Multiple Giant Keloids after Pacemaker Implantation

Víctor A. Medina-Ravell1 MD, FACC, Otto A. Medina-Malpica1 MD, Napoleón A. Medina-Malpica1 MD, Adrian Baranchuk2 MD FACC FRCPC
1Unidad Privada de Arritmias Cardíacas y Medicina Interna, Fundarritmia AC, Centro Médico “Guerra Méndez” Valencia, Venezuela
2Heart Rhythm Service, Kingston General Hospital, Queen’s University, Kingston, Ontario, Canada

To the Editor

A 29 year-old female underwent pacemaker implantation due to congenital heart block at the age of 7 (Figure 1). This dual chamber transvenous device was extracted by laser 9 years later due to ventricular lead fracture and replaced by a transatrial dual chamber pacemaker (Figure 2 and 3).

Briefly, the laser extraction technique requires placement of a TEE probe to continuously monitor wall motion and ventricular function of the heart and pericardial space during the entire procedures for early detection of hemopericardium or other abnormalities. This is followed by dissection of every lead to be removed to its entrance in the accessed vein, extensive debridement of the pocket, insertion of a locking stylet to secure and provide control of the lead to be removed always under high quality fluoroscopy followed by navigation through the entry vein downward towards the anatomic site (atrium or ventricle) were the lead was implanted. Maintained traction of the locking stylet and laser pulses are given while right and left rotation of the outer sheath is performed to overcome the fibrous attachment of the lead to the vein or to another adjacent lead in the same vein. Once the sheath gets close to the lead tip, the outer sheath is advanced to provide mandatory countertraction (forward movement to immobilize the myocardial site where the lead tip lies) to prevent myocardial avulsion or perforation of that chamber. Gentle traction (backward movement) is maintained with the locking stilet. These combined maneuvers (traction>countertraction) are essential to protect the underlying myocardium adjacent to the lead tip from serious complications (avulsion, perforation).

The right trans-atrial approach is used in cases where upper venous availability is difficult or impossible and when large vegetations (> 2.5 cm) are attached to the leads or to the atrial wall and an important embolic event could possibly occur. This surgical approach is used to provide access to the chamber in a beating heart, avoiding cardiopulmonary bypass. Needless to say, should always be done by an experienced cardiothoracic surgeon.

Briefly it implies removal of 4th of 5th chondro-costal cartilage with a rongeur surgical tool to directly access the right atrial appendage through which a purse-string suture is done. A small incision is made at the atrial appendage and through it, using a straight or curved neurological micro forceps, under fluoroscopy, is used to grab the leads and exteriorize them through the atriotomy, followed by the same extraction steps described above. Once all the leads are removed, this access can also be used for implantation of a new system, if required. When the venous access is considered inappropriate (i.e. pacemaker-dependent patient with current infection incompletely solved) the epicardial approach is definitively recommended.

Corresponding Author
Dr Adrian Baranchuk, Associate Professor of Medicine and Physiology, Clinical Electrophysiology and Pacing, Kingston General Hospital, 76 Stuart St, Queen’s University, Kingston, K7L 2V7, Canada.
Tel – 613 549 6666 ext 3801, Fax – 613-548-1387, e-mail – barancha@kgh.kari.net
Due to the extrapericardial lead fracture event that occurred in this case (Figures 2 and 3), the removed system was replaced by a transvenous dual chamber pacemaker implanted with support of extracorporeal circulation. The new ventricular lead was implanted on the outflow tract with a 4F lumenless lead and the atrial bipolar lead in the epicardial surface of the right atrial appendage. Local radiation therapy over the scar was applied 72 hours after the lead extraction and the new implant procedure.

At the time of the laser extraction, one of the giant keloids (upper left) (Figure 1, Panel A) was surgically removed and its base was infiltrated with steroids. Shortly afterwards, that keloid reappeared so no steroid was used to infiltrate the remaining ones. No radiation therapy was used at this time.

Figure 1, Panel A shows giant keloids developed after the first 2 surgeries. Figure 1, Panel B shows a new keloid developed after the third surgery. Figure 1, Panel C shows the size of keloids after radiotherapy. Figure 1, Panel D shows her current status. Chest x-ray shows current lead position (Figure 1, Panel E). Figure 1, Panel F shows the macroscopic biopsy sample. Figure 1, Panels G & I show histologic views of the keloid using trichromic technique and panel H shows hematoxylin/eosin; confirming collagen fibers and no cellular atypia.
It is necessary to highlight the lack of family history of keloids in this case. No other treatment for keloids such as botulinic toxine, imiquimod or photodynamic therapy was used in this case. To the best of our knowledge, no other reports about Multiple Giant Keloids after pacemaker implantation can be found in the literature.

**Key Words:** Keloids; pacemaker; radiotherapy

**Acknowledgement:** Our gratitude to pathologists Maria E Bruni-Tortoledo, MD and Francisco Bruni L, MD from Clínica El Avila Caracas, Venezuela for processing the biopsies.