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A Comparative Study of Expectant Management and Induction of Labour At 40 Weeks in Women with Previous One Caesarean Section in The Department of Obstetrics and Gynaecology in SMS Medical College and Hospital, Jaipur

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Abstract

Background: Labour induction is a common obstetric intervention, particularly in post-term pregnancies, to prevent maternal and fetal complications. In women with a previous caesarean section, choosing between induction and expectant management requires careful evaluation due to risks like uterine rupture. This study compares maternal and perinatal outcomes between both approaches at 40 weeks.

Aim: To compare expectant management and induction of labour at 40 weeks in women with previous one caesarean section.

Result: Most women in both groups were aged 26–30 years with similar interpregnancy intervals and labour durations. VBAC rates were higher in Group B (60%) than Group A (26.67%), showing a statistically significant difference (p=0.009). Other maternal and neonatal outcomes were comparable.

Method: A comparative observational study was conducted for one year after ethical approval. Detailed history, physical, and obstetric examinations were performed. Women with uncomplicated singleton pregnancies and one previous LSCS at 40 weeks were clinically and sonographically assessed for TOLAC eligibility based on gestational age, pelvic assessment, and Bishop score evaluation.

Conclusion: The study concludes that both induction of labour and expectant management at 40 weeks in women with one previous caesarean section are safe and effective, showing comparable maternal and neonatal outcomes. Induction, however, demonstrated a higher rate of successful vaginal birth after caesarean. With proper patient selection and monitoring, induction may enhance VBAC success without increasing complications, though larger studies are needed.

Keywords: Labour induction, post-term pregnancies, ternal and fetal complications, caesarean section.

Introduction

Labour is a physiological process involving progressive uterine contractions that cause cervical effacement, dilatation, and fetal descent through the birth canal. However, abnormalities in this process can prolong labour and increase maternal and fetal risks. Labour induction refers to the artificial initiation of labour before its spontaneous onset and is one of the most common obstetric interventions. Post-term pregnancy is a major indication for induction.[1] Pregnancies extending beyond 40 weeks carry higher risks of fetal distress, stillbirth, and operative deliveries due to declining placental function. Management options for such pregnancies include elective induction or expectant management until spontaneous labour or caesarean section becomes necessary. Induction aims to reduce risks associated with prolonged gestation, such as post-term pregnancy, oligohydramnios, or intrauterine fetal demise.[2]

The global increase in caesarean deliveries has resulted in more women with previous uterine scars, raising concerns about appropriate delivery methods. Trial of labour after caesarean (TOLAC) refers to an attempt at vaginal delivery following a prior caesarean, with uterine rupture being the primary risk (0.5–0.9% vs. 0.2% in unscarred uteri).[3] Although generally safe, TOLAC requires careful selection and management. Obstetric societies support TOLAC for eligible women. The RCOG recommends avoiding induction when possible and advises delivery by 41 weeks if spontaneous labour does not occur.[4]

Prolonged pregnancies beyond 40 weeks increase risks such as meconium-stained fluid and oligohydramnios. A meta-analysis reported a 64% higher risk of stillbirth beyond 41 weeks.[5] When successful, vaginal birth after caesarean (VBAC) reduces maternal morbidity and complications in future pregnancies, whereas repeat caesareans raise risks of haemorrhage and placenta accreta spectrum disorders.

A large study of 46,176 women found that induction at 39 weeks reduced repeat caesarean rates.[6] ACOG advises induction when benefits outweigh risks. The ARRIVE trial showed that elective induction at 39 weeks lowered caesarean rates without worsening perinatal outcomes, though later research found no significant differences.[7]

This study Aim To compare expectant management and induction of labour at 40 weeks in women with previous one caesarean section.

Materials and Methods

Type of Study: Descriptive observational study

Study Design: Descriptive comparative study

Study Place: Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

Duration of Study: Conducted from October 2023 for one year or until the desired sample size was achieved, followed by two months for data compilation and statistical analysis

Study Universe: All pregnant women attending the labour room in the Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

Study Population: Pregnant women with previous one lower segment caesarean section (LSCS) who were eligible for TOLAC at 40 weeks gestation

Ethical Consideration: Approval was obtained from the Institutional Review Board and Ethical Committee before the commencement of the study

Inclusion Criteria: Women with singleton live pregnancy at 40 weeks gestation and previous one LSCS. Women eligible for TOLAC and willing to participate by providing informed written consent. Women not included in any other research study.

Exclusion Criteria: Women with medical complications such as liver or renal disease, diabetes mellitus, gestational diabetes, or hypertensive disorders of pregnancy, and those with fetal complications including congenital anomalies, multiple gestation, or intrauterine growth restriction.

Methodology: The study was conducted for one year after obtaining ethical approval. Detailed history taking, general physical, systemic, and obstetric examinations were performed. Information on age, parity, socioeconomic status, and high-risk behaviours was documented. Women with uncomplicated pregnancies and one previous LSCS presenting at 40 weeks were clinically and sonographically evaluated for TOLAC eligibility. Gestational age, pelvic assessment, and Bishop score were carefully assessed to determine suitability for labour.

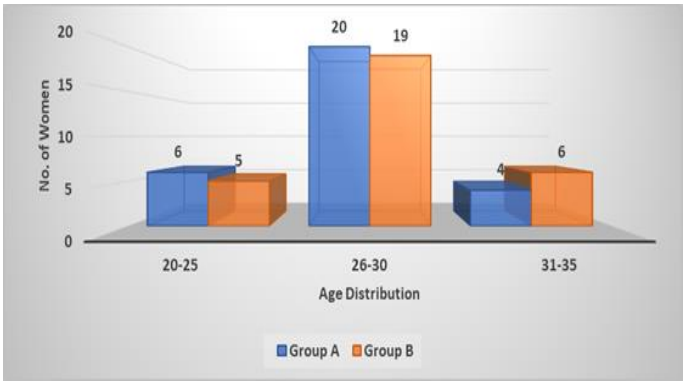
Induction of Labour*:* Induction with dinoprostone gel (PGE2 0.5 mg/3 g) was done intracervically. Women were monitored for contractions, leaking, and fetal well-being. Bishop score was reassessed after six hours; if less than six, the dose was repeated. Failure to achieve active labour within 12 hours was considered failed induction, and LSCS was performed.

Outcome Assessment: Mode of delivery, maternal outcomes, and fetal outcomes were analyzed statistically to draw inferences.

Results & Observations

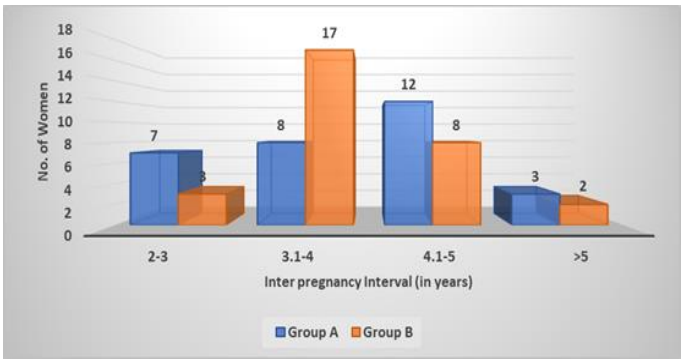
The study compared Group A and Group B across multiple parameters. Religion: Hindus 83.33% vs 73.33%, Muslims 16.67% vs 26.67% (p=0.34). Socioeconomic status: lower 23.33% vs 33.33%, lower middle 43.33% vs 20%, upper lower 33.33% vs 46.67% (p=0.15). Rural residence 43.33% vs 56.67% (p=0.3); literacy 70% vs 63.33% (p=0.58); booked 63.33% vs 56.67% (p=0.59). Mean birth weight 2.72 ± 0.28 kg vs 2.83 ± 0.18 kg (p=0.07). No significant differences were observed overall.

Figure 1: Distribution of study population according to Age.



The majority of women in both groups were aged 26–30 years, comprising 66.67% in Group A and 63.33% in Group B. The mean ages were 27.73±2.51 and 28±2.54 years, respectively, with no statistically significant difference observed between the groups (p=0.68).

Figure 2: Distribution of study population according to Inter Pregnancy Interval.



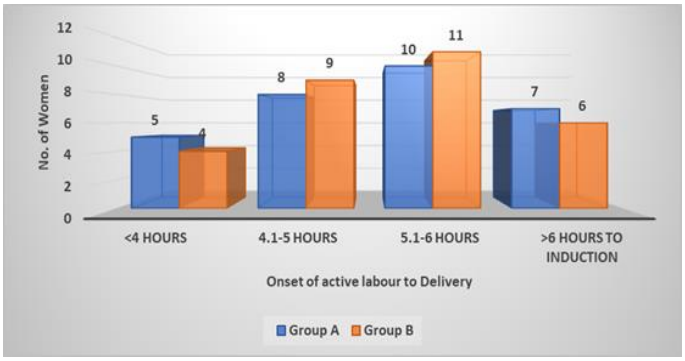
The interpregnancy interval was mostly 3.1–4 years in both groups. The mean interval was 4.29±0.95 years in Group A and 4.18±0.78 years in Group B, showing no statistically significant difference between groups (p=0.62).

Table 1: Distribution of study population according to Need for oxytocin augmentation

Need for oxytocin augmentation	Group A		Group B		P-value
	No. of Women	Percentage	No. of Women	Percentage	
Yes	11	36.66	4	13.33	0.03
No	19	63.33	26	86.67	
Total	30	100.00	30	100.00	

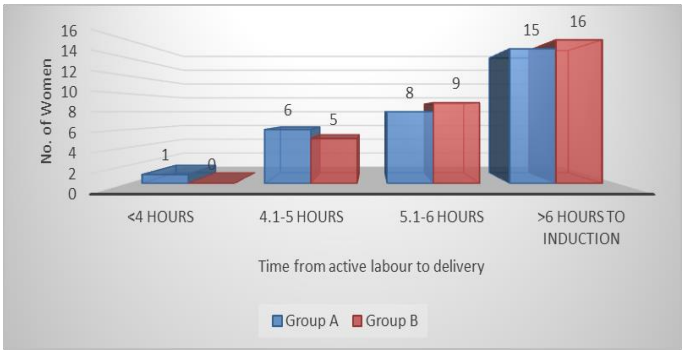
Oxytocin augmentation was required in 36.66% of women in Group A and 13.33% in Group B. Most women did not require augmentation (63.33% and 86.67%, respectively). The difference in the need for oxytocin augmentation between the two groups was statistically significant (p=0.03).

Figure 3: Distribution of study population according to Time from induction to onset of active labour.



The time from induction to active labour was similar in both groups. Most women entered active labour between 4–6 hours. The distribution pattern showed no statistically significant difference between Group A and Group B (p=0.96).

Figure 4: Distribution of study population according to Time from active labour to delivery.



In both groups, most women had labour durations exceeding 6 hours (50% in Group A, 53.33% in Group B). The remaining women delivered within 4–6 hours. The difference in labour duration between the groups was not statistically significant (p=0.92).

Table 2: Comparison of study population according to Mode of delivery

Mode of delivery	Group A		Group B		P-value
	No. of Women	Percentage	No. of Women	Percentage	
LSCS	22	73.33	12	40.0	0.009
VBAC	8	26.67	18	60.0	
Total	30	100.00	30	100.0	

In Group A, 73.33% of women delivered by LSCS and 26.67% by VBAC, whereas in Group B, 40% had LSCS and 60% achieved VBAC. The difference in mode of delivery between the two groups was statistically significant (p=0.009).

Table 3: Comparison of Maternal hospital stay in two groups

Maternal hospital stay	Group A		Group B		P-value
	No. of Women	Percentage	No. of Women	Percentage	

1-2 days	9	30.00	14	46.67	0.39
3-5 days	19	63.33	14	46.67	
>5 days	2	6.67	2	6.67	
Total	30	100.00	30	100.00	

In Group A, 63.33% of women stayed for 3–5 days, while 30% stayed 1–2 days and 6.67% over 5 days. In Group B, 46.67% stayed 1–2 days, 46.67% for 3–5 days, and 6.67% over 5 days. The difference was not statistically significant (p=0.39).

Discussion

This study compares expectant management and induction of labour at 40 weeks in women with one previous caesarean section. It evaluates maternal and neonatal outcomes, including VBAC success, complications, and hospital stay. The aim is to determine the safer, more effective approach through individualized management and close intrapartum monitoring.

In the study, most women were aged 26–30 years, comprising 66.67% in Group A and 63.33% in Group B, with mean ages of 27.73±2.51 and 28±2.54 years, respectively (p=0.68). Similarly, Yadav P et al[8] reported mean ages of 25.16 and 24.87 years, while Panchal D et al[9] found mean ages of 24.36 and 23.99 years, indicating comparable demographic profiles across studies.

In this study, most women in Group A had an interpregnancy interval of 4.1–5 years, while in Group B the majority were between 3.1–4 years, with no significant difference. Similarly, Dong Y et al[10] found that very short (≤11 months) and long (≥60 months) intervals increased the risk of repeat caesarean and neonatal complications. Likewise, Liu Y et al[11] reported that short spacing heightened uterine rupture risk, while long intervals increased infections and neonatal admissions.

In this study, 36.66% of women in Group A and 13.33% in Group B required oxytocin augmentation, showing a significant difference (p=0.03). Similarly, Yadav K et al[12] found oxytocin use in 36.7% of Group A and 66.7% of Group B (p=0.001). Likewise, Panchal D et al[9] reported 40% augmentation in the spontaneous group versus 24% in the induced group, also statistically significant (p=0.02).

In this study, most women in both groups entered active labour between 4–6 hours, showing no significant difference (p=0.96). Similarly, How H Y et al[13] reported a mean induction-to-active-labour time of 5.6 ± 2.1 hours with no difference between one or two PGE_2 doses. Likewise, Østborg T B et al[14] found induction prolonged active labour in nulliparous women (~9 h vs 7.2 h) but shortened it slightly in parous women (~2.4 h vs 2.8 h).

In this study, most women in both groups had an active labour-to-delivery interval exceeding 6 hours (50% in Group A, 53.33% in Group B), with no significant difference (p=0.92). Similarly, Rajalakshmi K et al[15] reported that 52% in the misoprostol group and 55% in the oxytocin group laboured for over 6 hours. Likewise, Dong Y et al[10] found mean active phases of 6.4 ± 1.2 h and 6.6 ± 1.1 h, respectively, without statistical significance.

In this study, LSCS was more frequent in Group A (73.33%) than Group B (40%), while VBAC was higher in Group B (60%) (p=0.009). Similarly, Yadav P et al[8] reported 76% vaginal and 24% caesarean deliveries in Group A versus 58% and 42% in Group B. Likewise, Panchal D et al[9] found spontaneous labours resulted in 82% vaginal and 15% caesarean births, whereas induced labours had 66% vaginal and 29% caesarean deliveries.

In this study, hospital stay was slightly longer in Group A, but the difference was not statistically significant (p=0.39). Similarly, Vecchioli R et al[16] found that 39.1% of induced women stayed ≥6 days versus 9% in spontaneous labour, showing prolonged hospitalization. Likewise, Kacica M et al[17] reported that elective induction increased hospital stay by an average of 0.34 days compared to spontaneous labour, a statistically significant difference (p<0.0001).

Conclusion

This study found that women with one previous caesarean undergoing either expectant management or induction at 40 weeks had comparable demographic, obstetric, maternal, and neonatal outcomes. Induction showed a higher rate of successful VBAC without increasing complications, indicating it as a safe, effective option. Both strategies appear equally safe, though larger studies are needed for validation.

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