Does A Trans-Septal Approach For Implantation Of The WiSE-CRT Leadless Endocardial Left Ventricular Pacing System Reduce The Incidence Of Vascular Complications?

Simon James  
Andrew Turley  
Chrostopher Rinaldi  
Martin Arnold  
Raymond Sy  
Kim Chan  
Prash Sanders  
Giovanni Rovaris  
James DeVille

Introduction: WiSE-CRT is a leadless CRT endocardial pacing system. It uses ultrasound technology to transfer energy from a subcutaneous pulse generator to a receiver implanted directly into the Left Ventricle (LV) endocardial wall. To date this procedure has been performed via a retrograde aortic route which necessitates large gauge femoral arterial access. This is a potential risk to a population of patients with potential vascular disease. A trans-septal access route for implant has been used in a small number of patients in whom retrograde access for implantation is either not feasible or not safe. We compare the efficacy and safety of implanting the WiSE-CRT system via a trans-septal approach versus the standard retrograde aortic route.

Methods: WiSE-CRT was implanted via a trans-septal route in cases where retrograde access was either unfeasible or unsafe. Procedural outcome data, site of implant and complication data was collected and compared with a contemporaneous cohort of implants performed using a retrograde aortic approach.

Result: 20 patients (15 male / 5 female) underwent trans-septal implant at 7 centres. Mean age was 69.7±9.4 years. The electrode was successfully implanted in all 20 cases. locations of each implant is summarised in figure 1. Contraindications to a retrograde approach were: severe peripheral vascular disease-12, mechanical AVR - 4, morbid obesity - 2, TAVR - 1, Aorto-bifemoral graft - 1. In the trans-septal group there were no acute vascular or thromboembolic complications, no incidence of perforation / tamponade. In the retrograde aortic comparator group of 80 cases there were the following: Vascular complications-5 (haematoma -1, pseudoaneurysm-3, reduced flow necessitating removal of closure sutures-1), tamponade-1, perforation with sheath-1.

Conclusion: Leadless endocardial LV pacing utilising a trans-septal approach is both feasible and safe. It is possible to access a wide range of target sites for implant successfully. This technique removes the incidence of vascular complication that is associated with large gauge arterial access.