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Post Modified MAZE Arrhythmias: Identification, Mechanism and Therapy

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Background: Identification of the atrial rhythm in patients after radiofrequency ablation (RFA) modified Maze III procedure could be challenging.

Methods: We examined a 12-lead ECG of 220 consecutive patients who underwent modified Maze. If atrial rhythm could not be determined we developed a 3 step algorithm. First we increased the ECG amplitude from 10 to 40mv. If still undetermined we proceeded with esophageal recording and if still doubtful we proceeded with endocardial recording.

Results: During follow up (1 y), in 17 pts (8%) atrial rhythm could not be identified by ECG due to invisible P waves. In 6, increasing the ECG scale was enough to demonstrate SR. In another 2, SR was established by esophageal recording and in 5 others only endocardial recordings identified SR (2 of them with intra atrial block). In 3 other esophageal recording demonstrated left atrial rhythm, dissociated from the ventricle (driven by high right atria I rhythm). In another, esophageal recording demonstrated an atrial flutter (AFL). At all, 30 patients (13.6%) were diagnosed as having atypical AFL. Twenty were either converted to SR by drugs, direct cardio- version or with rate control drugs. Ten patients underwent invasive electrophysiology study. The mechanism of the AFL was: 1- Rt. sided isthmus dependent, 2- mitral annulus reentry, 1- Lt. pulmonary veins reentry, 1- Rt. free wall reentry, 1- Rt. septum and low Rt. atrium reentry and 4- Lt. atrial flutter but exact location could not be localized. RFA was attempted in 6 pts. Of these, only the pt with the Rt. sided isthmus was cured. Four patients eventually underwent AV nodal ablation and implantation of a permanent pacemaker.

Conclusions: Standard ECG may not enable determining atrial rhythm in patients following Maze surgery. Invasive recordings proved to be helpful and should be used whenever in doubt. Post Maze AFL are only rarely due to be cava-tricuspid isthmus dependent and have a very low rate of RFA success.