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Outcome of leadless pacemaker implantation in a referral centre for lead extraction: a comparison with transvenous pacemaker

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Background: Leadless cardiac pacing is a promising technology in terms of efficacy and safety.

Purpose: The aim of the study was to compare the long-term clinical and electrical performance of Micra leadless pacemaker with ventricular single-chamber transvenous pacemaker (VVI TV-PM) in a high-volume centre for transvenous lead extraction (TLE).

Methods: Between May 2014 and April 2019, 100 patients (group 1) underwent Micra implant at our centre. We identified 100 patients (group 2) who underwent VVI TV-PM implant in the same period for a 1:1 comparison matched by age, sex, left ventricular systolic ejection fraction and previous TLE.

Results: The implant procedure was successful in all patients. In group 1, the procedure duration was lower than in group 2 (43.86 ± 22.38 vs 58.38 ± 17.85 min, $p < 0.001$), while the fluoroscopy time was longer (12.25 ± 6.84 vs 5.32 ± 4.42 min, $p < 0.001$). There was no difference about the rate of septal deployment at the right ventricle (group 1 vs group 2: 76% vs 86%, $p = 0.10$). Patients were followed-up for a median of 12 months. We did not observe any acute and chronic procedure-related complications in group 1, while we reported acute complications in seven patients (0 vs 7%, $p = 0.02$) and long-term complications in three patients (0 vs 3%, $p = 0.24$), needing for a system revisions in 6 cases (0 vs 6%, $p = 0.038$) in group 2. One systemic infection occurred during follow-up in a patient with VVI TV-PM. Electrical measurements were stable during follow-up in both groups, with a longer estimated battery life in group 1 (mean delivered energy at implant group 1 vs group 2: 0.14 ± 0.21 vs 0.26 ± 0.22 μJ, $p < 0.001$).

Conclusion: Micra pacemaker implant is a safe and effective procedure, with a lower rate of acute complications and system revisions and a longer estimated battery life compared to VVI TV-PM, even in a real life setting including patients who underwent TLE.