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Obstetric outcome of trial of labour after previous caesarean

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Abstract

Background & Methods: The aim of the study is to assess safety, efficacy and outcome of trial of labour after caesarean (TOLAC). The primary outcome was the success rate of TOLAC, defined as the proportion of eligible women who achieved a vaginal delivery after initiating a trial of labour.

Results: For participants with spontaneous onset of labour, 63.2% (115 participants) achieved a successful VBAC, compared to 32.6% (28 participants) who required a C-section. Among those without spontaneous labour, 36.8% (67 participants) had a VBAC, while 67.4% (58 participants) underwent a C-section. The difference in outcomes based on spontaneous onset of labour was highly significant (P-value < 0.001).

Conclusion: The majority of participants in the study was in the age group of 26-30 years (34.3%) and had senior secondary education (22.4%). Successful VBAC rates were higher among those with spontaneous onset of labor (63.2%) and in participants with elective previous LSCS (53.8%). Complications such as postpartum hemorrhage (10.4%) and uterine rupture (1.07%) were noted in the VBAC group, whereas fever/infection (26.7%) and blood transfusion (31.3%) were more common in the C-section group.

Keywords: safety, efficacy, outcome & (TOLAC).

Study Design: Observational Study.

Introduction

Trial of labour after caesarean (TOLAC) is a planned attempt to allow labour in women who have had previous caesarean birth, this approach allows women who wants vaginal delivery to achieve that goal –vaginal birth after caesarean (VBAC)[1]. Globally the trial of labour after caesarean delivery is considered a reasonable safe option that is highly effective at reducing overall caesarean rate and obstetrics complications. Caesarean sections have increased dramatically in India[2]. According to NFHS-5 survey conducted (2019-2021) the C-section rate has increased further to approximately 21.5% [3].With increasing awareness and access to healthcare options , more women are opting for C-sections . Women undergoing caesarean section have a higher morbidity and mortality rate than those having vaginal birth,

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such as post-partum haemorrhage , need for massive blood transfusion ,surgical risk (intestinal obstruction, wound dehiscence , wound scars , infection etc .) and obstetric complications in subsequent pregnancies[4].

The overall success rate of TOLAC according to ACOG was 60-80%[4]. TOLAC lowers the country's overall caesarean rate while reducing maternal and neonatal morbidity and mortality[5] . The most feared complication of trial of labour after caesarean delivery is uterine rupture which can have catastrophic consequences, including substantial maternal and perinatal morbidity and mortality. Although the absolute risk of uterine rupture is low, several clinical, historical, obstetric, and intrapartum factors have been associated with increased risk. Caution is advised when considering labour augmentation[6-8].

Material and Methods

During the initial three months activities included designing the study protocol, defining inclusion and exclusion criteria for participant selection, and establishing data collection methods. The period was also utilized to secure ethical approval for the study. The study was conducted at the Department of Obstetrics and Gynaecology, Gandhi Medical College, Bhopal. Ethical Clearance: The ethical clearance for this study was approved by the Institutional Ethics Committee of Gandhi Medical College, Bhopal, via protocol no. GMC/IEC/2022/92.

Inclusion Criteria

1. All the women fulfilling the ACOG criteria for TOLAC and willing to participate in the study.
2. Consent to Participate: Women who provided informed consent to participate in the study.

Exclusion Criteria:

1. Women not willing to participate or not giving consent. ii. Women having previous 2 Caesarean.

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Result

Table 1: Distribution of Participants According to Age		
Age Group	n(268)	%
21-25	82	30.6
26-30	92	34.3
31-35	60	22.4
>35	34	12.7
Total	268	100.0
Mean	27.4	-

Out of the 268 participants, the majority fell within the age range of 26-30 years, accounting for 34.3% (92 participants). This was followed by the 21-25 age group, comprising 30.6% (82 participants). Participants aged 31-35 years made up 22.4% (60 participants), while those over 35 years represented the smallest group at 12.7% (34 participants).

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Table 2: Distribution of Participants According to Socioeconomic Status		
Kuppuswamy Class	n (268)	%
Lower	20	7.46
Upper Lower	76	28.4
Lower Middle	58	21.6
Upper Middle	108	40.3
Upper Class	6	2.24

In terms of socioeconomic status, the largest group of participants, 40.3% (108 participants), belonged to the upper middle class. The upper lower class accounted for 28.4% (76 participants), followed by the lower middle class at 21.6% (58 participants). Participants from the lower class made up 7.46% (20 participants), and the upper class constituted the smallest group at 2.24% (6 participants).

Table 3: Outcome of Trial of Labor		
Type of Delivery	N (268)	Percent%
VBAC	182	67.9
C-section	86	32.7
Scar rupture/Rupture uterus	2	0.74

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Out of the 268 participants who underwent a trial of labour, 67.9% (182 participants) successfully had a Vaginal Birth After Caesarean (VBAC). In contrast, 32.7% (86 participants) required a C-section. There were also two cases of scar rupture or rupture uterus, accounting for 0.74% of the total participants.

Table 4: Distribution of Outcome of TOLAC According to Onset of Labour

	VBAC (n =182)		C-section (n=86)		P-value
	n	%	n	%	
Augmentation of Labour					
No	76	41.7	20	23.2	0.012
Yes	97	53.2	57	66.2	
Rupture uterus	2	1.07	0	0	
Spontaneous Labour					
No	67	36.8	58	67.4	< 0.001
Yes	115	63.2	28	32.6	

For those who did not require augmentation of labour, 41.7% (76 participants) achieved a successful VBAC, while 23.2% (20 participants) required a C-section. Among those who did require augmentation, 53.2% (97 participants) had a successful VBAC, and

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66.2% (57 participants) underwent a C-section. There were 2 cases (1.07%) of uterine rupture in the VBAC group, with no cases in the C-section group. The difference in outcomes based on the need for labour augmentation was statistically significant (P-value = 0.012).

For participants with spontaneous onset of labour, 63.2% (115 participants) achieved a successful VBAC, compared to 32.6% (28 participants) who required a C-section. Among those without spontaneous labour, 36.8% (67 participants) had a VBAC, while 67.4% (58 participants) underwent a C-section. The difference in outcomes based on spontaneous onset of labour was highly significant (P-value < 0.001).

Table 5: Indication for C-section

Indication for C-Section	N (86)	Percent%
Fetal Distress	25	29.07
No Progress of Labour	18	20.93
Other Obstetric Indications	23	26.74
Women changed mind	20	23.26
Total	86	100.00

Among the 86 participants who required a C-section, the most common indication was foetal distress, accounting for 29.07% (25 participants). Other significant reasons included the lack of progress in labour, which made up 20.93% (18 participants), and various

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other obstetric indications, comprising 26.74% (23 participants). Additionally, 23.26% (20 participants) opted for a C-section after initially planning for a vaginal birth.

Table 6: Distribution of Outcome of TOLAC According to type of complications

Complications	VBAC (n = 182)		C-section (n=86)	
	n	%	n	%
PPH	19	10.4	5	5.8
Uterine Rupture	2	1.07	0	0
Scar Dehiscence	0	0	5	5.8
Perineal Tear	2	1.09	NA	NA
Vulva Haematoma	3	1.64	NA	NA
Thromboembolis m	0	0	0	0
Fever/ Infection	6	3.29	23	26.7
Operative Injury	NA	NA	7	8.1
Uterine artery laceration	NA	NA	6	3.2
Extension of uterine incision	NA	NA	7	3.8
Post-operative wound infection	NA	NA	23	26.7

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Urinary tract infection	3	1.64	10	11.6
Blood transfusion > 2 units	6	3.2	27	31.3

Examining the complications associated with TOLAC among the 268 participants:

- Postpartum hemorrhage (PPH) occurred in 10.4% (19 participants) of the VBAC group and 5.8% (5 participants) of the C-section group.
- Uterine rupture was observed in 1.07% (2 participants) of the VBAC group, with no cases in the C-section group.
- Scar dehiscence was noted in 5.8% (5 participants) of the C-section group, with no cases in the VBAC group.
- Perineal tear occurred in 1.09% (2 participants) of the VBAC group.
- Vulva hematoma was reported in 1.64% (3 participants) of the VBAC group.
- There were no cases of thromboembolism in either group.
- Fever or infection was significantly higher in the C-section group, with 26.7% (23 participants) compared to 3.29% (6 participants) in the VBAC group.
- Operative injury was present in 8.1% (7 participants) of the C-section group.
- Uterine artery laceration occurred in 3.2% (6 participants) of the C-section group.
- Extension of the uterine incision was observed in 3.8% (7 participants) of the C-section group.
- Postoperative wound infection was reported in 26.7% (23 participants) of the C-section group.

Discussion

The age distribution of participants in this study shows that the majority of women attempting TOLAC were between the ages of 21 and 30 years, with the mean age being 28.8 years. Specifically, 30.6% of the participants were aged 21-25 years, 34.3% were aged 26-30 years, 22.4% were aged 31-35 years, and 12.7% were over 35 years. This age distribution is comparable to the findings of Bhardwaj et al. (2023), who also reported a similar age range among Indian women undergoing TOLAC. This age group is significant as younger women are often considered better candidates for TOLAC due to generally better health and higher likelihood of successful vaginal delivery[9]. However, age alone is not the sole predictor of TOLAC success. Previous studies have highlighted various factors, including the method of labour onset, previous vaginal delivery, and the presence of medical complications, which play crucial roles in determining the outcomes of TOLAC[10].

The incidence of scar rupture or uterine rupture in our study was 1.07%. This is lesser than the 2.3% reported by Chen YT et al. (2022), but still within the range reported in the literature. Differences in patient populations, clinical practices, and monitoring protocols may account for this variation. The risk of uterine rupture remains a critical concern in TOLAC, emphasizing the need for stringent monitoring and prompt intervention[11-13]. Uterine rupture, although rare, can have severe consequences for both the mother and the fetus,

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making it essential to have experienced medical personnel and emergency protocols in place during TOLAC.

Oakes et al. (2022) found that a favourable admission score, including factors such as cervical dilation and station, was associated with a higher likelihood of successful VBAC. They emphasized the importance of waiting until the end of pregnancy to finalize patient counselling on the decision to TOLAC, incorporating admission cervical assessment[14]. This finding aligns with our study, suggesting that thorough evaluation and monitoring during the admission process can significantly impact TOLAC outcomes.

Conclusion

The majority of participants in the study was in the age group of 26-30 years (34.3%) and had senior secondary education (22.4%). Successful VBAC rates were higher among those with spontaneous onset of labor (63.2%) and in participants with elective previous LSCS (53.8%). Complications such as postpartum hemorrhage (10.4%) and uterine rupture (1.07%) were noted in the VBAC group, whereas fever/infection (26.7%) and blood transfusion (31.3%) were more common in the C-section group.

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