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Case Report

Extraction of Free Floating Pacemaker Wire in Right Ventricle

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We are reporting a case of lead extraction from a woman who has been implanted permanent pacemaker (PPM), and later has a complication of local site infection and infective endocarditis. She had multiplelocal debridement procedures, generator removal, and multiple cable amputations.Her PPM wire was free-floating inside the right ventricle (RV). Lead extraction was done successfully using a snare catheter and a long sheath.

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Keywords: lead extraction

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Laporan Kasus

Ekstraksi *Lead* Pacu Jantung dengan Kabel Seluruhnya Tertarik ke dalam Ventrikel Kanan

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Kami melaporkan sebuah kasus dan prosedur ekstraksi lead pacu jantung pada seorang wanita yang mendapatkan komplikasi endokarditis infektif setelah pemasangan pacu jantung permanen. Sebelumnya pasien sudah melalui prosedur debridemant, pengangkatan generator, dan beberapa kali amputasi kabel karena infeksi tempat pemasangan generator; sehingga akhirnya seluruh kabel tertarik dan melayang bebas dalam ventrikel kanan. Tindakan ekstraksi lead dilakukan setelah evaluasi posisi dan jenis lead, melalui akses femoral dengan menggunakan kateter snare dan long sheath dengan hasil yang baik.

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Kata kunci: ekstraksi lead

Introduction

Lead extraction is an increasingly common procedure reflectingthe rising number of cardiac pacing/defibrillator system implants.This has led to the development of several lead extraction techniques; among them are locking stylet, laser catheter, and diathermy technique.[1]Leads are usually removed via the same transvenous access, but sometimes venous access is required from a non-implant vein.This patient that we're reportingunderwent lead extraction of a free-floating wire in right ventricle due to multiple amputations of the lead using femoral access.

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Case Report

A 52-year old lady admitted with intermittent fever since 9 months before she came to our center. She had fever since day 2 after PPM implantation. She went back to the hospital where she has been implanted, diagnosed to have PPM insite infection, and had debridement procedure. One week after discharge, the skin above the implantation site felt hot, looked reddish, and pus still extruding. One month later, she had intermittent fever. She was diagnosed to have local site infection.The generator was cleaned and later taken out; while the lead was left inside. Lateron examination, the doctor found that the lead cable was bulging under her skin. The skin was cut open, and the cable was partially amputated. Within days, the cable bulged out again, and another amputation was done. She had another five episodes of cable amputation, while the lead still left inside her heart. She still had

intermittent fever through those times. We have no information about the type of generator and the PPM lead that was implanted.

The patient then came to our center; had echocardiography(transtorachal and transesophageal) and fluoroscopy examination. Examination showed that aPPM lead(passive)was attached to RVOT, andthe wirewas free floating inside the right ventricle. (Figure 1)

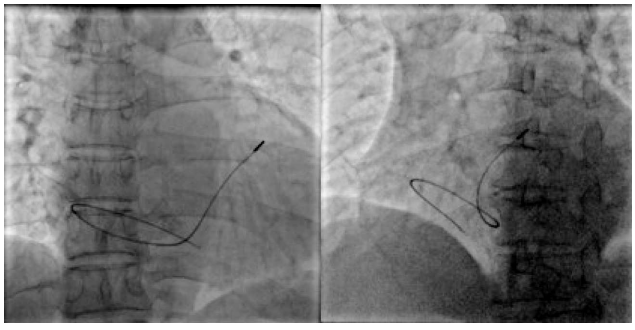

Figure 1. Fluoroscopy examination from AP (A) and RAO (B) view showing passive lead attached to RVOT area with all of its part free-floating inside RV.

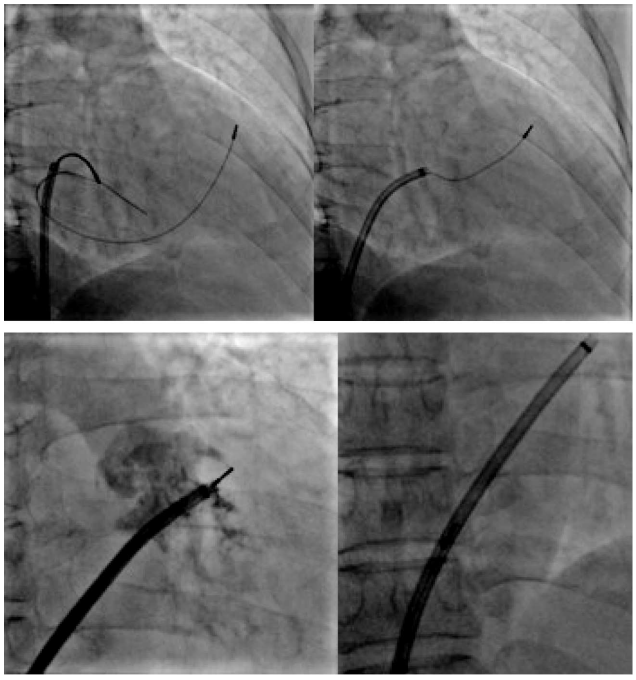

Figure 2. Extraction procedure: The wire was caught with a snare catheter (A) and a long sheath was pushed to give support and evaluate fibrotic area (B). Contrast was injected to evaluate how deep was the lead lodged into the myocardium (C). The lead was then pulled out, and went to the long sheath (D).

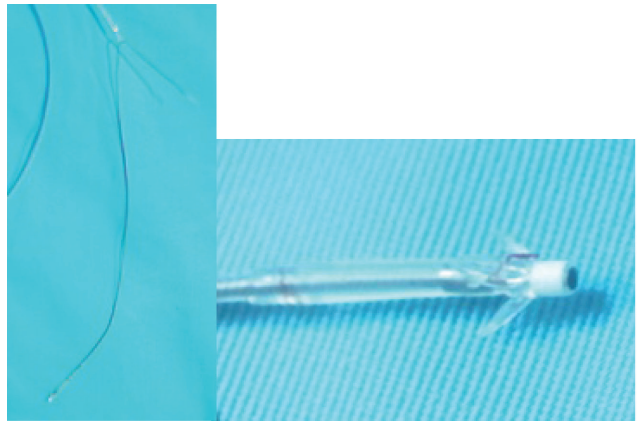

Figure 3. Pacemaker Lead after extracted.

Lead Extraction was done through femoral access. Snare catheter was used to catch the floating wire, andalong sheath (SLO) was inserted to hold the fibrotic area around the lead and give support when pulling the wire. Before the snare pulled, we injected contrast to evaluate the depth of lead penetration in the ventricle. Evaluation showed that the lead was not penetrated deep in ventricle. The lead was pulled out easily to long sheath without using much power. (Figure 2) Total fluoro time of the procedure was 16 minutes and 38 seconds.

Direct examination of the lead after extraction showed no sign of vegetation, fibrous tissue, or calcification. (Figure 3) On further observation, the patient's fever was gone next day after lead extraction. She still receive 2 weeks antibiotic treatment after extraction procedure.

Discussion

Lead extraction involves many techniques with specialized devices. The procedure hasmany variations, and choice of strategydepends on case-by-case evaluation.[4]The common indications of lead extraction including infection and venous occlusion.Infection was the main indication in this patient, and it is classified as class I for lead removal indication according to 2009 Heart Rhytm Society (HRS) consensus[1].

It was decided to use snare and long sheath in this patientdue to the floating wire. There was no more access from the generator implant site. Considering the position of wire, we decided that the snaring and pulling can be done easily thorugh femoral access. Snare technique was chosen because the distal position of the lead was loose, and relatively easy to reach.SLO long

sheath wasused because it islong and strong enough to hold the fibrotic area, while the curve can give enough support by pushing the right atrium. The sheath was also used inject contrast.Contrast injection gave us important information to see the lead penetration into myocardium, and we think it is essential in this case, although the HRS consensus does not mention about contrast usage as a necessity, it does gave benefit when there was no implantation data like in this patient.

There are many ways to perform lead extraction, and the decision has to be taken with considering the anatomical, clinical condition, as well as the indication of a patient. Reporting and reviewing lead extraction processes will help us to know and learn from other physician's various technique to do this procedure.

Reference

1. Wilkoff BL, Love CJ, Byrd CL, et al. Transvenous Lead Extraction: Heart Rhythm Society Expert Consensus on Facilities, Training, Indications, and Patient Management. Heart Rhythm 2009;6:1085-104.
2. Sohail MR, Uslan DZ, Khan AH, et al. Management and Outcome of Permanent Pacemaker and Implantable Cardioverter-Defibrillator Infections. Journal of the American College of Cardiology 2007;49:1851-9.
3. Bracke FA. Yes we can! But should we? Lead extraction for superfluous pacemaker and implanted cardioverter-defibrillator leads. Europace 2009;11:546-7.
4. Buch E, Boyle NG, Belott PH. Pacemaker and Defibrillator Lead Extraction. Circulation 2011;123:e378-e80.