

## Case Report

# Intermittent Right Ventricular Outflow Tract Capture due to Chronic Right Atrial Lead Dislodgement

Partha Prateem Choudhury, Vivek Chaturvedi, Saibal Mukhopadhyay, Jamal Yusuf

Department of Cardiology, GB Pant Hospital, New Delhi, India

Address for Correspondence: Dr. Partha Prateem Choudhury, Assistant Professor, Department of Cardiology, GB Pant Hospital, New Delhi, India. E-Mail: drparthapc79@gmail.com

### Abstract

A 58 year old male, known case of type 2 diabetes and hypertension, had undergone implantation of a dual chamber pacemaker(DDDR) in 2007 for complaints of recurrent syncope and trifascicular block with a normal ejection fraction and normal coronaries. His post implantation parameters were normal at that time. He now presented to our pacemaker clinic where his ECG done showed two types of paced complexes. The first few complexes were consistent with atrial sensed right ventricular apical pacing with left superior axis. Later complexes showed loss of atrial sensing with pacing from right ventricular outflow tract(inferior axis) with subtle oscillation in its axis. On application of magnet, two pacemaker spikes were visible with interspike interval of 120 ms and paced complexes with inferior axis starting from the first spike suggesting that the atrial lead was responsible for RVOT depolarization. On interrogation of the pacemaker, atrial EGM showed sensed activity from atrium followed by large sensed ventricular complex. Fluoroscopy confirmed that the atrial lead was dislodged and was intermittently prolapsing into the RVOT. Since the patient was asymptomatic, he refused any intervention and subsequently his atrial lead was switched off by telemetry. The above case signifies that asymptomatic lead dislodgement is not always manifested as loss of capture and even subtle variation of the axis of the paced complexes can provide us with a clue that can be confirmed by telemetry of the pacemaker and fluoroscopy.

**Key words:** Dual chamber pacemaker, lead dislodgement, Electrogram (EGM)

### Introduction

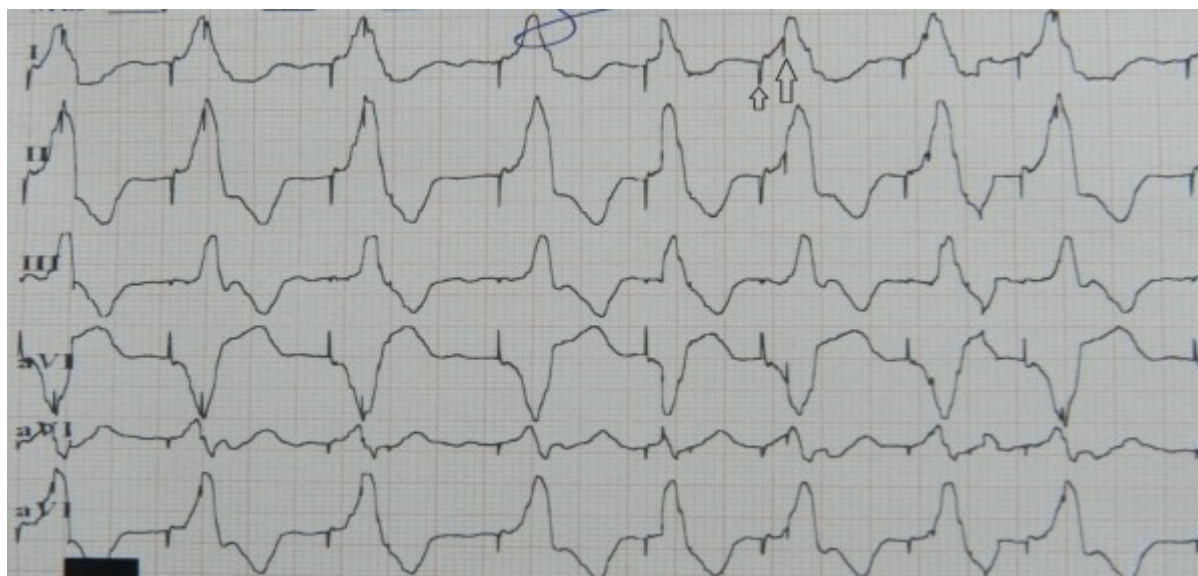
A 58 year man presented to our pacemaker clinic for a routine follow-up visit. Previously, he had undergone implantation of a dual chamber pacemaker (DDDR) in 2007 (both leads tined) for complaints of recurrent syncope and trifascicular block (right bundle branch block with left atrial hemi-block and prolonged PR interval) on electrocardiogram. His left ventricular ejection fraction and coronary angiogram were normal. His pacing parameters after implantation, and at his last visit 4 years post-implantation, were both normal. He had been asymptomatic since then but on this visit, an interesting abnormality was recorded on the electrocardiogram (ECG) (**Figure 1**). What can be the cause for this ECG?

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**Figure 1:** Baseline ECG showing spontaneous paced QRS complexes. The ECG shows paced QRS complexes at an approximate rate of 75 bpm. The first three complexes show p waves followed by paced QRS complex with left superior axis consistent with atrial sensed right ventricular apical pacing. The subsequent complexes do not show any p waves and have paced complexes with an inferior axis; within these complexes itself the sixth, seventh, tenth and eleventh complex show subtle widening of QRS and leftward shift in axis (aVL positive) as compared to fourth, fifth, eighth, and ninth complexes (aVL equiphase). Only one pacemaker spike is seen and no clear p wave is made out.

Thus in the initial complexes there is appropriate atrial sensed ventricular pacing proceeding from the RV apex while in the later complexes there is loss of atrial sensing with right ventricular pacing originating from the right ventricular outflow tract (RVOT) with subtle oscillations in the axis of paced QRS. On application of magnet, the following rhythm was noticed (**Figure 2**).



**Figure 2:** ECG with application of magnet after 4 spontaneous paced QRS complexes show two pacemaker spikes (small and large arrow) with interspike interval decreasing to 120 ms.

Before application of magnet, spontaneous pacing is seen with similar QRS morphology as the latter complexes in previous figure with no atrial sensing. However a pacemaker spike is seen buried within the first two QRS complexes with interspike interval of approximately 150 ms. On application of magnet the ventricular rate accelerates to 100bpm, the QRS width varies but morphology remains same, and the interspike interval decreases to 120 ms (small and large arrow). Thus on application of magnet, the ventricular depolarization is occurring from right ventricular outflow tract (RVOT) and presence of both the spikes with shortened interspike

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