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Title: AN ESHEATH LEFT IJ APPROACH TO IMPLANTATION OF A MICRA LEADLESS PACEMAKER IN A 2-YEAR-OLD, 10.9KG BURN VICTIM

Objective: To demonstrate feasibility of a leadless pacemaker implant via a 16-F eSheath through the internal jugular (IJ) in a 10.9Kg burn victim.

Methods: N/A

Case description:

We present a 2-year-old female transferred from Mexico with third-degree circumferential thoracic/abdominal burns and irreversible third-degree heart block with a junctional escape rate of 50-60 bpm. Following extensive surgical skin grafting/harvesting she failed isoproterenol wean with ongoing signs of low cardiac output with bradycardia, lethargy and poor perfusion. Due to 22% total body surface area burns and subsequent thoracic grafts, the multi-disciplinary team including the burn specialists concluded that the IJ was the preferred entry route for leadless pacemaker placement.

Using the Seldinger technique, a 6F sheath was placed in the 1.2 cm diameter left IJ. Serial dilations were performed until a 16F, 36 cm long eSheath/dilator was advanced over a guidewire into the mid-right atrium. The 55.7cm Micra sheath was shortened to 20cm to allow sufficient length of the Micra catheter. After heparinization, the 23 Fr Micra dilator expanded the inner diameter of the eSheath for introduction of a modified Micra sheath through the 16 F eSheath valve. The Micra catheter was passed through the eSheath into the mid-right atrium, followed by eSheath retraction into the innominate vein. Under echocardiographic/fluoroscopic guidance the Micra was advanced across the tricuspid valve and into the apical-septal position. Due to lack of septal engagement, Micra was deployed three times for proper implantation. The catheter/sheath were removed, and a figure-of-8 stitch was placed for hemostasis. Post-placement Echocardiogram showed no pericardial effusion and only trivial tricuspid regurgitation.

The pacing threshold was 0.38 V at 0.24 ms, R-wave of 3.5 mV, and impedance 610 ohms, programmed VDD 70 to 115bpm, mode switch VVIR at 115bpm with upper sensor rate of 170bpm. No complications occurred (Figure 1).

Seven-month follow-up demonstrated threshold of 0.5V at 0.24ms, R-wave of 9.3mV, impedance of 590ohms. A3/A4 programming were the atrial accelerometer vector with 43% A-sense-V-paced rhythm.

Conclusions:

This case demonstrates successful lead-less pacemaker placement in a 10.9 kg patient by a modified 16-French eSheath approach. This method reduces consistent tension/stretch of the veins with Micra advancement while limiting invasive access for decreased infection risk.

