Efficiency of a Hybrid Approach for Cardiac Implantable Electronic Device Infections

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**Introduction**: Transvenous Lead Extraction (TLE) procedures are recommended for cardiac implantable electronic device (CIED) infections as class I and the efficiency has been established. However, there are often cases in which it is difficult to perform TLEs. Therefore, a hybrid approach (HA) for lead extractions may be required in elective cases. We verified the efficiency of the HA, because the procedure has still not been established. The HA was defined as a TLE performed by an electrophysiologist with the support of a cardiac surgeon in the same operation.

**Methods**: From 2013 to September 2018 among the 200 patients referred to our institution for TLEs, we performed 7 HA procedures (6 males, median age 64.3, pacemaker [PM] 1, cardiac defibrillators [ICDs] 4, cardiac resynchronization therapy [CRT] 2). The HA was performed in 4 cases for big vegetations ($\geq$3cm), failed TLEs in 2 cases, and unable to perform the TLE due to a tricuspid annuloplasty (TAP) in 1 case. All procedures were performed in the operating room. We detached the leads from the subclavian vein to the superior vena cava (SVC) and high right atrium with an excimer laser sheath. We performed a thoracotomy from the SVC to the RA and right ventricle (RV).

**Result**: Six cases were performed during one procedure and 1 during two. For a total of 16 leads (RA leads 4, RV leads 5, ICD leads 6, left ventricle [LV] lead 1), complete HA procedural success was achieved. One case underwent a CRT implantation with a simultaneous HA, and the remaining 6 cases underwent a CIED implantation after treatment of an infection.

**Conclusion**: We performed 7 HAs and used this HA in high risk patients in order to increase the overall safety of the procedure. The HA was useful in difficult TLE cases.