Leadless pacemaker implant in patients with a history of open heart surgery: experience with the Micra transcatheter pacemaker

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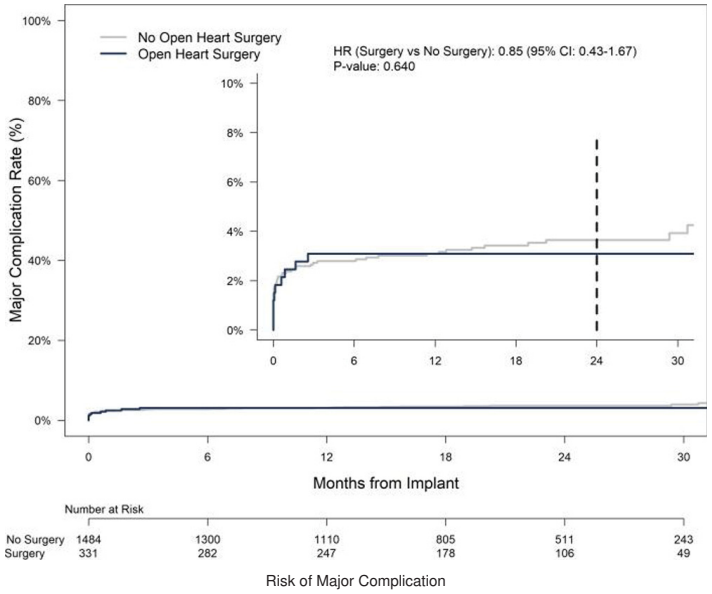
Background: The Micra transcatheter pacemaker has demonstrated a favorable safety and efficacy profile relative to transvenous pacing. Patients with a history of open heart surgery have a higher risk of complications with transvenous pacemakers during follow-up. The experience with leadless pacemakers among a large cohort of patients with a history of open heart surgery has not been reported.

Objective: To report outcomes in patients with a history of open heart surgery undergoing Micra implant.

Methods: Patients undergoing Micra implant from the Micra Transcatheter Pacing Post-Approval Registry (PAR) were included in the analysis. Baseline and procedural characteristics, major complications, and electrical performance were compared among patients with vs. without history of cardiac surgery.

Results: A total of 331 out of 1815 (18.2%) patients had a history of open heart surgery, underwent Micra implant, and were followed for 19.4±10.4 months. The mean age was 74.6±13.5 years, 40% were female. The most common cardiac surgery was aortic valve surgery (71%) followed by mitral valve surgery (39%). Patients with prior open-heart surgery were more likely to have contraindications to transvenous pacing, were more likely to be on oral anticoagulants, and had more co-morbidities including atrial fibrillation, heart failure, and coronary artery disease (all $p<0.005$). Implantation was successful in 327 of 331 patients (98.8%) with a median procedure time of 29 minutes. Mean pacing capture thresholds (PCTs) at implant were 0.66±0.51V and remained stable through follow-up. There were 11 major complications in 10 cardiac surgery patients, with no device or procedure-related infections reported. The major complication rate was 3.1% (Figure) and was not significantly different than that of patients without a history of open heart surgery (HR: 0.85, P=0.640). There was 1 cardiac perforation (with no intervention required) in the open heart surgery group (0.3%) and there were 14 cardiac perforations (0.94%, P=0.332) in the non-open heart surgery group of which 10 required intervention.

Conclusion: The Micra transcatheter pacemaker can be safely implanted in patients with a history of open heart surgery, with a similar long-term safety profile to patients without a history of open heart surgery. Importantly, there were no device-related infections reported in either group.



Risk of Major Complication