DOI: 10.21088/ijaa.2349.8471.12125.9

Indian Journal of Anesthesia and Analgesia
Volume 12 Number 1 January - March 2025

Case Report

Anaesthetic Management of Case of Atrial Septal Defect with Hypothyroidism in Pregnancy for LSCS

Patel Meghana[1], Madhusudhana Ravi[2]

How to cite this article:

Patel Meghana, Madhusudhana Ravi. Anaesthetic Management of Case of Atrial Septal Defect with Hypothyroidism in Pregnancy for LSCS. Ind J Anesth Analg. 2025; 12(1): 48-51.

ABSTRACT

Introduction: The most common cause of cardiac disease in pregnancy includes rheumatic heart disease, valvular heart disease and congenital heart disease. ASD is the most common acyanotic congenital heart defect. Prompt diagnosis and repair of antepartum cardiac problems is of prime importance for maternal foet al. health.

Hypothyroidism is widely prevalent in pregnant women. Since hypothyroidism is easily treated, timely detection and treatment of the disorder could reduce the burden of adverse foet al. and maternal outcomes, which are very commonly encountered.

Case Report: A 25-year-old female diagnosed with G2P1L1 with 36 weeks 4 days gestation presented with hypothyroidism. During assessment, ASD was identified with right bundle branch block (RBBB). Laboratory tests were normal.

The patient was closely monitored, 16G peripheral intravenous catheter placed. Lactated Ringer's solution was started, followed by Inj ranitidine, Inj metoclopramide, and Inj midazolam. The Caesarean-section was carried out under spinal anaesthesia.

With the patient seated, hyperbaric bupivacaine (10 mg) was administered L4-5 interspace. The patient was then laid supine, and an oxygen mask delivering 3 litres per minute was applied. The surgical procedure commenced once the sensory block reached the T6 level.

Five minute after baby delivery, mother had respiratory distress despite stable hemodynamic findings. Subsequently, hypotension, bradycardia developed and SpO2 dropped below 85%. By the tenth minute of the surgery, blood pressure gradually fell to 90/50 mmHg and heart rate of 45 bpm prompting the administration of Inj Atropine 0.6 mg. patient supplemented with oxygen and fluid

Author's Affiliation:

[1] Postgraduate Resident, Anaesthesiology, SDUMC, SDUAHER, Kolar, Karnataka, India.
[2] Professor, Anaesthesiology, SDUMC, SDUAHER, Kolar, Karnataka, India.

Corresponding Author:

Ravi Madhusudhana, Professor, Anaesthesiology, SDUMC, SDUAHER, Kolar, Karnataka, India.
E-mail: ravijaggu@gmail.com

➢ **Received:** 07-12-2024 ➢ **Revised:** 10-01-2025 ➢ **Accepted:** 29-01-2025

resuscitation was done. Patient stabilized, Surgery lasted for 50min and shifted to HDU for monitoring, later uneventful.

Conclusion: In the ASD patient planned for section, the most ideal anaesthetic method that would best enable hemodynamic stability should be selected by considering elective and emergency condition of the surgery.

KEYWORDS

• ASD • Caesarean section • Hypothyroid • Spinal anaesthesia

KEY MESSAGES

ASD with PAH can be symptomatic and ASD is the most common Congenital Heart Disease in Pregnancy. Diagnosing in the preoperative period, planning for analgesia and anaesthesia with maintaining the systemic and Pulmonary vascular resistance is very important in reducing the maternal and foet al. morbidity. Hypothyroidism is also common in pregnancy and may present with excessive weight gain, bradycardia in mother and growth impairment in foetus; early diagnosis and treatment is essential for the better outcome.

INTRODUCTION

ASD is the most common acyanotic congenital heart defect. Cardiac disease in pregnancy have an incidence of 0.3-3.5% and major cause of maternal death.[1] The most common cause of cardiac disease in pregnancy includes rheumatic heart disease, valvular heart disease and congenital heart disease. Prompt diagnosis and repair of antepartum cardiac problems is of prime importance for maternal foet al. health.

Pregnancy is a period that places great physiological stress on both the mother and the foetus in the best of times.[2] However, if pregnancy is compounded by endocrine disorders such as hypothyroidism, the potential for maternal and foet al. adverse outcomes can be immense. Hypothyroidism is widely prevalent in pregnant women. Since hypothyroidism is easily treated, timely detection and treatment of the disorder could reduce the burden of adverse foet al. and maternal outcomes, which are very commonly encountered.

CASE REPORT

A 25-year-old female diagnosed with G2P1L1 with 36 weeks 4 days gestation presented to the hospital with complaints of palpitation and fatigue. Patient had been diagnosed with hypothyroidism and on medication. During the preoperative assessment, ASD was identified and on the electrocardiogram right bundle branch block (RBBB) was observed with pulmonary pressure of 40 mmHg. Laboratory tests were normal. The patient was closely monitored in the operating room, where a 16G peripheral intravenous catheter was placed. Lactated Ringer's solution was started, followed by 50 mg of Inj ranitidine, 10 mg of Inj metoclopramide, and Inj midazolam 1 mg for sedation. The Caesarean-section was carried out under spinal anaesthesia. Preoperative vital signs indicated a blood pressure of 160/80 mmHg, a heart rate of 120/min, and an SpO2 of 95%.

With the patient seated, the lumbar area was cleaned with iodine solution, and hyperbaric bupivacaine (10mg) was administered in a single dose using a 25G Quincke needle at the L4-5 interspace. The patient was then laid supine, and an oxygen mask delivering 3 litres per minute was applied. The surgical procedure commenced once the sensory block reached the T6 level.

Five minute after baby delivery, mother had respiratory distress despite stable hemodynamic findings. Subsequently by tenth minute, hypotension, bradycardia developed and SpO2 dropped below 85%, blood pressure gradually fell to 90/50 mmHg and heart rate of 45 bpm prompting the administration of Inj Atropine 0.6 mg, patient supplemented with oxygen and fluid resuscitation was done. Patient stabilized, Surgery lasted for 50min and shifted to HDU for monitoring, later uneventful.

DISCUSSION

Atrial septal defect (ASD) is the most prevalent acyanotic congenital heart defect, occurring in 10% of cases.[3] It is more frequently diagnosed in women and is typically well tolerated during pregnancy In advanced stages, ASD can lead to complications like pulmonary arterial hypertension, right heart failure, atrial fibrillation or flutter, stroke, and Eisenmenger syndrome.[4,5]

There are three types of ASD. The first type, ostium primum, occurs below the foramen ovale and is found in 20% of cases. The second type, ostium secundum, is the most common, accounting for nearly 70% of cases. The third type, sinus venosus, is located in the upper part of the interatrial septum near the superior vena cava, affecting 6-14% of patients. This type can result in various complications, including pulmonary arterial hypertension, cardiomegaly, and arrhythmias, which may ultimately lead to myocardial ischemia. Pulmonary hypertension is classified into three severity grades: mild (36-49 mmHg), moderate (50-59 mmHg), and severe (≥60 mmHg).[6]

Understanding a patient's ASD history is crucial for accurate diagnosis and treatment. Timely diagnosis and management of cardiac issues during pregnancy are vital for both maternal and foet al. well-being. A study by Yap *et al*.(2) found that women with unrepaired ASD had a higher incidence of pre-eclampsia (3.54%), small for gestational-age births (1.95%), and foet al. mortality (5.55%) compared to the general population.[1]

In pregnant patients with congenital heart disease, the common risks associated with general anaesthesia, such as aspiration, tachycardia from intubation, and hypertension, should be considered. For those with ASD, general anaesthesia can result in dysrhythmias (5-10%), heart block, cardiac failure, and infective endocarditis. Additionally, during surgery, it is critical to avoid hypotension, hypoxemia, hypercarbia, and hypothermia to prevent shunt reversal (Eisenmenger syndrome).[4]

Research indicates that regional anaesthesia is the most frequently used type. However, during surgery, the intracardiac shunt may reverse due to sudden, uncontrolled hypotension and hemodynamic instability. In our case, despite administering low-dose spinal anaesthesia, the patient experienced acute hypotension and respiratory distress without chest pain. Thus, it is essential to have resources available for intraoperative complications.

Regional anaesthesia was employed by Weis *et al* along with intravenous infusion of adrenaline to counteract decrease in SVR which can occur immediately after spinal. Supplemental oxygen was administered as it would be beneficial in severe PAH. [7]

All factors that could cause reversal of shunt or increase shunt fraction to be avoided by maintaining adequate preload and cardiac contractility, near normal heart rate, SVR, PVR and adequate management of pain relief.

Good preanesthetic assessment, proper preparation, good intraoperative and postoperative analgesia for non-cardiac surgeries can be easily performed under regional anaesthesia in patients of large ASD with severe pulmonary hypertension.[8]

CONCLUSION

In ASD, the most common acyanotic congenital heart defect, poses significant risks during pregnancy, contributing to increased maternal and foet al. morbidity and mortality. For ASD patients undergoing caesarean sections, a thorough preanesthetic check, meticulous planning with selection of most suitable aesthetic method to maintain hemodynamic stability is essential for a better outcome.

Conflict of Interest: NIL

REFERENCES

1. Yap S.C., Drenthen W., Meijboom F.J., Moons P., Mulder B.J., Vliegen H.W. *et al*. Comparison of pregnancy outcomes in women with repaired versus unrepaired atrial septal defect. BJOG: An International Journal of Obstetrics & Gynaecology. 2009 Nov; 116(12): 1593-601.
2. Leary P.J., Leary S.E., Stout K.K., Schwartz S.M., Easterling T.R. Maternal, perinatal, and postneonatal outcomes in women with chronic heart disease in Washington State. Obstetrics & Gynecology. 2012 Dec 1; 120(6): 1283-90.
3. Saxena A., Divekar A., Soni N.R. Natural history of secundum atrial septal defect revisited in the era of transcatheter closure. Indian heart journal. 2005 Jan 1; 57(1): 35-8.

4. Balint O.H., Samman A., Haberer K., Tobe L., McLaughlin P., Siu S.C., *et al*. Outcomes in patients with pulmonary hypertension undergoing percutaneous atrial septal defect closure. Heart. 2008 Sep 1; 94(9): 118993.
5. Hidano G., Uezono S., Terui K. A retrospective survey of adverse maternal and neonatal outcomes for parturients with congenital heart disease. International journal of obstetric anesthesia. 2011 Jul. 1; 20(3): 229-35.
6. Roy R., Prasad A. Anaesthesia management of a patient with large atrial septal defect with moderate pulmonary hypertension for total abdominal hysterectomy. J AnesthCrit Care Open Access 2015; 2: 00075.
7. Weiss B.M., Hess O.M. (2000) Pulmonary vascular disease and pregnancy: current controversies, management strategies, and perspectives. Eur Heart J 21(2): 104–115.
8. Vikram Madaan and Rekha Gupta Anaesthetic management of a case of large ASD with severe pulmonary hypertension—case presentation; Ain-Shams Journal of Anesthesiology volume 14, Article number: 32 (2022).