Surgical intervention for cardiac tamponade during ablation of AF: who and when? A single center experience

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Introduction: Cardiac tamponade (CT) is the most common potential life threatening complication associated with radio-frequency catheter ablation (RFCA) for atrial fibrillation (AF). Based on current clinical practice, the decision of conservative therapy or surgical intervention remains unclear. The aim of this study is to retrospectively analyze the occurrence and management of CT during RFCA for AF in our experienced medical center.

Methods: All patients with a cardiac tamponade perforation who have undergone radio-frequency catheter ablation for atrial fibrillation in our center were included.

Result: Of 2890 procedures performed from 2013 to 2018, 28 (0.97%) patients occurred cardiac tamponade. Among them, the left atrium dimension was 35.5±3.7mm on average. 22 (78.6%) patients were noted during ablation procedure, 6 (21.4%) patients were noted within 1 hour after the procedure. 25 (89.3%) patients were required to perform pericardiocentesis immediately. 10 patients underwent emergency surgical repairs due to the hemodynamic unstable state among whom the average of drainage was 2250ml (627.5-3050). The perforation sites could be identified during the surgical repairs: 5 at right superior pulmonary vein, 2 at coronary sinus, 1 at left atrium appendage, 1 at left superior pulmonary vein and 1 at tricuspid isthmus, respectively. During the surgical procedure, Cox maze procedure (4/10) and left atrial appendage excision (2/10) were performed accordingly. The drainage volume was strongly associated with decision of surgical repair (OR: 1.003, \( P=0.033 \)), the cutoff value was 400ml (AUC: 0.919, sensitivity: 100%, specificity: 72.22%, \( P<0.001 \)). No patient died of CT in our cohort.

Conclusion: The incidence of CT (0.97%) was lower than 1% in our center. The annual incidence rate was 0.19%. Latent CT occurred in 6 (21.4%) patients. The dimension of left atrium was small (35mm) in patients with CT. The most common perforation site was RSPV. If the drainage was more than 400ml during the procedure, emergency surgical repair should be recommended.