

BACKGROUND

Third-degree atrioventricular block, commonly referred to as complete heart block, is a condition characterized by a disruption in the electrical conduction of the heart leading to significant circulatory compromise. While often asymptomatic, it can present acutely, especially under stress or with certain medications. Anesthetic agents, with their potential to depress cardiac function, can unmask underlying cardiac conduction abnormalities in susceptible individuals. This case report highlights the importance of thorough preoperative assessment, even for seemingly low-risk procedures, to identify potential complications and optimize patient care.

This case of unmasked complete heart block is unique due to the patient's complex medical history and rapidness of detection after induction agents were administered. Despite the initial challenges, the patient received timely intervention with pacemaker implantation, resulting in a favorable outcome. The rhythm conversion from sinus bradycardia to complete heart block can appear subtly on the monitor and carry a profound impact on overall patient outcome.

CASE REPORT

A 76-year-old female with a history of atrial fibrillation (status post left atrial appendage occlusion device placement three months prior) and presyncopal episodes presented for colonoscopy due to GI bleed. Recent cardiology evaluation to evaluate the left atrial appendage occlusion device listed no concerns with cardiovascular status and patient reported presyncopal episodes had resolved. Preoperative vitals showed bradycardia and hypertension. Labs revealed mild anemia and normal electrolytes. General anesthesia was planned.

After induction with propofol and administration of anticholinergics, the case was aborted due to persistent and worsening bradycardia. EKG revealed a complete heart block. Subsequent workup in the emergency department confirmed the block, and the patient underwent permanent pacemaker placement in the evening and was discharged later that day. Chart review months later revealed later receipt of outside records that indicated the patient had undergone event monitoring which indicated varying degrees of AV block, but the anesthesiology team did not have access to this information at the time of the case.

RADIOLOGY FINDINGS

Prior to the procedure, a pre-operative TTE revealed atrial fibrillation, a well-seated Watchman device, mild mitral and tricuspid regurgitation, mild-moderate concentric left ventricular hypertrophy, and a left ventricular ejection fraction of 55-60%. Although previous event monitoring had identified varying degrees of AV block, this information was not readily available to the anesthesia team at the time of the procedure. Despite presenting to pre-operative holding in sinus bradycardia, the patient developed profound bradycardia shortly after receiving minimal sedation. An immediate 12-lead ECG confirmed complete heart block. A subsequent TTE revealed worsening tricuspid regurgitation and new pulmonary hypertension. A permanent pacemaker was implanted to restore normal sinus rhythm. Post-implantation ECG confirmed appropriate pacemaker function.

CLINICAL IMPLICATIONS

This case underscores the critical importance of a comprehensive preoperative assessment, including a thorough review of medical history, medications, and recent diagnostic tests. While the patient's history of heart block was documented, its timely access was limited by electronic medical record (EMR) incongruence, impacting its appreciation in medical management. This case highlights the need for increased vigilance during sedation, especially in patients with underlying cardiac conduction abnormalities.

Anesthetic providers should be prepared to recognize and manage acute cardiac decompensation, including the timely administration of medications and coordination of appropriate care. Additionally, effective communication and data sharing between different EMR systems is crucial to ensure favorable patient care. By improving interoperability between EMRs, healthcare providers can access a comprehensive patient history, reducing the risk of adverse events.

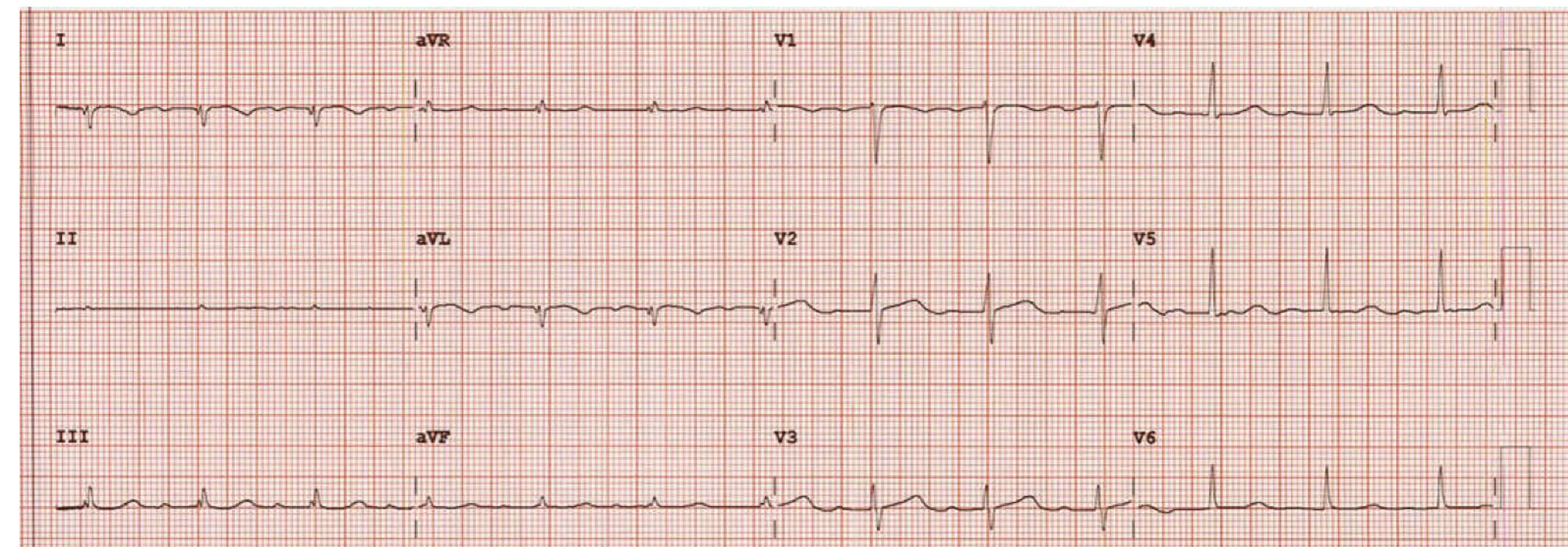


Image 1: 12-lead taken three months earlier, revealing AV block

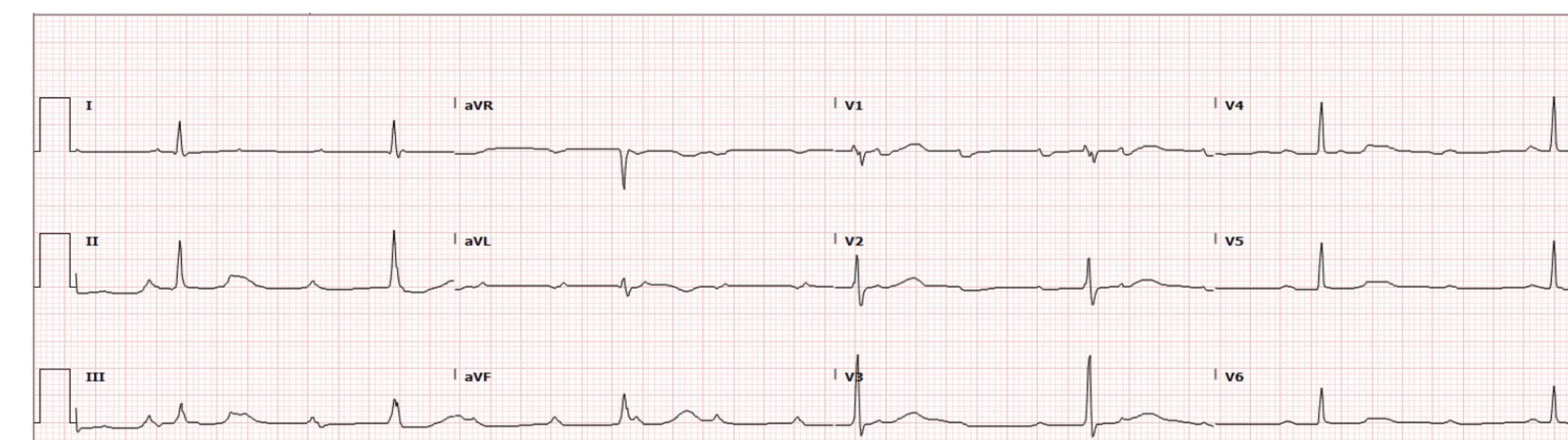


Image 2: 12-lead in PACU demonstrating complete heart block, immediately following aborted case.

DISCUSSION

Further research is needed to investigate the optimal strategies for identifying and managing patients at risk for perioperative cardiac events. Prospective studies could explore the utility of pre-operative cardiac screening tools and risk stratification models to identify patients who may benefit from additional cardiac evaluation or closer monitoring during anesthesia. Additionally, future research could investigate the optimal timing and type of cardiac intervention in patients with pre-existing cardiac conditions undergoing non-cardiac surgery.

REFERENCES

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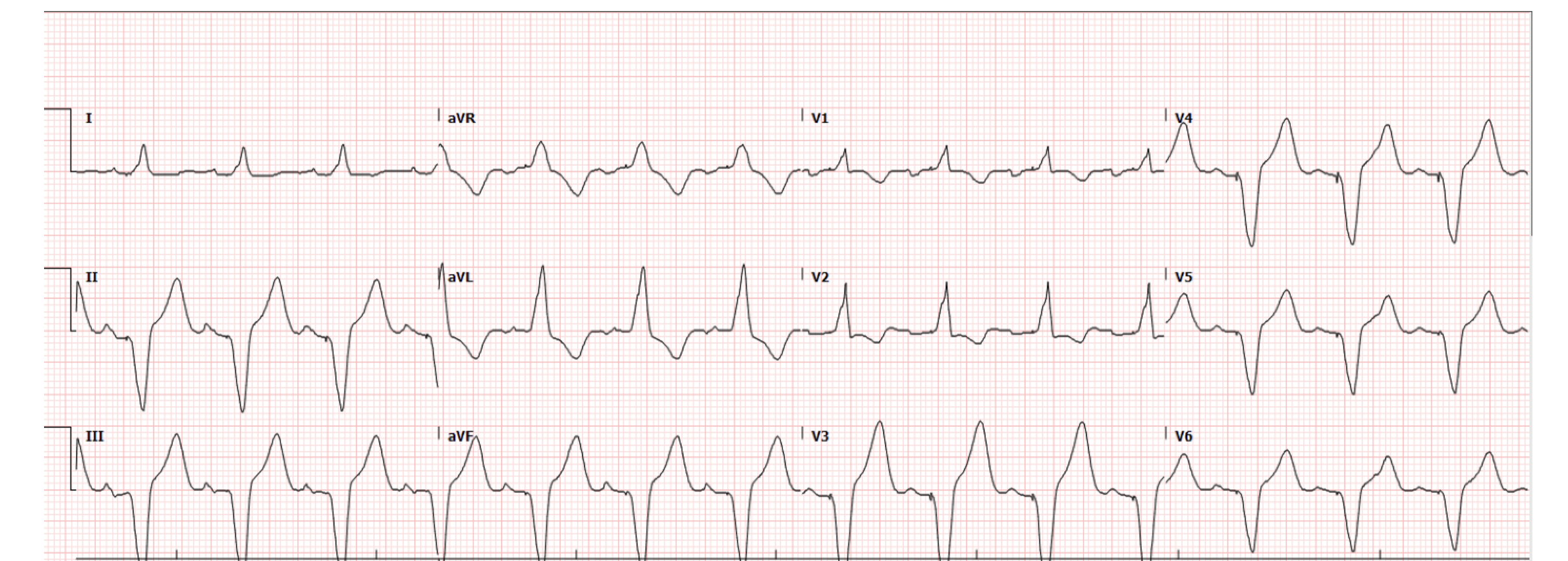


Image 3: 12-lead following PPM later that evening, demonstrating ventricular pacing