

# Eisenmenger's syndrome in pregnancy: Use of epidural anesthesia and analgesia for elective cesarean section

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## Abstract

We describe a case of a pregnant patient with a large ventricular septal defect (VSD) and pulmonary artery hypertension, presented to the hospital and underwent elective cesarean section under epidural anesthesia and postoperative analgesia. The procedure was uneventful till the patient was discharged on 10<sup>th</sup> day.

**Key words:** Anesthesia, epidural analgesia, labour, obstetric analgesia, pulmonary arterial hypertension, ventricular septal defect

## Introduction

Although conception is discouraged in woman with Eisenmenger's syndrome, as maternal mortality is 30%-50%; but in inevitable circumstances, meticulous planning of anesthesia can help the parturient survive the ordeal of a cesarean section.

## Case Report

A 27-year-old pregnant female, 50 kg (gravida three para one) was admitted to our hospital at 34 weeks of gestation with complaint of pain abdomen for 2 days. On examination, the patient was found to be cyanotic with clubbed fingers and raised Jugular venous pressure (JVP). Her pulse rate was 98 per minute, blood pressure 130/90 mmHg, respiratory rate 18 per minute; O<sub>2</sub> saturation 64% on air. On auscultation, a pansystolic murmur grade III in fourth to sixth intercostals space, and bilateral basal crepitations were present. Two years back, during her first pregnancy, she delivered a term still born

baby at home, after which she became dyspnoeic, cyanotic, and was rushed to hospital. There she was diagnosed to have VSD with severe pulmonary hypertension with bidirectional shunt. The patient was advised to have regular follow-up with the cardiologist but her visits were irregular. The second pregnancy was spontaneously terminated at 4 months and was uneventful. With regard for her health, the patient was advised not to conceive, but she refused. She was told to have congenital heart disease in childhood, but because of poor socioeconomic status lost follow-up.

During present pregnancy, she had dyspnea grade I in first trimester but increased to grade III in third trimester. She was on irregular treatment with tablet sildenafil 25 mg twice a day since 4 months. Considering precious pregnancy lower segment cesarean section (LSCS) was planned. All risks were explained and written informed consent was obtained. All blood investigations were normal. Two-dimensional echocardiography (ECHO) with color Doppler showed large perimembranous VSD of 17 mm size, bidirectional shunt, severe pulmonary artery hypertension (PAH), severe tricuspid regurgitation, dilated right atrium, normal biventricular function with ejection fraction of 52%. In the operating room, the patient was given oxygen by facemask; electrocardiogram (ECG) and pulse-oximeter were attached for continuous monitoring. Peripheral intravenous access was secured. Central venous pressure (CVP) catheter was placed through the right antecubital vein.

All cannulations were done after local infiltration with lidocaine. The baseline parameters were observed and recorded with heart rate of 99 per min, blood pressure 140/98 mm Hg, CVP 11 cm H<sub>2</sub>O and SpO<sub>2</sub> was 88% on

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oxygen by facemask. Meticulous attention was paid to avoid bubbles in lines and syringes because of the risk of paradoxical embolism. Ampicillin and gentamicin were administered for prophylaxis against bacterial endocarditis. An 18G Tuohy needle was inserted in L2-L3 interspace in sitting position and an epidural catheter was introduced 3 cm toward cephalad direction in epidural space. 3 cc test dose of lignocaine with adrenaline (1 in 2 lacs) mixture was administered. No formal fluid preload was done, but a slow infusion of hydroxyethyl starch was commenced. Incremental dose of lignocaine with adrenaline solution and bupivacaine (0.5%) were titrated against anesthetic and hemodynamics effects. Over a period of 30 min, a total of 7cc of lignocaine with adrenaline solution and 8 cc of bupivacaine with 25 µg of fentanyl produced a block height of T8 tested to touch with blunt forceps. CVP was maintained between 10-12 mm throughout the surgery. The vitals remained unchanged. The procedure was uneventful without pain and discomfort. After delivery of baby, furosemide 10 mg was given intravenously. A total of 450 cc of colloid was given. Postoperatively, epidural analgesia was maintained with 0.125% bupivacaine and 20 µg of fentanyl every 8 hourly for 72 h. After surgery patient was shifted to intensive care unit (ICU) for monitoring and was discharged on 10<sup>th</sup> day.

## Discussion

Pulmonary hypertension in pregnancy is associated with high mortality (30%-50%);<sup>[1-3]</sup> hence, pregnancy is contraindicated. Whatever anesthetic technique is chosen, principle remains the same. The cardiac output must be maintained and the systemic vascular resistance (SVR) must not be allowed to fall ensuring minimal change in the amount of right to left shunt. General anesthesia poses risk as potential for increased catecholamine release after laryngoscopy, during anesthesia and in recovery given the relatively poor pain control leading to increased right to left shunt. Also, general anesthesia might exacerbate her respiratory disease, thereby increasing postoperative hypoxia. These hazards are avoided by regional anesthesia.

Epidural anesthesia has been used successfully in this condition<sup>[4-6]</sup> and because of its slow onset; reduces the chance of precipitous hemodynamic changes as seen in spinal anesthesia. Spinnato *et al.*,<sup>[4]</sup> and others have suggested that it is safe to administer epidural anesthesia to patient with Eisenmenger's syndrome. In our case elective LSCS was chosen and successfully conducted with epidural anesthesia with local anesthetic and fentanyl. As the postpartum period is the period in which many mortalities have been reported, continuous monitoring of pulse, ECG and SpO<sub>2</sub> was continued in ICU, so that the postpartum hemodynamic alterations are recognized early and treated accordingly. In conclusion, our experience with this patient suggests that successful outcome is possible in patients with pulmonary hypertension with segmental epidural anesthesia; however, patients need intensive monitoring in the intraoperative and postoperative period.

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