

Removal of an Embolized Lead Segment During an Extraction Procedure

Ekstraksiyon İşlemi Sırasında Embolize Olan Elektrot Parçasının Çıkarılması

A 50-year-old male with a dual-chamber pacemaker implanted 23 years ago and ventricular capture failure causing syncope was referred. Upper extremity and thoracic computed tomography venography showed occluded bilateral subclavian and brachiocephalic veins. An extraction procedure with the replacement of the ventricular lead was recommended but refused by the patient. An epicardial left ventricular bipolar lead placement was performed using a left lateral mini-thoracotomy, the proximal part of the lead was subcutaneously moved to the previously created pocket located in the left pectoral region, and the previously implanted pulse generator with sufficient battery capacity was used and secured into the pocket. The proximal parts of the endocardial leads were left in the pocket (Figure 1). A few months later from the last procedure, a pocket infection with the separation of wound edges and externalization of leads was developed. This time the patient agreed with the extraction procedure. With the help of locking stylets and a rotational mechanical dilator sheath, the extraction of all endocardial lead segments except the tip pole of the atrial electrode with a small segment in the atrial appendage was performed. A bailout procedure using a steerable sheath with 12F inner lumen (FlexCath Advance™, Medtronic, USA) and a 25 mm-loop goose-neck snare (AndraSnare, Andramed, Germany) was performed to remove this ruptured segment. However, the remnant segment freed from the snare and embolized into the pulmonary vasculature. The steerable sheath was first directed to the right ventricular outflow tract and then to the right main branch of the pulmonary artery using a deflectable multicurve ablation catheter. Selective angiography of superior lobar arteries using a standard 6F right Judkins guiding catheter demonstrated the entrapped lead segment in the segmental branches. The goose-neck snare was advanced through the guiding catheter, and the lead segment was grasped and drawn

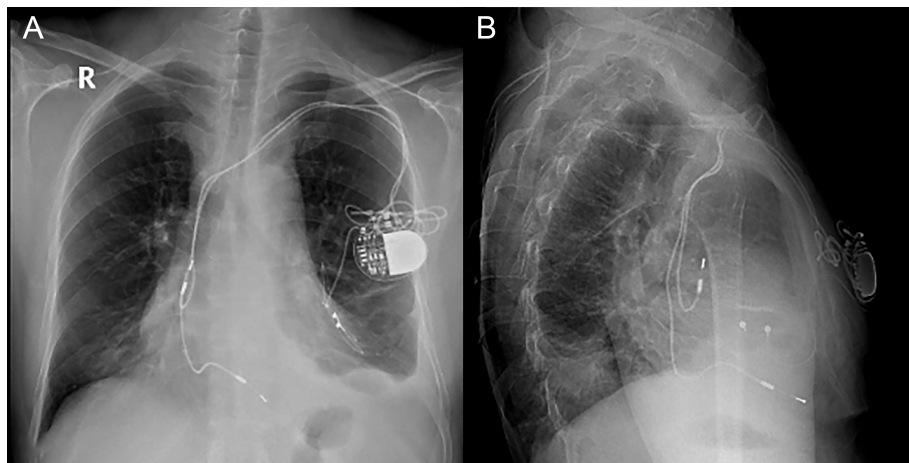


Figure 1. Preprocedural roentgenograms. Chest x-rays showing both endocardial and epicardial leads merged in the left pectoral pace pocket in the posteroanterior (A) and lateral (B) views.

CASE IMAGE OLGU GÖRÜNTÜSÜ

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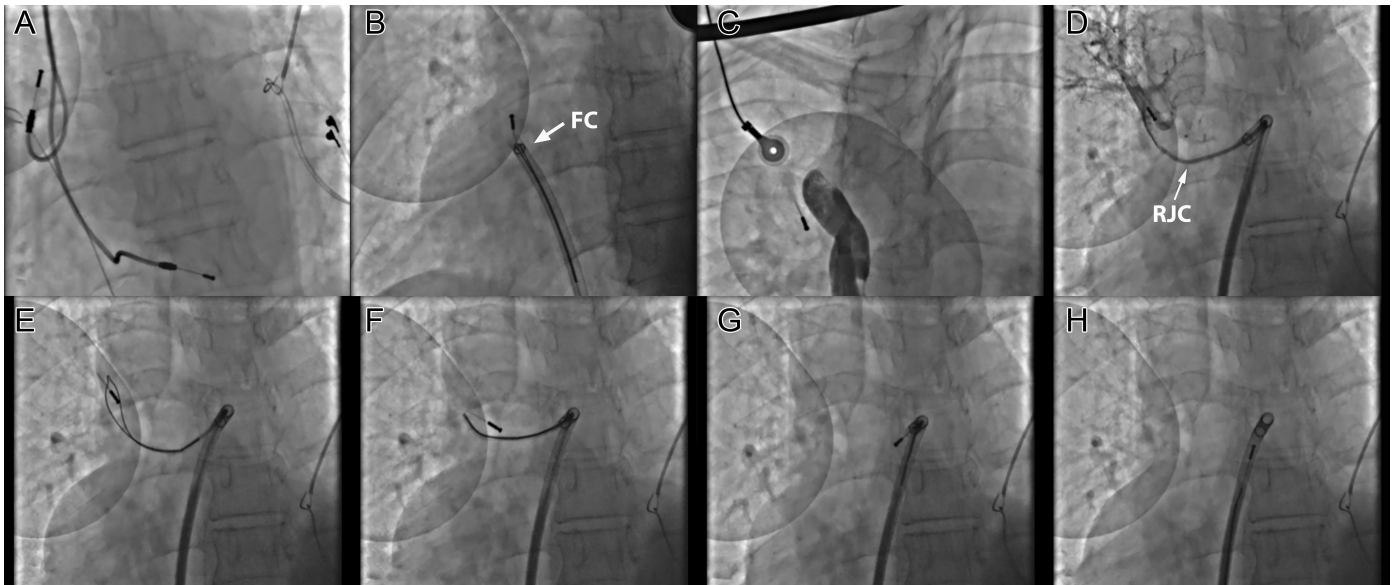


Figure 2. Procedural snapshots. Lead locations before the extraction procedure (A). Snaring of the remnant tip segment of the atrial lead in the right atrial appendage, traction of the snare, and advancement of the steerable sheath (arrow) toward the appendage resulted in successful extraction of the lead segment (B). Contrast venography of the superior vena cava showing the embolized lead segment not located in the right heart chambers, which seems as an extravascular structure (C). Parking of the steerable sheath in the right pulmonary artery, the advancement of the guiding catheter (arrow) through the sheath toward the superior lobar arteries, and contrast injection showing the lead segment entrapped in the segmental branches (D). Advancement of the snare through the guiding catheter toward the body of the lead segment (E). Grasping of the atrial lead remnant from the proximal portion (F), pulling back of the snare-guiding catheter system toward the sheath (G), and final internalization of the system into the sheath (H). FC, FlexCath™ steerable sheath; RJC, right Judkins catheter.

into the steerable sheath (Figure 2). Finally, all the system was removed from the femoral vein (Video 1).

*Video file associated with this article can be found in the online version of the journal.

Informed Consent: Informed consent was obtained from the patient for the publication of the case image.