



Use of a steerable delivery sheath for a challenging

LAAC thrombus trapping case

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History and physical:

A 86 y-o man was referred to our institution for a left atrial appendage closure (LAAC). He suffered from a persistent atrial fibrillation (CHADS-VASC2 score =4) and recurrent gastro-intestinal bleedings requiring red blood cell transfusion related to colic angiodysplasia. Oral and parenteral anticoagulation were formally contraindicated. Medical history also included preserved LV function cardiac failure, severe tricuspid valve regurgitation but there was no mitral valve stenosis or regurgitation. Baseline hemoglobin was 7.4 g/dl.

Physical examination revealed no sign of cardiac failure, a mild pre sternal murmur and normal hemodynamics.

Imaging:

Pre-LAAC CT scan revealed massive dilation of both right (volume=673 ml) and left (volume=441 ml) atria and a cactus-shaped LAA with poorly opacified distal tip (Figure A1-A2). Landing zone maximal diameter was measured to 26 mm. TTE confirmed significant tricuspid regurgitation, absence of mitral valve disease, normal LV systolic function and bi-atrial dilation. TEE revealed presence of a limited thrombus in the LAA distal section (A3).

Indication for intervention:

Persistent high embolic risk atrial fibrillation + formal contra-indication to oral anti-coagulation + presence of an atrial thrombus: a LAAC + thrombus trapping using an Abbott Vascular AMULET™ device was proposed.

Learning points of the procedure:

A first attempt was performed with conventional delivery sheaths. Despite three transeptal punctures on various fossa ovalis locations (infero-posterior, infero -median, median), there was no way to reach the LAA ostium due to the left atrium volume. A second attempt was performed 7 days later using Amplatzer steerable delivery sheath and AMULET device.



Compared to the classical LAAC procedure workflow, our strategy was modified as follows to allow correct implantation of the AMULET™ 28 mm occluder.

- 1) Transseptal puncture in an antero-inferior position under TEE + Echo Navigator™ (Philips) guidance (Figure B1), in order to minimize the distance between septum and LAA ostium
- 2) Deflection of the delivery sheath tip in order to navigate towards the LAA and to get the most appropriate coaxial alignment between device and LAA, as the presence of the underlying thrombus prohibited the use of a pig tail catheter to access the appendage (Figure B2).
- 3) Gentle ostial LAA catheterization with the AMULET™ partially deployed in the “ball” position to access to the landing zone (Figure B3-B4).
- 4) Progressive device deployment with concomitant use of delivery sheath tip deflection/flexion maneuvers in order to maintain coaxial alignment and minimize the tensions in the system (Figure B5-B6).

The prosthesis was successfully implanted. The patient was discharged under antiplatelet therapy. There was no clinical adverse event in the post-operative course.

This case illustrates the difficulties of achieving LAAC by conventional means in patients with extremely large atria and the interest of using tailored strategies combining “unconventional” transseptal puncture locations + use of steerable delivery sheaths.

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FIGURE A

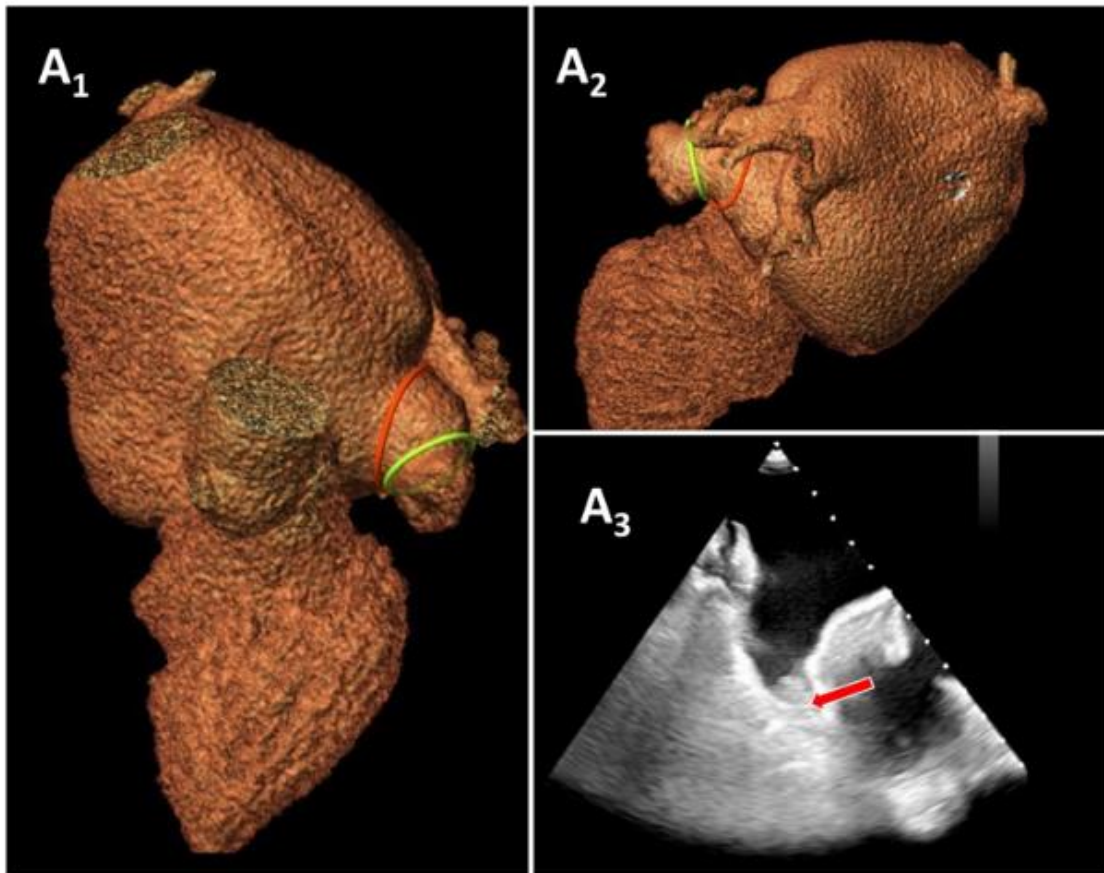


FIGURE B

