Feasibility and safety of left atrial appendage closure in a patient with previous foramen ovale occlusion: a multimodality approach

chiara cavallino | Fabrizio Ugo | Mario Matta | Maria Virginia Di Ruocco | Danilo Reale | Chiara Devecchi | Ludovica Maltese | Mohamed Abdirashid | Francesco Rametta

Ospedale Sant'Andrea

History and physical:

A 74-years old woman was admitted to our hospital for symptomatic anaemia during direct oral anticoagulant (OAC) treatment. Her past medical history reported arterial hypertension, smoking habit, chronic kidney disease. The patient suffered an ischaemic stroke at the age of 55 (at that time ECG was normal, significant carotid disease and atrial fibrillation were excluded); a patent foramen ovale presenting relevant left-to-right atrial shunt, inverted by Valsalva manoeuvre was diagnosed. The patient underwent successful transcatheter PFO occlusion, with the implantation of a dedicated device available at that time (STARflex 23 mm). At the age of 70, she developed atrial fibrillation (AF) and started OAC with rivaroxaban 20 mg, due to a CHA_2DS_2-VASc score of 5. After several and ineffective pharmacological attempts of rate and rhythm control, an ablate&pace strategy was carried out. However, after 3 years of tolerated OAC treatment, the patient sought medical attention for severe symptomatic anaemia (haemoglobin 7 g/dl).

Imaging:

Gastrointestinal endoscopic examination showed multiple colonic angiodysplasias carrying signs of recent bleeding, deemed unsuitable for endoscopic invasive treatment. OAC was discontinued and the patient evaluated for the feasibility of left atrial appendage (LAA) occlusion. Trans-oesophageal echocardiogram (TOE) showed a single-lobe ("chicken-wing") LAA morphology, free from intra-atrial thrombi. The PFO occluder was regularly in site, without residual leaks or thrombi and there was a small residual portion of free interatrial septum just posteriorly to the device, suitable for catheterization.

A pre-procedural cardiac computed tomography (CT) scan was performed in order to comprehensively assess the anatomical relationship between the atrium, the septal occlusion device, the residual device-free interatrial septum and the aortic root (Figure 1A). Based on the CT scan images, a three-dimensional accurate model was printed (Figure 1B), and the procedure of trans-septal puncture and LAA occlusion was simulated through this model and a demo model of the selected device, aiming to confirm its technical feasibility.

Indication for intervention:

LAA occlusion is indicated in this patient with non-valvular AF, elevated ischaemic and bleeding risk (CHA_2DS_2-VASc 5; HAS-BLED 4) and a bleeding source that cannot be fully eliminated (diffuse angiodysplasia) in alternative to OAC.

Intervention:

Under general anaesthesia and continuous TOE monitoring, trans-septal catheterization was performed puncturing at the postero-inferior edge of the device. Following successful access

in the left atrium, LAA closure device was successfully delivered without complications. The device selected for this procedure was LAmbre™ 26x32mm (Lifetech, Shenzhen, China), for the smaller diameter of its delivery sheath (11 F) compared to other devices and the need to perform the transseptal puncture in the small free residual portion of the interatrial septum (Figure 1C, 1D).

Learning points of the procedure:

Feasibility and safety of left atrial appendage closure in a patient with a previous percutaneous occlusion of a patent foramen ovale.

Pre-procedural multimodality imaging and choice of the correct device is of utmost importance when planning a challenging procedure.