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Box Lesion around Pulmonary Vein: Classic Lesion by Modern Technology

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Background: Maze procedure with a box lesion around pulmonary veins (PV) is a gold standard for atrial fibrillation (AF) ablation. We perform this lesion with bipolar radiofrequency (RF) ablator, abandoning the usual use of bipolar RF for bilateral epicardial isolation of pulmonary veins.

Methods: Between April 2004 and November 2009 we performed AF ablation in 224 patients using bipolar radiofrequency ablator and cryoprobe. The last 20 patients underwent the "Box" lesion. Patients' age was 63 ± 10 years. 70% of patients had persistent AF and 20% paroxysmal AF. Ablation lines were done by connecting left atriotomy to the incision left after amputated left atrial appendage by two epi- and endocardial ablation lines made with bipolar RF device. These lines were made along transverse and oblique sinus. Left atrial isthmus was ablated by bipolar RF and cryo.

Results: There were no complications related to box lesions. 18 patients (90%) were in sinus rhythm at the end of follow-up.

Conclusions: By performing box lesion around PV we achieve 3 goals: 1. Better transmuralty due to ablation of one layer of atrial wall epi- and endocardially, and not two layers like in epicardial PV isolation. 2. Isolation of whole posterior wall of the left atrium and not only PV. 3. No dissection around PV is needed. This dissection can be complicated especially with aberrant PV.