

LAAO Procedure: Minimal Approach, Maximal Effectiveness and Safety

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DESCRIPTION

The grown life expectancy will lead to further increase in prevalence of Atrial Fibrillation (AF), which is already the most common sustained arrhythmia in adults [1]. For this reason, Left Atrial Appendage Occlusion (LAAO) is destined to be more frequent in cathlab, as alternative procedure for stroke prevention in AF patients with contraindication to or high risk for Oral Anticoagulation (OAC) therapy [2]. In the last two decades, LAAO has demonstrated to be effective both preventing embolic risk in Non Valvular Atrial Fibrillation Patients (NVAF) and avoiding hemorrhagic events traditionally associated to OAC treatment [2].

Procedural safety remains the key element for prevention treatments as LAAO. Respect of device release criteria is another important aspect which need full consideration in actual procedure in order to reduce post procedural complications, as Device Related Thrombus (DRT). Intra-procedural imaging is one of the most impacting factors in controlling both elements [3]. Although the optimal LAAO guidance is not yet well defined, fluoroscopy without ultrasound imaging modality should be strongly discouraged [4]. For a long time, General Anesthesia (GA) facilitated Transesophageal Echocardiography (TEE) had been considered the gold standard imaging modality to guide LAAO [5]. This imaging technique needs anesthesiology team, with consequential added cost, and patient's tracheal intubation that may cause major complications especially in elderly patients. These assumptions underlie research of minimally invasive imaging techniques. The Intracardiac Echocardiography (ICE), yet used to guide Patent Foramen Ovale (PFO) and trans-septal puncture, appears to be a feasible, minimalist alternative to guide LAAO [5].

A recent and consisted review has compared TEE-guided and ICE-guided LAAO procedure enrolling 772 patients in a prospective, multicentric Italian registry. All procedures have been performed implanting a Watchman FLX device. Results have shown that ICE did not appear inferior to TEE in terms of procedural safety and follow up. The procedural success still remains extremely high (98.5%) demonstrating similar procedural outcomes in both groups (98.7% in ICE and 98.5%

in TEE-guided LAAO) [4]. Still, one year thromboembolic and hemorrhagic event rates are extremely low, both in ICE and TEE group.

Although ICE may result in an inferior image quality, ICE-guided LAAO and TEE-guided LAAO have similar outcomes [5-7]. Double venous access, with possible consequential complications, and increased procedural time are disadvantages related to ICE use in guiding LAAO. A crucial implementation in ICE use is to deliver the ultrasound catheter in Left Atrial (LA) through Interatrial Septum (IAS) to achieve optimal image quality of LAA [4].

Another innovative imaging methodology is recently born as this step could be considered challenging for a less experienced operator and in consideration of ICE limitations. The use of ICE probe via the esophageal route (ICE-TEE) has been demonstrated safe compared to standard TEE in excluding the presence of thrombus in LAA, in guiding patent foramen ovale percutaneous closure and in guiding the repair of congenital heart disease [8-9]. A case series on ICE-TEE guided LAAO has been recently published. Impressive outcomes resulted by this experience pave the way to a prospective registry (Dionisio Registry) which is actually ongoing in Umberto I Hospital (Siracusa, Italy), including 100 patients who undergone LAAO procedure guided by ICE-TEE.

CONCLUSION

Italian registry described above and the multitude of studies conducted on LAAO procedure pave the way for broader indications for LAAO procedures. Innovative methodologies to minimize patient discomfort and achieve optimal procedural outcomes are constantly studied and proved. LAAO procedure will certainly gain growing attention and develop further innovative technologies.

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