

# Cardiac implantable electronic devices and lead removal, single center experience

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**Introduction:** Over the past couple of decades, the use of cardiac implantable electronic devices (CIEDs) has increased significantly. Because of that and because of increased life expectancy of patients, this has led to an increase in the number of the device and lead complications. Consequently, there is a growing need to perform lead removal. Today, lead removal is a specialized procedure with well-defined indications. Indication for lead removal can be infection (infective endocarditis, pocket infection, pocket erosion, bacteremia), lead-related (fracture, insulation defect, dislocation-if the lead cannot be repositioned, dysfunction-for reasons other than lead fracture and insulation defect, CIED upgrade/need for additional lead(s), perforation) and chronic pain due to a periosteal reaction<sup>1</sup>. Lead removal can be explantation (removal of leads with a dwell time of less than 1 year and using simple traction), extraction (removal of leads with a dwell time of more than 1 year or with the use of specialized equipment (locking stylets, snares, cutting tools, telescoping and laser sheaths) regardless of implant time) and cardiothoracic surgical procedure.

**Patients and Methods:** We retrospectively analyzed the characteristics, types of devices, and indications for lead removal in 70 patients at University Hospital Centre Zagreb between January 2014 and July 2019.

**Results:** Average patient age was 67.6 years and most patients were male (74.3%). 78.6% of patients were on anticoagulation or antiplatelet therapy, and 50% had chronic renal failure or diabetes mellitus. Two most common indications for lead removal were lead dislocation (28 patients) and pocket infection/erosion (20 patients). Average lead dwelling time was 27.4 months. 38 explantations, 30 extractions, and 2 surgical removals were performed. Total of 99 leads was removed, 1.28 per procedure.

**Conclusion:** The procedure was successful in all patients. There was no recurrence of infection after infected device extraction. Besides 2 cases of pericardial effusion (which were not hemodynamically significant), no other major complication (cardiac tamponade, cardiac avulsion, SVC tear, death) were observed.

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## LITERATURE

1. Bongiorni MG, Burri H, Deharo JC, Starck C, Kennergren C, Saghy L, et al; ESC Scientific Document Group. 2018 EHRA expert consensus statement on lead extraction: recommendations on definitions, endpoints, research trial design, and data collection requirements for clinical scientific studies and registries: endorsed by APHRS/HRS/LAHS. *Europace.* 2018 Jul 1;20(7):1217. <https://doi.org/10.1093/europace/euy050>