Robotic surgical ablation of atrial fibrillation in mitral valve surgery

Over the last decade, the field of robotically-assisted heart valve surgery has known significant excitement and also widespread controversies. Although robotic instruments continue to evolve, financial constraints remain the main limiting factor in expanding robotics in cardiac surgery.

The paper entitled "Early and mid-term results of cryoablation of atrial fibrillation concomitant with robotic mitral valve surgery" by Kadan et al. (1), which appeared in Anatolian Journal of Cardiology case series, has critical issues for our geographical region.

First, the respected authors have demonstrated that minimally invasive mitral valve surgery can be performed safely and effectively using the robotic instrumentation as frontiers in Turkey. The sternotomy conversion rate of 2.9% and permanent pacemaker requirement rate of 5.9% are comparable to previous studies. They further shared the mid-term results of concomitant atrial fibrillation (AF) cryoablation procedures. As recommended by the 2017 ESC/EACTS guidelines (2), as class IIa indication, surgical ablation of AF should be considered in patients with symptomatic AF who are undergoing valve surgery. The authors also routinely closed the left atrial appendage (LAA), with the aim of decreasing the stroke rates and allowing for the discontinuation of warfarin. According to the 2017 ESC/EACTS guidelines, surgical excision or external clipping of the LAA may be considered in patients undergoing valve surgery as class IIb indication.

Nevertheless, mitral valve repair is underutilized (2/34; 5.9%) in this series. As recommended by the 2017 AHA/ACC guidelines (3), as Class I indication, mitral valve repair is recommended in preference to mitral valve replacement (MVR) when surgical treatment is indicated for patients with chronic severe primary mitral regurgitation involving the posterior or anterior leaflet or both leaflets, when a successful and durable repair can be accomplished. However, the authors stated that only two patients with isolated mitral regurgitation underwent mitral valve repair and all other patients had mitral stenosis or mixed lesions. I accept that this case series mostly involved rheumatic mitral valve disease, and mitral valve repair is challenging in this setting. I hope that the authors would apply complex mitral valve repair techniques using robotic mitral valve surgery even in rheumatic mitral valve disease shortly. Indeed, patients undergoing MVR would require long-term anticoagulation even after the restoration of the sinus rhythm.

Second, the Cox-Maze IV procedure lesion set is currently the gold standard for the surgical treatment of AF (4, 5). The authors performed left atrial cryoablation in accordance with the Cox-Maze IV lesion sets. However, the right atrial ablation lesion set is missing even in patients with long-standing persistent AF for more than 12 months. The authors reported that the overall AF free survival rate was 64.7% at 6 months. Thus, restoration of the sinus rhythm with synchronized atrial contraction as a primary end-point has room for improvement for future studies. The results of robotically-assisted biatrial maze procedure using hybrid approaches, and employing both catheter and surgical ablation, would be interesting.

Finally, as defined in the study's limitations, the rhythm follow-up protocol was restricted to only 3 days. Primary end-point assessment at 12 months would also be critical. Future randomized trials on hybrid approaches are warranted.

Conflict of interest: None

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