Active Fixation Leads in the Distal Coronary Venous System for Left Ventricular Stimulation: A Safety and Feasibility Study

Ahmad Fazli Abdul Aziz, Azlan Hussin, Surinder Kaur, Zunida Ali, Giat Sing Tay, Noor Asyikin Sahat, Razali Omar
National Heart Institute, Kuala Lumpur, Malaysia

Introduction: Well positioned left sided lead implantation via the coronary venous system is central in ensuring delivery of resynchronization therapy in selected patients with heart failure. Unfortunately, many factors can negatively impact optimal positioning. Therefore, we investigated the safety and feasibility of using an active fixation lead in the distal branches of the coronary sinus for left ventricular stimulation. Methods: From May 2009 till May 2011 we replaced failed conventional left ventricular with 4F active fixation leads (SelectSecure Model 3830, Medtronic, Minneapolis, USA) in 24 patients requiring cardiac resynchronization therapy or left ventricular pacing. The lead was positioned and actively fixed in the distal coronary sinus. Results: The leads were successfully implanted in all patients. From this 24 patients, 4 were implanted due to recurrent lead dislodgements, 3 were due to phrenic nerve stimulations and 17 were because of primary lead instability. Pacing threshold at implantation was $1.33 \pm 0.60\, V$ and impedance was $905 \pm 444\, \text{ohms}$. There were no lead dislodgements and no complications were noted in the peri-implantation period. Conclusions: Placement of a 4F active fixation lead in the distal coronary sinus to deliver left ventricular stimulation in selected patients with implantation obstacles is safe and feasible. Chronic data is needed to assess the clinical utility. Keywords: left ventricular pacing, active fixation lead, cardiac resynchronization therapy