

Anaesthesia for Quadruplets Pregnancy

Dr. Dinesh. K.[°]; Dr. Somasekharam.P^{*}; Dr.Chandrappa. M.H.^{*}

Introduction:

Multiple gestation pregnancies are associated with increased risk of maternal and foetal complications. Compared to singleton pregnancies, the risk of premature labour, toxemias, malpresentation and intrauterine growth retardations are high in these patients. With increasing use of fertility drugs, anaesthesiologists encounter such cases more often. We present a case of caesarian extraction of quadruplets and discuss the maternal and fetal considerations and also the need for a multi disciplinary approach for the safe outcome.

Case report:

A 25 year old primigravida of 32 weeks of gestation with severe Pregnancy induced hypertension (PIH) and foetal distress was posted for emergency cesarean section. A thorough pre anaesthetic evaluation revealed that the lady had a married life of 8 years and had conceived after infertility treatment (Inj. Clomiphene Citrate 50 mg /day for three cycles) and was on regular antenatal check up. Triplet pregnancy had been diagnosed on ultrasound scanning at 20th week. She was on treatment for severe anaemia and pre eclampsia, with iron supplements and Tab Nifedepine 5 mg once daily (for the past two months). Past history was not significant. She was admitted with onset of premature labour pains. The patient weighed 80 Kgs, was afebrile and anemic. There was bilateral pitting pedal oedema. Pulse was 110/min and blood pressure 170/120 mmHg. in supine left lateral position. Cardiovascular & Respiratory examination were normal. The abdomen appeared over-distended with gross abdominal wall edema. Patient had been given inj. magnesium sulphate 5 gms, by slow IV infusion, an hour before. Patient was monitored for progress of labour, but was taken up for emergency caesarean section because of failure of progress of labour and onset of foetal distress, detected by foetal monitor as decelerations over one of the fetuses. Laboratory investigations showed a hemoglobin level of 8.7 gm% and Urine albumin (2+). Random blood sugar, Blood urea and Serum creatinine and ECG was within normal limits. PIH profile could not be done. In view of severe PIH and fetal distress, General anaesthesia was chosen for cesarean section.

Informed and written consent was taken after explaining the procedure and complications. Left lateral position was maintained throughout. Injection Ranitidine 150 mg and Injection ondansetron 4mg were administered intravenously as premedication. Patient was preloaded with 500 ml of Ringer Lactate in view of anemic status and anticipated fall in blood pressure during induction. On arrival in the operation theatre, continuous manual displacement of uterus was maintained by an assistant. Non invasive monitoring (ECG, NIBP, SPO2) was setup and preoxygenation was started. B P was 168/118 mm Hg and HR 99/min pre induction. Anaesthesia was induced with inj. Thiopentone sodium 250 mg iv and intubation was performed after IV lignocaine 100 mg and succinylcholine 100 mg. Rapid sequence intubation was done with 7.5 sized cuffed endotracheal tube. Anaesthesia was maintained with oxygen & Nitrous oxide (50:50), Inj. vecuronium 4 mg and Halothane (0.5%). Fentanyl 75 micro grams was given iv after the delivery of foetuses. BP increased to 180 / 120 mm Hg transiently at intubation and was 160/108 mm Hg after 2 minutes of intubation with O₂-N₂O / vecuronium and halothane. Four babies were extracted (only three had been detected by scanning). Two were monochorionic and two dichorionic and weighed 1.45 kg, 2 kg, 1.8 kg and 1.3 kg (One female and three males). Inj. oxytocin two units IV stat and 10 units per 500 ml of R L was administered. Patient was transfused with one unit of blood intraoperatively. Blood pressure and Pulse were maintained at 150-160 / 90-100 mm Hg and 90-100 / min. respectively throughout. At the end of the procedure neuromuscular blockade was reversed using neostigmine and glycopyrrolate, extubated and patient was shifted to post anaesthesia care unit with continuous monitoring. Post operatively, blood pressure and pulse remained stable. Analgesia was obtained using diclofenac sodium 75 mg IM TID. Further post operative period was uneventful. All the babies were shifted to neonatal intensive care for further management.

Discussion

With the frequent use of infertility therapy, multiple gestation pregnancies are commonly encountered. Morbidity and mortality of both mother and foetuses are more as compared to singleton pregnancies. Multiple gestation pregnancies are frequently complicated by anemia, toxemia, intrauterine growth retardation, premature labour, malpresentations and low birth weight.

An analysis of multiple pregnancies from King Khaled university, Saudi Arabia over a 5 year period showed an incidence of 10.25 per 1000 deliveries.¹ In our institution

Authors & Correspondence

- ☞ Associate Professor*
- ❖ Professor and Head of Dept., Dept. of Anaesthesiology
- ⚕ Professor, Dept. of Anaesthesiology & Coordinating officer, SDUU, Kolar
- * Dr. Dinesh K
E mail: drdini2233@gmail.com

this is the first case of higher order pregnancy of quadruplets. A study from Dalhousie university, Canada has reviewed all high order pregnancies (triplets and above) in their institute over a 22 year period.² They compared the maternal and perinatal outcome with singletons and twins in the same hospital population. 51.4% of the higher order multiple pregnancies were conceived through infertility therapy. There was high incidence of preeclampsia, preterm delivery, cesarean delivery and longer antepartum and postpartum hospital stays. The triplets and quadruplets had significant increase in morbidity and mortality.

There is a case report³ of spontaneous quadruplet pregnancy in a woman with a personal and family history of twin and triplet pregnancies. Our patient conceived after infertility therapy and there was no family history of multiple gestation pregnancies. The study from Canada² showed an increased incidence of cesarean delivery. Vaginal delivery, epidural analgesia and cesarean sections under epidural anaesthesia and general anaesthesia have all been described, with successful outcome. Most authorities believe that cesarean section is the safest route of delivery for all pregnancies with three or more fetuses. If vaginal delivery is planned, the delivering obstetrician should possess great skill and experience with external versions and with vaginal breech delivery⁴.

Epidural anaesthesia is useful and beneficial with adequate preloading and also is associated with good neonatal outcome⁴. Presence of an epidural catheter for labour analgesia may help in conversion to anaesthesia in case of emergency cesarean section. In our case cesarean section was performed in view of the foetal distress, anemia and severe PIH.

There is no ideal anaesthetic technique for cesarean delivery in multiple gestation pregnancies. General anaesthesia was chosen because of foetal distress and preeclampsia. The maternal and foetal factors to be considered during the anaesthetic management are^{5,6}

I) Maternal factors : a) Exaggerated effects of the huge pregnant uterus on cardiovascular system, respiratory system and GIT, increasing the risk of hypotension, respiratory embarrassment and aspirations. b) Anemia c) Toxaemia d) Postpartum hemorrhage even requiring hysterectomy. Uterine contractions should be avoided before the delivery of all the babies and effective periparturient uterine contractions should be promoted to decrease the blood loss.

II) Foetal factors - a) Prematurity b) Malpositions c) Underweight babies d) Malformations, resulting in increased mortality and morbidity. Sufficient equipment and manpower should be available for the effective resuscitation of the newborn babies. Although the complication rates described are high, good maternal and neonatal outcomes can be obtained by aggressive perinatal care in higher order multiple gestations⁷.

Conclusion

Higher order multiple gestations are common with the frequent use of infertility therapy. Regular checkups, bed rest, Iron supplements, steroids and beta agonists are considered in the antenatal period. Multiple pregnancies are frequently complicated by anemia, toxaemia, malpresentations, premature labour and intrauterine growth retardation. They can be delivered by vaginal or cesarean delivery. A multidisciplinary team with meticulous approach consisting of Anaesthesiologist, Obstetrician, Pediatrician, Operation theatre staffs with additional equipment for resuscitation of mother and babies are required at the time of delivery for the safe and best outcome.

References

1. Babay ZA, Addar MH, Al Meshari AA. Multiple pregnancy management : The king Khalid university Hospital experience. *Ann Saudi Med* 1994; 14(5): 405-408.
2. Cassell KA, O'connel CM, Baskett TF. The origins and outcomes of triplet and quadruplet pregnancies in Nova Scotia : 1980-2001. *Am J Perinatal*. 2004 Nov; 21(8): 439-45.
3. Tabbakh GH, Breoekhuizen FF. Spontaneous quadruplet pregnancy in a women with a personal and family history of spontaneous twin and triplet pregnancy. A case report *J Reprod Med*. 1994 Feb; 39(2): 134-6.
4. Sanjay Datta, *Anesthetic and Obstetric Management of High-Risk Pregnancy; Third Edition ; 2004; Springer-Verlag New York.*
5. Crosby ET, Elliott RD. Anaesthesia for cesarean section in a parturient with quintuplet gestations pulmonary edema and thrombocytopenia. *Can J Anaesth*. 1988 July; 35(4): 417-21.
6. Takauchi Y, Inamori N, Ohashi Y. Anaesthetic management for cesarean section in two parturients with quintuplet gestation. *Masui*. 993 Dec; 42 (12): 1844-8
7. Angel JL, Kalter CS, Morales WJ et al. Aggressive perinatal care for high order multiple gestations: Does good perinatal outcome justify aggressive assisted reproductive techniques: *Am J Obstet Gynecol*. 1999 Aug; 181(2): 253-9.