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## Original Research Article

# Analysis of success of vaginal birth after cesarean in relation to indication of primary caesarean section: a tertiary care experience

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### ABSTRACT

**Background:** Apprehensions related to vaginal birth after caesarean (VBAC) has reduced rates of successful vaginal trials over last decade. The objective of this study was to identify the indications of first caesarean section that can lead to a successful trial of labour in subsequent pregnancy.

**Methods:** Retrospective cohort study was done between November 2014 and October 2017. Data from the case records was analysed.

**Results:** Study over 3 years from 2014 to 2017 revealed fetal distress (82.7%), breech (72.2%), transverse lie (66.7%), antepartum haemorrhage (56.2%) and twins with first non-cephalic (57.9%) have successful outcome of VBAC whereas obstructed labour (19.2%) and failed induction (18.4%) in previous pregnancy have poor outcome for VBAC.

**Conclusions:** Attempts to allow trial of labour after one previous caesarean section with fetal distress, malpresentation and twins as indications of caesarean in previous pregnancy are safe and should be encouraged.

**Keywords:** Caesarean section, Indication, Primary, Success, Trial of labour, Vaginal birth after cesarean

### INTRODUCTION

Caesarean section rates have increased dramatically over last few decades. Once a caesarean, always a caesarean was a rule that was followed by most obstetricians.<sup>1</sup> With increasing audits, evidence was produced that trial of labour was a safe and successful option in majority of such repeat pregnancies.<sup>2,3</sup> Occasional uterine rupture and fetal risks have changed the outlook for trial of labour after previous caesarean section.<sup>4,5</sup>

Vaginal birth after cesarean (VBAC) has reduced in frequency over last 10 years.<sup>4,6</sup> Elective repeat caesarean sections contribute in large proportion to the caesarean section rates. Gradually caesarean section rates are

increasing in frequency.<sup>7,8</sup> Reasons include better electronic monitoring and medico legal fears of a failed vaginal delivery and poor APGAR scores.<sup>9,10</sup>

Several studies published in Europe and India document this trend. Often, women who underwent a caesarean delivery after a prolonged labour in the first pregnancy do not want to undertake a trial of labour in this pregnancy. There is always a dilemma in obstetrician's mind about which patients are more likely to have a successful VBAC while counselling them for a trial of labor.

With this reducing trend of successful vaginal birth in patients with previous one caesarean section, younger obstetricians forego counselling the patients well for a

trial of labour despite facility of adequate monitoring and emergency caesarean section being present.

This study was done to correlate success of trial of labour in subsequent pregnancy with indications for caesarean section in the first pregnancy.

The objective of this study was to identify the indications of first caesarean section that can lead to a successful trial of labour in subsequent pregnancy.

## METHODS

This study is a retrospective cohort study carried out at a tertiary teaching hospital in Delhi. All previous one caesarean section deliveries over a 3-year period between November 2014 and October 2017 were studied and data was analysed.

### Inclusion criteria

- Pregnancy with previous one caesarean delivery
- Singleton pregnancy
- Low transverse uterine scars.

### Exclusion criteria

- Previous known classical or inverted 'T' uterine scar
- Previous hysterotomy/myomectomy entering uterine cavity
- Previous uterine rupture
- Presence of any contraindication to labour in current pregnancy such as placenta previa, malpresentation or cephalopelvic disproportion
- Refusal for trial of labor
- Incomplete records
- Non-viable pregnancy with term <26 weeks.

The above-mentioned case files were reviewed and a pre-formed proforma was filled. Note was made of the indications for primary caesarean section, course of labour, mode of delivery, success or failure of trial, maternal complications during delivery and neonatal ICU admissions.

### Statistical analysis

Inference was drawn from this data after doing a statistical analysis between successful and failed trial of labour groups using Chi square test and p value was calculated to make recommendations.

## RESULTS

This study was carried out in Hamdard Institute of Medical Sciences and Research, New Delhi between November 2014 and October 2017.

There were four thousand four hundred and nine deliveries during the study period. There were three thousand and twenty-eight vaginal deliveries including instrumental deliveries during this period (68.6%). There were five hundred and forty-seven deliveries with previous caesarean section. One hundred and eighteen patients were excluded from the study as they were taken up for elective caesarean section. Indications for elective caesarean section is as per Table 1.

**Table 1: Indications for elective repeat caesarean section (n=118).**

Indication	Number	Percentage
Prev. 2LSCS	57	48.3
Cephalopelvic disproportion	19	16.1
Breech	8	6.7
Transverse lie	5	4.2
Ante partum haemorrhage	8	6.7
Twins	4	3.3
Previous myomectomy	1	0.84
Short interconception period	8	6.7
Gestational diabetes with deranged doppler	4	3.3
Preterm with eclampsia	3	2.5
Cord prolapse	1	0.84
<b>Total</b>	<b>118</b>	<b>100</b>

Four hundred and twenty-nine patients were included in our study for attempt at vaginal delivery. One hundred and thirty-four (134) patients did not consent to trial of vaginal birth and opted for elective caesarean section (31.2%). Two hundred and ninety-five patients of previous one caesarean section underwent trial of labour. One hundred and thirty-six had a successful vaginal birth after previous caesarean section (46.1%). One hundred and fifty-nine patients were taken up for repeat emergency caesarean section (53.9%).

**Table 2: Indications for emergency repeat caesarean section (n=159).**

Indications	Number of cases	Percentage
Fetal distress	74	46.54
Scar tenderness and signs of impending rupture	52	32.7
Failed progress of labour	21	13.2
Failed Induction of labour	12	7.54
<b>Total</b>	<b>159</b>	<b>100</b>

Most common reason for repeat emergency caesarean section was fetal distress. Other reasons for emergency repeat caesarean section are as per Table 2.

Most common indication for previous caesarean section resulting in successful vaginal delivery was again fetal

distress. Other reasons for previous caesarean section resulting in successful vaginal delivery are as per Table 3.

The patients with indication of first caesarean section as fetal distress, breech, antepartum haemorrhage, transverse lie, twins with first non-cephalic presentation had their p values significant for successful VBAC. Those patients who had undergone previous caesareans for failed induction and obstructed labour had significant p value for failure of VBAC. However, patients with failure to

progress and bad obstetrical history did not show significant results. No maternal mortality was recorded during the study period. Most common maternal morbidity was fever in both successful and failed VBAC groups. Other common morbidity noted in both groups were urinary tract infections and PPH. More cases with gaped episiotomy (2.8%) and retained products of conception (0.7%) were noted in successful VBAC groups. Blood transfusions were needed in more emergency caesarean group (6.2%).

**Table 3: Indication of Primary caesarean section in relation with outcome of trial of labour.**

Indications for previous caesarean section	Total VBAC (Successful + Failed)	Successful VBAC	Failed VBAC	Chi square test= $\chi^2$ 2 value (p value)	Interpretation
Fetal distress	52	43 (82.7%)	9 (17.3%)	55.1 (p<0.05)	Significant for success
Failure to progress	63	24 (38.1%)	39 (61.9%)	2.5 (p>0.05)	No inference drawn
Breech	18	13 (72.2%)	5 (27.8%)	27.2 (p<0.05)	Significant for success
Ante partum haemorrhage	16	9 (56.2%)	7 (43.8%)	4.02 (p<0.05)	Significant for success
Transverse lie	18	12 (66.7%)	6 (33.3%)	17.7 (p<0.05)	Significant for success
Failed induction	38	7 (18.4%)	31 (81.6%)	31.5 (p<0.05)	Significant for failure of VBAC
Twins with first non-cephalic	19	11 (57.9%)	8 (42.1%)	5.7 (p<0.05)	Significant for success
Bad obstetrical history	19	7 (36.8%)	12 (63.2%)	3.2 (p>0.05)	No inference drawn
Obstructed labour	52	10 (19.2%)	42 (80.8%)	29.3 (p<0.05)	Significant for failure of VBAC
<b>Total</b>	<b>295</b>	<b>136 (46.1%)</b>	<b>159 (53.9%)</b>		

The p value is significant when <0.05.

No neonatal mortality was recorded in the study period. Neonatal ICU admissions were needed in 10.2% of successful VBAC and 19% of neonates born after emergency caesarean section.

## DISCUSSION

Vaginal birth after previous caesarean section is a disappearing art in today's institutions. Percentage of deliveries undergoing successful vaginal deliveries (VBAC) were much higher a decade back.<sup>4,5</sup> This did result in more morbidity and mortality in both mother and neonate<sup>1</sup>.

With better monitoring and lesser appetite for risk taking, these numbers have reduced. Lesser number of successful vaginal deliveries (VBAC) are being reported. This also leads to better maternal and neonatal results.<sup>4,6</sup>

Such inference can risk a perception that vaginal trials after previous caesarean section can be omitted for a safer maternal and neonatal outcome.

However, based on above results, it is possible to have a good maternal and fetal outcome after vaginal trials for select indications. Good monitoring can make decision making easier and delivery experience safer for mother and neonate.

Trial of labour in patients with indication of previous caesarean section as fetal distress and abnormal presentations (like breech and transverse lie) are best indications for a successful outcome. Even twins and antepartum haemorrhage has a good outcome for a trial of labour. Better outcomes are possible as these indications may not exist in next pregnancy and hence a well-managed intra-partum monitoring will lead to a successful vaginal delivery.

Obstructed labour is mostly related to faulty pelvis or a large foetus, which may be a reason for repeat emergency caesarean section even in the next pregnancy. Trial of labour can result in increased maternal and neonatal morbidity in these cases. Often patients who had a failed induction and obstructed labor in previous deliveries are apprehensive and may not be good candidates to undergo the trial of labor for VBAC. Failure to progress and bad obstetrical history are grey zones in which inference could not be drawn from our study. With these as reasons for previous caesarean individualization may be needed and help from senior faculty may be useful.

Trial of labour in cases of previous caesarean section need to be increased and study in Scandinavia having historical higher rates of VBAC reveal a need for imparting information to the patient from treating clinician about advantages of VBAC as a first alternative.<sup>11,12</sup> Having knowledge of above mentioned factors that can result in successful VBAC can reduce fear in clinicians for attempting VBAC.<sup>13</sup>

## CONCLUSION

Trial of labour after previous caesarean section can be safely and successfully tried in cases with fetal distress, twins, antepartum haemorrhage and malpresentations as indications for previous caesarean section. Obstructed labour and failed induction are reasonable risk factors for an increased maternal and neonatal mortality and should only be attempted for a vaginal trial in the presence of good monitoring and senior surgeons.

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