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PERINATAL OUTCOME IN TWIN PREGNANCIES: VAGINAL DELIVERY VERSUS CAESAREAN SECTION – A PROSPECTIVE OBSERVATIONAL STUDY AT A TERTIARY CARE CENTRE

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ABSTRACT

Background: Twin pregnancies are associated with a substantially higher risk of perinatal morbidity and mortality compared to singleton gestations. The optimal mode of delivery in twin pregnancies remains controversial, particularly with respect to its impact on perinatal mortality. While vaginal delivery is feasible in carefully selected cases, caesarean section is often preferred due to concerns regarding fetal safety, especially in the presence of obstetric complications.

Objectives: To evaluate perinatal mortality in twin pregnancies and analyse its association with the mode of delivery i.e., vaginal delivery versus caesarean section.

Materials and Methods: This prospective observational study included 100 twin pregnancies managed at a tertiary care hospital. Detailed maternal, antenatal, and intrapartum data were collected. The mode of delivery was categorised as vaginal delivery (spontaneous or assisted) or caesarean section. Indications for caesarean section were recorded. Perinatal mortality outcomes were analysed in relation to the mode of delivery.

Results: Vaginal delivery was the predominant mode of delivery, occurring in the majority of twin births. Caesarean section was performed in 28% of cases, most commonly for malpresentation (16%), followed by poor Bishop score, non-progress of labour, fetal distress, and placental complications. A total of 38 perinatal deaths were recorded. Of these, 30 cases (80%) occurred following vaginal delivery, while 8 cases (20%) occurred following caesarean section. Among vaginally delivered twins, perinatal mortality rates were 18.91% and 22.22%, whereas among caesarean-delivered twins, rates were 19.23% and 10.71%. The higher absolute number of perinatal deaths following vaginal delivery reflected its greater utilization rather than an isolated effect of delivery mode.

Conclusion: Perinatal mortality in twin pregnancies is multifactorial and largely influenced by prematurity and obstetric complications. When appropriately selected, vaginal delivery does not independently increase perinatal mortality. Caesarean section remains vital for specific obstetric indications but does not eliminate perinatal risk.

Keywords: *Twin pregnancy; Perinatal mortality; Mode of delivery; Caesarean section; Vaginal delivery.*

INTRODUCTION

Twin pregnancies account for a small proportion of total pregnancies but contribute disproportionately to perinatal morbidity and mortality worldwide. The rise in assisted reproductive techniques and delayed childbearing has resulted in

a steady increase in the incidence of multiple gestations, particularly twins [1]. Despite advances in antenatal surveillance and neonatal care, twin pregnancies continue to pose significant obstetric challenges.

Perinatal mortality in twins is influenced by multiple factors, including prematurity, low birth weight, malpresentation, intrapartum complications, and mode of delivery [2]. Compared to singleton pregnancies, twins are associated with a two- to three-fold higher risk of perinatal death, largely attributable to preterm birth and growth discordance [3].

The choice of mode of delivery in twin pregnancies remains controversial. While planned vaginal delivery is considered safe in selected cases—especially when the first twin is in cephalic presentation—caesarean section is frequently preferred due to concerns regarding intrapartum complications, particularly for the second twin [4]. Malpresentation, fetal distress, non-progress of labour, and placental complications often necessitate operative delivery in twins [5].

Several studies have attempted to compare perinatal outcomes between vaginal and caesarean deliveries in twin pregnancies, with conflicting results. Some authors report no significant difference in perinatal mortality when strict selection criteria are followed for vaginal delivery [6], while others advocate elective caesarean section to minimiseintrapartum risks [7].

In low- and middle-income settings, the decision regarding mode of delivery must balance maternal safety, neonatal outcomes, available resources, and obstetric expertise. Understanding local data on delivery practices and perinatal outcomes is therefore essential for evidence-based decision-making.

This study aims to evaluate perinatal mortality in twin pregnancies and analyse its association with the mode of delivery in a tertiary care centre, using prospectively collected data.

OBJECTIVE

To assess perinatal mortality in twin pregnancies and compare outcomes in relation to vaginal delivery and caesarean section.

MATERIALS AND METHODS

This prospective observational study was conducted at a tertiary care teaching hospital, GMC and JK Lon Hospital, Kota, Rajasthan. A total of **100 twin pregnancies** admitted for delivery were included in the study.

Inclusion criteria: All diagnosed twin pregnancies beyond the period of viability

Exclusion criteria: Major congenital anomalies incompatible with life and Higher-order multiple pregnancies

Detailed maternal history, antenatal complications, gestational age at delivery, and intrapartum details were recorded.

Mode of delivery was categorised as:

1. Spontaneous vaginal delivery
2. Assisted breech delivery
3. Caesarean section

Indications for caesarean section were documented as per institutional protocols. Perinatal outcomes, including perinatal mortality, were recorded and analysed. Data were compiled in the MS excel sheet, and observations were drawn.

RESULTS

Table 1: Mode of Delivery in Twin Pregnancies

Mode of delivery	No. of cases (Twin-1)	%	No. of cases (Twin-2)	%
Spontaneous Vaginal delivery	66	66%	51	51%
Assisted breech delivery	8	8%	21	21%
Caesarean section	26	26%	28	28%
Total	**100**	**100%**	**100**	**100%**

Among the 100 twin pregnancies studied, vaginal delivery was the predominant mode of delivery. Spontaneous vaginal delivery occurred in **66%** of cases for the first twin and **51%** for the second twin, while assisted breech delivery was observed in **8%** and **21%**, respectively. Caesarean section was performed in **26%** of first twins and **28%** of second twins. Thus, vaginal delivery (spontaneous and assisted) constituted the majority of deliveries, while caesarean section accounted for just over one-quarter of cases.

Table 2: Indications for Caesarean Section

Indication	No. of cases	Percentage
Mal presentation	16	16%
PIH with poor bishop score	4	4%
NPOL (Non-progress of labour)	2	2%
Fetal distress	2	2%
Placenta previa	1	1%
Abruptio placentae	1	1%
DTA (Deep transverse arrest)	2	2%
Total	**28**	**28%**

A total of **28 caesarean sections** were performed. The most common indication was **malpresentation (16%)**, followed by **poor Bishop score (4%)**, **non-progress of labour (2%)**, **fetal distress (2%)**, **abruptio placentae (2%)**, **deep transverse arrest (2%)**, and **placenta previa (1%)**. Perinatal mortality was predominantly associated with prematurity and antenatal or intrapartum complications rather than the mode of delivery itself.

Table 3: Mode of Delivery versus Perinatal Mortality (PNM)

Mode of delivery	1st twin		2nd twin		Total
	No.(n=100)	PNM (%)	No.(n=100)	PNM (%)	PNM
Vaginal delivery	74	14(18.91%)	72	16 (22.22%)	30
Caeserian section	26	5(19.23%)	28	3 (10.71%)	8
P value (Chi-sq)	P=0.798 (NS)		P=0.104 (NS)		

Perinatal mortality was documented in **38 cases**. Of these, **30 cases (80%)** occurred following **vaginal delivery**, while **8 cases (20%)** occurred following **caesarean section**.

Among vaginally delivered twins, perinatal mortality was observed in **14 cases (18.91%)** among first twins and **16 cases (22.22%)** among second twins. In contrast, among caesarean-delivered twins, perinatal mortality occurred in **5 cases (19.23%)** among first twins and **3 cases (10.71%)** among second twins.

Overall, a higher proportion of perinatal deaths was observed following vaginal delivery; however, this reflected the larger proportion of vaginal births in the study population rather than an isolated effect of delivery mode. No statistically significant association was observed. (Chi-square test; P>0.05)

DISCUSSION

Perinatal mortality in twin pregnancies is influenced by a complex interplay of gestational age, intrapartum complications, and fetal condition. In the present study, although **80% of perinatal deaths occurred following vaginal delivery**, this finding must be interpreted in the context of the fact that **vaginal delivery constituted the predominant mode of birth** in the study population.

Similar observations have been reported in earlier studies, where higher absolute numbers of perinatal deaths followed vaginal delivery due to its greater utilization, rather than increased inherent risk [6,7]. When examined proportionately, perinatal mortality rates following caesarean section were not negligible, underscoring that operative delivery does not eliminate perinatal risk in twin gestations.

Malpresentation emerged as the leading indication for caesarean section in this study, consistent with published literature identifying abnormal fetal lie as a key determinant of operative intervention in twin pregnancies [5,8]. The lower proportion of perinatal mortality following caesarean delivery in this cohort likely reflects **appropriate risk-based selection** for operative delivery rather than superiority of the mode itself.

Importantly, the observed perinatal deaths were frequently associated with **prematurity and obstetric complications**, factors repeatedly shown to be stronger predictors of adverse outcomes than the route of delivery alone [3,9]. Evidence from randomized and observational studies suggests that, in carefully selected twin pregnancies, planned vaginal delivery does not significantly increase perinatal mortality when compared to caesarean section [4,10].

These findings support current recommendations that mode of delivery in twin pregnancies should be individualized, taking into account presentation, gestational age, and intrapartum progress, rather than adopting a universal caesarean policy.

Perinatal mortality in twin pregnancies is multifactorial and is influenced by gestational age at delivery, obstetric complications, and intrapartum management decisions. In the present study, although **80% of perinatal deaths occurred following vaginal delivery**, this finding must be interpreted in the context of vaginal delivery being the predominant mode of birth. The association reflects exposure distribution rather than an inherent excess risk attributable to vaginal delivery itself.

The strong influence of **prematurity** on perinatal mortality observed in this cohort is consistent with findings from a prospective cohort study conducted at the same tertiary care centre, which demonstrated a marked inverse relationship between gestational age at delivery and perinatal survival in twin pregnancies [11]. In that study, nearly 70% of perinatal deaths occurred among deliveries before 32 weeks of gestation, underscoring that **gestational age is a more critical determinant of perinatal outcome than route of delivery alone**.

Similarly, data from a prospective observational study evaluating overall perinatal outcomes in twin pregnancies reported a perinatal mortality rate of 19%, with prematurity, low birth weight, and early neonatal complications emerging as dominant contributors to adverse outcomes [12]. These findings support the interpretation that the higher absolute number of perinatal deaths following vaginal delivery in the present study reflects the burden of preterm vaginal births rather than suboptimal delivery practices.

In the current study, caesarean section was primarily performed for clear obstetric indications, particularly malpresentation, non-progress of labour, and fetal distress. This selective approach to operative delivery likely contributed to the comparatively lower proportion of perinatal deaths following caesarean section. Comparable observations have been reported in institutional studies where caesarean delivery in twins was associated with improved outcomes only when used judiciously for high-risk situations [6,13]. Choudhary N, et al reported 75% full-term births, 16% preterm births and 9% abortions with 34% casarean section and 30% vaginal delivery among singleton pregnancies [14]

Importantly, previous randomized and observational studies have shown that **planned vaginal delivery in appropriately selected twin pregnancies does not significantly increase perinatal mortality**, provided that the first twin is in cephalic presentation and delivery occurs in a well-equipped tertiary care setting [4,10]. The findings of the present study align with this evidence and reinforce the principle that **routine elective caesarean section for all twin pregnancies is not justified**.

Overall, the integration of delivery-mode–specific mortality data with gestational age–related outcomes emphasizes that strategies aimed at **preventing very early preterm birth, optimizing antenatal surveillance, and ensuring skilled intrapartum care** are likely to yield greater reductions in perinatal mortality than changes in delivery mode alone.

CONCLUSION

Perinatal mortality in twin pregnancies is predominantly influenced by gestational age and obstetric risk factors rather than the mode of delivery alone. Although a higher absolute number of perinatal deaths occurred following vaginal delivery, this reflects its greater frequency as a delivery mode in the study population. Caesarean section remains essential for clearly defined obstetric indications but does not completely eliminate perinatal risk. Carefully selected vaginal delivery in twin pregnancies is a safe and acceptable option in tertiary care settings with appropriate expertise.

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