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Original Article

Maternal Morbidity Associated With A Successful Versus Failed Trial of Labour After a Previous Caesarean Section

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ABSTRACT

Objective: To compare the maternal morbidity associated with a successful trial of labour after the previous scar versus a failed trial of labour after the previous scar and ending in repeat Caesarean section.
Study Design: Cross-sectional study.
***Place and Duration of Study*:** Department of Gynaecology and Obstetrics, Pak-Emirates Military Hospital, Rawalpindi Pakistan, from Jun to Dec 2022.
Methodology: A total of six hundred and ten (n=610) patients were in the study. The variables studied while observing the outcome included indication of Caesarean section in the previous delivery, birth weight of the baby, overall outcome and post-operative maternal complications.
Results: The mean age of the participating patients was 24.44±3.89 years. Of the 610 patients, 278(45.6%) delivered successfully via vaginal delivery after a previous Caesarean section, while 332(54.4%) had to be delivered again via repeated Caesarean section. Overall outcome in both groups revealed 331(99.7%) patients were delivered by Caesarean section, with 01(0.3%) patients landing in a ruptured uterus in the Caesarean Section Group.
Conclusion: Previous history of normal vaginal delivery, increased parity and birth weight less than 3 kg have a better chance of a successful Vaginal Birth after a Caesarean section in selected patients resulting in fewer complications and decreasing the overall Caesarean section rate.

Keywords: Caesarean Section, Trial of Labour, Obstetric Labour.

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INTRODUCTION

The mode of Caesarean section delivery remains one of the major procedures for delivering the foetus in case vaginal delivery fails or the patient is unfit for a trial of labor.[1] Although considered a lifesaving procedure at times, the incidence of the Caesarean section has increased drastically in the past few decades, especially in the 70s.[2,3]

The increased incidence is reported to be due to associated co-morbidities like diabetes.[4] hypertension.[5] and ischemic heart disease.6 It is also attributed to patients not willing to a trial of labour due to fear or psychological reasons.[7] Whatever the case may be, the maternal morbidities associated with subsequent Caesarean section deliveries like adhesions, incisional hernias, placenta previa/accreta and uterine rupture have posed the dilemma of decreasing the trend of Caesarean section both for the obstetrician as well as the patient.[8,9]

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This calls into view the decision to give a trial to carefully selected and properly evaluated patients for VBAC. It is established that VBAC results in better post-op outcomes than elective repeat Caesarean section (ERCS) and is associated with less blood loss and fewer hospital stays, resulting in less resource burden and better healthcare management.[10] However, recently, VBAC has been under intense scrutiny because of the risk of uterine rupture and needs to be evaluated again for safety. This study aims to find the parameters that affect the trial of scar as well as maternal morbidities that result from VBAC and ERCS.

METHODOLOGY

The cross-sectional study was conducted at the Department of Gynaecology and Obstetrics, Pak-Emirates Military Hospital, Rawalpindi, Pakistan from June to December 2022, after the approval from IERB. Sample size was calculated by WHO calculator, keeping the population proportion for the previous one scar at 11%.[11]

Inclusion Criteria: Patients with a history of previous one Caesarean section scar planned for an elective

Caesarean section after 36 weeks of pregnancy were included. Patients with a previous vaginal delivery were also included.

Exclusion Criteria: Patients with a history of more than one Caesarean scar, contra-indication to vaginal delivery, patients with placenta previa/accreta, a history of uterine rupture and cephalopelvic disproportion, were excluded.

All the patients included in the study were followed from 36 weeks of gestation till delivery. The patients were thoroughly counselled regarding the study and complications of both vaginal delivery and the Caesarean section. Progression of the labour process was monitored with auscultation of fetal heart sounds every 30 min as well as regular CTGs. The patients were induced if required as per hospital protocol and given Syntocinon for augmentation if required. The entire process of induction and progression with previous history and indication for the last Caesarean section was endorsed on a data sheet. The primary outcome measure was the mode of delivery of the baby, and the secondary outcome measure was the incidence of uterine rupture and complication after VBAC and LSCS after a failed trial of scar. The variables studied while observing the outcome included the age of the patients, parity, indication of Caesarean section in the previous delivery and birth weight of the baby.

All statistical calculations were performed using Statistical Package for Social Sciences 26.0. Data were statistically described in terms of Mean and SD, frequencies, and percentages when appropriate. The Chi-square test was applied. The *p*-value of 0.05 or less was taken as significant.

RESULTS

A total of six hundred and ten (n=610) pregnant women were included in the study as per the inclusion criteria. The mean age of the participating patients was 24.44±3.89 years. Of the 610 patients, 278(45.6%) delivered successfully via vaginal delivery after a previous Caesarean section, while 332(54.4%) had to be delivered again via repeat Caesarean section. Only one patient being given a trial resulted in a ruptured uterus but was immediately rushed for an emergency laparotomy, with the baby surviving and requiring NICU care.

While observing the outcome considering the parity of the patients being studied, it showed a strong chance of delivering vaginally as the parity increased (*p*-value <0.001). Of the 309 patients who were para 1, 108(38.8%) delivered vaginally, while 201(60.5%) delivered via the Caesarean section. This trend shifted in patients where the parity increased more than one and, in the group where parity was three or more than 3, from a total of 140 patients, 90(32.4%) delivered vaginally successfully while 50(15.1%) delivered via Caesarean section (Table-I).

Table-I: Comparison of Maternal Age, Parity for Trial Of Labour (n=610)

Characteristics	Vaginal Birth After Cesarean Group n (%) (n=278)	Repeat Lower segment Caesarean section Group n (%) (n=332)	*p*-value
Maternal Age (Years)			
<20	30(10.7%)	39(11.7%)	0.980
20-25	162(58.2%)	189(56.9%)	
26-30	55(19.7%)	66(19.8%)	
>30	31(11.1%)	38(11.4%)	
Parity			
1	108(38.8%)	201 (60.5%)	<0.001
2	80 (28.8%)	81 (24.4%)	
≥3	90 (32.4%)	50 (15.1%)	

The indications for the previous caesarean section in the group, when compared with the outcome in the present delivery, showed that patients who were diagnosed with fetal distress and antepartum haemorrhage in the previous pregnancy showed the highest success rate of delivering vaginally in the present pregnancy. At the same time, patients who failed to progress in the last delivery and ended up in a Caesarean section were amongst the highest group to end up with a subsequent Caesarean section this time as well (*p*-value = 0.035), shown in (Table II).

Table-II: Indication for Caesarean Section in Previous Pregnancy (n=610)

Indications	Vaginal Birth After Cesarean Group n (%) (n=278)	Repeat Lower segment Caesarean section Group n (%) (n=332)	*p*-value
Fetal Distress	152(54.7%)	168(50.6%)	0.035
Breech	24(8.6%)	51(15.4%)	
Failure to Progress	87(31.3%)	104(31.3%)	
Transverse Lie	03(1.1%)	04(1.2%)	
Antepartum Hemorrhage	12(4.3%)	05(1.5%)	

Patients ending up in LSCS had an increased incidence of maternal complications when they were followed up with ruptured uterus seen in 01(0.5%)

patient, scar dehiscence in 15(4.5%), thinning of scar in 65(20%), abdominal wall or omental adhesion in 87(25.5%), prolonged catheterization in 13(4%), post-partum haemorrhage in 10(3%) and wound gape in 01(0.5%). The post-operative maternal complications were considerably less in the VBAC group, with cervical tears seen in 3(1%), vaginal tears in 14(5%), paraurethral tears in 3(1%) and anal sphincter tears in 3(1%) patients (Table-III).

Table-III: Outcome of Trial of Labor in Patient with Previous Scar (n=610)

Failed Trial of Labor with Previous Scar (LSCS) (n=332)	
Caesarian Section	331(99.7%)
Ruptured Uterus	01(0.3%)
Complications After LSCS (n=332)	
Ruptured Uterus	1(0.5%)
Scar Dehiscence	15(4.5%)
Scar Thinned Out	65(20%)
Abdominal Wall/Omental Adhesion	87(25.5%)
Prolonged Catheterization	13(4%)
Post Partum Hemorrhage	10(3%)
Wound Gap	1(0.5%)
Successful Trial of Labor with Previous Scar (VBAC) (n=278)	
Vaginal Birth After Cesarean	232(83.4%)
Vaccum Delivery	33(11.8%)
Forceps Delivery	13(4.7%)
Complications After VBAC (n=278)	
Cervical Tear	3(1%)
Vaginal Tear	14(5%)
Paraurethral Tear	3(1%)
Anal Sphincter Tear	3(1%)

DISCUSSION

The study was carried out in our demographical area because of the increasing incidence of Caesarean deliveries and the reluctance of obstetricians to give a trial of labour to a previous scar patient.[12] Even though the chances of uterine rupture increase when given a trial of labour to these patients by a slight margin, the better outcome of a VBAC far outweighs this complication.[13]

Various studies on this topic have demonstrated that the rate of VBAC is comparable to the Caesarean section rate done.[14] This also confirms our findings that the rate of Caesarean slightly exceeds that of VBAC. However, this slight increase is attributed to several factors, including patient exhaustion, co-morbidities like PIH, eclampsia and gestational diabetes mellitus.15,16 However, the study still proves that at least half of the population demographic can be easily given a trial of scar and can be delivered successfully vaginally. This results in better patient outcomes, less blood loss with increasing parity, decreased hospital stays, less infection and scar complications and overall decreased burden of resources on the institute.[17,18]

Dooley *et al*. also concluded in their study that the VBAC rate improved when the patient's parity increased.[19] This also relates to patients who have had previous vaginal deliveries, and the subsequent chances of VBAC improved significantly. The increased success rate of parity is explained by better patient tolerance, prior experience and a laxer reproductive canal for delivery, as studied by Ryan *et al*.[14]

As further studies have shown, lack of progress and fetal distress remain the major reasons why the trial of scar fails in our setups. This is consistent with our study as well with patients with fetal distress and failure to progress, resulting in a Caesarean section in more than 50% of the cases.

When talking about maternal morbidity and the chances of complications, the literature supports that VBAC is associated with considerably fewer chances of maternal complications with no incidence of surgical and scar-related issues.[20,21]

It is recommended that unless there is an absolute contra-indication to the normal trial of labour, patients with a previous Caesarean section are good candidates for VBAC and should be given a trial of labour since the study confirms that the chances of success are high, especially in patients with no co-morbid, increased parity and previous history of normal vaginal birth.

CONCLUSION

We conclude that previous history of normal vaginal delivery, increased parity and birth weight less than 3 kg have a better chance at a successful VBAC in selected patients resulting in fewer complications and decreasing the overall Caesarean section rate.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

BR & AA: Conception, study design, drafting the manuscript, approval of the final version to be published.

MT & AC: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

QA & HS: Data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity

of any part of the work are appropriately investigated and resolved.

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