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Dual Chamber Pacemaker Implant in Coronary Sinus with Several Complications

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Dual Chamber Pacemaker Implant in Coronary Sinus Leading to Several Complications

Nancy Zaher Kelada Wassef *; Mina Ibrahim; Christine Botrous; Amr Anos; Janaka Pathiraja

Abstract: Permanent pacemaker implantation is a low-risk procedure. However, complications may occur with a rate of around 4-8% [1]. We present a case where initial implantation resulted in complications that could have been avoided by meticulous assessment of lead position in different projections and early post procedure Xray that would have delineated other serious complications. We present a case where the right ventricular lead was placed in the coronary sinus, which resulted in loss of pacing capture with further syncope after the pacemaker implant. This was apparent in the post procedure electrocardiogram (ECG) with right bundle branch pacing and the lead was repositioned in the right ventricular apex the following day. Furthermore, the patient was discharged home without a chest Xray (CXR), and she represented a week later with a haemo-pneumothorax and pericardial effusion. A chest drain was placed and was discharged after a slow recovery following several complications that could have been avoidable.

Keywords: Heart block; Permanent Pacemaker; complications; learning points.

An eighty-seven-year-old female patient presented with syncope and documented high grade atrioventricular block. (Figure 1) She had a dual chamber pacemaker implant, after which she had another episode of syncope with loss of pacing capture in CCU. (Figure 2A–C)

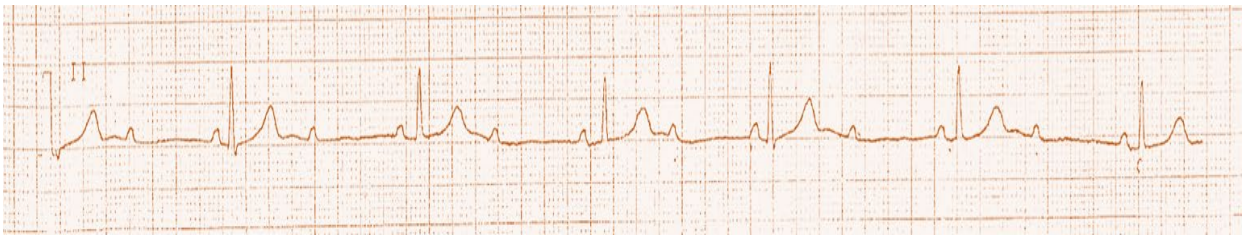
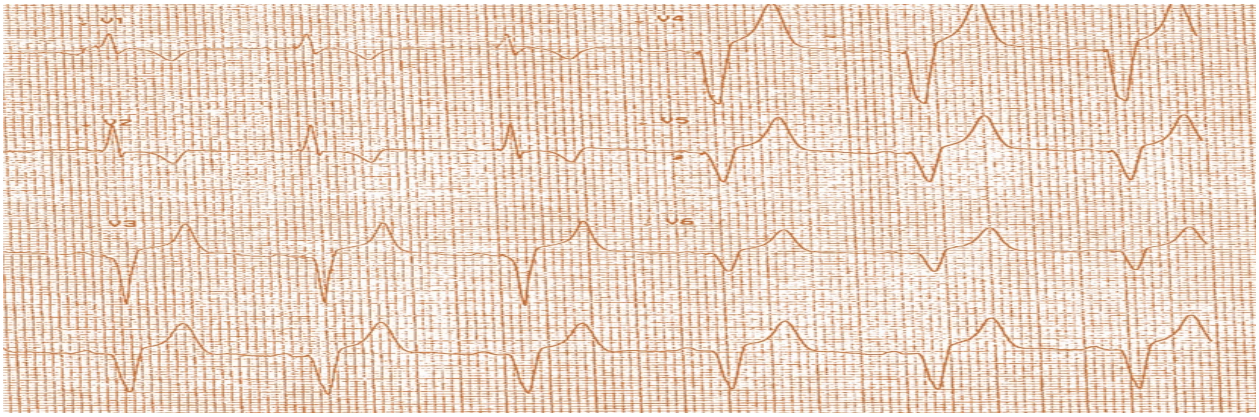


Figure 1. demonstrates Mobitz type two, second degree atrioventricular block.



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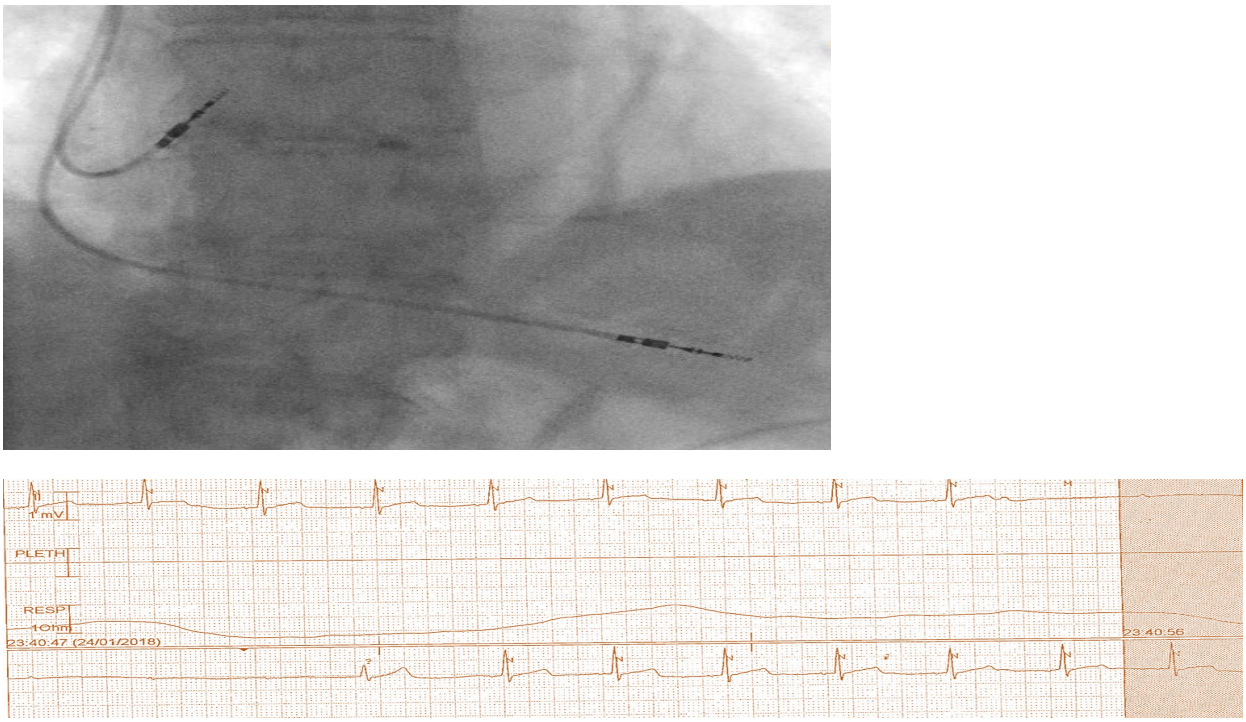

Figure 2. (**A**): demonstrates ECG paced ventricular rhythm with right bundle branch block (RBBB) pattern. (**B**) demonstrates dual chamber final implant by fluoroscopy, with right ventricular lead in middle cardiac vein position rather than right ventricular apex. (C) Telemetry monitor revealing native sinus rhythm with loss of capture with long pause after pacemaker implant, followed by a syncope in CCU. This was confirmed by pacing checks with loss of capture at the highest output.

The patient had repositing of the right ventricular (RV) lead in the right ventricular apex, and the ECG showed left bundle branch block (LBBB) pattern pacing. (Figure 3) Pacing checks were satisfactory after repositioning, and she was discharged home without a CXR.

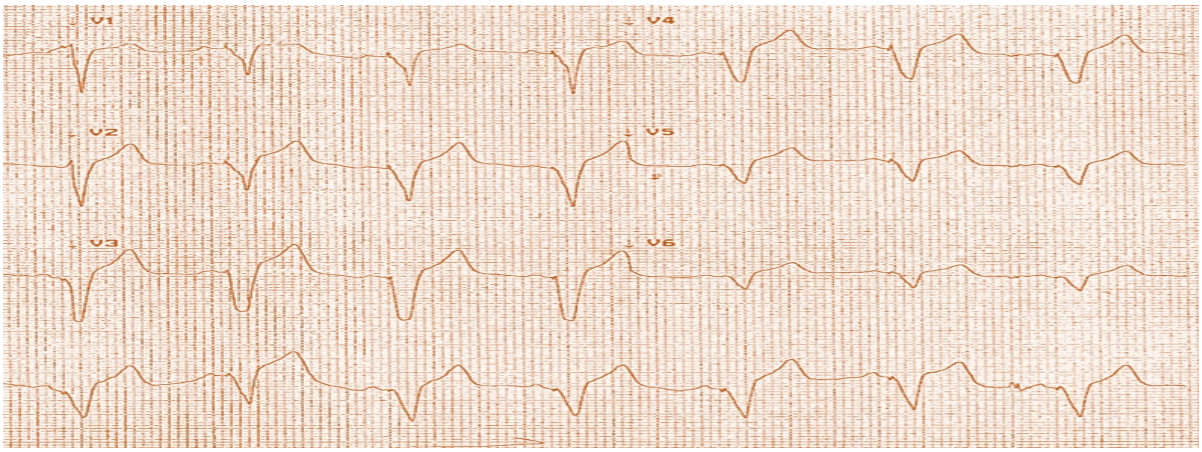

Figure 3. ECG showed LBBB pattern pacing.

A week later; she was re-admitted with worsening dyspnoea. CXR and CT revealed haemopericardium and haemothorax and she was treated with a chest drain and conservatively managed for pericardial effusion (Figure 4; 5). She had a slow recovery and was discharged home after treatment with no further symptoms during follow up in pacing clinic.

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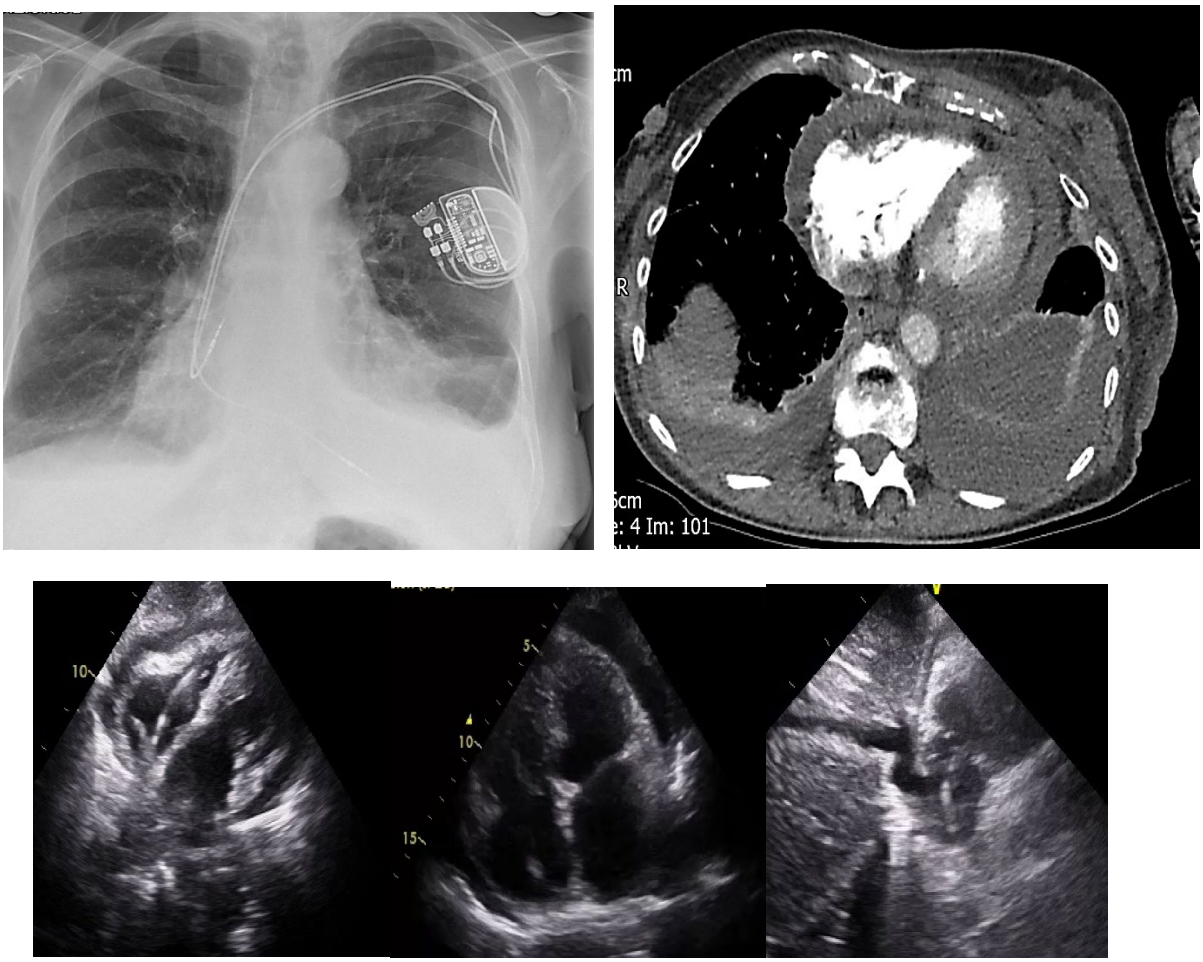

Figure 4. (**A**) CXR demonstrates haemo-pneumothorax with dual chamber pacemaker leads in position. (**B**) CT showing bilateral pleural effusion and pericardial effusion. (C) Echocardiography from subcoastal and apical windows showing moderate pericardial effusion, with inferior vena cava (IVC) collapse more than 50%.

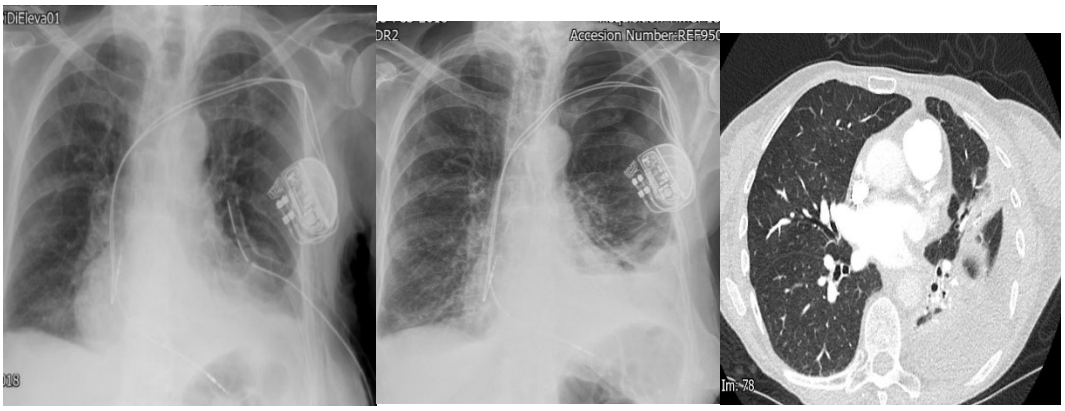

Figure 5. (**A**) CXR demonstrates the left sided chest drain. (**B**) CXR demonstrates residual left sided haemo-pneumothorax after drain removal. (**C**) CT revealing residual loculated haemothorax.

Learning Points

ECG evaluation post pacemaker implantation is essential, and pseudo RBBB with late V4 transition, should raise the suspicion of coronary sinus pacing of the right ventricular lead [2].

ST elevation with injury current is an essential step during implant, that alerts the operator to extracardiac placement, and post procedure [3].

LAO projection will allow the operator to identify right ventricular versus coronary sinus lead placement during procedure [4].

Chest Xray and pacing interrogation are essential after all pacemaker implantations [5].

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Data Availability Statement: The data are available on request from the authors.

Conflicts of Interest: The authors declare no conflicts of interest.

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