

Patient with Mitral Stenosis for Caesarean Section Under Epidural Anaesthesia

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ABSTRACT

Mitral stenosis (MS) is the most common, clinically important valve lesion and the first symptoms occur during pregnancy in 25% of the patients. In this case report, we presented the anesthesia management of a 41-year-old gravida 4 para 3+ with 38+1 weeks of gestation, who was a known case of severe mitral stenosis with pulmonary hypertension and atrial fibrillation. Both general and regional anesthetics have been described for caesarean section in these patients. Regional anesthesia has become popular as a safe choice in the recent past for caesarean section in all parturients including those with heart disease. In this case with severe MS who underwent caesarean delivery under graded epidural block successfully.

Keywords: Mitral Stenosis, Caesarean, Anaesthesia.

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INTRODUCTION

Mitral stenosis (MS) is the most common valvular heart disease associated with pregnancy. The area of the mitral valve is 4–6 cm². The patient becomes symptomatic when this reduces to 2 cm² and mitral valve area (MVA) of less than 1.0 cm² is considered severe.¹ Mitral stenosis (MS) is the most common, clinically important valve lesion and almost always develops due to rheumatic heart disease. The first symptoms occur during pregnancy in 25% of the patients.²⁻⁵

Atrial fibrillation is a known complication of MS and may further aggravate the situation with onset of systemic emboli.¹ Pregnant women with heart disease constitute a unique problem for obstetrician and obstetric anesthesiologists. Severity of the lesion and hemodynamic status of the patient are of importance in anesthesia management for caesarean delivery in these patients. Anesthetic management can be challenging and quite risky, particularly in patients with MS and pulmonary hypertension.^{2,5,6} We present the case with severe MS who were presented to us for caesarean delivery. We used graded epidural anesthesia to conduct the cases successfully.

CASE PRESENTATION

A 41-year-old gravida 4 para 3+ with 38+1 weeks of gestation, who was a known case of severe mitral stenosis with pulmonary hypertension and atrial fibrillation. She was posted for elective caesarean delivery and bilateral tubal ligation. The patient, who had previous history of 2 SVD followed by caesarean section 4 years ago due to her cardiac disease, history of mitral stenosis for 9 years which was worsened during pregnancy, history of appendectomy more than 20 years ago. The patient was diagnosed as a case of rheumatic heart disease (RHD) with severe MS during her antenatal check-up when she developed breathlessness during walking in the second trimester. She was started on clexane SC daily for atrial fibrillation with rheumatic MS, and then to heparin low dose protocol infusion. The 2D echocardiography revealed MVA by PHT = 0.81cm². She was planned for elective caesarean section under epidural anesthesia. During the pre-anesthetic evaluation, her blood pressure was 80-100/53-56 mm Hg. All laboratory investigations were done. After taking written informed high-risk consent, the patient was wheeled

inside the operation theater. IVF NS-70 ml/hr(1ml/Kg/hr) was started. Epidural bolus prior starting the procedure was bupivacaine 0.25% mixed with lidocaine 1% and fentanyl 2mcg/ml of 10 mls then Infusion continued with the same mixture. She developed tachyarrhythmia and hypotension briefly after delivery of the fetus and resolved spontaneously. The epidural infusion continued till the end with epidural Fentanyl bolus. Intraoperative findings showed mild adhesions between the

anterior abdominal wall and the uterus, very thin lower uterine segment, delivery of a baby boy with good Apgar score and cord pH of 7.2.

Right tube was sent for histopathology and semi-left tube was sent to histopathology as it was noticed that the left tube and ovary were obliterated. Post-operative analgesia was maintained. The patient was kept in the high dependency obstetric unit for the next 2 days and continued to do well postoperatively.

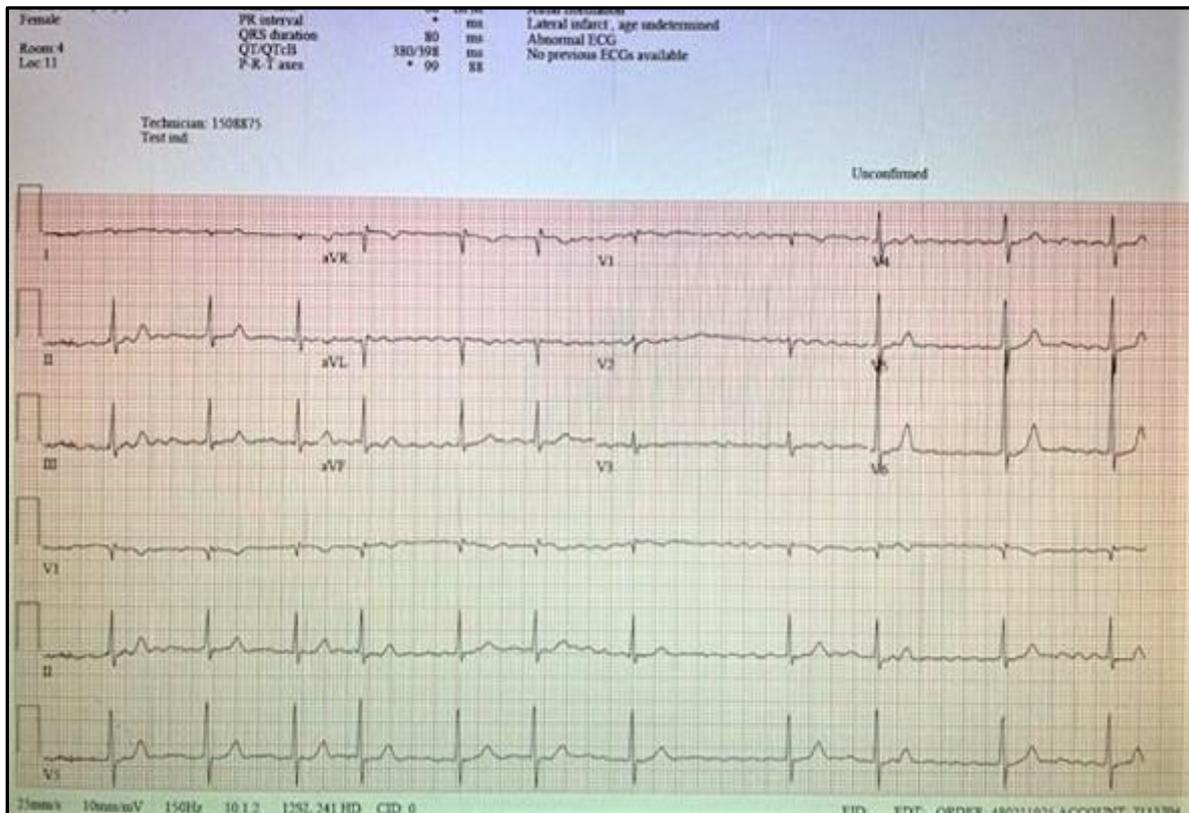


Fig 1: Patient's Baseline ECG prior surgery revealing atrial fibrillation which is rate controlled.

DISCUSSION

Pure or predominant MS occurs in approximately 40% of patients with rheumatic heart disease. The increased blood volume and cardiac output (CO) by 30-40% during pregnancy and a further increase in the CO to 80-100% of prelabor values following delivery are poorly tolerated by parturient with valvular heart disease such as mitral and aortic stenosis. A severe decompensation in myocardial function can develop during third trimester, labor, and immediately after delivery. Cardiac output, heart rate, and stroke volume decrease to prelabor values by 24-72 h postpartum and return to nonpregnant levels within 6-8 weeks after delivery.⁷ Authors have used bupivacaine and ropivacaine for epidural anesthesia;^{8,9} however, Mishra et al. used a combination of lignocaine and adrenaline for both test dose and establishment of block followed by use of bupivacaine and fentanyl in a parturient with Eisenmenger's syndrome.¹⁰

For symptomatic patients with moderate to severe mitral stenosis and severe pulmonary hypertension, percutaneous mitral balloon valvuloplasty or mitral valve surgery should be considered before pregnancy to reduce the need for gestational treatment and to improve pregnancy out-comes.¹¹ Beta blockers and diuretics remain the main stay of medical management for symptomatic patients in pregnancy.¹²

According to Gomar and Errando, with the exception of tetralogy of fallot, primary pulmonary hypertension, idiopathic hypertrophic subaortic stenosis, and anticoagulation, neuraxial techniques with low segmental blockade of dermatomes offer an alternative to general anesthesia in parturient with cardiac disease during caesarean section. Adequate cardiovascular invasive monitoring is essential and should be administered and maintained in the postpartum period with the same criteria that reduce morbidity and mortality in cardiac patients undergoing general surgery.¹³

Bin Suhaym NA et al reported a case of a 44-year-old female, gravida 8 para 5 plus 2 at 37 weeks' gestation admitted electively for caesarean section and tubal ligation. She is a known case of DCM with an ejection fraction of 30% for a few years. After admitting the patient, the anesthesia plan is to proceed with epidural anesthesia with a backup plan of general anesthesia. The caesarean section went smoothly with no complications. The patient was admitted to the intensive care unit (ICU) for observation as she is in a high risk for having decompensated heart failure post operation. She was stable in the ICU, and they transferred her back to the ward with a stable condition after 24 h. No perioperative or anesthetic complications occurred. The patient was discharged home 2 weeks later.¹⁴

Fentanyl works synergistically with bupivacaine in reducing the pain threshold without increasing sympathetic and motor blockade.¹⁵ There have been many studies that prove the effectiveness of opioid use in spinal anesthesia especially in CS surgery. Previous studies have shown that lipophilic opioids, for example fentanyl, can accelerate the onset and extend the duration of bupivacaine blocks, and prolong the duration of postoperative analgesia.¹⁶

CONCLUSION

The use of epidural for caesarean delivery in parturients with severe MS is safe for both the mother and the baby.

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