

Extraction of 34-year-old Cardiovascular Implantable Electronic Device

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Abstract

Background: Cardiovascular implantable electronic device (CIED) was first implanted in 1958 and since then, the implantation rate is escalating for various indication mainly symptomatic bradyarrhythmia. However, extraction rate of CIED remained unclear and we reported an interesting case of explanting a 34-year-old permanent pacemaker. **Case Report:** A 79-year-old gentleman with a Teletronic's permanent pacemaker who defaulted his routine follow up for three decades presented to our center and underwent uneventful removal of his device. Post removal of CIED, he was monitored for a year and remained asymptomatic. **Conclusion:** Patients need to be educated on post-implantation pacemaker care.

Keywords: Artificial Pacemaker, Bradycardia, Cardiac Arrhythmias, Device Removal, Heart Block.

Introduction

Historically, the first cardiovascular implanted electronic device (CIED) was performed on Mr Arne Larsson in 1958 and since then, the implantation rate is escalating and beneficial for various indications [1]. During implantation, the generator is secured into pre-pectoral pocket while the lead is attached to endocardial tissue. However, extracting a fibrous embedded lead can be disastrous with risk of perforation. In this article, we reported a case of extracting permanent pacemaker that had been in-situ for the past 34 years.

Case Report

A 79-year-old gentleman with underlying dyslipidemia and heart rhythm conduction disorder presented to our center for pacemaker interrogation. He was diagnosed with likely heart rhythm conduction disorder when admitted in 1985 for pre-syncope episode and a single chamber pacemaker was implanted during similar admission. However,

the exact diagnosis for his presyncope was unclear and denied any extensive investigation prior to the implantation. Post-implantation, he denied recurrence of symptoms and subsequently defaulted his follow-up. He presented to our clinic for device interrogation, three decades post-implantation after being convinced by his children. Otherwise, he denied any syncopal, giddiness or palpitation. Clinically, there was a pacemaker bump on the right pectoral region and 12-leads Electrogram (ECG) revealed an unremarkable sinus rhythm. Pacemaker interrogation was attempted but failed to communicate with the depleted pulse generator. As the patient was asymptomatic and unclear indication for implantation, a 24 hours Holter monitoring was organized which revealed nil abnormality detected. Thus, he was admitted for removal of the pacemaker.

Intra-operatively the pacemaker generator box was still intact but was heavily encapsulated with dense fibrous tissue [Fig.1]. The remnant

of the lead was left embedded into pre-pectoral pocket and incision site was closed. He was monitored regularly on monthly basis and remained asymptomatic throughout a year. 24 hours Holter monitoring was repeated and again noted neither significant pause nor bradyarrhythmia.

Discussion

After successful implantation of first CIED, more devices are being implanted but the indication remained ambiguous until a comprehensive guideline of pacemaker therapy published by The European Society of Cardiology in 2013 [1,2]. Therefore, indication for CIED is relatively lenient during beginning era of CIED implantation and is demonstrated by our case. In addition, Martinelli *et al.* reported 70 out of 6110 patients whom had pacemakers implanted in the period of 1986 to 1998 had no clear indication and 35 of these pacemakers were explanted after extensive investigation [3]. Decisions to explant malfunction CIED with no clear indication can be complicated as removing the device is associated with various complications especially with leads extraction [4]. Therefore, the risk may influence on conservative management and safety of leaving depleted generator in-situ was demonstrated by Iakobishvili *et al.* No immediate complication with embedded old pacemaker was observed upon insertion of a new device during six months follow up [4]. Back to our patient, diagnosis for his CIED was uncertain but the most common indications for pacemaker therapy in the eighties were sick sinus syndrome and heart block [5]. We postulated that the event which lead to his previous admission was relatively transient and may warrant thorough investigations to ascertain true diagnosis. For his case, we decided to explant the old pacemaker due to concern on the state of pulse generator. The integrity of his pacemaker remained doubtful especially not on proper care since implantation and prone to chemical spill from the battery.

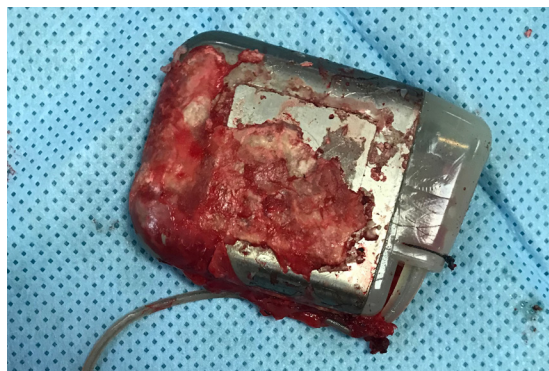


Fig.1: The-1985 Teletronic's single chamber pacemaker was densely encapsulated with fibrous tissue.

Conclusion

A permanent pacemaker is indicated for the patient with sinoatrial node disease and symptomatic bradyarrhythmia and patients need to be educated on post-implantation of pacemaker care.

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