

## CASE REPORT

# Complete Heart Block with Pregnancy-induced Hypertension for Emergency Cesarean Section: Anesthesia Management

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## ABSTRACT

The incidence of complete atrioventricular block first time during pregnancy is rare. Majority of cases remain asymptomatic and do not require any active intervention. Symptomatic ones can present with syncope, dyspnea, arrhythmia, heart failure or sudden cardiac death. The risk of syncope and sudden cardiac death is increased in patients with heart rate less than 50/minute. The goal in the perioperative anesthetic management of this case is to preserve the heart rate and maintain hemodynamic stability. We present a case of 26 years old parturient with pregnancy-induced hypertension (PIH), complete heart block (CHB), intrauterine growth retardation (IUGR), and Rh incompatibility managed under spinal anesthesia.

**Keywords:** Complete heart block, Pregnancy, Spinal anesthesia.

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## INTRODUCTION

The incidence of complete atrioventricular block first time during pregnancy is rare.<sup>1</sup> It may be asymptomatic, or it may present with syncope, dyspnoea, arrhythmia, heart failure or sudden cardiac death. The risk of syncope and sudden cardiac death is increased in patients with heart rate less than 50/minute.<sup>2</sup> We present a case of 26 years old parturient with pregnancy-induced hypertension (PIH), intrauterine growth retardation (IUGR), Rh incompatibility and complete heart block (CHB).

## CASE

A 29-year-old moderately built gravida 3, para 1, live 1, abortion 1, with 37 weeks gestation, presented to our

tertiary care hospital in labor. She was referred from a periphery hospital i/v/o maternal bradycardia and ECG s/o complete heart block. She was also a diagnosed case of Rh incompatibility and pregnancy-induced hypertension with IUGR (intrauterine growth retardation) for which she was taking tablet labetalol 100 mg twice daily. She had also received anti-D immunoglobulin in the seventh month of pregnancy. She was diagnosed with heart block during her previous cesarean section but did not do any follow-up as she had no symptoms.

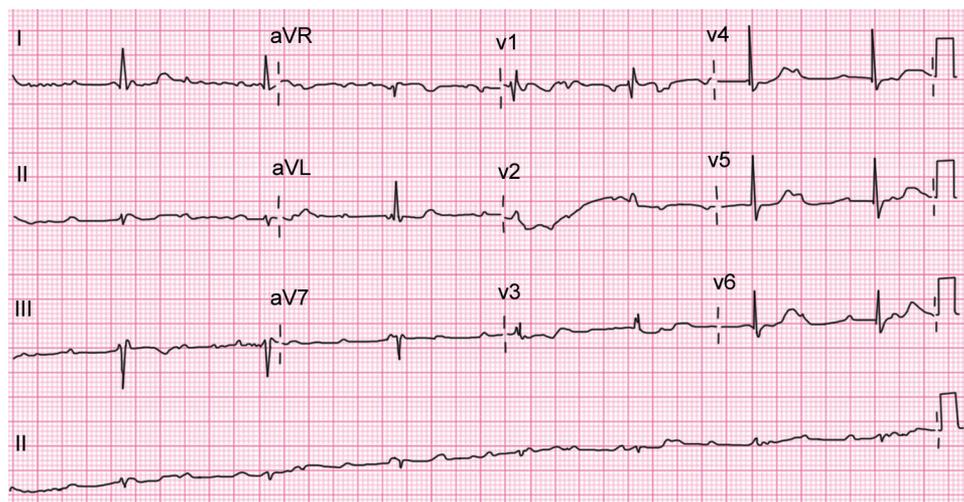
On examination, her pulse rate was 46 beats per minute, blood pressure (BP) was 160/100 mm Hg, and general condition was stable on admission. Electrocardiogram (ECG) showed atrioventricular dissociation with atrial rate 100/minute, ventricular rate 42/minute and narrow escape suggestive of complete heart block (Graph 1). Cardiorespiratory system examination was normal. Echocardiography revealed an ejection fraction of 60% with mild MR, trivial TR, and a structurally normal heart. Cardiologist's opinion was sought. Routine blood investigations were within normal limit. The woman was taken up for cesarean section under emergency conditions. Written informed high-risk consent was taken, and cardiac ICU was kept standby. Standard monitors including a pulse oximeter, ECG and noninvasive blood pressure were attached. Heart rate did not respond to intravenous atropine. Injection isoprenaline was kept standby, and venous access for pacing to be kept ready was decided. The sheath for temporary pacing was inserted in the right internal jugular vein (IJV) under local anesthesia. Pacing wires and cardiologist were present in OR for immediate pacing if and whenever required. The patient was preloaded with 500 mL of Ringer's lactate. Spinal anesthesia was induced with 1.5 mL 0.5% heavy bupivacaine and 25 mcg of fentanyl. A healthy male baby of 2.2 kg was delivered with an Apgar score of 9/10 at 1 minute and 10/10 at 5 minutes. The neonate did not have any rhythm disturbances. The operative duration was 40 minutes.

The intraoperative course was uneventful, and temporary pacing was not required. The patient maintained HR of 45–55/minute and mean arterial pressure of 75–85 mm Hg throughout the procedure. Oxygen

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Graph 1: ECG s/o CHB

supplementation was given via Hudson's mask at 6L/minute till postoperative period. The patient was closely observed postoperatively, and analgesia was taken care of with diclofenac 75 mg IV three times a day. IJV sheath inserted for temporary pacing was removed after 24 hours of cesarean section. The patient was referred to a cardiologist for follow-up for permanent pacing.

## DISCUSSION

In CHB, there is a complete absence of atrioventricular conduction. It can be congenital or acquired. Isolated congenital CHB is relatively benign with narrow QRS complexes on ECG, and heart rate may increase with atropine or sympathomimetics.<sup>3</sup> Majority of cases remain asymptomatic and do not require any active intervention during labor and delivery. The low systemic vascular resistance (SVR) in pregnancy facilitates an increase in stroke volume and thus pregnancy is often well tolerated even with the heart rate as low as 50/minute. As the patient was a k/c/o PIH, it contributed to the maintenance of BP on a higher side despite low HR.

Permanent pacing is advocated during 1st and 2nd trimester for symptomatic cases. Few asymptomatic patients may become symptomatic or present with complications due to Valsalva induced bradycardia during the 2nd stage of labor.<sup>4</sup> Although, no significant bradyarrhythmia during labor and delivery attributed to increased sympathetic response at this stage has been observed by some authors.<sup>5</sup>

In patients without a permanent pacemaker, temporary pacemakers have been routinely inserted for labor and birth to withstand any hemodynamic variations.<sup>6</sup> However, temporary pacing is also associated with complications like a femoral hematoma, coronary sinus dissection, cardiac perforation, cardiac tamponade, many more

and even death.<sup>7</sup> Cases have been successfully managed without temporary pacing,<sup>6</sup> but such cases should always be managed in a tertiary care setup with pacing facilities available, and with a multidisciplinary team including cardiologist, obstetrician, and anesthesiologist.

The goal in the perioperative anesthetic management of a case with complete heart block is to preserve the heart rate and maintain hemodynamic stability. There are no specific recommendations for the most appropriate anesthetic technique for cesarean section in women with CHB. Controlled epidural anesthesia is the preferred technique, but it was not chosen as the patient was posted for emergency LSCS and duration of surgery was not expected to be long. General anesthesia was avoided as both inhalational and intravenous anesthetic agents may alter the hemodynamic status and could have caused more harm to the already IUGR fetus. Also, many anesthetic drugs like fentanyl, suxamethonium, and neostigmine have an adverse effect on heart rate. Induction with propofol has a risk of worsening bradycardia. We managed the case under spinal anesthesia maintaining hemodynamic stability without compromising the fetus.

## CONCLUSION

Complete heart block is well tolerated in pregnancy, and asymptomatic cases can be managed without a pacemaker, but such practice should be allowed only in a tertiary care center with the facilities of emergency pacing and a team of an obstetrician, and cardiologist available at all times.

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