

Single Centre preliminary results of laser lead extraction in paediatric and CHD patients: how multidisciplinary cooperation can make the procedure safe and effective.

Albanese S.B., Pazzano V., Remoli R., Di Mambro C., Silvetti M.S., Guccione P., Rinelli G., Del Pasqua A., Schloderer U., Cetrano E., Curione D., Secinaro A., Kennergren C., Carotti A., Drago F. Bambino Gesù Children's Hospital, Rome, Italy

Background

Over the past decades, the number of transvenous pacemaker (PM) and defibrillator (ICD) implantations in paediatric patients markedly increased. Therefore, the amount of children and young patients needing lead extraction is expected to grow. Herein our preliminary experience with laser transvenous lead extraction in children/young CHD patients is reported.

Methods

All patients underwent pre-procedural transthoracic and transesophageal (TEE) 2D-/3D-echocardiography, and iodine contrast Computed Tomography (CT) to assess lead location and course, presence of calcifications, and relationship with venous and cardiac structures in order to evaluate risks and allow appropriate procedural planning. Intraprocedural 3D-TEE was also used both to evaluate lead embedding into venous structures and to real-time monitor integrity of vascular and cardiac structures. All procedures were performed in the hybrid operating room by a multidisciplinary team including electrophysiologists, cardiac surgeons, anesthesiologists, interventional cardiologists (when required), radiology and perfusion technicians. Post-procedural management included at least 24hrs of patient monitoring in intensive care unit.

Results

From 09/2017 to 09/2018, 8 patients (4 females) with a median age of 12 years (range: 11-28) underwent lead extraction.

Six had a structurally normal heart, 3 with congenital Complete Atrio-Ventricular Block (cAVB), 2 with cAVB in the context of a myopathy (1 Emery-Dreifuss and 1 Kearns-Sayre Syndrome), and 1 with a channellopathy. Two had Transposition of the Great Arteries (TGA) corrected with a Mustard operation, Sinus Node Disease and obstruction of the Superior Vena Cava (SVC) baffle. One of the TGA patients had a dual-chamber PM, whereas the other 7 had a single ventricular system, 6 PM and one ICD. The indication consisted in lead dysfunction or need for SVC baffle stenting in the post-Mustard patients.

Median age of the 9 removed leads was 4.5 years (range: 1.5-16). Electrodes were extracted through a left subclavian venous approach using 40-80 Hz laser sheaths in all, alternated with mechanical sheaths in the two cases with previous Mustard. No complications occurred during/after extraction.

Conclusions

The use of pre- and intra-procedural imaging and a multidisciplinary approach may ensure successful and safe outcome of laser lead extraction even in young patients with relatively old leads and/or corrected CHD.