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## **Factors Predicting Success of Trial of Labour among Women with Previous one Caesarean Delivery in a Developing Country**

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### **Abstract**

The objective of the study was to find out the factors predicting outcome of trial of labour after previous caesarean delivery among women living in a developing country. A retrospective study of 149 cases of trial of Labour was conducted in women with a history of one prior caesarean section. Binary logistic regression was used to identify predictive factors. The adjusted odds ratios with 95% confidence intervals (95%CI) were used to indicate risk of failure of the trial of Labour when the factor was present. It was found that success rate of vaginal birth was 24.16%. Factors significantly predictive of success of trial of Labour were previous vaginal delivery (OR 18.4, 3.3 -329.6), baby weight < 3 kg (OR 33.3, 5.4-62.6) and 2<sup>nd</sup> stage of labour during previous LSCS (OR 2.1, 1-4.2). The study has shown that trial of labour can be attempted successfully, in women with previous caesarean delivery, with due consideration of maternal and foetal outcome. A prior history of vaginal delivery and baby weight < 3 kgs are the best predictor of success of trial of labour.

**Key Words:** Trial of Labour, Previous caesarean delivery

### **Introduction**

Few issues in modern obstetrics have been as controversial as the management of the woman who has had a prior caesarean delivery. In early twenties when caesarean deliveries were done by classical caesarean incision, it was quoted that *“Once a caesarean, always a caesarean (Craigins Dictum).”* With the introduction of low transverse uterine incision in 1920s, vaginal birth after caesarean increased significantly. Now days, the trial of labour of vaginal birth after caesarean (VBAC) is a well- established standard practice of care. The interest was rekindled in vaginal births especially as the rates of primary caesarean deliveries were increasing at an unprecedented pace. In an effort to address the rising caesarean delivery rate, the American College of Obstetricians and Gynecologists (1988) recommended that most women with one previous low transverse caesarean delivery should be counseled to attempt labour in a subsequent pregnancy. Now the dictum has modified into *“Once a caesarean section, always a hospital delivery”* [1].

India is also not excluded from this rising trend of primary caesarean deliveries. There are many valid reasons for this increase in frequency of caesarean deliveries but most authorities agree that its underlying justification is based on the further lowering the maternal mortality and increasing fetal survival as compared to difficult operative means of vaginal delivery. The fundamental concern should focus on the safest methods of delivery for every mother rather than upon an arbitrary caesarean rate.

The present study was conducted in Government tertiary care hospital, to find out factors predicting the outcome of Vaginal Birth after Caesarean (VBAC) trial in women with one prior lower transverse caesarean and spontaneous onset of labour.

## Objective

1. To find out the factors predicting outcome of trial of labour after previous caesarean delivery
2. To compare the maternal and fetal morbidities and mortality between vaginal and repeat caesarean delivery

## Material and methods

*Study Design:* Retrospective study based on hospital records.

*Inclusion criteria:*

1. Patients admitted with history of one previous Lower segment Caesarean Section (LSCS)
2. Gestational age of 28 or more weeks with spontaneous onset of labour

The present study was undertaken in the Department of Obstetrics and Gynaecology of a Tertiary Care Institute in Mumbai city, India. Data was collected from hospital records from May 2010 to April 2012, available at the Medical Record section of the institute, after getting the necessary permission. Ethical clearance was obtained from the institutional ethical committee.

## Observation & results

During the study period, 164 patients fulfilled the inclusion criteria. Among these 15 women had to undergo elective caesarean section and were excluded. Trial of labour was given in 149 women, with mean age of 26 years (Standard Deviation 4.1 Years).

The rate of vaginal birth was 24.16% (36 of 149 women). The most common indication for repeat caesarean section was Scar Tenderness (43.75%), followed by CPD (24.22%) and Fetal Distress (18.75%) as shown in Table 1.

Among the study participants 62 (41.6%) were aged less than 20 years. This shows that in India early marriages and child birth is still prevalent.

Rate of vaginal birth was significantly more among the women with History of previous vaginal delivery, stage of labour in which previous LSCS was done and birth weight less than 3 kg (P Value < 0.001). The rate of vaginal birth was less among women's with Inter-conceptual period less than 2 years, BMI > 23kg/m<sup>2</sup> and age group > 25 years but this difference was found to be statistically non significant (Table 2).

On applying logistic regression factors significantly predictive of success of trial of labour were birth weight < 3000gm (Odds Ratio= 33.3, 95% CI 3.3- 329.6), past history of vaginal delivery (Odds Ratio=18.4, 95% CI 5.4-62.6) and stage of labour (second) during previous LSCS (Odds Ratio=2.1, 95% CI 1-4.2) (Table 3)

The foetal and maternal outcome was not statistically different between two groups (P value > 0.05) (Table 4 & 5).

Among the newborns, 15 were admitted to Neonatal Intensive care unit (NICU) in view of delayed crying. The commonest maternal morbidity among both groups was fever during post partum period (20 out of 149 women) (Table 6). In this study no maternal or foetal mortality was reported.

### Discussion:

The success of trial of labour found to be 24.16% which was quite less than expected but this low rate can be explained as half of the women had inter-conceptual period  $\leq 2$  years (76 out of 149 women). In the literature, various studies have reported vaginal delivery rate ranging from 10-90%, such as Pembe et al [2] 14.24%, Jha M [3] 31%, Kayani S et al [4] 61% etc. In a prospective study in Yemen, Frass K.A. et al found that vaginal birth after caesarean section was possible in 87.1% women with one previous caesarean section and spontaneous onset of labour [5]

The commonest indications of repeat caesarean section were scar tenderness (43.75%), CPD (24.2%) and fetal distress (18.7%). This is in accordance with the findings of similar studies conducted by Jha M [3], Singh AK et al [6] etc.

Success of trial of labour was associated with positive history of vaginal delivery (OR -18.4), baby weight  $< 3$  kg (OR -33.3) and 2<sup>nd</sup> stage of labour during previous LSCS (OR-2.1). Haresh Doshi U [7] also found higher vaginal birth rate among women with history of vaginal delivery prior to or after LSCS and baby weight  $< 3$  kgs.

The vaginal rate was more among women with Inter-conceptual period  $\geq 2$  Years (27.5% vs 14%), BMI less than 23 kg/m<sup>2</sup> 27% Vs 16%). However, this difference was statistically non significant. Literature has shown decrease in success of trial of labour with high BMI, especially  $> 30$  kg/m<sup>2</sup>, as shown by Juhasz G et al [8] and Celeste P. et al [9].

**Conclusion:** The study has shown that trial of labour can be attempted successfully, in women with previous caesarean delivery, with due consideration of maternal and foetal outcome. The foetal and maternal morbidity was also similar in both groups. A prior history of vaginal delivery and baby weight  $< 3$  kgs are the best predictor of success of trial of labour.

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Indications	Frequency	Percent
Scar tenderness	56	43.75
Cephalo Pelvic Disproportion (CPD)	31	24.22
Fetal Distress	24	18.75
Malpresentation	7	5.47
Low lying placenta with Ante Partum Haemorrhage	7	5.47
IUGR	2	1.56
PIH	1	0.78

Variables		Mode of delivery		Test of significance	P Value
		Emerg. LSCS (n=113)	Vaginal (n=36)		
Age Group	<20 Years	48	14	Pearson's Chi Square	0.177
	20-25 Years	33	16		
	> 25 Years	32	6		
H/O Vaginal Delivery	Yes	11	18	Fischer Exact	<0.001*
	No	102	18		
Stage of labour in previous LSCS	Zero	27	8	Pearson's Chi Square	<0.001*
	One	69	8		
	Two	17	20		
Body Mass Index	18.5 to 23	77	29	Fischer Exact	0.205
	>23	36	7		
Inter Conception Period	<2 Years	31	5	Fischer Exact	0.12
	≥ 2 Years	82	31		
Birth Weight	> 3 kg	30	1	Fischer Exact	<0.001*
	≤ 3 kg	83	35		

\* P Value found to be significant at 99.9 % confidence limit.

<b>Table 3. Factors affecting the trial of labour outcomes</b>				
Variable in the equation	P Value	Odds Ratio	95.0% Confidence Interval	
			Lower	Upper
H/o Vaginal delivery	<b>&lt;0.001</b>	18.4	5.4	62.6
Stage of labour during previous LSCS	<b>0.03</b>	2.1	1.0	4.2
Birth Weight (<3 Kg)	<b>0.003</b>	33.3	3.3	329.6

<b>Table 4- Association of maternal morbidity with mode of delivery</b>					
Mode of delivery	Maternal Morbidity		Total	Test of significance	P Value
	Yes	No			
Emergency LSCS	24	89	112	Fischer's Exact Test	1
Vaginal	7	29	36		

<b>Table 5- Association of foetal morbidity with mode of delivery</b>					
Mode of delivery	Foetal Morbidity		Total	Test of significance	P Value
	Yes	No			
Emergency LSCS	9	104	112	Fischer's Exact Test	0.2
Vaginal	6	36	36		

<b>Table 6. Maternal morbidity among the both groups</b>				
Sr No	Maternal Morbidity	Mode of delivery		Total
		Vaginal	Emergency LSCS	
1	Fever	5	15	20
2	Blood Transfusion	2	4	6
3	Abdominal Distension	Nil	3	3
4	Wound Gap	Nil	2	2
Total		7	24	31