

## Usefulness of 3D Transesophageal Echocardiography in a Patient with Subaortic Membrane

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Images correspond to a 37-year-old woman who was referred to our center with dyspnea and effort angina. Physical examination revealed a systolic murmur in the aortic area. Transthoracic Doppler echocardiography showed a tricuspid aortic valve with normal opening and mild to moderate aortic regurgitation, and a subaortic membrane with peak and mean gradient of 50 y 30 mm Hg, respectively.

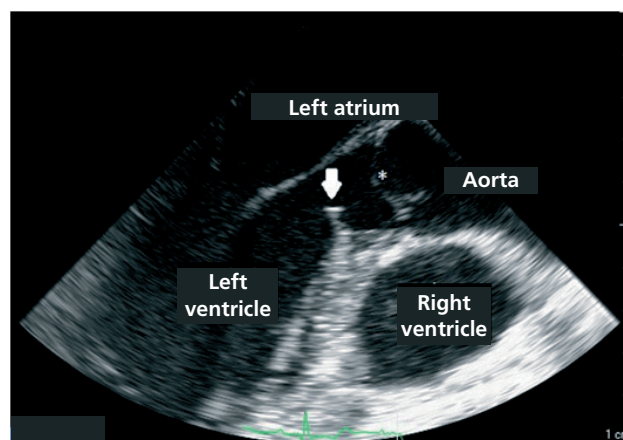
A transesophageal echocardiography with a Philips IE33 machine and 3D X7-2t transesophageal probe was performed. On 2D transesophageal images, a clear fibrous membrane in the left ventricular outflow tract could be observed, partially attached to the interventricular septum and the anterior mitral leaflet (Figure 1, Video 1).

Transesophageal 3D images from the aortic view

in systole and diastole (Video 2) and from the long axis view (Figure 2, Video 3) were useful to assess implantation and extension of the membrane. A 3D planimetry showed a LVOT area of 3.4 cm<sup>2</sup> and an effective area of 1.63 cm<sup>2</sup> in relation to the membrane orifice.

Surgical resection of the membrane and aortic valve repair were performed. Intraoperative findings were very similar to the preoperative 3D images.

In complex heart diseases, 3D echocardiography is very useful to assess the anatomy of the affected structure and surrounding tissues. In the case of subaortic membrane, it is very difficult to fully assess it with conventional 2D echocardiography. In this case, 3D echocardiography enabled full assessment of membrane position, implantation and extension, helping surgical management.



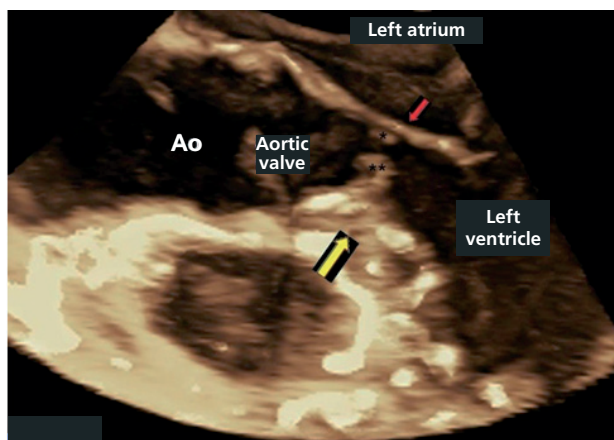
**Fig. 1.** Transesophageal view at 120°. The aortic valve (\*) and subaortic membrane (arrow) can be clearly observed.

### Conflicts of interest

None declared

### REFERENCES

- Hung J, Lang R, Flachskampf F, Shernan S, McCulloch M, Adams D, et al. 3D Echocardiography: A review of the current status and future directions. *J Am Soc Echocardiogr* 2007;20:213-33. <http://doi.org/dxspgd>
- Misra A, McCulloch M, Gangopadhyay S, Lawrie G, Dokainish H. Images in cardiology: remarkable correlation of subaortic membrane visualization by three-dimensional echocardiography and at surgery. *Clin Cardiol* 2005;28:356. <http://doi.org/b6qfj6>



**Fig. 2.** 3D view of the left ventricular outflow tract and proximal aorta (Ao). The aortic valve and subaortic membrane (\*) and (\*\*). The extension of the subaortic membrane towards the anterior mitral leaflet can be clearly seen (\*). Upper arrow: anterior mitral leaflet; lower arrow: interventricular septum.

- Maréchaux S, Juthier F, Banfi C, Vincentelli A, Prat A, Ennezat PV. Illustration of the echocardiographic diagnosis of subaortic membrane stenosis in adults: surgical and live three-dimensional transoesophageal findings. *Eur J Echocardiogr* 2011;12:E2. <http://doi.org/d94392>

**Video 1.** 2D transesophageal view at 120°.

**Video 2.** 3D view from the aorta (short axis).

**Video 3.** 3D view of the outflow tract and proximal aorta.