



STUDY ON NEONATAL OUTCOME OF TWINS ACCORDING TO BIRTH ORDER, PRESENTATION AND MODE OF DELIVERY.

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ABSTRACT

Management of twin pregnancy is a challenge in obstetrics. The optimum mode of delivery for twins is not determined. The objective of this study is to compare the outcome of twin pregnancies according to birth order, presentation and mode of delivery. The study included 101 patients with twin pregnancies with > 32 weeks period of gestation, with both twins live. Neonatal morbidity and mortality (death within 28 days) was compared in study group in relation to their birth order (first and second twin), presentation (vertex and non-vertex) and mode of delivery (vaginal delivery, caesarean section or combined- first twin vaginal delivery and second by caesarean section). Follow up was done for 1 month or till NICU admission of neonate. **Results:** Out of 101 patients, 75 were planned for vaginal delivery and 26 for caesarean section. Overall caesarean section rate was 28.7%. Neonatal morbidity in relation to birth order for first twin (28.71%) and second twin (26.7%), with p value of 0.838. Outcome in relation to presentation of first twin between vertex (29.6%) and non-vertex (26.6%) with p value of 0.768 and for second twin with p value of 0.33. For mode of delivery, vaginal delivery (31.34%), caesarean section (24.13%) and combined group (20%), with p value not statistically significant. **Conclusion:** With good antenatal care and intrapartum surveillance, trial of labour can be done for vaginal birth for twin pregnancies.

KEYWORDS: Twin pregnancy, neonatal outcome, chorionicity, apgar score.

INTRODUCTION

Twin pregnancies have an incidence of approximately 3 % of all gestations.^[1] The influence of birth order on neonatal outcome is still unclear. The second twin is at higher risk of severe morbidity and mortality because of obstetric complications that may occur after delivery of first twin; like placental separation, cord prolapse, uterine atony, long interval delivery and cervical spasm.^[2,3]

The consensus that vaginal delivery is safe when both twins are vertex and caesarean section when both are non-vertex is based on expert opinion rather than randomized clinical trials.^[4] In fact, studies on the effect of presentation, mode of delivery and birth order have produced conflicting results. Planned vaginal delivery is associated with an increased risk of perinatal complications in the second twin compared with the first twin,^[4-7] but data from some other studies did not demonstrate any benefit if caesarean section was planned.^[8] Hence, the optimal mode of delivery of twins remains controversial.

MATERIAL AND METHODS

The study is a prospective observational study conducted at department of Obstetrics and Gynaecology, Lok Nayak Hospital. The study enrolled eligible candidates to the facility during the period of November 2014 till April 2016. The study was approved by institutional ethical committee of Maulana Azad Medical College. Study population included pregnant women with twin pregnancies with both live foetuses of > 32 weeks period of gestation recruited at the time of their admission to labour room. It excluded pregnancies with any gross congenital anomalies in single or both foetuses or IVF conceived pregnancies.

The sample size was restricted to a minimum of 101 patients due to constraint of time and patient availability. A written and informed consent was taken from all the subjects who satisfied the inclusion criteria after explaining them the methodology. A detailed history and examination was done. Birth order was twin A and B for first and second presenting twin. They were planned for either vaginal delivery or caesarean section by the treating obstetrician. Mode of delivery were vaginal delivery, caesarean section or combined (twin A by

vaginal delivery and B by caesarean section). Presentation was classified as vertex or non-vertex (breech, transverse or compound presentation).

Neonatal morbidity was defined as Apgar score < 7 at 5 minutes, neonatal birth trauma or fracture while attempting manipulation during delivery, NICU admission (due to complications like birth asphyxia, hypoxic ischaemic encephalopathy, sepsis, hypothermia), umbilical cord pH < 7 in foetus with birth asphyxia.

Neonatal mortality was defined as death of the neonate within 28 days. All delivered neonates were followed till one month of their delivery or in case of NICU admission till their discharge.

RESULTS

Out of 101 patients recruited in the study, 75 were planned for vaginal delivery and 26 for planned caesarean section. The decision was made by treating obstetrician. Overall caesarean section rate was 28.7%.

Table 1: Distribution of study population according to different demographic parameters, expressed as number and percentages.

S.NO	DEMOGRAPHIC PARAMETERS		Number (N)	%
1.	AGE	<25 years	42	41.58%
		25-35 years	50	49.5%
		35 years	9	8.92%
2.	POPULATION DISTRIBUTION	Urban	4	3.96%
		Sub-urban	71	70.29%
		Rural	26	25.75%
3.	GRAVID STATUS	Primigravida	30	29.7%
		Gravida 2	41	40.6%
		>gravida 2	30	29.7%
4.	SOCIO-ECONOMIC STATUS	Lower class	67	66.3%
		Lower middle	25	24.75%
		Upper class	9	8.95%
5.	GESTATION	32-34 weeks (early preterm)	19	18.81%
		34-37 weeks (late preterm)	53	52.47%
		>37 weeks (term)	29	28.72%
6.	PRESENTATION OF TWIN A/ TWIN B	Vertex/vertex	48	47.52%
		Vertex/non-vertex	23	22.77%
		Non-vertex/vertex	21	20.79%
		Non-vertex/non-vertex	9	8.92%
7.	CHORIONICITY	Diamniotic dichorionic	85	84.16%
		Diamniotic monochorionic	14	13.86%
		Monoamniotic monochorionic	2	1.98%
8.	MODE OF DELIVERY	Vaginal delivery	67	66.3%
		Caesarean section	29	28.7%
		Combined group	5	5.0%

Table 2: Neonatal morbidity according to presentation and mode of delivery in twin A and B.

Neonatal morbidity Twin A	Vertex- vaginal delivery N(%)	Vertex-caesarean	P value	Non-vertex vaginal delivery	Non-vertex caesarean delivery	P value
No	40 (70.17%)	11(78.57%)	0.531	9(69.23 %)	12(70.58%)	0.936
Yes	17 (29.82%)	3 (21.4%)		4 (30.76 %)	5(29.4 %)	
Total	57	14		13	17	
Twin B						
No	35(76.08 %)	17(70.83%)	0.633	15(71.42%)	7(70 %)	0.935
Yes	11(23.91 %)	7(29.16 %)		6(28.58 %)	3(30 %)	
Total	46	24		21	10	

Table 2 depicts that neonatal morbidity for twin A with vertex presentation delivered vaginally vs caesarean section had p value of 0.531 and for non-vertex presentation was 0.936, while for twin B it was 0.633 and 0.935 respectively, showing that the neonatal

outcome in twin pregnancies is comparable in both groups.

Table 3: Neonatal mortality according to presentation and mode of delivery for twin A and twin B:

Neonatal mortality Twin A	Vertex /vaginal delivery N (%)	Vertex-caesarean N (%)	P value	Non-vertex vaginal	Non-vertex /caesarean	P value
No	55(96.5%)	13(92.86%)	0.545	12(92.31%)	17(100%)	0.245
Yes	2(3.50%)	1(7.14%)		1(7.69%)	0 (0%)	
Total	57	14		13	17	
Twin B						
No	42(91.3%)	24(100%)	0.245	17(81%)	9(90%)	0.242
Yes	4(8.69%)	0(0%)		4(19%)	1(10%)	
Total	46	24		21	10	

Table 3 depicts that neonatal mortality for twin A with vertex presentation with vaginal delivery and caesarean section had p value of 0.545 and for non-vertex of 0.245.

Similarly for twin B it was, 0.245 and 0.242. Thus the outcome is not affected by the presentation and mode of delivery for first and second twin.

Table 4: Distribution of maternal complications according to mode of delivery.

Maternal complications	Vaginal delivery	Caesarean section	Combined group
Severe pre-eclampsia/ eclampsia	4 (5.97%)	2 (6.89%)	3 (60%)
PPH requiring blood transfusion	3 (4.47%)	2 (6.89%)	0
ICU admission	0	1 (3.44%)	1 (20%)
3 rd / 4 th degree perineal tear	1 (1.49%)	0	0
Hysterectomy	0	0	0
Maternal death	0	0	0
Total	67	29	5

Table 4 depicts that no severe maternal complications, massive PPH, need for hysterectomy or maternal deaths was found in any of the study groups. Conditions like

pre-eclampsia/ eclampsia, anaemia, post partum haemorrhage were commonly found to be associated.

Table 5: Outcome of twin A and B.

	Morbidity in TwinA, n/N(%)	Mortality in TwinA,n/N(%)	Morbidity in TwinB,n/N(%)	Mortality in TwinB,n/N(%)
PRESENTATION				
Vertex presentation	21/71(29.6 %)	2/71(2.82 %)	17/7(26.9 %)	4/70(5.71 %)
Non-vertex	8 /30(28.6 %)	2/30(6.67 %)	10/31(33.3%)	5/31(16.13%)
P value	0.768	0.394	0.33	0.240
MODE OF DELIVERY				
Vaginal delivery	22/72(71.3 %)	3/72(4.17 %)	21/67(31.3%)	8/67(11.94%)
Caesarean section	7 (28.7 %)	1 (3.45 %)	6/29 (33.71%)	1/29 (2.94 %)
Combined group	-	-	1/5 (20 %)	1/5 (20 %)
P value	0.519	0.09	0.142	0.90
PRESENTATION AND MODE OF DELIVERY				
Vertex/vaginal	17/57(29.82%)	3/57(4.17 %)	11/46(23.91%)	4/46(8.69 %)
Vertex/ caesarean	3/14(21.4 %)	1/14(3.45 %)	7/24 (29.16%)	0
P value	0.53	0.545	0.633	0.245
Non-vertex/ vaginal	4 (30.76 %)	1 (7.69 %)	6/21(28.58 %)	4/21(19 %)
Non-vertex/cesarean	5 (29.4 %)	0 (0 %)	3/10 (30 %)	1/10 (10 %)
P value	0.934	0.245	0.935	0.242

DISCUSSION

Timing and mode of delivery for twin pregnancies have always been a matter of controversy. American College of Obstetrics and Gynaecology (ACOG) says that “the route of delivery for twins should be determined by the presentation/position of foetuses, foetal surveillance and the maternal and foetal status”.^[9]

The Cochrane database had reviewed one randomised trial on optimum mode of delivery for twins and had concluded that caesarean delivery should not be universally accepted as the mode of delivery for twins.^[10]

Table 6: Comparison of neonatal morbidity according to presentation and mode of delivery with different studies.

Neonatal morbidity according to presentation.	Vertex N (%)	Non- vertex N (%)
Herbst et al (2008) ^[11] Twin A	248/ 17406 (1.4%)	38/ 2826 (1.3%)
Bjelic- Radisic (2007) ^[12] Twin B	5/ 171 (3%)	6/ 48 (12.5%)
Ginsberg et al (2005) ^[13] Twin A	137/ 6940 (2%)	37/ 2142 (1.7%)
Ginsberg et al ^[13] Twin B	145/ 7366 (2%)	42/ 2999(1.4%)
Present study Twin A	21/ 71 (29.6%)	8/30 (26.6%)
Twin B	17/70 (23.9%)	10/ 31 (33.3%)

On comparing with other studies, in study by Herbst et al, neonatal morbidity shows lesser percentage compared to current study because they included only low risk pregnancies with gestation age > 34-35 weeks and excluded patients with complications like pre-eclampsia,

anaemia, foetal growth restriction, derranged Doppler studies, preterm, discordant twins; which were included in this study.^[11] These studies showed that neonatal outcome was not affected by presentation of twins at the time of delivery.

Table 7: Comparison of neonatal morbidity according to mode of delivery.

	Vaginal delivery N (%)	Caesarean section N (%)	Combined group N (%)
Fox et al (2010) ^[14]	2/130(1.5%)	3/157(2%)	
Twin A/Twin B	7/130 (5.3%)	5/ 157 (3.2%)	
BjelicRadisic(2007) ^[12]	5/ 219 (2.2%)	7/ 48(14.5%)	-
Twin A/Twin B	23/219 (10.5%)	6/48 (12.5%)	7/14 (50%)
Smith et al (2007) ^[15]	7/ 457 (1.5%)	29/ 416 (7%)	-
Twin A/Twin B	12/457 (2.6%)	21/416 (5%)	
Herbst et al(2008) ^[11]	150/ 12572 (1.2%)	136/ 7660 (1.7%)	-
Twin A/Twin B	326 (2.6%)	157 (2%)	
Ginsberg(2005) ^[13]	148/4599 (3.2%)	40/ 5247 (0.7%)	-
Twin A/Twin B	143 (3.1%)	28 (0.5%)	9/518 (1.7%)
PRESENT STUDY	21 / 67 (31.34%)	7 / 29 (24.13%)	1 / 5 (20%)
Twin A/Twin B	20 /67 (29.8%)	5 /29 (11.24%)	2 / 5 (40%)

According to cohort study by Fox et al, planned vaginal delivery is associated with similar neonatal outcomes as planned caesarean section and risk of combined vaginal and caesarean delivery is lowered with active second stage management.^[14] Study by Radisic et al also showed that morbidity was less in vaginal delivery compared to caesarean section for twin A.

Combined group had maximum morbidity. The study included patients with gestation age > 34 weeks with all compromised babies excluded from the study.^[12] In study by Herbst et al, vaginal mode for first twin cephalic and caesarean section for first twin breech was chosen, with gestation age > 34 weeks, excluding all antenatal complications; no significant difference in neonatal outcome was found.^[11]

CONCLUSION

Ideal mode of delivery and neonatal outcome of twins according to their presentation and birth order is always individualised in different clinical scenario with available facilities.

This study concludes that the neonatal outcome in terms of neonatal morbidity and mortality does not show any statistical difference between both twins according to birth order. Outcomes according to presentation (vertex

and non-vertex) and mode of delivery (vaginal and caesarean delivery) are also comparable. Maternal complications like severe postpartum haemorrhage, ICU admission, need for hysterectomy did not worsen in either group. Thus we conclude that in a tertiary care centre with good antenatal care, intrapartum monitoring and nursery facilities, trial of labour can be given to twin pregnancies with no associated risk factors irrespective of their presentation. Caesarean section rate can be reduced, resulting in decreased maternal morbidity, emergency hysterectomy and dreaded complications like morbid adherence in the future.

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