Outcome of Catheter Ablation of Atrial Arrhythmias after Surgical Maze procedure - a descriptive study

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Introduction: Adjuvant surgical Maze procedure may be performed in open heart surgery to treat atrial fibrillation (AF). The recurrence rate is reported to be up to 43% (Ishii Y, Gleva MJ, Gamache MC, et al. Circulation. 2004; 110 [supplement II]: II-164–II-168). Catheter ablation may be pursued in the patients with AF recurrence after surgical Maze.

Methods: We conducted a retrospective study of 8 patients who underwent radiofrequency catheter ablation (RFCA) in 2017-2018 for atrial arrhythmias after surgical Maze procedure. We aim to describe the electrophysiological (EP) findings & procedure details.

Result: Mean age was 61 +/- 6.1 years old (5 male). Median time to presentation of atrial arrhythmias after surgical Maze procedure was 16.5 months (ranging from 1 – 119 months). All patients underwent surgical Maze procedure in addition to another surgical procedure: mitral valve surgery with tricuspid valve annuloplasty/repair (n=6), coronary artery bypass graft surgery with aortic valve surgery (n=1) and septal myomectomy with resection of chords for HOCM (n=1). Mean LVEF was 54.9 +/- 4.0 % & mean indexed left atrial (LA) volume was 39.0 +/- 11.0 ml/m2. Indications for RFCA were persistent atrial flutter (AFL) (n=7) and paroxysmal AF/flutter (n=1). All patient presented in atrial tachyarrhythmia at time of RFCA with mean tachycardia cycle length (TCL) of 332 +/- 99 ms. With activation mapping, the EP diagnoses were mitral annular dependent AFL (37.5%, n=3), pulmonary vein re-entry (25%, n=2) and others (37.5%, RA scar reentry in 1, RA upper loop re-entry in 1 and CTI dependent flutter in 1). Mean procedure time was 223.5 +/- 70.9 minutes & mean fluoroscopy screening time was 28.76 +/- 13.0 minutes. Mean RFCA time was 2708 +/- 1894 seconds. Acute procedural success rate was 100% without any complication. Residual electrical reconnection of surgical block lines in the LA after surgical Maze procedure were found in 75% of patients (n=6). Re-isolation of pulmonary veins (LIPV, n= 5; LSPV, n = 4; RSPV, n = 3; RIPV, n = 3) and re-ablation of the surgical block lines in the LA posterior wall & roof (n = 4) were achieved with RFCA. 4 patients were evaluated at 12 months follow-up show no recurrence of atrial arrhythmias.

Conclusion: In this single centre study, catheter-based mapping and RFCA of these arrhythmias seems to be feasible and effective. However, longer-term follow up is required to identify the recurrence of
atrial arrhythmias.