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**Radhika Bajpai**
Indira IVF Hospitals Private Limited, Ground Floor, Shalimar Logix, 4A Rana Pratap Marg, Hazratganj, Lucknow, Uttar Pradesh, India

**Gargi Sharma**
Indira IVF Hospitals Private Limited, Ground Floor, Shalimar Logix, 4A Rana Pratap Marg, Hazratganj, Lucknow, Uttar Pradesh, India

**Corresponding Author:**
**Gargi Sharma**
Indira IVF Hospitals Private Limited, Ground Floor, Shalimar Logix, 4A Rana Pratap Marg, Hazratganj, Lucknow, Uttar Pradesh, India

# Delayed interval delivery in a case of multifetal pregnancy reduction

**Radhika Bajpai and Gargi Sharma**

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**Abstract**
Prematurity is a known complication associated with multiple pregnancy**.** Fetal reduction has emerged as a promising option to reduce the complications associated with multiple pregnancies and hence giving couple a chance to parent one or two healthy babies. But fetal reduction is not totally free of risks. We present a case of dichorionic triamniotic triplet pregnancy conceived following in-vitro fertilization (IVF) managed with fetal reduction of monochorionic pair followed by spontaneous expulsion of reduced twin and successful delayed interval delivery of the healthy fetus after a latent period of 31 days.

**Keywords:** Delayed interval delivery, multiple gestation, fetal reduction, prematurity

## 1. Introduction
The outcome of multiple pregnancies is threatened by a number of complications most commonly preterm birth. A number of medical and surgical interventions like fetal reduction, cerclage have been tried with variable success rates in reducing preterm births. We report a rare case of triplets conceived following IVF followed by fetal reduction and later on preterm expulsion of reduced twin and successful delayed delivery of the live baby after a latent period of 31 days. The literature shows that option of interval delivery has been considered in selected cases with improved neonatal outcomes of the second twin.

## 2. Case report
Our patient is a 34 years old second gravida, with one healthy living issue of 9 years, who attended our hospital with the complain of secondary infertility and 2 failed attempts at IUI. She conceived following IVF ICSI from our hospital. The first scan done at 6 weeks revealed a dichorionic triamniotic triplet gestation. The patient was explained about the risks associated with it and she opted for reduction of the monochorionic pair. As a routine preprocessed infection screen (urine and high vaginal swab) were sent and it was found to be positive for Klebsiella species and appropriate antibiotic according to sensitivity report was given. She underwent the procedure at 12 weeks after nuchal translucency scan. The procedure was done with intracardiac instillation of potassium chloride in both monochorionic twins by separate pricks and one of those was the presenting fetus. The procedure was successful but the patient had an episode of leaking per vaginum after 2 days. The patient was managed conservatively with antibiotics, intramuscular progesterone weekly and rest. The singleton pregnancy continued uneventfully until 28 weeks 1 day, when the patient complained of pain abdomen. The ultrasound was normal with fetal weight approximately 1073g. Transvaginal cervical length was normal around 3cm. The patient was given a course of tocolytics (isoxsuprine) for 7 days and a course of steroids (betamethasone) was also administered. She continued her intramuscular dose of 17 hydroxy progesterone (250mg weekly). She was asked to get admitted for observation but she declined. 3 days later at 28 weeks 4 days, she expelled some mass per vaginum after which her pain subsided (Fig. 1). She preserved the expelled product and it was sent for histopathological examination next day. Ultrasound examination revealed live singleton pregnancy and normal cervical length on transvaginal ultrasound (3cm). Vaginal swabs, urine culture, routine blood examination for white blood cell count were sent, empirical antibiotics and additional micronized progesterone (400mg OD) were started and tocolytics continued for one more week. The histopathological examination confirmed that the expelled mass was product of conception (reduced twin).

The cultures were sterile and hence the antibiotics were stopped in 10 days. However, weekly vaginal swabs were sent. Patient continued her regular antenatal care. The cervical length was monitored transvaginally at each antenatal visit. At 33 weeks 1 day she had premature rupture of membranes and delivered vaginally a healthy male baby weighing 1.8 kg. The other reduced twin was also delivered. The baby did not require any active intervention following birth and was discharged after 3 days. The child has normal development until now, that is, 6 months of age.

**Fig 1:** The expelled mass at 28weeks 4days which was proven to be products of conception (reduced twin) on histopathological examination

## 3. Discussion

With increasing advancements and utilization of artificial reproductive techniques, the incidence of multiple pregnancies has also increased remarkably. These pregnancies are commonly complicated by preterm labor. In India every year 3.5 million babies are born preterm and prematurity accounts for 40% of neonatal mortality rate [1]. To overcome this problem in multiple pregnancies, multifetal pregnancy reduction is being used widely to improve the chances of delivering at least one healthy fetus and reducing maternal and fetal morbidity arising from such higher order pregnancies. But this procedure is also not without complications.

To the best of our knowledge, this is the first case of expulsion of reduced twin followed by interval delivery of alive healthy baby. The process of parturition is an interplay of uterine - cervical - decidual- fetal factors. The etiopathogenesis leading to preterm birth is not very clear yet, but the causes that can be attributed here are decidual necrosis, infection and haemorrhage leading to a low grade fetal inflammatory response which trigger started the sequence of events required to bring about the parturition. The reduced fetus being small expelled at an early stage and the changes which continued slowly and persistently lead to the preterm delivery of the healthy fetus nearly a month later with the interventions undertaken enabling to buy a little more time.

After first reported case of delayed interval delivery [2] this option is also now being explored to increase the survival of second twin. A systematic review of 13 case series [3] has reported delayed interval delivery as a successful means for improving outcome of second twin after delivery of nonviable first twin in selected pregnancies. Similar case has been reported by Song TB *et al*. where quadruplets (one empty sac) conceived by IVF underwent embryo reduction at 7 weeks and continued as twins followed by sIUFD of one twin at 23weeks which expelled spontaneously at 24weeks and delayed interval delivery of second twin at 33 weeks [4].

In most of the cases after spontaneous onset of labor and premature delivery of first twin, the second twin delivers within a short span of time. However, in a few cases, pregnancy can be continued after delivery of first twin by means of a number of interventions or sometimes conservatively to an appropriate gestational age when the survival of the second twin can be assured by aggressive neonatal resuscitation. This is possible only with dedicated maternal and fetal monitoring and good neonatal intensive care facilities. Though this situation arises mostly in the emergency room, a thorough discussion with the parents must not be rushed or skipped. Counseling should include the need for hospitalization and close maternal and fetal monitoring, proposed expenditure and the possibility of delivering second twin at a peri-viable gestation and its risk of causing long term morbidities in the child. Neonatologist should also be involved in the counseling.

Criteria for selecting patients for delayed interval delivery: -

1. Gestational age at delivery of first twin <32weeks
2. Diamnionicity and intact membranes of second twin
3. Exclusion of infection in second twin
4. Absence of fetal distress, lethal congenital anomaly, intrauterine death of the retained fetus and abruptio placentae
5. Absence of maternal medical indications for delivery

The main idea behind selecting a patient for delayed interval delivery is to prolong the birth of the second baby (or the third in case of triplet pregnancy) to increase the chances of its survival. Studies have shown that infants born very preterm account for more than half of all infant deaths [5]. Zhang J *et al*. [6] showed that delayed delivery of the remaining fetus(es) before 30 weeks of gestation for 2 or more days was associated with improved infant survival and higher infant birth weight.

Medical and surgical interventions to prolong delivery of the second twin have been proposed by various authors with conflicting results. No consensus has been achieved in this regard as to what should be ideal management in such cases, however, instead of following a rigid protocol for all cases, an individualized approach should be designed for each patient. High ligation of the umbilical cord of the first twin and leaving the placenta in situ have been agreed by all. Tocolysis, antibiotic therapy and cerclage can be helpful in properly selected cases.

In a retrospective study done by Parilla *et al*. [7] including 802 pregnancies with multiple gestation at less than equal to 26 weeks, of which 29 pregnancies were managed by cervical cerclage, showed no benefit of prophylactic cerclage in prolonging pregnancy, attributing to low prevalence of cervical incompetency in the study group. Similar observation was made by Fayad *et al*. [8] in their multicenter study of 35 pregnancies in which they delayed interval delivery of the second twin was executed, as they found no significant difference in the latency period with the interventions. Cristinelli *et al*. [9] reported increased latency period but also an increased risk of infection with cerclage. Rosbergen *et al*. [10], Song TB *et al*. [4], Van der Straeten *et al*. [11] and Arabin *et al*. [12] could demonstrate benefits of delayed delivery of second twin without the use of cerclage. Petousis *et al*. [13] reported effectiveness of cerclage in achieving delayed delivery interval, however their study had

small number of cases with none of the case showing any sign of infection or uterine contraction at the time of cerclage. Also, Zhang J *et al*. [14] in their review of seven case series reported that cervical cerclage after the delivery of first twin is associated with longer delivery interval without increasing the risk of intrauterine infection. In our opinion cerclage should be considered in cases of cervical incompetency and in those where cervical dilatation persists after delivery of first twin without signs of infection or uterine contractions. Monitoring of cervical length with transvaginal ultrasound at regular intervals can be helpful in guiding further management in these patients. In our case as there was no cervical dilatation and normal cervical length post expulsion and gestational age being more than 28 weeks and after reviewing the literature we decided against cerclage.

Emphasis should be laid on exclusion of infection while prolonging the pregnancy. Weekly vaginal swabs, laboratory tests (white blood cell count, CRP, procalcitonin), temperature charting, clinical examination (uterine tenderness, maternal tachycardia) can prove beneficial in safe execution of the procedure. Some authors have advocated the use of amniocentesis to rule out or confirm infection in the second twin [15]. Roman S. *et al*. [16] subjected patients to amniocentesis after the delivery of first twin if there was suspicion of subclinical chorioamnionitis. However, in their series, women who suffered serious morbidity due to sepsis had a negative amniocentesis prior to undergoing delayed-interval delivery. Thus, the risk of this serious, potentially life- threatening maternal complication is high and difficult to predict, and patients must be informed of this risk as part of the informed consent process prior to proceeding with delayed interval delivery. Also, Rosbergen *et al*. [10] reported an increased incidence of sepsis in the delayed twin as compared to the reference group which included a neonate of same gestational age admitted to their center. Most of the authors have suggested starting broad spectrum antibiotics (IV for 2 - 3 days followed by oral therapy) initially for 5 - 10 days and later on adjusting it according to the culture report [10, 11, 17, 18]. While some authors have used a continuous regimen (oral erythromycin) until delivery of the second twin [13]. Fayad *et al*. [8] found no significant difference in latency period in their study where 100% of their study population received antibiotic prophylaxis and 42.9% received continuous antibiotics therapy. We believe that after initial course of antibiotic therapy, subsequent re initiation or substitution of antibiotics should be based on cultures and also digital vaginal examinations should be avoided if possible.

Steroids for fetal lung maturity after 24 weeks of gestation and anti Rh-D in cases of Rh-negative mothers should be administered.

Some authors have proposed the use of low molecular weight heparin in selected cases as the patients are hospitalised and put on bed rest for prolonged duration.

Fetal monitoring of second twin with ultrasound should be carried out at regular intervals as indicated.

Indications for cessation of therapy include signs of infection, bleeding per vaginum, uterine contractions despite adequate tocolysis.

Vaginal progesterone for maintenance tocolysis has been found to be beneficial in preventing recurrent preterm labour and increasing latency period[19] with relatively fewer side effects. Hence, we considered the same for maintenance tocolysis in our patient.

Maternal complications have been reported in a few studies mainly due to sepsis, post-partum haemorrhage which in one case required hysterectomy, septic pelvic thrombosis, increased rate of Caesarean section, blood transfusion, placental abruption and one case of uterovaginal fistula [9, 16, 20, 21, 22]. None of the studies have reported any case of maternal mortality.

Short term outcome with increased survival of the second twin have been reported by many studies. One study has reported higher incidence of perinatal deaths and significant damage from preterm birth with this procedure [22] and one study reported higher incidence of sepsis in the second born as compared to reference group comprising of neonates of same gestational age [10]. Another study has reported benefit with the procedure only when the first twin was born before 24 weeks of gestation and the interval was up to 3 weeks [23]. No significant benefit was noted when the first delivered after 24 weeks and interval as of more than 4weeks. However, the authors believe that this may be due to the small number of cases. In contrast Zhang J *et al*. [6] reported good outcomes in second twin at 24 - 29 weeks of gestation both in terms of immediate survival and survival to one year of age. We believe that the upper limit for selecting the patients for delayed delivery interval can be up to 32 weeks as the main cause of mortality in neonates born at gestational age less than 33 weeks is preterm birth related complications like respiratory distress syndrome, intraventricular haemorrhage, necrotising enterocolitis and chronic lung disease [1].

The study by Rosbergen *et al*. [10] that the long-term outcome of the second twin were not significantly different from the reference group. However, major sequelae in 6 out of the 7 delayed born babies have been reported by Livingston *et al*. [22].

## 4. Conclusion

Ours is a case, first of its kind, where following spontaneous expulsion of reduced twin, the delivery of live healthy second twin is delayed by medical interventions successfully. Practising delayed interval delivery in carefully selected patients with proper counseling and close monitoring can be helpful in reducing neonatal mortality and morbidity. In our case we could prolong the pregnancy by 31 days resulting in better birth weight (a difference of 800 gm) and hence ensuring better prognosis of the baby. However larger studies are needed to understand the effect of the procedure on long term outcome of the newborn.

## 5. References


1. Jain K *et al*. Causes of death in preterm neonates (<33 weeks) born in tertiary care hospitals in India: analysis of three large prospective multicentric cohorts. J Perinatol. 2019; 39:13- 19.
2. Carson JL. Twins born with an interval of for- ty-four days. Br Med J 1880; i:242.
3. Feys S. Jacquemyn: Delayed interval delivery can save the second twin: evidence from a systematic review. Facts Views Vis Obgyn. 2016; 8(4):223–231.
4. Song TB, Jeong J, Kim YH, Kim EK. Delayed interval delivery in multiple gestations. Arch Gynaecol Obstet. 2000; 263:185–7.
5. Mathews TJ, MacDorman MF. Infant mortality statistics from the 2006 period linked birth/infant death data set. Natl Vital Stat Rep. 2010; 58:1-32.
6. Zhang J, Hamilton B, Martin J, Trumble A. Delayed interval delivery and infant survival: a population-based study. Am J Obstet Gynecol. 2004; 191:470.
7. Parilla BV, Haney EI, MacGregor SN. The prevalence and timing of cervical cerclage placement in multiple gestations. Int J Gynaecol Obstet. 2003; 80(2):123–127.
8. Fayad S, Bongain A, Holhfeld P *et al*. Delayed delivery of

second twin: a multicentre study of 35 cases. Eur J Obstet Gynecol Reprod Biol. 2003; 109:16- 20.
9. Cristinelli S, Fresson J, André M, Monnier-Barbarino P. Management of delayed-interval delivery in multiple gestations. Fetal Diagn Ther. 2005; 20:285.
10. Rosbergen M, Vogt HP, Baerts W *et al*. Long-term and short-term outcome after delayed- interval delivery in multi-fetal pregnancies. Eur J Obstet Gynecol Reprod Biol. 2005; 122:66.
11. Van der Straeten FM, De Ketelaere K, Temmerman M. Delayed interval delivery in multiple pregnancies. Eur J Obstet Gynecol Reprod Biol. 2001; 99:85–99.
12. Arabin B, van Eyck J. Delayed-interval delivery in twin and triplet pregnancies: 17 years of experience in 1 perinatal centre. Am J Obstet Gynecol. 2009; 200:154.e1–8.
13. Petousis S, Goutzioulis A, Margioula-Siarkou C *et al*. Emergency cervical cerclage after miscarriage of the first fetus in dichorionic twin pregnancies: obstetric and neonatal outcomes of delayed delivery interval. Arch Gynecol. 2012; 286:613-7.
14. Zhang J, Johnson CD, Hoffman M. Cervical cerclage in delayed interval delivery in a multifetal pregnancy: a review of seven case series. Eur J Obstet Gynecol Reprod Biol. 2003; 108(2):126–130.
15. Porreco RP, Sabin ED, Heyborne KD, Lindsay LG. Delayed-interval delivery in multifetal pregnancy. Am J Obstet Gynecol. 1998; 178:20.
16. Roman AS, Fishman S, Fox N *et al*. Maternal and neonatal outcomes after delayed- interval delivery of multifetal pregnancies. Am J Perinatol. 2011; 28:91.
17. Reinhard J, Reichenbach L, Ernst T *et al*. Delayed interval delivery in twin and triplet pregnancies: 6 years of experience in one perinatal center. J Perinat Med. 2012; 40:551.
18. Farghali M, Abdelazim I, Abdelrazek K. Delayed second twin delivery: benefits and risks. J Matern Fetal Neonatal Med. 2019; 32:1626.
19. Suhag A, Saccone G, Berghella V. Vaginal progesterone for maintenance & tocolysis: a systematic review and metaanalysis of randomized trials. Obstet Gynecol. 2015; 213:479–487.
20. Farkouh LJ, Sabin ED, Heyborne KD *et al*. Delayed-interval delivery: extended series from a single maternal-fetal medicine practice. Am J Obstet Gynecol. 2000; 183:1499.
21. Kalchbrenner MA, Weisenborn EJ, Chyu JK *et al*. Delayed delivery of multiple gestations: maternal and neonatal outcomes. Am J Obstet Gynecol. 1998; 179:1145.
22. Livingston JC, Livingston LW, Ramsey R, Sibai BM. Second-trimester asynchronous multifetal delivery results in poor perinatal outcome. Obstet Gynecol. 2004; 103:77.
23. Oyelese Y, Ananth CV, Smulian JC, Vintzileos AM. Delayed interval delivery in twin pregnancies in the United States: Impact on perinatal mortality and morbidity. Am J Obstet Gynecol. 2005; 192:439.