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Original Research

Fetal Outcomes in Women with Two Previous Cesarean Deliveries: A Case-Control Study

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Abstract

Background: Neonatal outcomes in pregnancies complicated by multiple cesarean deliveries are of increasing concern, with risks including preterm birth, low birth weight, and NICU admissions. Objectives: This study evaluates fetal outcomes in women with two previous cesarean deliveries compared to those with one prior cesarean. **Methods:** A retrospective case-control study was conducted at BMCRI, Bangalore, including 100 women (>28 weeks gestation). Group A (n=50) had two previous CS, and Group B (n=50) had one previous CS. Neonatal outcomes analyzed included preterm birth, low birth weight, Apgar scores, NICU admission, and perinatal mortality. Fisher's exact test was used for categorical variables, and descriptive analysis was applied to continuous variables. **Results:** Preterm birth occurred more frequently in Group A (20% vs 12%). Low birth weight was higher in Group A (26% vs 18%). Apgar <7 at 5 minutes was noted in 12% of Group A vs 6% of Group B. NICU admissions were higher in Group A (18% vs 10%), while perinatal mortality was 4% vs 2%. Mean birth weight was 2.74 vs 2.92 kg, and mean gestational age at delivery was 37.2 vs 37.6 weeks. Though not statistically significant, these findings reveal clinically relevant trends. **Conclusion:** Neonatal outcomes after two prior cesareans show increased risks of adverse events, underscoring the importance of antenatal surveillance, timing of delivery, and ensuring neonatal intensive care availability.

Keywords: Neonatal outcomes, fetal outcomes, two previous cesarean deliveries.

Introduction

Mild Hyperbaric Oxygen Therapy (mHBOT) has proliferated globally and in India under the guise of a wellness service. Soft-shell portable Cesarean delivery rates have risen sharply over the past three decades, with global estimates reporting over 21% of births delivered via cesarean section [1]. In India, NFHS-5 data show cesarean delivery rates above 20% in urban areas, with substantial variation across states [2]. While cesarean sections have improved maternal and neonatal survival in complicated pregnancies, repeat cesarean deliveries are associated with increasing risks [3].

Fetal outcomes in women with multiple cesareans remain a matter of debate. Potential risks include iatrogenic prematurity due to early elective cesareans, low birth weight, and increased NICU admissions [4,5]. Elective repeat cesarean delivery before 39 weeks has been linked to neonatal respiratory morbidity, including transient tachypnea of the newborn and respiratory distress syndrome [6,7]. Additionally, compromised placentation in scarred uteri may contribute to intrauterine growth restriction and perinatal mortality [8].

Previous studies (Kaplanoglu et al., Gasim et al.) found no statistically significant differences in neonatal morbidity after multiple cesareans, although trends toward higher NICU admissions and lower Apgar scores were observed [9,10]. Global guidelines, including those from ACOG and RCOG, recommend careful timing of delivery and ensuring neonatal care readiness for women with repeat cesareans [11,12]. This study aims to compare neonatal outcomes between women with two versus one prior cesarean, thereby contributing to evidence for counseling and planning of delivery in women with multiple scars.

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RESULT

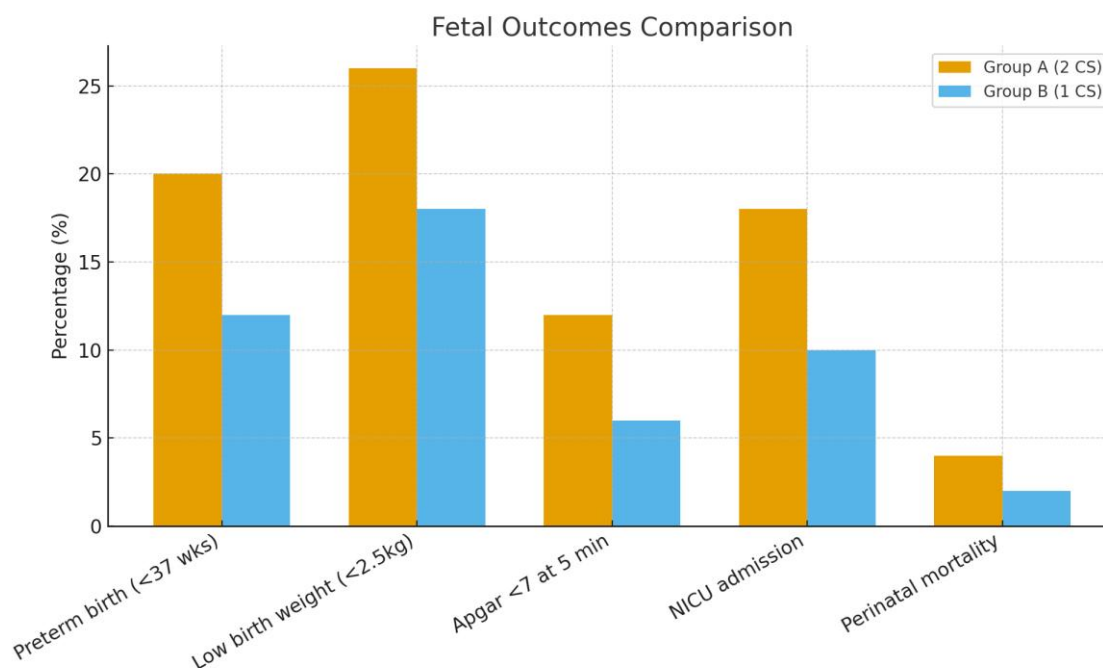
Table 1. Fetal outcomes with percentages

Variable	Group A (2 CS, %)	Group B (1 CS, %)	p-value
Preterm birth (<37 wks)	20	12	0.317
Low birth weight (<2.5kg)	26	18	0.365
Apgar <7 at 5 min	12	6	0.298
NICU admission	18	10	0.274

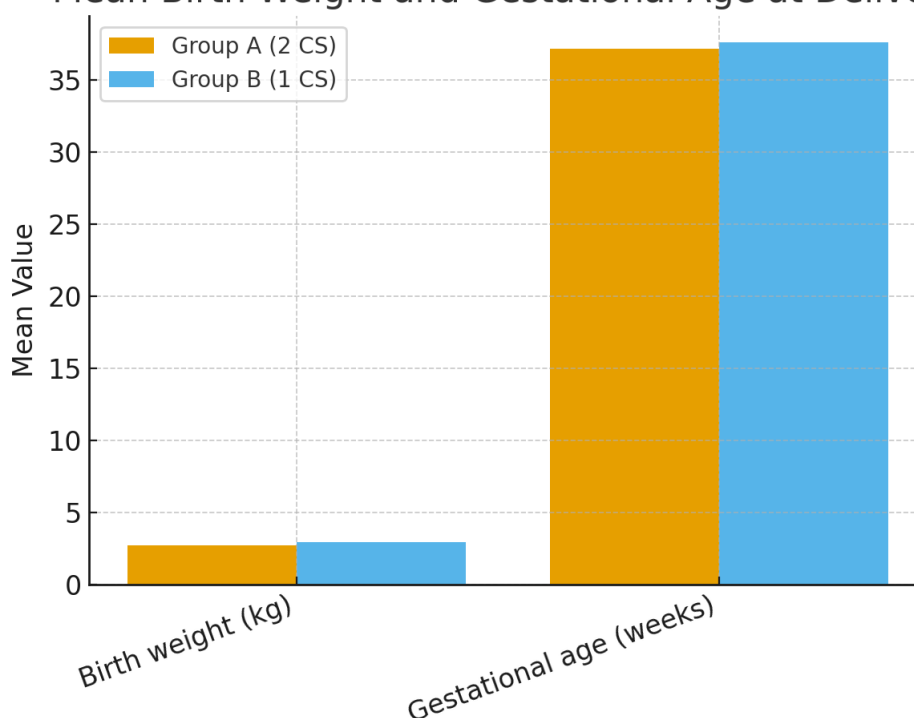
Perinatal mortality	4	2	0.556
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Table 2. Continuous fetal outcomes (means)

Variable	Group A (mean)	Group B (mean)	p-value
Birth weight (kg)	2.74	2.92	0.075
Gestational age (weeks)	37.2	37.6	0.099



Mean Birth Weight and Gestational Age at Delivery



DISCUSSION

The present study demonstrates that neonatal outcomes tend to be less favorable in women with two previous cesarean sections compared to those with one prior cesarean. Although differences were not statistically significant, trends were evident. Preterm birth was more frequent in Group A (20% vs 12%), likely due to increased rates of scheduled elective cesareans before 39 weeks [6]. This finding aligns with Tita et al., who reported significantly increased respiratory morbidity in neonates delivered before 39 weeks [7].

Low birth weight and Apgar <7 at 5 minutes were also more common in Group A, which may reflect subtle effects of uterine scarring on placentation and intrauterine growth [8,9]. NICU admissions were almost double in Group A (18% vs 10%), consistent with findings by Hansen et al., who linked elective repeat cesareans to higher neonatal morbidity [7].

Although perinatal mortality was low in both groups, it was higher in Group A (4% vs 2%). While this difference was not significant, it underscores the importance of ensuring tertiary neonatal care facilities when managing women with multiple prior cesareans [10,11]. Our findings align with Uygur et al. and Gasim et al., who reported that while major differences may not always reach statistical significance, the

cumulative burden of morbidity is clinically relevant [9,10] .

The key strength of this study is its direct comparison of outcomes in a resource-limited Indian tertiary center, adding local data to the global body of literature. Limitations include the small sample size and lack of long-term neonatal follow-up. Larger multicenter studies are needed to confirm trends observed here.

Conclusion

Women with two prior cesarean deliveries demonstrate higher risks of adverse fetal outcomes compared to those with one prior cesarean, including increased preterm birth, low birth weight, lower Apgar scores, NICU admissions, and perinatal mortality. Although not statistically significant in all cases, the trends are clinically important. Optimal timing of elective repeat cesarean at ≥ 39 weeks, coupled with vigilant antenatal care and guaranteed neonatal intensive care backup, is essential to mitigate risks [11-20] . Future research with larger cohorts and long-term neonatal follow-up is warranted to strengthen the evidence base.

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