

# Does mode of delivery of second twin influence the neonatal outcome?

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## Abstract

**Background:** The incidence of twin pregnancies account is about 3% of all gestations. The second twin is generally considered at higher risk of severe morbidity and mortality because of obstetric complications. There is general consensus that vaginal delivery for twins is safe when both are in vertex presentation, whereas planned caesarean section is typically indicated for breech presentation of the first twin. Planned vaginal delivery has been associated with an increased risk of perinatal mortality and morbidity of the second twin compared with the first twin. The purpose of this study was to examine the association between mode of delivery and NICU admission, neonatal mortality in term and preterm twin pregnancies, particularly for second born twins. **Objectives:** To study the influence of various methods of delivery of the second of the twins on the neo natal outcome of the second twin. **Material and Methods:** We analyzed 50 cases of twin pregnancies delivered in hospitals attached to JJM Medical College, Davangere (from July 2013 to July 2014) where the first twin was vertex and delivered vaginally. Pregnancies with ante-partum complications were excluded. Three groups of twin pairs were selected and included in the study. Group A: Twin pairs with the second twin delivered by caesarean section. Group B: Vaginally delivered second twin. Group C: Version and breech extracted second twin. Twin pairs were excluded if the mother was assigned a diagnosis suggesting any ante-partum pathology: congenital malformations, immunization or hydrops, intrauterine growth restriction, chorioamnionitis, maternal infection or fever, ante-partum bleeding or placenta praevia, preeclampsia or eclampsia, diabetes, twin-to-twin transfusion syndrome, or intrauterine fetal death. **Results:** Total number of 50 cases were studied where the first twin was vertex and delivered vaginally. Out of 50 cases, 62% had a non-vertex second twin. 64% of babies delivered vaginally were admitted into NICU with 24% mortality. All cases of IPV and breech delivery were admitted into NICU with 50% mortality where as only 52.63% of babies delivered by caesarean sections were admitted into NICU with 15.78% mortality. The neonatal outcome in the three study groups were shown in Table 1 and 2. Second born twins in Group A (second twin delivered by caesarean section) was at lower risk of NICU admission ( $p=0.109$ ) or neonatal death ( $p=0.232$ ) compared to second born twins in group B (vaginally delivered second twin) and group C (version and breech extracted second twin). **Conclusion:** Neonatal mortality is lower for the second twin after caesarean delivery compared to Vaginal and IPV-breech but it is not statistically significant. The present results support that, caesarean delivery may be associated with a better chance of neonatal survival in otherwise uncomplicated twin pregnancies.

**Keywords:** Twin pregnancy, Vaginal delivery, Caesarean section, Internal Podalic version, NICU admission.

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## INTRODUCTION

The influence of birth order on neonatal outcomes in twin pregnancy is still unclear. The second twin is generally considered at higher risk of severe morbidity and mortality because of obstetric complications that may occur after delivery of the first twin, including malpresentation, placental separation, cord prolapse, uterine atony, long interval delivery and cervical spasm. There is general consensus that vaginal delivery for twins is safe when both are in vertex presentation, whereas planned caesarean section is typically indicated for breech presentation of the first twin. In fact, studies on the effect

of presentation, mode of delivery and birth order have produced conflicting results. Planned vaginal delivery has been associated with an increased risk of perinatal mortality and morbidity of the second twin compared with the first twin. The question of whether all twin pregnancies should be delivered by caesarean section was raised in an editorial,<sup>1</sup> prompted by a study of intrapartum and neonatal deaths of twins in Britain 1994-2003.<sup>2</sup> In that study by Smith and co-workers, the risk of death due to intrapartum anoxia or trauma for the term second twin compared with the first was fourfold at vaginal delivery and twofold at caesarean delivery.<sup>2</sup> In a previous report from Scotland 1985-2001, the risk of intra-partum or neonatal death was fivefold for the second twin compared with the first at vaginal birth, whereas no association was found between birth order and mortality after planned caesarean section.<sup>3</sup> Thus, fetal distress and low Apgar scores are more frequent in second twins.<sup>4,5</sup> However, another large registry study of twin births in the United States 1995-97 showed no difference in neonatal mortality between first and second twins.<sup>6</sup> A debate about the ideal mode of delivery for twins may be expected, and we considered that a retrospective analysis of our data of neonatal mortality in twin deliveries according to mode of delivery might inform this debate. The purpose of this study was to examine the association between mode of delivery and NICU admission, neonatal mortality in term and preterm twin pregnancies, particularly for second born twins. If the first twin is in cephalic presentation, caesarean delivery is usually restricted to complicated or high risk pregnancies. When the first twin presents by the breech, caesarean delivery is generally recommended. This difference in policy according to presentation of the first twin provided the opportunity to evaluate the outcome of the second twin in pregnancies without significant ante-partum complications delivered by caesarean section (for breech presentation of the first

twin) compared with those delivered vaginally (first twin cephalic in otherwise uncomplicated pregnancy).

## MATERIAL AND METHODS

We analysed 50 cases of twin pregnancies delivered in hospitals attached to JJM Medical College, Davangere from 2013 July to 2014 July where the first twin was vertex and delivered vaginally. Pregnancies with ante-partum complications were excluded. Three groups of twin pairs were selected and included in the study. Group A: Twin pairs with the second twin delivered by caesarean section. Group B: Vaginally delivered second twin. Group C: Version and breech extracted second twin. Twin pairs were excluded if the mother was assigned a diagnosis suggesting any ante-partum pathology: congenital malformations, immunization or hydrops, intrauterine growth restriction, chorioamnionitis, maternal infection or fever, ante-partum bleeding or placenta praevia, preeclampsia or eclampsia, diabetes, twin-to-twin transfusion syndrome, or intrauterine fetal death.

## RESULTS

Total number of 50 cases were studied where the first twin was vertex and delivered vaginally. Out of 50 cases, 62% had a non-vertex second twin. 64% of babies delivered vaginally were admitted into NICU with 24% mortality. All cases of IPV and breech delivery were admitted into NICU with 50% mortality where as only 52.63% of babies delivered by caesarean sections were admitted into NICU with 15.78% mortality. The neonatal outcome in the three study groups were shown in Table 1 and 2. Second born twins in Group A (second twin delivered by caesarean section) was at lower risk of NICU admission ( $p=0.109$ ) or neonatal death ( $p=0.232$ ) compared to second born twins in group B (vaginally delivered second twin) and group C (version and breech extracted second twin).

Table 1

| Admission to NICU | Mode of delivery |            |                 |            |                    |            | Total           |            |
|-------------------|------------------|------------|-----------------|------------|--------------------|------------|-----------------|------------|
|                   | LSCS             |            | Vaginal         |            | Version and breech |            |                 |            |
|                   | Number of cases  | %          | Number of cases | %          | Number of cases    | %          | Number of cases | %          |
| No                | 9                | 47.4       | 9               | 36         | 0                  | 0          | 18              | 36         |
| Yes               | 10               | 52.6       | 16              | 64         | 6                  | 100        | 32              | 64         |
| <b>Total</b>      | <b>19</b>        | <b>100</b> | <b>25</b>       | <b>100</b> | <b>6</b>           | <b>100</b> | <b>50</b>       | <b>100</b> |

p - value = 0.109

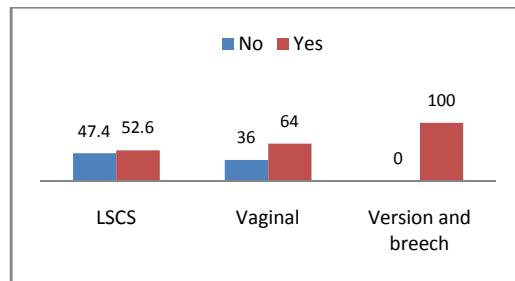


Figure 1: Admission to NICU

| Death        | Mode of delivery |            |                 |            |                    |            | Total           |            |
|--------------|------------------|------------|-----------------|------------|--------------------|------------|-----------------|------------|
|              | LSCS             |            | Vaginal         |            | Version and breech |            | Number of cases | %          |
|              | Number of cases  | %          | Number of cases | %          | Number of cases    | %          |                 |            |
| No           | 16               | 84.2       | 19              | 76         | 3                  | 50         | 38              | 76         |
| Yes          | 3                | 15.8       | 6               | 24         | 3                  | 50         | 12              | 24         |
| <b>Total</b> | <b>19</b>        | <b>100</b> | <b>25</b>       | <b>100</b> | <b>6</b>           | <b>100</b> | <b>50</b>       | <b>100</b> |

p - value = 0.232

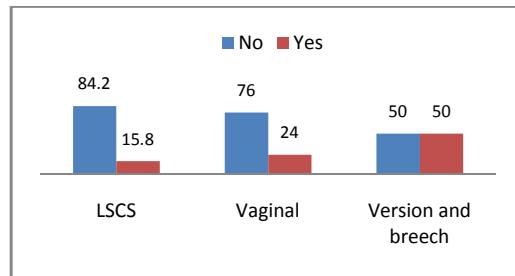


Figure 2: Deaths

## DISCUSSION

This study showed a difference in NICU admission and neonatal mortality in second twins born after caesarean Delivery, but the difference, a reduction, was not statistically significant either for deliveries before 34 completed weeks or after 34 weeks. We cannot definitively conclude that the lower mortality after caesarean delivery is a causal relationship. In order to minimize bias, we excluded pregnancies in which the mother or any of the twins had been given a diagnosis suggesting ante-partum pathology: Fetal malformations, immunization, hydrops, intrauterine growth retardation, chorioamnionitis, maternal infection or fever, antepartum bleeding, placenta praevia, preeclampsia, diabetes, or twin-to-twin transfusion syndrome. However, there may have been complications during pregnancy not clearly identified or coded. In the presence of such complications it would have been more likely that birth would be by caesarean section. Therefore, unknown or uncoded complications would tend to underestimate risk differences. We only studied neonatal mortality and not intrapartum and intrauterine deaths. A higher rate of morbidity and mortality for preterm twins delivered

vaginally (significant for those below 750 g) was also reported by Zhang *et al.*, who studied 4428 live born twin pairs in North Carolina.<sup>13</sup> In a Canadian study, no perinatal death occurred in term twin births (prelabour deaths excluded) of which 79% were planned as vaginal deliveries.<sup>14</sup> Since the present study was considerably small there is no significant difference in NICU admission or neonatal mortality. In conclusion. However, as for preterm singleton breech delivery, it must be emphasized that a caesarean section performed merely due to preterm labour in a twin pregnancy may do more harm than good if the diagnosis of inevitable delivery is incorrect.<sup>15</sup>

## CONCLUSION

Neonatal mortality is lower for the second twin after caesarean delivery compared to Vaginal and IPV-breech but it is not statistically significant. The present results support that, caesarean delivery may be associated with a better chance of neonatal survival in otherwise uncomplicated twin pregnancies.

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