Different techniques of cardiac leads extraction: 17-years single centre experience

A. Piro[1], C. Lavalle[1], A. Ciccaglioni[1], M. Alfarano[1], MC. Gatto[1], MV. Mariani[1], M. Straito[1], GM. Schiaffini[1], A. Ceccacci[1], G. Giunta[1], M. Mancone[1], F. Fedele[1]
(1) Sapienza University of Rome, Department of Cardiovascular, Respiratory and Morphologic Sciences, Rome, Italy

Abstract

Background. Cardiovascular implantable electronic devices (CIEDs) have become an important therapeutic modality of cardiovascular care. The increasing rate of CIEDs implantation determines an increasing rate of CIEDs related complications, especially including devices and leads infections that represent the strongest indication for the complete system removal. Therefore, it is clear the importance of providing safe and efficient transvenous lead extraction (TLE) techniques. TLE techniques used until now, although very effective, are not without risk especially in elderly patients with significant comorbidities.
Purpose. The aim of our study is to evaluate the safety and the efficacy related to lead extraction of CIEDs with all currently available techniques (simple manual traction, mechanical sheaths and high-frequency excimer laser). We explore the indications, complications, and success rates involved in the removal of CIEDs leads in our centre, over 17 years.
Methods. We enrolled 447 consecutive patients (mean age 72,8 years, 74% male and 26% female) undergoing TLE between December 2001 and Febrary 2018. In total 955 leads were extracted, 353 of which were atrial, 278 ventricular, 213 ICD leads and 111 were left leads for coronary sinus. The indications for TLE were pocket infection (44%), sepsis (31%), lead failure (16%) and others causes (9%). Lead implant mean duration was 54 months. 87 leads (9%) were extracted using lead-locking-device (LLD), 497 (52%) using high-frequency excimer laser, 235 (25%) using mechanical sheaths and 136 (14%) using simple manual traction. For 15 leads (1.5%) TLE needed femoral transvenous approach. A complete transvenous lead extraction without complications was considered successful.
Results. Overall 879 leads (92%) were successfully and completed extracted, 65 leads were partially extracted with no other complications and 11 leads (1%) were not extracted. There were major complications in 14 patients (3,13%) such us pericardial effusion, cardiac tamponade, bradycardia, superior cava vein rupture, subclavian vein thrombosis, jugular thrombosis and hematoma. All-cause mortality related to TLE procedure was 0,89% (n=4) at 1 year of follow-up. The all-cause mortality at two years of follow-up was 9,43% (n=45).
Conclusions. According to our experience, transvenous lead extraction can be safely and successfully performed in the majority of patients regardless of the technique used (LLD, high-frequency excimer laser and mechanical sheaths). However, the mortality of patients extracted for systemic infection remains slightly high at two years follow-up.

Recent Publications (minimum 5)

1 "Estrazione degli elettrocateteri con differenti metodiche: l'esperienza di un singolo centro"
A.Piro, M. Alfarano, C.Lavalle, A. Ciccaglioni, P. Franciosa, G.Giunta, P. Scarparo, M. Vassallo, S. Cimino, M. Mancone, F. Fedele, Abstract 15°Congresso AIAC 2018
2 "Il problema clinico: le aritmie ventricolari maligne e la morte improvvisa"C.Lavalle, A. Piro, E.Silvetti. Cardioverter Defibrillatori Impiantabili, capitolo 1. Edizioni Minerva Medica, 2015
3 "Ablazione di Tachicardia Ventricolare in paziente con trombosi apicale del ventricolo sinistro"A. Piro, C. Lavalle, C. Pandozi, M. Russo, M. Galeazzi, M. Sgueglia, F. Palano, F. Colivicchi. 2014. Poster P106, 75° Congresso Nazionale SIC
4 "Initial experience with three-dimensional anatomical mapping during cardiac pacing lead extraction"BL. Nguyen, A. Persi, S. Poggi, G. Riitano, A. Piro, C. Gaudio, G. Giunta, A. Ciccaglioni, RJ. Siegel, ES. Gang. Cardiology, 2013, vol. 125(suppl 2), p. 66, ISSN: 0008-6312
5 "Speckle-Tracking Echocardiographic Assessment in Post myocardial Infarction Patients With Ventricular Arrhythmias"
BL. Nguyen, A. Persi, S. Poggi, A. Placanica, G. Riitano, A. Piro, G. La Torre, G. Piccirillo, C. Gaudio, ES. Gang, A. Vitarelli, RJ. Siegel. Journal of Arrhythmia, 2013, vol.29, issue 5, P3-072

Photograph



Biography Dott. Agostino Piro

Dr Piro is a research fellow at "Sapienza" University of Rome. He is an ECDS (EHRA Cardiac Device Specialist, certification from EHRA) and conducts activities in the field of cardiac electrophysiology with a specific emphasis on catheter ablation of AVNRT, AVRT, Atrial Tachicardia, Atrial Flutter, Atrial Fibrillation and Ventricular Arrhythmias performed either with conventional technique or with cardiac navigation and mapping system (Carto, Rhythmia,Navx). He also conducts activities in the field of cardiac pacing with emphasis on ICD/CRT in heart failure, leads and devices extractions, management of cardiac arrhythmias.

Email: Agostino.piro@uniroma1.it