while having no effect on the risk of newborn issues.

**4. Conclusion**

Extracting a deeply impacted foetal head during intrapartum caesarean delivery using the reverse breech technique is linked with reduced maternal morbidity than the head pushing technique.

Since the reverse breech surgery has been shown to have positive outcomes for both the mother and the baby, it is recommended for usage during late-stage pregnancies when the fetus's head is profoundly affected after a

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