

## **Morphologic Features of the P Waves at Surface Electrocardiogram as Surrogate to Mechanical Function of the Left Atrium Following a Successful Modified Maze Procedure**

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### **Background:**

Absent LA mechanical contraction may occur following the modified Cox-Maze operation, and was found to impose a potential risk for the occurrence of thromboembolic stroke. It is unknown whether certain morphologic P wave characteristics can surrogate absent LA mechanical activity.

### **Methods and Results:**

ECG tracings of 150 consecutive patients that were in sustained sinus rhythm following the Maze operation were evaluated. P waves were scrutinized for morphology, duration, axis and amplitude. Clinical, surgery-related, and echocardiographic data were collected and analyzed. Forty-seven patients (31%) had no evidence of LA contraction at 3 months after surgery (baseline assessment) and on follow-up echocardiography. Multivariate analysis showed that a positive-only P wave deflection at lead V1 ( $p=0.03$ ), a negative-only deflection at aVL and a P wave amplitude of  $\leq 0.05$  mV at the septal-anterior leads ( $p<0.001$  for both) were associated with absent LA mechanical contraction. In a secondary analysis, a risk score involving the above 3 parameters was developed for the prediction of stroke occurrence. Patients at the high risk score group had a 30% survival freedom of stroke compared to 70% for patients at intermediate risk ( $p<0.001$ ).

### **Conclusions:**

Absent LA mechanical contraction following the modified Maze operation may be accompanied by a distinguished pattern of the P waves on the surface ECG.