Commentary

Interventional Cardiology

Long-term outcome after thoracoscopic ablation for atrial fibrillation: A short commentary

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Description

Since the introduction of the maze operation by Cox and colleagues in the early nineties, treatment of Atrial Fibrillation (AF) has evolved towards minimally invasive surgical and Catheter Ablation (CA) with the goal of limiting the impact on the patient's well-being [1]. Next to minimally invasive (port-access) maze surgery supported by extracorporeal circulation [2], thoracoscopic ablation on the beating heart has become a popular surgical treatment modality that is currently applied in a (staged) hybrid and non-hybrid setting [3,4]. Recently, our group further developed the classic bilateral thoracoscopic approach towards a unilateral setting from the right side, requiring an accumulated incision length of 27 mm only, while the lesion set remained unchanged [5].

The 2020 European Society of Cardiology guidelines, indicating thoracoscopic ablation as a class IIA recommendation, for drug refractory and symptomatic paroxysmal and persistent AF after failed CA or with risk factors for CA failure, are mainly based on the results of the randomized controlled FAST trial revealing superior short- and long-term outcomes of Surgical Ablation (SA) compared to CA [6-8]. However, postoperative complications mainly driven by pneumothorax, were higher in the surgical arm while long-term clinical event rates were similar in both groups. Since the original publication of the FAST trial, many single and multicenter observational studies have reported on short- and long-term rhythm outcome, safety and stroke data, suggesting that thoracoscopic ablation is a useful alternative to other rhythm control strategies in a referral AF centre [9,10].

In a recently published observational cohort analysis of patients undergoing thoracoscopic ablation in 2012-2013 (n=82, 50% non-paroxysmal, mean left atrial index volume=44 mL/m²), 60% freedom from atrial arrhythmia (ATA) was described after a mean follow-up of 4 years and an observed neurologic event rate of 0.3 per 100 patient years [11]. Patients underwent holter monitoring every 3 months in the first post-operative year and the definition of success was applied in a strict way according to the 2012 HRS consensus statement [12]. These results are in line with the recently published long-term data from the FAST trial, revealing 44% freedom from ATA after a mean follow-up of 7 years [8] and with other non-hybrid studies in which success rates beyond three years have been described between 34% and 69%, depending on Anti-Arrhythmic Drugs (AAD) usage and AF type [4,13-19]. Interestingly, a meta-analysis reporting on the published data between 2011-2016 revealed relatively high on- and off-AAD success rates varying from 81%-90% and 61%-92% at 2-years respectively and 47%-69% at 5 years follow-up [20]. This wide range in success rates may probably reflect potential bias, including: retrospective study design and consequently incomplete and intermittent rhythm monitoring, the intensity and duration of holter

follow-up, diversity of patient groups and disease stage (paroxysmal versus (long-)standing persistent), surgical approaches applied (lesion sets and different devices) and ablation setting ((staged) hybrid versus non-hybrid). This highly emphasizes the need for a careful interpretation of study results specifically with respect to the type and intensity of rhythm monitoring and disease-stage (type of AF). For instance, a quick look at the outcome data from the CASA-AF trial [21], a randomized controlled trial comparing SA with CA in long-standing persistent AF (LSPAF) patients, has revealed a 1-year off-AAD success rate of 26% in the surgical arm. This is substantially lower than what has been previously reported, as reflected by a pooled analysis of 67% [20]. These disappointing surgical results might be partly explained by the advanced disease stage of the patients included (LSPAF) and the accurate AF recurrence detection applied in this study by using continuous rhythm monitoring. Further, the extended procedural time (median of 265 min) and remarkably short ablation time of 15 minutes together with the low number of 20 procedures (as first operator) required for enrollment, might suggest that a less experienced team carried out the procedures [21]. We speculate that this could potentially have resulted in a higher chance of incomplete lesions and inadequate exit-and entrance block testing. Although not supported by data, we consider the learning curve of such a procedure to be set at 50 operations for a single surgeon performed within 2.5 years.

Conclusion

In conclusion, the field of AF treatment has been dominated by the focus on minimally invasive techniques to reduce treatment burden and on eliminating drug refractory AF itself, which has resulted in satisfying long-term rhythm outcomes and more standardized follow-up methods. In addition, there is growing attention nowadays for other patient important outcomes like stroke, AF burden reduction and ultimately quality of life improvement.

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