Epicardial Radiofrequency Pulmonary Vein Isolation Combined with Left Atrial Appendage Resection for the Treatment of Atrial Fibrillation: Early Results of a New Minimally Invasive Approach

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Background: Minimally invasive approaches for surgical ablation of atrial fibrillation have gained attraction for years due to potential benefits of maximizing the efficacy of surgery and minimizing the complexity of conventional Cox-Maze procedure. Methods: Five patients underwent bilateral pulmonary vein isolation using an epicardial bipolar radiofrequency ablation device (Cardioblate Gemini System, Medtronics, USA) combined with left atrial amputation using an endoscopic gastrointestinal anastomosis stapler. For three patients whose indication for surgery was lone atrial fibrillation, the surgery was performed through bilateral mini-thoracotomy incisions without pump assist, whereas other two patients underwent standard sternotomy for concomitant aortic valve replacement. Radiofrequency ablation was performed for four-to-seven times to confirm the entrance and exit block. Results: All patients restored normal sinus rhythm intraoperatively. There were no mortality or operative complications. Baseline rhythm at discharge was normal sinus rhythm in 4 and atrial fibrillation or flutter on 24-hour Holter monitoring. At three months, four patients showed sinus rhythm without anti-arrhythmic medications whereas one had atrial fibrillation. Conclusion: Epicardial bipolar radiofrequency pulmonary vein isolation combined with left atrial appendage resection is safe and feasible. This approach may be a good alternative to catheter ablation for patients with lone atrial fibrillation.

Keywords: atrial fibrillation, ablation, surgery