Percutaneous Extraction of Cardiac Leads With Evolution Mechanical Dilator Sheath in Young Patients

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Introduction:
Endocardial lead infections and lead malfunctions in children is an important issue. This growing problem has increased the interest in percutaneous lead removal technology. In this report, we present our initial experience in percutaneous lead extraction with a novel hand-powered mechanical dilator sheath.

Methods:
During 25 months between December 2009 and January 2012, 10 leads in 9 patients were removed. All of the extracted leads were older than 48 months. The leads were removed by using the Evolution mechanical dilator sheath (Cook Medical) with the only rotational cutting force and without laser or radiofrequency energy.

Results:
Patients mean age was 15,7 (range 11-23) years old. Indications for lead removal included cardiac device infection in 3 (%33.3) cases, lead malfunction in the remaining 6 (66.7%) cases. The extracted device was a pacemaker in 7 (%77,7) cases and implantable cardioverter defibrillators (ICD) in remaining 2 (%22,3) of them. Among 10 leads, 8 (%80) were right ventricular and 2 (%20) were atrial electrode. The mean time from the preceding procedure was 6,3 years (4–10 years). Device was 9 fr in 6 of 9 cases and it was 11 fr in remainig 2 cases. Complete procedural success with Evolution system alone was achieved in 5 (%55,5) patients (6 leads) and one of them was completely removed with snaring. In 2 leads, partial procedural success was achieved with a remaining ventricular tip smaller than 4 cm (1 and 3 cm). In one patient procedure was failed with a remaining ventricular tip about 8 cm. This patient was reguired surgical intervention for remaining tip. In 8 patients of 9, clinical success was achieved (%88,9), and all of this patients discharged uneventfully without a major complication.

Conclusions:
There are not sufficient data about mechanical technique with Evolution system for lead extraction in children. In an adult studies shows that, it is an effective method for chronically implanted pacemaker/ICD leads. So our experience in pediatric patients confirms that too. Further investigation is required to compare success and complication rates with other techniques.

Key words: Lead extraction, Pediatric, Evolution