Performance of MICRA pacemaker at 12 months follow-up

Nee Hooi Tan
Khine Sein
Hernandez Jemelee
Paul Chun Yih Lim
Kelvin Chi Ming Chua
Eric Tien Siang Lim
Kah Leng Ho
Boon Yew Tan
Daniel Thuan Tee Chong
Wee Siong Teo
Chi Keong Ching

Introduction: Leadless trans-catheter pacemaker systems have been developed to overcome the need for a pacemaker pocket and transvenous lead.

Methods: Describe the procedure details & electrical parameters during implantation and up to 12 months follow-up.

Result: 16 patients were recruited from August 2016 to September 2018. Mean age of patients was 66.9 +/- 8.7 years old (8 male). Indications for pacemaker were sick sinus syndrome (56.3 %, n = 9) & complete AV block (43.7%, n = 7). 87.5% (n= 14) were patients on haemodialysis via upper limbs arteriovenous fistula (AVF) & lack of venous access for traditional transvenous permanent pacemaker implantation. 6.3% (n=1) were patient on long term steroids & immunosuppressant therapy with the concern about wound healing. Mean duration of implantation procedure was 63.25 +/- 41.8 minutes, while mean fluoroscopy time was 11.86 +/- 5.02 minutes. 15 patients underwent the procedure under local anaesthesia with conscious sedation and 1 patient who had subcutaneous ICD & MICRA leadless pacemaker implanted during the procedure was done under general anaesthesia. The pacemaker was deployed successfully on 1.5 +/- 0.9 attempts (ranging from 1 – 4 attempts). The device was implanted at RV apical-septum in 15 patients & RV low-septum in 1 patient. Mean values of the R wave were 9.0 +/- 5.5 mV, impedance were 669 +/- 177 ohms & pacing threshold were 0.76 +/- 0.54 V at pulse width of 0.28 +/- 0.09 ms during implantation. The femoral puncture sites of all patients were closed with a Figure of 8 stitch suturing method. 1 patient developed hematoma at the groin puncture site post-procedure was managed conservatively. At 12 months, 9 patients passed away due to underlying other medical illness & not device related. 1 of the patient passed away 2 months after MICRA implantation due to MRSA sepsis from haemodialysis catheter related bacteremia.

Conclusion: Implantation of leadless pacemakers is feasible & safe. The pacemaker & electrical parameters were stable at 12 months follow-up. Longer-term follow up is clearly required but the early experience appears positive.