

Delayed Delivery of the Second Twin after Preterm Labor of One of the Twins in Twin Pregnancy Following ICSI: A Case Report

Ahmed Morsy Saad

Teaching Fellow, Department of Obstetrics and Gynecology,
Damanhour Medical National Institute, Damanhour, Egypt

*Corresponding author: Ahmed Morsy Saad, MD, E-mail: dr.mero_2014@hotmail.com, Phone: 01224949237

ABSTRACT

This case report presents a delayed delivery of the 2nd twin following preterm labor in a twin pregnancy achieved through intracytoplasmic sperm injection (ICSI). The patient, with primary infertility due to male factor (azoospermia), underwent embryo transfer, resulting in twin gestation. Preterm labor led to the delivery of the 1st twin at the end of the fifth month. The 2nd twin remained in utero and was managed with tocolytics, and supportive medications. At 32 weeks, a cesarean delivery has been carried out to deliver the second twin, who required 17 days in the Neonatal Intensive Care Unit. This case highlights the viability of delaying delivery for one twin to improve outcomes.

Keywords: Preterm labor, Intracytoplasmic Sperm Injection (ICSI), Testicular Sperm Extraction (TESE), Delayed twin delivery.

INTRODUCTION

The prevalence of several pregnancies is on the rise because of a greater utilization of assisted reproductive techniques, which accounts for one percent of all gestations ⁽¹⁾. Multiple-fetal pregnancies are correlated with an elevated risk of preterm delivery ⁽²⁾. Preterm delivery is a significant possibility in twin pregnancies, with rates of approximately four percent, eight percent, and sixteen percent for deliveries occurring prior to the 30th, 32th, & 34th weeks, correspondingly ⁽³⁾. The 2nd twin is typically delivered promptly after the 1st twin in most pregnancies. Nevertheless, delayed delivery of the 2nd twin has been documented in specific medical cases ⁽⁴⁾. The duration of the interval is inversely proportional to the gestational age at which the 1st twin has been delivered, ranging from 1 to 152 days ^(5,6). Preterm delivery is related to an elevated risk of neonatal mortality & morbidity ⁽⁷⁾.

CASE PRESENTATION

A 25-year-old female case with primary infertility due to male factor (azoospermia), the male partner underwent Testicular Sperm Extraction (TESE). Intracytoplasmic Sperm Injection (ICSI) has been carried out, resulting in three embryos. A fetal reduction was done reducing the number to two embryos. At the third month of gestation, a cervical cerclage was placed. At the end of the 5th month and beginning of the sixth month, the patient experienced preterm labor, resulting in the birth of one twin.

The second fetus remained in utero, after that, the case was admitted to a Maternity Hospital in Desouk under my supervision and was treated with (Progesterone, Magnesium sulfate, Indomethacin, Pantoprazole, Nifedipine, isoxsuprine) until 32 weeks of gestation, at which point a cesarean delivery has been performed, delivering the 2nd twin. The newborn required 17 days stay in the Neonatal Intensive Care Unit (NICU) before being discharged.

NEWBORN REPORT

Age: 17 days, Sex: Male, Date of admission: 23/9/2024, Date of discharge: 9/10/2024, Provisional diagnosis: RD Grade II – III, Final diagnosis: RDS of preterm baby, Presentation at admission: male baby 32 weeks \pm 2 weeks, RD grade II - III, complicated tachypnea, mild to moderate subcostal retraction. Admitted on nasal CPAP, 60% for 4 days, 40% for 2 days, then 21% for 1 day. Weaned on nasal cannula at 2L/min for 4 days, The patient's condition improved, and he was successfully weaned off oxygen therapy.

Table 1: Follow up of arterial blood gases of baby.

Date	pH	pCO ₂ (mmHg)	HCO ₃ (mEq/L)
23/4/2024	7.35	35	20
24/4/2024	7.28	29	16
26/4/2024	7.25	29	13
30/4/2024	7.33	35	16
2/5/2024	7.35	30	18

INVESTIGATIONS

On evaluation, ultrasound was done for the second twin before delivery and revealed a bulky gravid uterus which contained a single living male fetus, P.D. = 78 mm & F.L. = 60 mm of G.A. about = 31 Ws + 4 Ds.

Expected fetal weight was around 1650 g, normal fetal heart movement was ~ 142 b/m, with normal fetal movement and tone, adequate liquor amniotic fluid (clear in nature), and no gross fetal anomalies.

Placenta was seen fundal anterior of grade II maturity, while neither hemorrhage or separation detected, nor placenta accrete. A normal cerebroplacental blood flow was revealed on Duplex study.

There was evidence of another smaller collapsed placenta at left posterior wall, likely of aborted baby (figure 1). CRP for the child was negative (1.5 mg/dl).

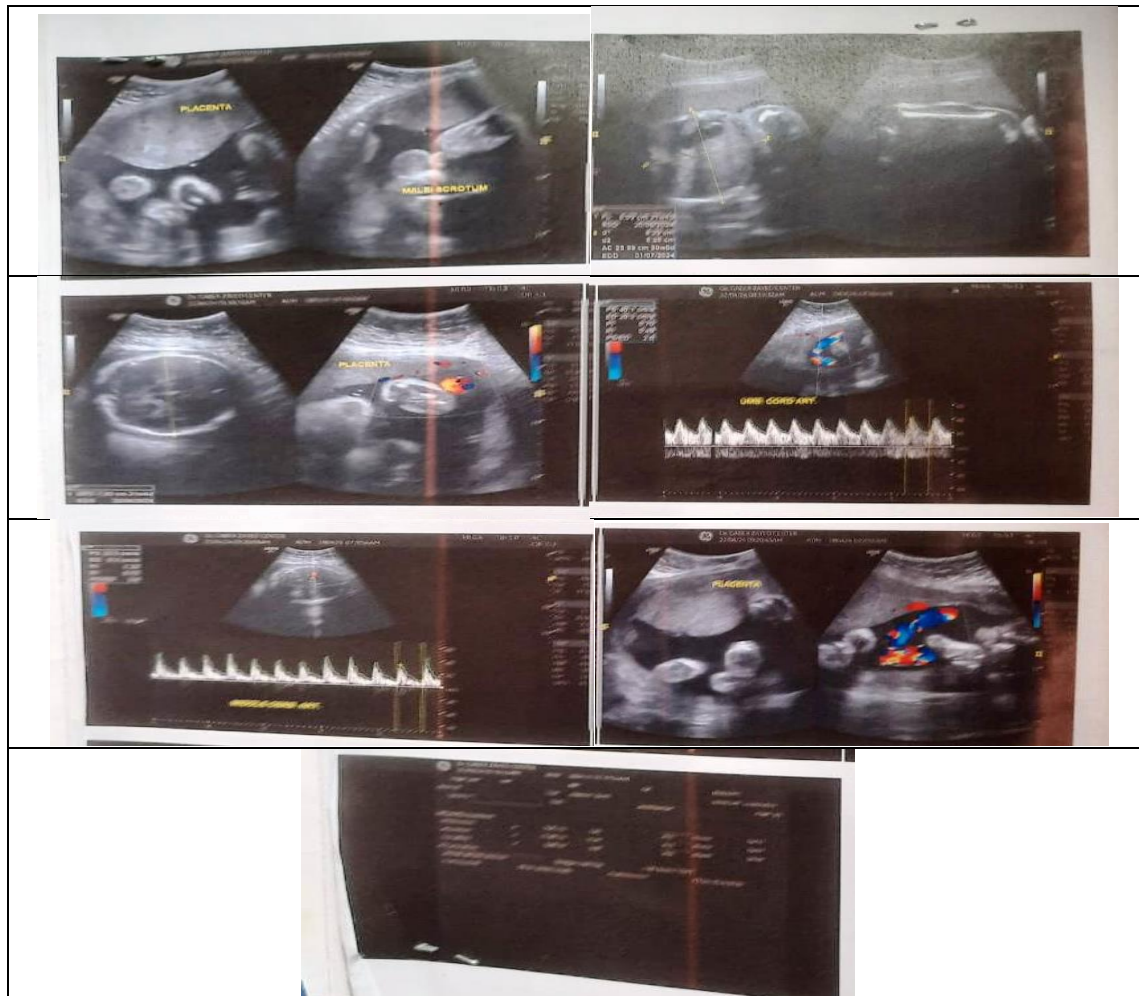


Figure 1: Ultrasound showing a single living male fetus with normal fetal parameters and a collapsed placenta, suggesting evidence of an aborted baby.

Ethical Consideration

This Case presentation was approved by the Ethics Committee of the Research Centre of General Organization for Teaching Hospitals and Institutes (GOTHI). The medication utilized in the investigation is confirmed by the Egyptian Ministry of Health. Prior to enrollment, written informed consent was obtained from the participant. The study protocol conformed to the Helsinki Declaration, the ethical norm of the World Medical Association for human testing.

DISCUSSION

In recent decades, developments in assisted reproductive technologies and their extensive application have resulted in a significant rise in the incidence of multiple pregnancies. Consequently, the management of multiple pregnancy deliveries has been deemed to have evolved, especially with certain selected cases⁽⁸⁾. The present case study was a female case with primary infertility due to male factor (azoospermia), intracytoplasmic Sperm Injection (ICSI) was performed, resulting in three embryos. A fetal reduction was done reducing the number to two

embryos. At the third month of gestation, a cervical cerclage was placed. At the end of the 5th month and initiating of the 6th month, the patient experienced preterm labor, resulting in the birth of one twin. The second fetus remained in utero. The case was managed under medical observation until 32 weeks of gestation, at which point a cesarean section was performed, delivering a healthy second twin.

Gestational age is the primary determinant of neonatal survival among babies born prior to the 25th week of gestation. The extension of the gestational duration & a rise of fetal weight significantly enhances fetal outcomes^(10, 11).

In agreement with our research, **Louchet M et al.**⁽⁹⁾ identified characteristics associated with the successful delays in delivery of the 2nd twin in cases where the interval following the delivery of the 1st twin exceeded twenty-four hours. The delays in delivery - interval delivery of the 2nd twin may extend gestation and result in a viable birth for the 2nd twin; however, it provides the possibility of maternal problems.

Postponing the delivery of the 2nd twin until a later gestational age may enhance mortality and morbidity outcomes; nevertheless, it increases the possibilities of

abruption of placenta, chorioamnionitis, premature rupture of membranes, & preterm labor ^(13, 14).

The conclusion indicated that when the 1st twin is delivered between the 22th and 23th weeks, delaying the delivery of the 2nd twin correlates with decreased perinatal and newborn mortality ⁽⁷⁾.

Rosbergen *et al.* conducted the research involving twenty-four examples of attempted delayed interval delivery. The average delay was 19.9 days, and the trial demonstrated a significant rise in birth weight and neonatal survival, along with a reduction in adverse results ⁽¹²⁾.

In contrast to the findings of the present research, the rate of infectious complications in the 2nd twin has been elevated, with a forty-two percent incidence of sepsis ⁽²¹⁾. Additional problems were primarily associated with preterm. Furthermore, the incidence of small gestational age (SGA) infants rise with the duration among both deliveries ⁽²²⁾.

Furthermore, in contrary to our case report, the maternal dangers primarily included chorioamnionitis in twenty-two percent and endometritis in twenty-nine percent of the stated cases. Multiple cases of septic shock were recorded, with one case requiring an emergency hysterectomy ⁽²³⁻²⁷⁾. There is no agreement on the best obstetrical care for rare cases of asynchronous twin delivery or delayed interval. Managing recommendations are derived from case reports & involve tocolytics, amniocentesis of the 2nd fetus, broad-spectrum antibiotics, steroids for fetal lung maturity, & the placement of a cervical cerclage ⁽¹⁵⁻¹⁸⁾.

Certain writers indicate that cerclage results in an extended delay in delivery, while others contend that it heightens the danger of infection and membrane rupture ⁽¹⁶⁾. Additional recommendations involve vaginal washes utilizing chlorhexidine, cervico-vaginal cultures, follow up of infectious laboratory indicators like white blood cell count & C-reactive protein, and the administration of vaginal progesterone ^(16, 19, 20).

CONCLUSION

The present case report indicates that the delayed delivery of the 2nd twin in the third trimester is related to a favorable outcome; nonetheless, the accompanying hazards mustn't be ignored. Controversies remain regarding the optimal management of delayed interval delivery of remaining fetus/fetuses due to the rarity of such occurrences. In multiple gestations resulting from assisted reproductive technologies, efforts must be made to extend the pregnancy after the natural miscarriage or early delivery of one baby. Further research is required to evaluate the long-term effects of this management on both the mother and her infant.

Funding: No fund

Availability of data and material: Available

Conflicts of interest: No conflicts of interest.

Competing interests: None

REFERENCES

1. **Canu A, Giannini A, Ghirri P *et al.* (2019):** Delayed delivery of the second twin: Case report and literature review of diamniotic dichorionic twin pregnancy with very early preterm premature rupture of membranes. *Case Rep Womens Health*, 22:e00104. doi: 10.1016/j.crwh.2019.e00104.
2. **Padilla-Iserte P, Vila-Vives J, Ferri B *et al.* (2014):** Delayed interval delivery of the second twin: obstetric management, neonatal outcomes, and 2-year follow-up. *J Obstet Gynaecol India*, 64(5):344-8.
3. **To M, Fonseca E, Molina F *et al.* (2006):** Maternal characteristics and cervical length in the prediction of spontaneous early preterm delivery in twins. *American journal of obstetrics and gynecology*, 194(5):1360-5.
4. **Cheung K, Seto M, Wang W *et al.* (2020):** Effect of delayed interval delivery of remaining fetus (es) in multiple pregnancies on survival: a systematic review and meta-analysis. *American journal of obstetrics and gynecology*, 222(4):306-19.
5. **Roman A, Fishman S, Fox N *et al.* (2011):** Maternal and neonatal outcomes after delayed-interval delivery of multifetal pregnancies. *American journal of perinatology*, 28(02):091-6.
6. **Farkouh L, Sabin E, Heyborne K *et al.* (2000):** Delayed-interval delivery: extended series from a single maternal-fetal medicine practice. *American journal of obstetrics and gynecology*, 183(6):1499-503.
7. **Aydin Y, Celiloglu M (2012):** Delayed interval delivery of a second twin after the preterm labor of the first one in twin pregnancies: delayed delivery in twin pregnancies. *Case Rep Obstet Gynecol.*, 22(4):271-4.
8. **Temur I (2013):** A twin pregnancy provided with ICSI, an abortion of the first fetus at the 18th week and live birth of the second fetus at the end of the 36th week: a case report and literature review. *The Journal of Maternal-Fetal & Neonatal Medicine*, 26(13):1355-8.
9. **Louchet M, Dussaux C, Luton D *et al.* (2020):** Delayed-interval delivery of twins in 13 pregnancies. *J Gynecol Obstet Hum Reprod.*, 49(2):101660. doi: 10.1016/j.jogoh.2019.101660.
10. **Zhang J, Johnson C, Hoffman M (2003):** Cervical cerclage in delayed interval delivery in a multifetal pregnancy: a review of seven case series. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 108(2):126-30.
11. **Costeloe K, Hennessy E, Gibson A *et al.* (2000):** The EPICure study: outcomes to discharge from hospital for infants born at the threshold of viability. *Pediatrics*, 106(4):659-71.
12. **Rosbergen M, Vogt H, Baerts W *et al.* (2005):** Long-term and short-term outcome after delayed-interval delivery in multi-fetal pregnancies. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 122(1):66-72.
13. **Graham GM 3rd, Gaddipati S (2005):** Diagnosis and management of obstetrical complications unique to multiple gestations. *Semin Perinatol.*, 29(5):282-95.
14. **Zhang J, Hamilton B, Martin J, Trumble A (2004):** Delayed interval delivery and infant survival: a population-based study. *American journal of obstetrics and gynecology*, 191(2):470-6.
15. **Roman A, Fishman S, Fox N *et al.* (2011):** Maternal and neonatal outcomes after delayed-interval delivery of

- multifetal pregnancies. American journal of perinatology, 28(02):091-6.
16. **Cozzolino M, Seravalli V, Masini G *et al.* (2015):** Delayed-interval delivery in dichorionic twin pregnancies: a single-center experience. Ochsner Journal, 15(3):248-50.
 17. **Raposo M, Cardoso M, Ormonde M *et al.* (2017):** Obstetric Management of Delayed-Interval Delivery. Case Rep Womens Health, 16:11-13. doi: 10.1016/j.crwh.2017.09.002.
 18. **Doger E, Cakiroglu Y, Ceylan Y *et al.* (2014):** Obstetric and neonatal outcomes of delayed interval delivery in cerclage and non-cerclage cases: An analysis of 20 multiple pregnancies. Journal of Obstetrics and Gynaecology Research, 40(7):1853-61.
 19. **Padilla-Iserte P, Vila-Vives J, Ferri B *et al.* (2014):** Delayed interval delivery of the second twin: obstetric management, neonatal outcomes, and 2-year follow-up. J Obstet Gynaecol India, 64(5):344-8. doi: 10.1007/s13224-014-0544-1.
 20. **Daskalakis G, Fotinopoulos P, Pergialiotis V *et al.* (2018):** Delayed interval delivery of the second twin in a woman with altered markers of inflammation. BMC Pregnancy Childbirth, 18(1):206. doi: 10.1186/s12884-018-1848-4..
 21. **Tran P, Desveaux C, Barau G *et al.* (2015):** Delayed-Interval delivery in multifetal pregnancy: a review and guidelines for management. Gynecology & Obstetrics, DOI:10.4172/2161-0932.1000333.
 22. **Oyelese Y, Ananth C, Smulian J, Vintzileos A (2005):** Delayed interval delivery in twin pregnancies in the United States: Impact on perinatal mortality and morbidity. American journal of obstetrics and gynecology, 192(2):439-44.
 23. **Arabin B, Van Eyck J (2009):** Delayed-interval delivery in twin and triplet pregnancies: 17 years of experience in 1 perinatal center. Am J Obstet Gynecol., 200(2):154.e1-8. doi: 10.1016/j.ajog.2008.08.046.
 24. **Fayad S, Bongain A, Holthfeld P *et al.* (2003):** Delayed delivery of second twin: a multicentre study of 35 cases. European Journal of Obstetrics & Gynecology and Reproductive Biology, 109(1):16-20.
 25. **Galvão A, Gonçalves D, Rocha A *et al.* (2016):** Delayed interval delivery of a second twin resulting in septic shock in the mother. Revista Nascere e Crescer, 25(4): 241-3.
 26. **Hoffman M, Sciscione A (2004):** Sepsis and multisystem organ failure in a woman attempting interval delivery in a triplet pregnancy: a case report. Journal of reproductive medicine, 49(5):387-8.
 27. **Livingston J, Livingston L, Ramsey R, Sibai B (2004):** Second-trimester asynchronous multifetal delivery results in poor perinatal outcome. Obstetrics & Gynecology, 103(1):77-81.