

International Conference on

# Chest

November 17-18, 2016 Dubai, UAE



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### The outcomes of atrial fibrillation (AF) between Cut and Sew Technique for the Cox-maze Procedure & Comparison with Bipolar Radiofrequency Ablation

**Background:** Persistent atrial fibrillation leaves patients symptomatic and at increased risk of thromboembolism even after otherwise successful cardiac surgery. Majority of the patients who present to us have organic cardiac disorders predisposing to AF, surgery for the underlying lesions alone usually fails to abolish AF, leaving patients symptomatic and at an increased risk of thromboembolism. Effective treatment procedure surgically of atrial fibrillation is cut-and-sew Cox maze procedure which is widely established. The clinical experience using alternate energy sources is with radio-frequency ablation, which uses alternating current to transfer energy to atrial tissue. Success of this technology has led surgeons to apply RF directly to the heart during cardiac surgery. The effectiveness of RF compared with the standard CS maze procedure is not known. We evaluate the impact of radiofrequency ablation technology by direct comparison with the CS technique

**Methods:** To treat AF secondary to cardiac lesions requiring surgery, we combined a full Cox-maze using RFA procedure in 184 patients simultaneously undergoing valvular procedures (87), repair of congenital anomalies (12), and other procedures (2), including 24 repeat operations between 2012 and 2016. Matched variables were gender, age, New York Heart Association (NYHA) class, AF type, and concomitant mitral valve. Additional variables potentially affecting out-come, including hypertension (RF vs CS) left atrial size, and preoperative duration of AF were similar between groups.

**Results:** Procedures performed simultaneously with the maze operation were relevant to the diagnoses. Mean aortic cross-clamp time varied from 64 to 235 minutes, with bypass time ranging from 91 to 297 minutes. There were three early deaths (2%), no late deaths, and one episode of transient neurological ischemic attack in follow-up ranging from 1 to 4 years, for a total of 184 patients. Postoperative AF disappeared in 110 patients, rhythms were sinus in 95 patients (80%), junctional in 15 (7%), and persistent AF in 15 (14%), each of whom had mitral valve disease. Three patients (2%) who had never been defibrillated. Patients with other underlying pathology had complete recovery of atrial rhythm. After discharge, patients were followed monthly for adjustment of medication, rhythm, signs of myocardial ischemia, and control of anticoagulation. Doppler echocardiography and chest radiography were scheduled for 1, 3, 6, and 12 months after surgery. Among 36 patients without mechanical valves, 45 (85%) with atrial rhythm and contraction have been taken off anticoagulation therapy or electrocardioversion, including 12 who are free of all medication, leaving 20 patients with persistent AF. Rhythms after the combined procedures were sinus, persistent AF or atrial flutter, and the junctional who eventually required atrial pacemaker implantation. Anticoagulation was discontinued only in patients with atrial rhythm and documented contraction 3 to 6 months after reparative surgery. Antiarrhythmics were tapered after anticoagulation was discontinued or after cardiac rhythm was considered stable.

**Conclusions:** The standard cut and sew Cox-maze procedure remains the gold standard for the surgical treatment of AF. The results suggest that the combined approach is safe, effective, and indicated in patients who are judged capable of tolerating the procedure and likely to regain atrial rhythm. The risk of death, cerebrovascular events, and reoperation for bleeding. Superiority

of cut-and-sew technique for the Cox maze procedure in reducing the prevalence of atrial flutter during follow-up, but bipolar RF shortens the aortic cross-clamping time and cardiopulmonary bypass time, and decreases the risk of permanent pacemaker implantation.

## Biography

Al-Masri H Hatem is a cardiac critical care intensivist and consultant of cardiac surgery. He completed his medical degree (MD-Doktorate) at Charles University – Faculty of Medicine and holds a degree in Biochemistry from the University of Waterloo – Canada. He completed his residency training in Germany (Leading Facharzt) and holds training fellowships in Cardiac Surgery from IJN KL Malaysia, Switzerland and Canada. He is the author of an award-winning medical research paper titled “Hemodynamic Support Requires Integrated Approach Comparing pl.VAD vs. IABP in Patients Experiencing Left Ventricular Failure” (Best Paper of Young Cardiac Surgeon) at the 8th International Congress of Update in Cardiology and Cardiovascular Surgery (UCCVS 2012) awarded by European Society for Cardiovascular Surgery, World Society of Arrhythmias (WSA) and the Society of Cardiology and the International Academic of Vascular and Endovascular Surgery (ISCP). He is a member of the Medical German Association, Malaysian Medical Association and the Saudi Medical Council.

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