

Incidentally detected accessory left atrial appendage in a patient being planned for left atrial appendage closure



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Introduction

Left atrial appendage closure (LAAC) has been an accepted treatment strategy to anticoagulation in patients with nonvalvular atrial fibrillation (AF) who qualify for anticoagulation with a high bleeding risk.¹ Left atrial accessory appendages (LAAA) are now being increasingly detected with use of cardiac computed tomography (CT). However, the clinical significance of LAAA remains unknown and there is no clear consensus in the management strategy in patients with LAAA being planned for LAAC. We report a case of an incidentally noted LAAA in a patient being planned for LAAC.

Case report

An 88-year-old man with hypertension, benign prostatic hypertrophy, heart failure with preserved ejection fraction, and AF was scheduled for placement of a Watchman™ LAAC device (Boston Scientific, Maple Grove, MN). He was previously on apixaban 5 mg twice daily for stroke prevention but developed intolerance to anticoagulation owing to recurrent hematuria with resultant severe iron deficiency anemia. Hence, apixaban was discontinued and the patient was referred for LAAC. Transthoracic echocardiogram showed left ventricular ejection fraction 65% with mild left ventricular hypertrophy, along with moderate mitral valve regurgitation, moderate aortic valve regurgitation, and moderate-to-severe tricuspid regurgitation.

Preoperative transesophageal echocardiogram (TEE) on the day of the procedure showed a thrombus within the left atrial appendage (LAA), leading to cancellation of the procedure (Figure 1). The patient was started on warfarin with enoxaparin bridging with careful monitoring of International Normalized Ratio and anemia, with plans of repeat cardiac

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KEY TEACHING POINTS

- Detection of left atrial accessory appendages (LAAA) have increased with increasing use of cardiac computed tomography (CT). However, cardiac CT is not routinely used prior to planning for left atrial appendage closure (LAAC).
- There is no clear consensus regarding management of LAAA in patients being planned for LAAC.
- We propose that cardiac CT be used as the preferred imaging modality prior to LAAC.
- Further research is required regarding optimal management strategy for LAAA in patients undergoing LAAC.

imaging after 2 months. Follow-up cardiac CT scan revealed a cauliflower-type $26 \times 29 \times 32$ mm LAA without intracardiac thrombus. However, it also revealed an unexpected finding of an accessory LAA measuring $20 \times 13 \times 11$ mm located inferior to the appendage (Figure 2A and 2B). The accessory appendage could not be visualized on review of the previous TEE study and was considered not amenable

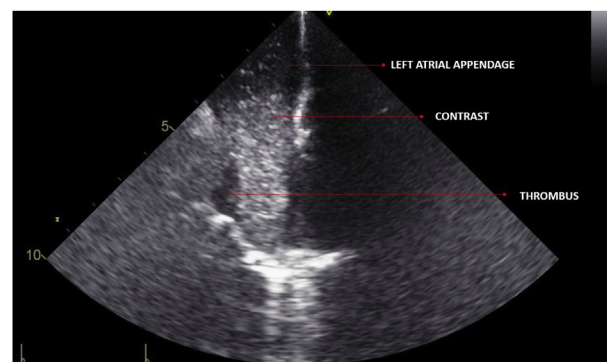


Figure 1 Transesophageal echocardiogram image showing left atrial appendage thrombus.

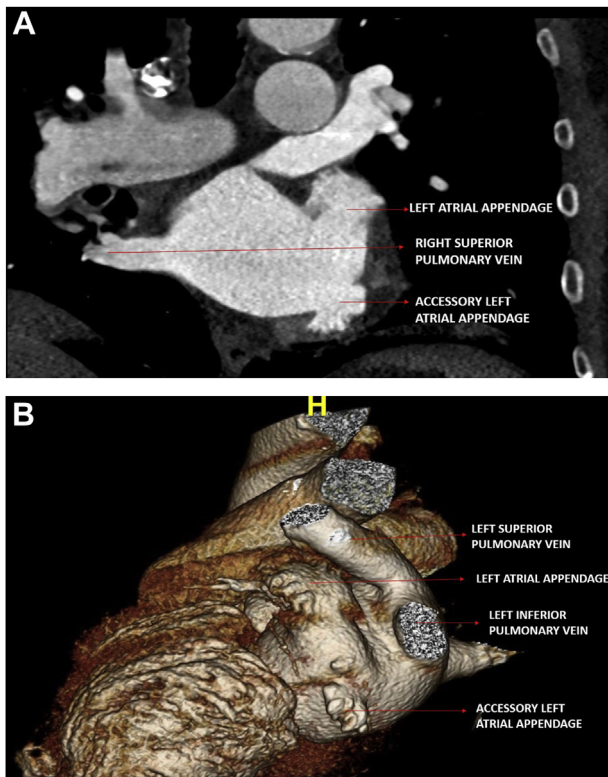


Figure 2 (A) Transverse section computed tomography showing accessory left atrial appendage; (B) 3D computed tomography showing accessory left atrial appendage.

to percutaneous or surgical occlusion. The patient has been maintained on chronic oral anticoagulation with warfarin.

Discussion

LAA is the suspected site for 90% of intracardiac thrombi in AF. The recently published PRAGUE trial has reinforced the current evidence of noninferiority of LAAC compared to oral anticoa-

gulation in preventing thromboembolic events.¹ The use of LAAC devices is expected to continue to increase in the future.

With increasing use of cardiac CT, there have been higher rates of identification of LAAA recently. Left atrial outpouchings include accessory appendage, atrial aneurysm, and atrial diverticulum. The difference between these entities is represented in Table 1. The prevalence of LAAA has been reported to be between 10% and 28%.^{2,3} Despite the higher rates of identification of LAAA, their clinical significance remains unknown. In a study by Vehian and colleagues,³ presence of LAAA was associated with higher risk of stroke and transient ischemic attack on bivariate analysis. This association was no longer significant on multiple logistic regression when adjusted for age, sex, hypertension, dyslipidemia, and diabetes mellitus. However, no large-scale studies are available to evaluate LAAA association with risk of stroke. There has been 1 reported case of a thrombus arising from left atrial diverticulum.⁴ The most common location for LAAA was the right anterosuperior wall of the left atrium. Since cardiac CT is not the preferred imaging modality for percutaneous LAA occlusion procedures, the prevalence of LAAA has never been reported in any of the Watchman or Amulet randomized controlled trials or clinical registries. One could postulate that LAAA could be responsible for at least some of the reported cases of LAAC device failure (thromboembolism in AF despite well-sealed LAA without device-related thrombosis). There is also evidence suggesting that cardiac CT when compared to TEE results in better sizing of the LAAC device, shorter duration of the procedure, and lesser number of devices used.⁵ So far, there has not been any published literature regarding percutaneous LAAA closure.

Conclusion

We report a case of a large LAAA leading to cancellation of percutaneous LAA occluder device placement. Our case report

Table 1 Left atrial outpouchings

	Left atrial accessory appendage	Left atrial diverticulum	Left atrial aneurysm
Embryological origin	Congenital from primitive LA	Congenital from posterior atrial wall or acquired	Congenital or acquired
Location	Anterosuperior and lateral wall	Congenital - LA appendage and LA posterior wall Unknown origin - anterior wall, anterosuperior wall, and venoatrial junction of the right superior pulmonary vein	Congenital - inferoposterior wall Acquired - not reported
Anatomic features	Contractile, trabeculated structures with a circumscriptive ostium and a narrow neck	Contractile, sac-like structures with either a smooth or trabeculated inner surface, a circumscriptive ostium, and a narrow neck, with a variable morphology	Noncontractile structures with a wide neck followed by a sac like body
Association with atrial fibrillation	Rarely associated with ectopic activity triggering atrial fibrillation	No association with atrial fibrillation	No association with atrial fibrillation
Association with embolic risk	Unclear association with thromboembolic risk	No association with embolic risk	No association with embolic risk

LA = left atrium.

serves as a cautionary tale against routine LAAC placement without detailed cardiac imaging and encourages the consideration of cardiac CT as the preferred imaging modality.

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