Case Report

Device closure of left atrial appendage as a modality for stroke prevention in a patient with atrial fibrillation- the first in Sri Lanka

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Abstract

Atrial fibrillation is the most common sustained cardiac arrhythmia in the general population. It is associated with substantial morbidity and mortality due to stroke. Prevention of stroke is the major goal in the management of atrial fibrillation. Oral anticoagulation, initially with warfarin and most recently with novel oral anticoagulants(NOACS) has been the main therapeutic option for stroke prevention. However, many patients are poor candidates for life long oral anticoagulation. This prompted the emergence of the therapeutic alternative, left appendage closure. In patients with atrial fibrillation, left atrial appendage is the major source for thrombo- embolic complications and percutaneous trans catheter left atrial appendage device closure has proved to be non-inferior to oral warfarin.

Introduction

Atrial fibrillation (AF) is the most common significant cardiac arrhythmia, affecting more than 33 million individuals worldwide [1] with a high prevalence in western populations. It's prevalence in Asian populations is low (< 1%), although it increases with age [2]. The number of patients with AF is expected to rise 2-5-fold in following decades [3] due to the growing population of older adults.

There are several complications reported due to AF of which stroke has been considered the most worrisome one. AF-related strokes have higher mortality, greater morbidity, increased health care costs, and increased incidence of recurrence compared with non– AF-related strokes. [4,5]

Previous studies and autopsy findings have shown that >90% of cardiac emboli in non-valvular atrial fibrillation (NVAF) originate in the left atrial appendage(LAA) [6].

Oral anticoagulation mainly warfarin and novel pharmacological agents play an important role in the prevention of LAA thrombus in non-valvular AF. Nearly 40% of patients at risk of stroke do not receive any anticoagulation due to contraindications, bleeding, or patient/physician preferences. [7]

This group of patients can benefit from mechanical approaches as a measure for stroke prevention. [6] Here we report the first case of LAA appendage device closure in Sri Lanka for a patient with AF who developed recurrent bleeding while on anticoagulation.

Case report

A 69-year-old female patient who was diagnosed to have atrial fibrillation required anticoagulation for prevention of stroke as her CHA2DS2-VASc score was 05. She had a history of multiple hospital admissions with recurrent epistaxis and haematuria with labile INR.

Her past medical history revealed hypertension and TIA. Her pulse rate was 80 per minute, irregularly irregular, with normal blood pressure. ECG revealed rate controlled AF and echocardiography showed normal left ventricular systolic function without significant valvular abnormalities. Therefore, we planned left atrial appendage device closure with prior transoesophageal echocardiographic assessment of left atrial appendage for suitability. (Figure 1)

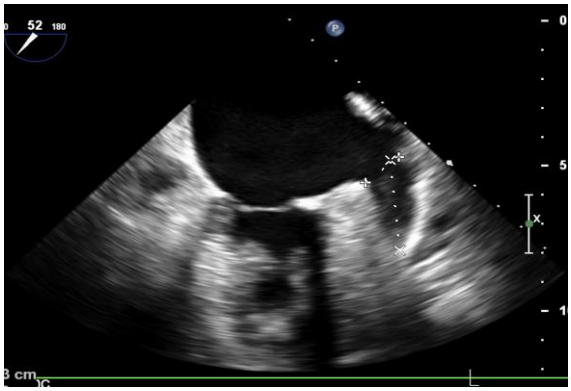

Figure 1- TOE at 52 degrees demonstrating LAA in question

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After established right femoral arterial and venous access, trans-septal puncture was performed in posterior and inferior position of the inter atrial septum using Brockenbrough needle which was confirmed fluoroscopically. Following that a 0.002-inch wire was advanced into the left atrium and was kept in the LAA. A Judkins right diagnostic catheter was advanced over the wire and the anatomical location of LAA was confirmed by contrast injection. Thereafter Judkins right catheter was exchanged for a 5F marker pigtail catheter and angiogram was performed in two radiographic views. (RAO 30 Cranial 10, RAO 30 Caudal 10). (Figure 2). Left atrial appendage ostium (21mm) and the landing zone (19mm) were measured to determine the appropriate size of the device.

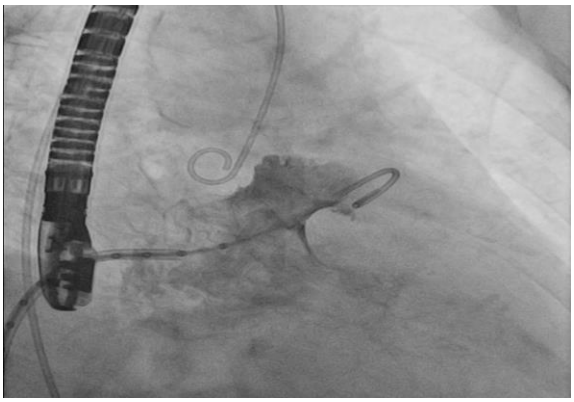

Figure 2- Angiographic assessment of LAA.

Then 24mm Amplatzer LAA device was positioned across the LAA ostium by using 13F Amplatzer delivery sheath. After confirmation of the position by transoesophageal echocardiography and fluoroscopy, LAA device was released across the left atrial appendage. (Figure 3,4).

Post procedure angiogram revealed no residual communication or leak in between left atrium and left atrial appendage. Follow up was uneventful. Her AF was well managed without anticoagulation. A year later, she was investigated for lymphadenopathy, requiring invasive procedures, which was easily managed in the absence of anticoagulation.

Discussion

Prevention of stroke and systemic embolization in non-valvular AF is achieved by several modalities of treatment including pharmacological and non-pharmacological approach. In a typical cohort of non-treated non-valvular AF patients, the annual

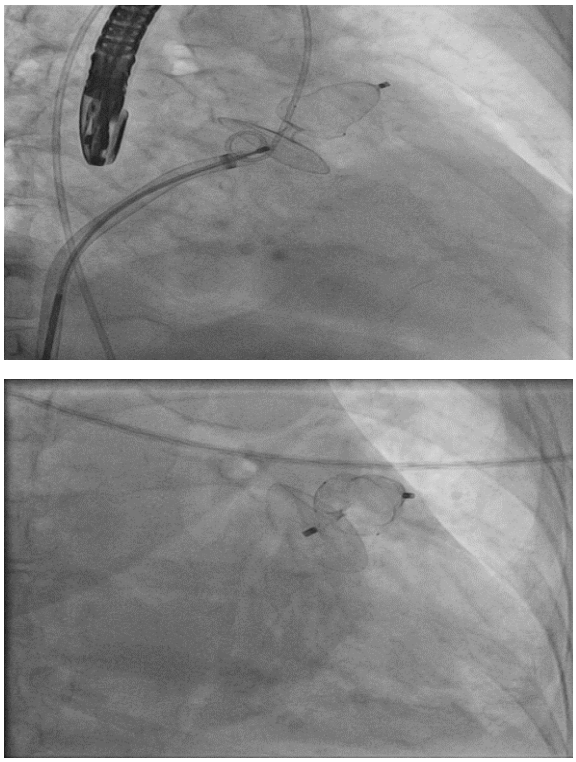

Figure 1(Above) & 4(Below) – Show delivery and deployment of Amplatzer LAA device into LAA respectively.

rate of ischemic stroke is approximately 5%. [8] This risk of thromboembolism and bleeding can be identified using risk scores such as CHA2DS2-VASc and HAS-BLED.

Oral anticoagulation (with vitamin K antagonists and non- vitamin K antagonists) has been demonstrated to reduce the thromboembolism. Warfarin is the main pharmacological agent that has been used for long time but is limited by a narrow therapeutic profile, a need for lifelong coagulation monitoring, and multiple drug and diet interactions. The new agents, novel oral anticoagulation (NOAC) also play a main role in drug therapy with lower risk of bleeding compared with warfarin but is not zero.

Therefore, LAA occlusion, though not a well-established procedure, offers non-valvular AF patients who are not candidates for long-term anticoagulation or who are under the category of failed therapy i.e recurrent thromboembolism despite adequate oral anticoagulation therapy, an alternate solution. This should be achieved by either surgical or percutaneous approach. Surgical approaches include the total excision of LAA or exclusion by ligation or stapling as well as epicardial clips after obtaining access by sternotomy or less invasive thoracoscopic approaches. [9,10].

The percutaneous LAA occlusion has been proposed to be a better approach with minimum complications for suitable patients. There are a few complications reported following LAA device closure such as pericardial effusion, thrombus on the device and peri-device leak. These can be minimised by appropriate patient and hard ware selection. Our patient was well managed without any complications and her follow up was uneventful.

The PROTECT AF trial demonstrated LAA occlusion to be non-inferior to warfarin and resulted in a statistically significant improved clinical outcomes compared to warfarin on long-term follow-up. [11]

Therefore, the ESC guidelines recommend that percutaneous LAA closure may be considered in patients with a high stroke risk and contraindications to long-term oral anticoagulation (class IIb, level B). We need more clinical data on the safety and the effectiveness of the therapy in specific patient groups.

Conclusion

Stroke is one of the serious complications in AF patients, which would be managed with different modes of treatment in specific groups of patients. Other than oral anticoagulation, percutaneous approach of LAA occlusion is a newer therapeutic option for those patients who are unable to take long term anticoagulation.

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