

Management of Nonvertex Second Twin

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Abstract

Objectives The objective of the current study is to compare outcomes of twin pregnancies with attempted labor and active second-stage management with twin pregnancies delivered by planned cesarean delivery.

Material and Methods Two hundred and eighty-three patients with twin pregnancy meeting the inclusion criteria were reviewed. They were followed for success of ECV and/or IPV in planned vaginal group and abdominal mode of delivery. Fetal outcome was assessed by APGAR score of both twins as well as NICU admission, if needed.

Results Out of 283 patients, 116 patients (40.9 %) had planned cesarean section, and 167 patients (59.01 %) had planned vaginal delivery. Out of 167 patients, 148 patients (88.6 %) had a vaginal delivery of both twins. ECV was successful in 36 patients (25.3 %), and IPV was successful in 102 (95.3 %). IPV failed in five patients (4.6 %), and hence resorted to emergency cesarean section. There was no significant difference in the rates of twin B having a 5-min Apgar score lower than 7 or an arterial cord pH below 7.20 in both the groups. Among the patients in the planned vaginal delivery group, the cesarean delivery rate

was 8.3 %, out of which combined vaginal—cesarean delivery rate was 4.6 %.

Conclusion Active second-stage management is associated with neonatal outcomes similar to those with planned cesarean delivery and a low risk of combined vaginal—cesarean delivery.

Keywords Twin pregnancy · ECV · IPV · Cesarean section · Second twin delivery

Introduction

Twins now account for 3 % of all births, largely because of the increased use of assisted reproductive technologies (ART) [1]. With the wide spread use of infertility drugs, the rate of twins in the United States rose by 76 % between 1980 and 2009, from 18.9 to 33.3 per 1,000 births [2]. In the UK, multiple pregnancies accounted for one in 68 maternities in 2007.

Twin pregnancy is associated with increased perinatal morbidity and mortality, mainly because of the increased incidence of prematurity and growth restriction [3]. Although there is consensus regarding the safety of vaginal delivery for twins when both are vertex, controversy arises over intrapartum management when the second twin is nonvertex: which route is preferred among those with vertex–nonvertex twins?

The vertex–nonvertex presentation occurs in approximately 40 % of all twins. Different schools of thought

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exist; some favor an elective cesarean section to all twins, thus minimizing the risk of fetal trauma and asphyxia [4]. Others allow the first twin to deliver vaginally and perform maneuvers like external cephalic version (ECV) or internal podalic version (IPV) for the delivery of second nonvertex twin [5]. ECV and IPV require expertise and have success rates of 45 and 97 %, respectively [6]. When comparing the two with each other, maternal risks remains the same, but fetal risks are 18 % more with ECV and 1 % more with IPV [7].

Fetal complications include shoulder presentations with arm prolapse, cord prolapse, visceral and skeletal injuries, hypoxic brain damage, and death. Maternal complications include uterine rupture, perineal trauma, placental abruption, postpartum hemorrhage, ascending infection, and procedure failure [8]. Where ECV and IPV have failed, final resort to deliver the second twin remains cesarean section, hence named Combined Delivery.

However, a recent review of the intrapartum management of twin pregnancies in the UK reports a steep decline in breech extraction and a concomitant decline in IPV despite the success rate of the procedure [7]. Lack of training is one of the factors contributing to increased trend in performing cesarean section for the second malpresenting twin. The rate of this event is as low as 2.2 % in some centers but as high as 17 % in others—in the largest cohort reported in the literature, the rate was 9.45 % [9].

The objective of the current study is to compare outcomes of twin pregnancies with attempted labor and active second-stage management with twin pregnancies with planned cesarean delivery.

Material and Methods

We retrospectively analyzed 283 cases of twin deliveries in one practice unit (unit II) in Fatima memorial hospital from January 2007 to December 2011. Fatima memorial hospital is a tertiary-care academic medical center with a level III neonatal intensive care nursery and 24-h in-house pediatric and anesthesia availability.

All the patients were booked, during their antenatal period; chorionicity and gestational age were confirmed in first trimester preferably, if not booked late. A detailed anomaly scan was offered to all the patients between 19 and 22 weeks' gestation followed by growth scan fortnightly from 30 weeks onwards. Delivery of all twin pregnancies was planned at 40 weeks of gestation, or earlier if indicated. During antenatal period, patients were counseled regarding the mode of delivery. For those where vaginal delivery was not contraindicated, senior registrar or a consultant discussed in detail the process, the risk of cesarean delivery in labor, and the risk of birth injury. Contraindications to

vaginal twin delivery of twins included monoamniotic twins, nonvertex first twin, nonvertex second twin with an estimated fetal weight more than 20 % larger than the first twin, previous cesarean section, and other usual contraindications to labor (placenta previa, prior classical cesarean delivery, and others). Exclusion criteria for the study group included actual birth weight <900 g, unrecognized multifetal pregnancy, multiple congenital anomalies, and/or antepartum intrauterine fetal death.

After discussing the risks and benefits of vaginal delivery, the patient's choice regarding mode of delivery was mentioned in the notes. All patients had the option to elect a cesarean delivery, regardless of the position of the second twin, and we did not dissuade a patient from choosing an elective cesarean delivery.

All elective cesarean sections were performed at 38 weeks of gestation, if not indicated before or presented in labor. The cesarean group included patients with a contraindication to vaginal twin delivery and those with patient's preference.

Those who opted for a vaginal delivery were managed in accordance to the unit protocol. After admission, partograph was maintained, and oxytocin and amniotomy were used for standard indications. Fetal monitoring was done after an admission CTG by intermittent auscultation by sonicaid. CTG was repeated when needed. Epidural analgesia was given to those who desired. Cesarean delivery in labor was performed for the usual obstetric indications. All patients were looked after by a registrar during the first stage, and delivery was conducted by a senior registrar in theater. Unit standard protocol included an attempt of ECV for the second twin, and if it failed, then IPV was performed. Ultrasonography was used for assistance as necessary. Cesarean section was performed when both the procedures fail. The purpose of performing delivery in theater was only to resort to cesarean without much waste of time.

ECV refers to a series of maneuvers in which pressure is applied to maternal abdomen to bring the head of the fetus to pelvic brim. IPV involves passing hand through the vagina with intact membranes with the aim of bringing down the feet and delivery completed after rupturing membranes.

Each twin was attended by a pediatrician after delivery, and Apgar scores are assigned by the pediatric team. Other outcomes which were assessed were skeletal or visceral injury, neonatal intensive care admissions, and neonatal death.

Results

In the current study, we included 283 patients meeting the inclusion criteria of the same. There were 116 patients

Table 1 Demographic characteristics of parturients under study

Characteristics	Planned cesarean delivery n (116)	Planned vaginal delivery n (167)	P value
Maternal age	26 ± 6.6	25 ± 6.8	0.219
Prior vaginal delivery	53 (45.69 %)	123 (73.65 %)	0.0001
Gestational age at delivery	35 ± 3.0	34 ± 2.6	<0.0001
Ultra sonographic fetal weight (g) twin A twin B	3.0 ± 300 2.6 ± 400	2.7 ± 400 2.5 ± 665	<0.0001 0.268

Table 2 Outcome based on planned mode of delivery

	Planned cesarean delivery n = 116	Planned vaginal delivery n = 167	P value
Birth weight twin A	3.2 ± 0.5	2.6 ± 0.6	<0.0001
Birth weight twin B	2.9 ± 0.45	2.5 ± 0.35	<0.0001
Twin A 1 min APGAR <7	4 (3.4)	5 (2.9)	0.001
Twin A 5 min APGAR <7	0 (0)	1 (0.5)	<0.0001
Twin A arterial pH less than 7.2	0 (0)	1 (0.5)	<0.0001
Twin B 1 min APGAR <7	4 (3.4)	9 (5.3)	<0.0001
Twin B 5 min APGAR <7	2 (1.7)	3 (1.7)	<0.0001
Twin B arterial pH less than 7.2	1 (0.8)	2 (1.1)	<0.0001
Fetal injury	0 (0.0)	1 (0.5)	<0.0001
Neonatal intensive care admission	10 (8.6)	15 (8.9)	<0.0001
Neonatal death	0 (0)	0 (0)	

(40.9 %) in the planned cesarean group and 167 patients (59.09 %) in the planned vaginal delivery group.

The two groups were similar for mean (\pm SD) maternal age, gravidity, parity, gestational age at delivery, ultrasonographic estimate of birth weight for twin B, incidence of breech, or transverse presentation for the second fetus (Table 1).

We looked at outcomes in the 167 patients in the planned vaginal delivery group. Only 14 patients (8.3 %) underwent a cesarean delivery in labor. Indications for cesarean delivery in the planned vaginal group were arrest of labor (six patients), arrest in the second stage (one patient), and non-reassuring fetal status (two patients). 148 patients (88.6 %) had a vaginal delivery of both twins. Spontaneous cephalic version occurred in 10 (6.5 %) patients. ECV was successful in 36 patients (25.1 %), and IPV was successful in 102 (95.3 %). IPV failed in five patients (4.6 %), and hence resorted to emergency cesarean section.

Fetal outcome was measured in terms of APGAR score at 5 min, visceral or skeletal injury, neonatal intensive care admissions, and neonatal death in planned cesarean group to those delivered vaginally. In the current study, there was no statistically significant difference observed in terms of outcome as shown in Table 2. One tibial fracture was seen in the IPV group.

Table 3 Outcome in planned vaginal delivery group by mode of delivery

APAR score <7	Cesarean delivery n = 14(8.3 %)	Vaginal delivery n = 153 (91.6 %)	P value
Twin A 1 min	2 (14.2)	3 (1.9)	0.616
Twin A 5 min	0 (0)	1 (0.6)	<0.0001
Twin A arterial pH less than 7.2	0 (0)	1 (0.6)	<0.0001
Twin B 1 min	4 (23.5)	5 (3.2)	0.696
Twin B 5 min	3 (21.4)	2 (1.3)	0.68
Twin B arterial pH less than 7.2	1 (7.1)	1 (0.6)	<0.0001

Table 3 shows outcome in patients undergoing planned vaginal delivery. Our study demonstrated no significant difference among patients undergoing vaginal delivery and ending up in cesarean section or vaginal delivery with regard to neonatal outcome.

Discussion

The optimal planned mode of delivery for twins that are found to be cephalic/noncephalic during the antenatal period is controversial. Based on observational data, some

advocate elective cesarean section for all women with a noncephalic second twin to minimize the risk of fetal trauma and asphyxia.

The cesarean section rate in the current study in women who opted for vaginal delivery was 10.9 % among laboring, with overall cesarean rate being 50.9 % which is less compared with others [9]. Possible reasons behind this may be the greater inclination on the part of women in the current social setup to deliver vaginally, performing thorough case selection during antenatal period, active management of second stage of labor, and availability of expertise at the time of delivery. The rate of combined delivery in the current study was 3.2 % which was slightly higher than that as per the findings of Schmitz et al. [10], who found a 0.5 % rate of combined vaginal–cesarean delivery among a cohort of French patients managed similarly in the second stage. Without active management of the second stage, the likelihood of a combined vaginal–cesarean delivery can be as high as 6–10 % [8, 11]. Therefore, the active management of the second stage seems to significantly decrease the likelihood of this outcome.

ECV is associated with higher failure rate, and successful vaginal delivery is achieved more with IPV. Primary breech extraction of the second nonvertex twin weighing greater than 900 g appears to be a reasonable alternative to either external version as seen in other studies [12].

In the current study, we did not find significant difference in terms of neonatal outcome between the two groups—delivered by elective cesarean section and those delivered vaginally after version—which is consistent with other large studies [12]. There was no significant difference in terms of outcome of APGAR score at 5 min between the two groups, though continuous electronic monitoring was not done in laboring patients, which can further improve the outcome. Fetal injury was seen in one newborn delivered after IPV which was not seen in those delivered by elective cesarean. Neonatal intensive care admission was not statistically different in two groups. Similar results were seen in studies conducted internationally [12].

When hospital charges are examined with clinical data, however, breech extraction of the nonvertex second twin is the most cost-effective delivery management strategy without compromising the outcome.

Limitations to the current study are twofold: First, it is a retrospective study where one cannot analyze the reasons for some patients who opted for cesarean section though fulfilling the criteria for vaginal delivery. Second, we do not have the facility for continuous electronic monitoring which could have affected the outcome.

However, the results of the current study support the continuance of the existing practice of active second-stage management of twin pregnancies, similar to what was

found in French patients [10]. Formal training of residents should be continued so that they do not change the practice policy because of diminishing expertise, in the same way as what is being observed in European countries.

The American Congress of Obstetricians and Gynecologists (ACOG) suggests that individual obstetricians recommend the best route for their patients: “The route of delivery for twins should be determined by the position of the fetuses, the ease of fetal heart rate monitoring and the maternal and fetal status” [13]. The Canadian Guidelines in the Consensus Statement 20 read: “Delivery of cephalic twin A/non-cephalic Twin B: Estimated weight 1500 to 4000 g. Vaginal delivery is indicated as long as the obstetrician is comfortable with and skilled in vaginal breech delivery” [14]. Consensus Statement 21 in the same document addresses preterm twins: “Delivery of cephalic Twin A/noncephalic Twin B: Estimated weight 500–1500 g. In this weight range, the group acknowledged that there is no consistent evidence to support either cesarean section or the vaginal route for delivery.” Similarly, the Cochrane Database reviewed one randomized trial on mode of delivery for twins and concluded that cesarean delivery should not be universally adopted as the route of delivery for twins [15].

In the current study, active second-stage management was associated with good neonatal outcomes without compromising the outcome. We conclude that in a selected and well-informed population, this management is appropriate.

Conflict of interest The authors declare that there is no conflict of interest.

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