Prefers Mini-Maze

Seung Hyun Lee, M.D, Ph.D
Assistant Professor Division of Cardiovascular Surgery
Severance Cardiovascular Hospital Yonsei University College of Medicine, Seoul, Korea

Atrial fibrillation (AF) is a significant risk factor for embolic stroke originating from the left atrial appendage (LAA). The standard of care for medical management of patients with AF remains oral anticoagulation, and current guidelines recommend treatment of patients with a CHA_2DS_2-VASC >1. Recently, the European Society of Cardiology has recommended that if patients are not amenable to anticoagulation (elevated CHA2DS-VASC and/or HAS-BLED scores), LAA occlusion may be warranted. Percutaneous approaches to LAA closure have set the basis for treating AF patients with contraindications to anticoagulation (elevated CHA2DS-VASC and/or HAS-BLED scores). In published series, anatomy-based selection for closure devices is necessary to accommodate individual anatomical variations. These anatomical limitations do not apply to the surgical approach.

Surgical techniques to control the LAA consist of either exclusion or excision of the LAA, although the efficacy of techniques is variable. In the minimaze setting, LAA excision is usually done by endoscopic stapler in case of Epicardial maze setting and the major challenges of this technique pertain to the remaining neck of the LAA after stapling or abrupt rupture of stapling line. The most common technique of LAA exclusion during right mini-thoracotomy approaches (endocardial Cox-Maze) is endocardial suturing of the LAA; however, this approach is associated with relatively high failure rates in terms of establishing recommunication. The alternative technique is s recently introduced LAA occlusion device, the AtriClip PRO (AtriCure, Inc,West Chester, OH USA) has been demonstrated to be safe and effective. The device has been further developed and is now available for Epicardial maze setting or minimally invasive Cox-Maze.

In real world results, for minimally invasive Cox-Maze, epicardial and Watchman groups, operative (or procedural) mortality rates were 0, 0.5 and 0.7%. At 12 months, rates of sinus rhythm restoration were 93, 80% and sinus restoration without anti-arrhythmic medications was 87, 72% for Cox-Maze, epicardial procedures, respectively. However, Watchman device cannot convert rhythm to sinus but just seal LAA orifice, and the total 30-day serious adverse events (SAE) rate was 7.9%, with a reported procedure and/or device-related SAE rate of 3.6% (data from the EWOLUTION registry : European heart journal, January 27, 2016).

Another point is the case combined with valvular heart disease, such as mitral stenosis. In various study series, despite interpatient variability, stenotic mitral valvular disease has progressive feature itself, so we should deliberate the possibility of surgical correction for stenosis worsening sometimes. During an average 3.3-year follow-up, mitral valve area decreased at a mean rate of 0.09 cm2/year , but there was marked interpatient variability (38.8%: relatively little change (<0.1 cm2/year), 34% :rapid (≥0.1 cm2/year)). Also in consideration of hardness and complexity during operation (inserted Watchman removal), we precisely should select the therapeutic option for combining valve disease.

In summary, in terms of clinical results and the possibility of mitral stenosis worsening, mini maze, whether epicardial maze or minimally invasive Cox-Maze, might be a better option for patients with AF, mild mitral stenosis.