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Commentary: The stand-alone Cox maze procedure: Bad marketing or lack of clinical interest?

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CENTRAL MESSAGE

There is an urgent need to improve the education and training of surgeons and electrophysiologists in all types of available surgical procedures for atrial fibrillation.

The role of surgical treatment for stand-alone atrial fibrillation (AF) is a subject of continuing debate. Although the Cox maze procedure with cardiopulmonary bypass (CPB) support has the best single-procedure success rate for any type of AF, >80% of the procedures performed in North America are performed on beating heart with a limited lesion set, probably inferior rhythm control, and higher cost.¹ The report from Washington University demonstrates once again that the Cox maze procedure for stand-alone AF is very safe and effective.² This study also shows that the type of AF did not impact the results of the Cox maze procedure. Despite increasing numbers of minimally invasive procedures, there was no compromise of the results, and long-term rhythm follow-up demonstrated stable results over time for a single-procedure intervention.² The results of the on-CPB Cox maze procedure carry the highest single-procedure success rate and stroke reduction compared with any catheter or

off-pump surgical ablation procedure, especially in patients with nonparoxysmal AF.³

Interestingly, it seems that unlike any other cardiac condition requiring an invasive intervention there is a significant impact of the wrong perception that off-CPB beating heart procedures are safer and less invasive. This perception is replacing the traditional considerations of the recommended surgical approach by our group and the group led by Dr Damiano at Washington University that is based on basic pathophysiology of AF, the primary effectiveness, and the actual safety of these procedures. This unusual approach to surgical ablation of AF is well captured by the recent Society of Thoracic Surgeons database report, which revealed that the majority of surgical ablation procedures for stand-alone AF are performed on the left atrium only, using beating heart procedures (off-CPB), and without elimination of the left atrial appendage.¹ It also suggests alarming rates of death and complications when patients were subjected to surgical conversion of the minimally invasive off-CPB approach to control an intraoperative complication.¹

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It is clear that there is a role for both on- and off-CPB approaches to treat our patients, and probably, if selected appropriately, the success rate will be superior to that with multiple catheter ablation procedures. Therefore, there is an urgent need to improve the education and training of surgeons and electrophysiologists in all types of available surgical procedures for AF and by so doing improve the patient selection and outcomes of such procedures.

My basic principles for appropriate selection of surgical ablation procedures are as follows:

1. Patients with longer duration of AF usually demonstrate much more complex biatrial substrate with pathology outside the pulmonary veins and the posterior left atrium.
2. Use only ablation devices that demonstrate consistent transmural ablation. An incomplete lesion not only will not terminate AF, but also can generate new sources for atrial arrhythmia.⁴
3. Determine what would be the best approach to exclude the left atrial appendage and almost completely eliminate the risk of future stroke.³
4. Attempt to avoid mid-sternotomy in almost all patients without compromising the safety and the efficacy of the procedures.

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