

# MATERNAL AND FOETAL OUTCOME IN SUCCESSFUL VAGINAL BIRTH AFTER CAESAREAN SECTION VERSUS REPEAT CAESAREAN SECTION

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## ABSTRACT

**Objective:** To compare successful vaginal birth after caesarean section (VBAC) and repeat caesarean section (c/section), with respect to maternal and fetal outcome.

**Methodology:** This comparative study was conducted at Women and Children Teaching Hospital, Bannu from January to December 2010. Patients with previous one caesarean section who went into spontaneous labour were included in the study. A detailed history and examination of each patient was recorded on a semi structured proforma. For the analysis, they were divided into two groups (VBAC and repeat c/section). The comparison in both the groups was made with respect to mode of delivery, maternal and fetal outcomes.

**Results:** Out of 62 patients included in the study, 21 (33.3%) deliveries were vaginal, either assisted or spontaneous, while remaining 41(66.1%) had an emergency repeat c/section. In the successful VBAC group, one patient each had Partial Scar Dehiscence, PPH, blood transfusion and puerperal pyrexia. In emergency C/section group 24 patients had blood transfusion, 8 had puerperal pyrexia and 7 had PPH. In the successful VBAC group, two neonates each had a low Apgar score and needed ICU admission while in emergency C/section group 6 neonates needed ICU admission and 5 had a low Apgar score.

**Conclusion:** Maternal and fetal outcome is better in successful VBAC as compared to repeat emergency c/section.

**Key Words:** Vaginal birth, Caesarean section (C/Section), Fetal outcome, Maternal outcome.

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## INTRODUCTION

It was previously emphasized that once Caesarean section (C/section) means always C/Section. This dictum has been changed in 1980s because of advances in obstetrical management of patients with prior c/section<sup>1</sup>.

The introduction of low incision c/section gave good strong scar to uterus to hold and safely deliver subsequent pregnancy<sup>1</sup>. The Royal college of obstetrics and gynaecology stated in their general guidelines that all patients who had previous c/section should be considered for vaginal delivery taking into account the reason for previous c/section and also wishes of patient and her partner<sup>2</sup>.

In developing countries c/section rate is still low and labor after c/section is common due to reasons like,<sup>3</sup> (a) Asian women regard childbirth as natural process (b) Low risk women receive primary care-by midwives or general practitioners and high risk

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women receive secondary care by obstetricians (c) Defensive obstetrics for fear of litigation is uncommon, so trial of labor after c/section is common. Thus a patient with previous c/section must be delivered in hospital provided presence of obstetrician, anaesthetist and staff capable of performing an emergency c/section<sup>4</sup>.

Specific outcomes of interest regarding trial of labor after c/section are successful VBAC, uterine rupture, hysterectomy, maternal mortality and neonatal outcomes. With each caesarean delivery, the risks of maternal morbidity and mortality risk increases. Thus a woman who wants more children, taking risks of trial of labor in current pregnancy may hold more long term benefits than a woman planning on tubal ligation after delivery<sup>5</sup>.

However a recent review on safety of vaginal birth after c/section concluded that methodological deficiencies in literature evaluating the relative safety of vaginal birth after c/section compared with repeat c/section are striking<sup>6</sup>.

In Pakistan large scale data is lacking on safety and outcome of trial of labor. Two retrospective studies conducted in our country suggest success as high as 70-80% of trial of labor in patients with favourable parameters<sup>7</sup>.

During labor in a subsequent pregnancy in patients with previous c/section, there is a small risk of a ruptured uterus (i.e., 0.47% chance among women having a trial of labor after caesarean section versus 0.03% among women scheduling repeat caesarean deliveries) If a uterine rupture does occur, the risk of perinatal death is approximately 6%. Mothers with a previous lower uterine segment caesarian are considered the best candidates, as that region of the uterus is under less physical stress during labor and delivery. Maternal morbidity, NICU admissions, length of hospital stay, and medical costs are typically reduced following a VBAC rather than a repeat caesarean delivery.

Main maternal morbidity is encountered by women who need an emergency c/section for failed VBAC. It is therefore vital that when discussing management with a patient, the individual risks and benefits must be considered.

Repeat caesarean sections become increasingly complicated as the probability of internal abdominal adhesions, bladder injuries, and abnormal placentation (placenta praevia or placenta accreta) increases dramatically, with placenta accreta reportedly affecting 50-67% of women having three or more caesarean sections. According to the United States Agency for Healthcare Research and Quality, "Abnormal placentation has been associated with both maternal and neonatal morbidity including need for ante-

partum hospitalization, preterm delivery, emergent caesarean delivery, hysterectomy, blood transfusion, surgical injury, intensive care unit (ICU) stay, and fetal and maternal death and may be life-threatening for mother and baby<sup>8</sup>.

The aim of the present study is to compare vaginal birth after caesarean section and repeat caesarean section with respect to maternal and fetal outcome in a peripheral hospital where sophisticated monitoring devices are not available.

## METHODOLOGY

This study was conducted on 62 patients from January to December 2010 in Gynaecology and Obstetrics unit of Women and Children Teaching Hospital, Bannu. Informed consent was obtained from all the patients. Patients with previous one caesarean having normal pregnancy with gestation of 36 weeks or more, clinically normal pelvic dimensions, spontaneous onset of labour were selected for trial of labor. Patients with unknown cause for c/section, any medical complication and previous classical c/section were excluded.

After admission in labour room, variables noted were age, gravidity, parity, indications for present and previous c/section and outcomes of pregnancy on detailed proforma. All basic laboratory investigations were carried out including full blood count, blood group, blood urea and sugar and USG to assess fetal being.

After evaluation, patients were counselled regarding potential benefits and harms of undergoing trial of labor. Patients in spontaneous labor were closely monitored for vital signs, fetal cardiac activity, lower abdominal tenderness, fetal distress, vaginal bleeding and loss of presenting part. Facilities for emergency c/section were made available and postnatal patient with normal delivery was observed in postnatal ward for 24 hours for vital signs, PPH or any other complication. Any signs of danger to mother or child led to c/section. Assistance was provided in the form of vacuum or forceps application with episiotomy to shorten second stage of labor.

## RESULTS

A total of 62 pregnant women were included in the study on the basis of inclusion criteria. Age of patient ranged from 20-45 years. Among these 21(33.3%) delivered vaginally; 12 (19.3%) were NVDs, 7(11.3%) needed assistance in the form of forceps and 2(3.2%) needed vacuum. The remaining 41(66.6%) underwent c/section (Table 1).

The indications for previous c/section in these 62 patients mainly included Failure to progress (n=17, 27.5%), Fetal distress (n=9, 14.5%), Breech presen-

**Table 1: Mode of Delivery in patients with Previous C/Section undergoing trial of labor (n=62)**

| Characteristic                                 |         | No of Patients | %    |
|--|---------|----------------|------|
| Emergency Caesarean Section                    |         | 41             | 66.1 |
| Successful Vaginal Delivery Total = 21 (33.9%) | NVD     | 12             | 19.3 |
|  | Vacuum  | 2              | 3.2  |
|  | Forceps | 7              | 11.3 |

**Table 2: Indication of Previous Caesarean Section (n=62)**

| Indication of C/Section     | No. of patients | %    |
|-----------------------------|-----------------|------|
| Failure to progress         | 17              | 27.5 |
| Fetal distress              | 9               | 14.5 |
| Breech presentation         | 7               | 11.3 |
| Placenta Previa             | 5               | 8.1  |
| Cephalopelvic disproportion | 5               | 8.1  |
| Twins                       | 4               | 6.5  |
| Bad obstetric history (BOH) | 3               | 4.8  |
| Decreased Fetal Movements   | 3               | 4.8  |
| Obstructed Labour           | 3               | 4.8  |
| Unstable lie                | 2               | 3.2  |
| PET                         | 1               | 1.6  |
| Chorioamnionitis            | 1               | 1.6  |
| Prolong Infertility         | 1               | 1.6  |
| Hypertension                | 1               | 1.6  |

**Table 3: Indication for Repeat Caesarean Section (n=41)**

| Indication          | No. of Patients | %    |
|---------------------|-----------------|------|
| Dysfunctional labor | 19              | 46.3 |
| Fetal distress      | 15              | 36.6 |
| Scar tenderness     | 7               | 17.1 |

tation (n=7, 11.3%), Placenta Previa (n=5, 8.1%) and Cephalopelvic disproportion (n=8, 8.1%) [Table 2].

Indications for repeat c/section were as follows, 19(46.3%) patients had dysfunctional labor, 15(36.6%) developed fetal distress while 7(17.1%) developed scar tenderness (Table 3).

In this study maternal morbidity was more in patients undergoing emergency repeat c/section than VBAC. Atonic PPH was seen in 1(1.6%) case with VBAC and 7(11.3%) of repeat emergency cases. Twenty four (38.7%) cases of emergency c/section needed blood transfusion in comparison with only one case with VBAC. Puerperal pyrexia was seen in 8(12.9%) cases of emergency c/section than in only one case of VBAC. Scar dehiscence was found in only 2(3.02%) cases with emergency c/section and

both were multiparas. No maternal death was recorded (Table 4).

The hospital stay in study group was 2-3 days in cases with successful VBAC and 7-8 days in emergency c/section and a little longer in complicated cases.

In our study, 2 (3.2%) babies delivered during VBAC and 5 (8.1%) by emergency c/section had Apgar score <6/10 while 2 (3.2%) with successful VBAC and 6 (9.7%) by emergency c/section needed admission in ICU. Only one (1.6%) stillbirth was observed in repeat c/section as patient was taken up for emergency lower segment c/section in view of fetal distress but the baby died and was delivered as a fresh still birth (Table 4).

**Table 4: Maternal outcomes and Fetal outcomes**

| Variables                | VBAC |     | Emergency Caesarean Section |      |
|--------------------------|------|-----|-----------------------------|------|
|                          | No.  | %   | No                          | %    |
| <b>Maternal Outcomes</b> |      |     |                             |      |
| Blood Transfusion        | 1    | 1.6 | 24                          | 38.7 |
| Puerperal Pyrexia        | 1    | 1.6 | 8                           | 12.9 |
| PPH                      | 1    | 1.6 | 7                           | 11.3 |
| Partial scar dehiscence  | 1    | 1.6 | 2                           | 3.02 |
| Uterine rupture          | 0    | -   | 1                           | 1.6  |
| Hysterectomy             | 0    | -   | 1                           | 1.6  |
| Maternal Death           | 0    | -   | 0                           | -    |
| <b>Fetal Outcomes</b>    |      |     |                             |      |
| 1 min Apgar score<6/10   | 2    | 3.2 | 5                           | 8.1  |
| Need for ICU admission   | 2    | 3.2 | 6                           | 9.7  |
| Still Birth              | 0    | -   | 1                           | 1.6  |

## DISCUSSION

In our study interventions for primary dysfunctional labor before deciding about c/section included optimization of maternal well-being (hydration and pain relief); longer period of time (about 5-6 hrs) to allow labor to progress; Mobilization; and fetal monitoring. Women who underwent c/section for poor progress in their last labor were reassured that limits will be placed on their present labor so that they do not undergo prolong labor.

Although attempts at trial of labor after c/section have become accepted practice, rate of attempted and successful VBAC has decreased during past 10 yrs in developed world. The number of patients attempting VBAC has drifted down in developing world from 20% to 10% during 2002-2005<sup>9</sup>. As practitioners experience complications and litigation related to managing patients undergoing trial of labor after c/section, they are less likely to allow new patients to undergo a trial of labor.

Najmi RS carried out a study at Sir Ganga Ram Hospital Lahore during 1999 to determine mode of delivery following one c/section and to establish significant factors influencing outcome<sup>10</sup>. In this study about 59% delivered vaginally of which more than 33% were with non recurrent causes. Another study by Saeed et al showed rate of delivery of about 67.9%<sup>11</sup>. These studies coincide with the conclusion that trial of labor after a prior low transverse c/section in women without ongoing contraindications is safe for most women. In present study vaginal delivery after c/section could hardly rise to 33.9%, 1/3 of total group, due to lack of sophisticated monitoring devices in our set up coinciding with figures by

Yousaf et al and Elkhousy et al<sup>12, 13</sup>. Non recurrent indications of previous c/section did not end up in subsequent c/section and hence has high rate of vaginal delivery<sup>14</sup>, but attempts at vaginal delivery were abandoned, at that very moment, when there was even a bit suspicion of scar dehiscence and also to avoid neonatal morbidities due to non reassuring fetal heart rate pattern. This discrepancy in various studies reflects the difference in the inherent nature of obstetric population and the difference in the protocol applied for selection of cases.

There was a single case of uterine rupture in our study and she was grand multipara depicting higher maternal morbidity with increasing parity. No maternal mortality was recorded as maternal mortality has decreased worldwide in practice<sup>13</sup>. In present study, no still birth was seen in patients who had VBAC but one stillbirth seen in repeat c/section due to fetal distress in first stage of labor thus, demonstrating that patients who have failed TOL are at increased risk of jeopardized fetal conditions and operative interference should be made in time if complications like fetal or maternal distress comes into the picture thus fetuses in jeopardized condition had low APGAR score and needed ICU admission. Majority of neonates were having NICU admission due to premature rupture of membranes, meconium stained liquor, low birth weight and respiratory distress syndrome. Our study was well comparable with studies of Jha et al<sup>15</sup>, who found that Infants born after successful VBAC who found that Infants born after successful VBAC (36%) had the lowest rates of NICU admission and the lowest resuscitation needs; those born otherwise (13%) had the highest resuscitation needs.

Recent studies report more evidence that uterine rupture and associated adverse perinatal outcomes are the result of trial of labor. The significant fetal trauma associated with use of sequential instruments, for example vacuum followed by forceps or vice versa is specifically associated with high injury rate. Intrapartum neonatal deaths from traumatic cervical or spinal injury secondary to assisted vaginal delivery is significantly greater than with c/section<sup>16</sup>.

Thus clinician must respect patient's autonomy and decision making capabilities while considering route of delivery after counselling her about all maternal and fetal risks. Several observational studies suggest an increased risk of perinatal mortality and hypoxic ischemic encephalopathy in infants of mothers who undergo trial of labor<sup>17</sup>.

## CONCLUSION

Indication for previous c/section is an important parameter for deciding success of trial of labour. Maternal and fetal outcome is better in successful VBAC as compared to repeated emergency c/section.

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## CONTRIBUTORS

QQ conceived the idea, planned and wrote the manuscript of the study. ZA helped in manuscript writing. AHK did the data analysis. All the authors contributed significantly to the research that resulted in the submitted manuscript.