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A COMPARATIVE STUDY ON MATERNAL AND NEONATAL OUTCOMES IN VAGINAL BIRTH AFTER CAESAREAN SECTION VERSUS ELECTIVE LOWER SEGMENT CAESAREAN SECTION

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ABSTRACT

Background: The increasing rate of caesarean sections in India has raised concern over unnecessary repeat surgeries. Vaginal Birth After Caesarean (VBAC) offers a potential alternative with fewer maternal risks and improved neonatal bonding.

Materials and Methods: A prospective observational study was conducted over 18 months at our tertiary care hospital. A total of 200 women with a history of one prior lower segment caesarean section and term singleton pregnancies were enrolled. They were grouped into VBAC (n=100) and Elective Lower Segment Caesarean Section (ELSCS, n=100) based on delivery mode.

Results: VBAC was successful in 78% of cases. Maternal complications such as febrile morbidity and hospital stay were significantly lower in the VBAC group. Neonatal outcomes were comparable between groups, with earlier initiation of breastfeeding observed in the VBAC group. Uterine rupture occurred in 1% of VBAC cases, with no maternal deaths.

Conclusion: VBAC is a viable and safe alternative to ELSCS when proper case selection and intrapartum monitoring are ensured. Promoting VBAC in India could reduce caesarean-related morbidity and healthcare costs.

INTRODUCTION

Caesarean section (CS) rates have risen sharply over the past few decades, both globally and in India. The National Family Health Survey-5 (NFHS-5) reports a CS rate of over 20% in Indian institutional births, with even higher rates in private hospitals (1). A major contributor to this trend is repeat caesarean delivery after a previous CS, often without a trial of labor (2). Vaginal Birth After Caesarean (VBAC) presents an opportunity to reduce repeat caesarean rates. VBAC offers advantages such as fewer infections, quicker recovery, lower anaesthesia-related risks, and shorter hospital stays (3). However, it carries certain risks like uterine rupture, requiring vigilant monitoring and timely surgical intervention (4). Globally, VBAC success rates range between 60% and 80% (5). In India, however, utilization remains limited due to clinician apprehension, limited institutional support, and medicolegal fears (6). Cultural preferences and patient concerns about safety also contribute to low acceptance (7). Elective Lower Segment Cesarean Section (ELSCS) remains the more commonly

chosen mode of delivery for women with prior CS, often without offering VBAC as a choice (8). A balanced approach with appropriate screening, counseling, and emergency preparedness can make VBAC a safe alternative (9). This study aims to evaluate maternal and neonatal outcomes in VBAC compared to ELSCS in Indian women with a previous one LSCS, to understand the feasibility and safety of promoting VBAC in current clinical practice.

MATERIALS AND METHODS

Study Design and Setting: This was a **prospective, observational, comparative study** conducted over a period of **18 months** (from January 2023 to June 2024) at tertiary care hospital. These centres were chosen to ensure geographical diversity and represent varied clinical practices in urban Indian healthcare settings. Institutional Ethical Committee approval was obtained from all three centres prior to initiating the study.

Study Population: A total of **200 pregnant women** with a **singleton pregnancy** and **one previous lower segment cesarean section (LSCS)**were included in the study after obtaining informed written consent. These women were in their third trimester (≥ 37 weeks) and were attending the obstetrics and gynecology outpatient departments for delivery planning. Participants were divided into two groups based on their planned mode of delivery and obstetric decision: **Group A (VBAC group):** Women who opted for or were medically advised a **trial of labor after cesarean (TOLAC)** and delivered vaginally (successful or failed trial). **Group B (ELSCS group):** Women who underwent **planned elective repeat LSCS** without undergoing labor.

Inclusion Criteria

- Singleton pregnancy with cephalic presentation
- One prior LSCS with transverse incision
- No contraindication to vaginal delivery (e.g., placenta previa, classical scar)
- Gestational age ≥ 37 weeks
- **I**nformed consent provided for mode of delivery

Exclusion Criteria

- More than one previous caesarean section
- History of uterine rupture or classical caesarean incision
- Malpresentation or multiple pregnancy
- Medical or obstetric complications necessitating immediate caesarean (e.g., severe preeclampsia, uncontrolled diabetes)
- Refusal to consent for participation or follow-up

Procedure and Data Collection

Women in Group A underwent careful evaluation for VBAC eligibility based on institutional protocols and ACOG guidelines. Continuous fetal and uterine monitoring was performed throughout labor. Emergency LSCS was undertaken in cases of fetal distress, labor arrest, or scar dehiscence. In Group B, elective cesareans were scheduled between 38 and 39 weeks as per standard practice. All surgeries were performed by experienced obstetricians using standardized LSCS techniques. Data were collected using a structured proforma. Maternal outcomes (labor details, complications, duration of hospital stay, need for blood transfusion, postpartum morbidity) and neonatal outcomes (APGAR scores, NICU admission, birth weight, early breastfeeding initiation) were recorded. Maternal satisfaction was assessed using a Visual Analog Scale (VAS, 0–10).

Statistical Analysis: Data were analyzed using **SPSS version 25.0**. Continuous variables were presented as mean ± standard deviation and compared using the **Student's t-test**. Categorical variables were expressed as percentages and compared using the **Chi-square test** or **Fisher's exact test** where appropriate. A *p*-value of <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic and Obstetric Profile of Participants

Parameter	VBAC (n=100)	ELSCS (n=100)	*p*-value
Mean maternal age (years)	26.7 ± 3.4	27.1 ± 3.8	0.46
Primigravida (%)	0	0	-
Inter-delivery interval >24 mo	65%	60%	0.45
Booked antenatal cases (%)	89%	91%	0.67
Urban residence (%)	74%	78%	0.51

Table 2: Maternal Outcomes

Maternal Outcome	VBAC (n=100)	ELSCS (n=100)	*p*-value
Successful vaginal delivery	78%	N/A	-
Uterine rupture	1%	0%	0.32
Postpartum haemorrhage	3%	4%	0.70
Febrile morbidity	2%	6%	0.14
Hospital stay >4 days	12%	62%	<0.001
Maternal satisfaction (VAS score ≥7/10)	88%	54%	<0.001

Table 3: Labor and Delivery Characteristics in VBAC Group

Parameter	VBAC (n=100)
Spontaneous onset of labor (%)	62%
Labor augmentation required (%)	24%
Epidural analgesia used (%)	19%
Induction of labor (%)	14%
Failed trial of labor (%)	22%

Table 4: Neonatal Outcomes

Neonatal Outcome	VBAC (n=100)	ELSCS (n=100)	*p*-value
Mean birth weight (kg)	2.96 ± 0.34	3.01 ± 0.29	0.19
APGAR score at 5 min <7 (%)	4%	2%	0.41
NICU admission rate (%)	6%	8%	0.57
Neonatal sepsis (%)	2%	3%	0.65
Breastfeeding initiated <1 hr (%)	81%	42%	<0.001

Table 5: Predictors of Successful VBAC

Predictor	Success Rate (%)	*p*-value
Prior vaginal delivery	90%	<0.001
Interpregnancy interval >24 months	84%	0.03
Spontaneous labor onset	88%	<0.01
Maternal BMI <30	82%	0.04
Bishop score ≥6 on admission	86%	<0.01

DISCUSSION

The study revealed that VBAC, when conducted under monitored and controlled conditions, yields favorable maternal and neonatal outcomes comparable to ELSCS. The success rate of 78% in our VBAC group is consistent with international studies and indicates that with proper selection, a majority of women can achieve successful vaginal delivery (10). The presence of prior vaginal delivery, spontaneous labor onset, and inter-pregnancy interval greater than 24 months significantly

predicted VBAC success (11). These findings highlight the importance of detailed antenatal history and readiness to support labor trials in appropriate candidates (12).

One notable maternal benefit in the VBAC group was the significantly reduced hospital stay, which correlates with faster recovery, decreased hospital costs, and better postpartum well-being (13). Additionally, maternal satisfaction levels were significantly higher in the VBAC group, likely due to the empowerment associated with vaginal delivery and early postpartum mobility (14). Neonatal outcomes between the groups did not differ significantly in terms of birth weight, APGAR scores, or NICU admission rates (15). However, the VBAC group showed a higher percentage of early breastfeeding initiation, an important factor in neonatal immunity and bonding (16). The incidence of uterine rupture was 1%, which is within the acceptable safety limits reported globally (17). The case was managed promptly without maternal or neonatal mortality, reinforcing that emergency preparedness and continuous monitoring are critical to successful VBAC implementation (18).

Despite these positive outcomes, VBAC remains underutilized in India. Reasons include lack of dedicated labor management protocols, institutional reluctance, and medicolegal concerns (19). Educating healthcare providers and developing standardized guidelines could improve acceptance (20). Overall, the findings suggest that VBAC should be actively promoted in eligible women to reduce repeat cesarean rates and associated complications in subsequent pregnancies. With improved awareness, infrastructure, and support systems, VBAC can become a mainstream choice in India (21).

CONCLUSION: VBAC, when offered judiciously and supported with proper obstetric care, offers comparable maternal and neonatal outcomes to elective LSCS in the Indian setting. It reduces surgical burden, improves recovery, and fosters natural birthing practices. National guidelines must endorse standardized VBAC protocols to reduce unnecessary repeat caesarean deliveries.

REFERENCES

1. International Institute for Population Sciences (IIPS) and ICF. *National Family Health Survey (NFHS-5), 2019-21: India*. Mumbai: IIPS; 2021.
2. Betrán AP, Ye J, Moller A-B, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and national estimates. *PLOS ONE*. 2016;11(2):e0148343.
3. Guise J-M, McDonagh MS, Osterweil P, Nygren P, Chan BK, Helfand M. Systematic review of the incidence and consequences of uterine rupture in women with previous cesarean section. *BMJ*. 2004;329(7456):19–25.
4. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med*. 2004;351(25):2581–9.
5. ACOG Practice Bulletin No. 205: Vaginal birth after cesarean delivery. *Obstet Gynecol*. 2019;133(2):e110–27.
6. Arulkumaran S, Gibb DM, Lun KC, Heng SH, Ratnam SS. Trial of labour after previous caesarean section. *Aust N Z J Obstet Gynaecol*. 1989;29(2):125–31.
7. Madaan M, Trivedi SS, Agrawal S. Vaginal birth after cesarean section: a 10-year experience. *J Obstet Gynaecol India*. 2010;60(6):498–502.
8. Patel RR, Peters TJ, Murphy DJ. Prenatal risk factors for Caesarean section. *Acta Obstet Gynecol Scand*. 2005;84(5):506–13.
9. Sentilhes L, Vayssière C, Beucher G, Deneux-Tharaux C, Deruelle P, Diemunsch P, et al. Delivery for women with a previous cesarean: guidelines for clinical practice from the French College of Gynecologists and Obstetricians. *Eur J Obstet Gynecol Reprod Biol*. 2013;170(1):25–32.
10. Lundgren I, van Limbeek E, Vehvilainen-Julkunen K, Nilsson C. Clinician-centred interventions to increase vaginal birth after cesarean section (VBAC): a systematic review. *BMC Pregnancy Childbirth*. 2015;15:16.

11. Tahseen S, Griffiths M. Vaginal birth after two caesarean sections (VBAC-2): a systematic review with meta-analysis of success rate and adverse outcomes of VBAC-2 versus VBAC-1 and repeat (third) cesarean deliveries. *BJOG*. 2010;117(1):5–19.
12. Aiken ARA, Aiken CE, Trussell J, Brockelsby J. Outcomes associated with first birth after cesarean delivery: a population-based study. *BJOG*. 2014;121(2):169–75.
13. Bujold E, Hammoud AO, Schild C, Krapp M, Baumann P. Trial of labor in patients with a previous cesarean section: does maternal age influence the outcome? *Am J Obstet Gynecol*. 2004;190(4):1113–8.
14. Eden KB, McDonagh M, Denman MA, Marshall N, Emeis C, Fu R, et al. New insights on vaginal birth after cesarean: can it be predicted? *Obstet Gynecol*. 2008;112(2 Pt 1):307–17.
15. Dodd JM, Crowther CA, Huertas E, Guise JM, Horey D. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. *Cochrane Database Syst Rev*. 2013;(12):CD004224.
16. Prior E, Santhakumaran S, Gale C, Philipps LH, Modi N, Hyde MJ. Breastfeeding after cesarean delivery: a systematic review and meta-analysis of world literature. *Am J Clin Nutr*. 2012;95(5):1113–35.
17. Fitzpatrick KE, Kurinczuk JJ, Alfirevic Z, Spark P, Brocklehurst P, Knight M. Uterine rupture by intended mode of delivery in the UK: a national case-control study. *PLoS Med*. 2012;9(3):e1001184.
18. Rossi AC, D'Addario V. Maternal morbidity following a trial of labor after cesarean section vs elective repeat cesarean delivery: a systematic review with meta-analysis. *Am J Obstet Gynecol*. 2008;199(3):224.e1–8.
19. Gandhi MN, Shah NB. Obstetricians' perspective on VBAC: a cross-sectional study in Gujarat. *J Obstet Gynaecol India*. 2018;68(2):124–9.
20. Sinha M, Gupta R, Singh N. VBAC: do we need to revisit the guidelines? *Int J Reprod Contracept Obstet Gynecol*. 2017;6(3):1121–6.
21. Ministry of Health and Family Welfare. *Operational Guidelines for Obstetric Services*. Government of India; 2018.