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Giant left atrial septal pouch stained during trans-septal puncture

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DESCRIPTION

A 66-year-old man with old cerebral infarction and paroxysmal atrial fibrillation (AF) was admitted to our hospital for dyspnoea on exertion. A 12-lead ECG showed AF. Transoesophageal echocardiography (TEE) revealed no thrombus in the left atrium, and a prominent left atrial septal pouch (LASP) was visualised (figure 1). In addition, TEE showed negative bubble study with and without Valsalva manoeuvre (figure 2). Then, we performed circumferential pulmonary vein isolation for the treatment of AF. During the trans-septal access with standard Brockenbrough method, it was noted that the contrast agent injected through the tip of the needle filled the LASP cavity (video 1).

The embryological aetiology of LASP is incomplete fusion of the septum primum and septum secundum during the closure of foramen ovale. Fusion limited to the caudal portion of the zone of overlap leads to creation of the LASP.¹ Mazur *et al* reported the presence of LASP in 40.8% of 294 healthy adult hearts in postmortem examination. The mean volume of the LASP was 0.31 ± 0.11 mL, which makes up only $13.6\% \pm 9.4\%$ (range: 3.1%–44.9%) of the appendage, and the average depth of the LASP was 8.4 ± 5.1 mm.² Hence, the LASP is a relatively small structure. However, in our case, the depth of LASP with a giant flap spreading to LA cavity (the white arrows in figure 1) was 30 mm. As the LASP cavity is surrounded by transverse muscle, it was difficult to insert catheters from the septal wall and isolate the right pulmonary veins. We consider that (1) the presence of LASP may also cause blood stasis in the LASP cavity, increasing the risk of blood clots formation

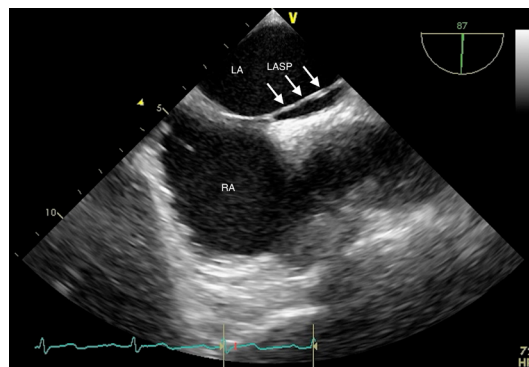


Figure 1 Mid-oesophageal bicaval view showed the giant membrane of LASP spreading to interatrial septum. LA, left atrium; LASP, left atrial septal pouch; RA, right atrium.

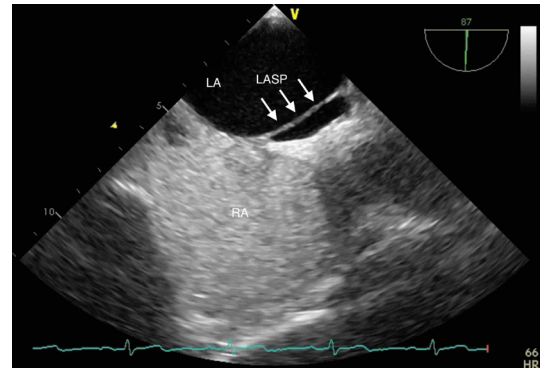
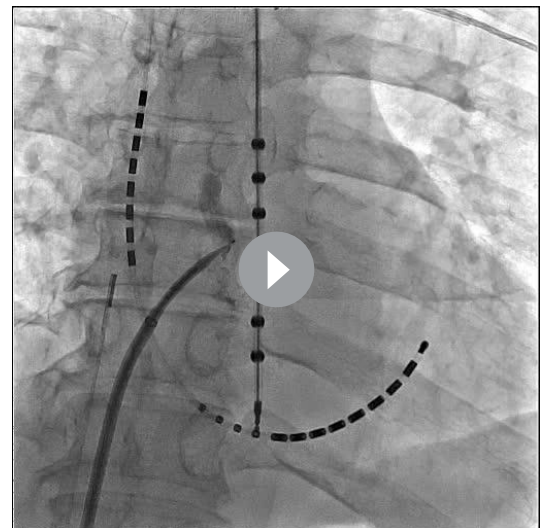


Figure 2 The microbubbles produced by an agitated saline with a provocative test could not detect patent foramen ovale. LA, left atrium; LASP, left atrial septal pouch; RA, right atrium.



Video 1 Trans-septal needle stuck into the bottom of left atrial septal pouch, and stained the giant cavity with contrast agent.



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Learning points

- ▶ The left atrial septal pouch (LASP) cavity may increase the risk of blood clots formation and potentially lead to ischaemic stroke.
- ▶ The muscle layers of LASP may become an arrhythmogenic substrate for triggering atrial fibrillation (AF).
- ▶ The flap of LASP restricts the motion of catheters as a result of difficulty of AF ablation.

and potentially lead to ischaemic stroke,³ (2) the muscle layers of LASP may become an arrhythmogenic substrate responsible for triggering AF⁴ and (3) the flap of LASP restricts the motion of the catheters as a result of difficulty of AF ablation.

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REFERENCES

- 1 Krishnan SC, Salazar M. Septal pouch in the left atrium: a new anatomical entity with potential for embolic complications. *JACC Cardiovasc Interv* 2010;3:98–104.
- 2 Mazur M, Jasinska KA, Walocha JA. The morphology, clinical significance and imaging methods of the atrial septal pouch: a critical review. *Transl Res Anat* 2018;13:7–11.
- 3 Kuwaki H, Takeuchi M, Kaku K, *et al*. Thrombus attached to the left atrial septal pouch assessed on 3-dimensional transesophageal echocardiography. *Circ J* 2011;75:2280–1.
- 4 Hołda MK, Koziej M, Wszolek K, *et al*. Left atrial accessory appendages, diverticula, and left-sided septal pouch in multi-slice computed tomography. association with atrial fibrillation and cerebrovascular accidents. *Int J Cardiol* 2017;244:163–8.

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