Subaortic membrane in a 12-year-old boy assessed by two- and three-dimensional echocardiography

An asymptomatic 12-year-old boy, who originated from Saint-Pierre de la Réunion, Reunion Island, had a low-intensity systolic murmur and underwent two-dimensional echocardiography, which depicted a subaortic membrane (Fig. 1). The abnormal flows caused structural damage to the aortic valve, with aortic regurgitation and mild subaortic obstruction (maximum gradient of 25 mmHg). No alteration to the left-ventricular contraction or damage to the mitral valve was observed. Three-dimensional echocardiography was performed with the 2–3 MHz matrix probe (i.e., 33, Philips, Andover, US) to provide left-ventricular views of the membrane (Fig. 2). Surgery was indicated by the presence of aortic regurgitation, and consisted of complete removal of both the membrane and the septal muscle (Fig. 3). Postoperative echocardiography showed complete disappearance of the gradient and minimal aortic regurgitation.

Three-dimensional echocardiography provides a precise snapshot of the anatomical aspect of the subaortic membrane viewed from the left ventricle. Surgery is indicated by the presence of aortic regurgitation, manifest as a jet lesion that could damage the valve; removal of the membrane avoids the need for an annoying aortic valve replacement (Ross intervention, heterologous graft or mechanical valve replacement and the need for anticoagulation). Other indications in children are dyspnoea on exertion, fainting or syncope, signs of myocardial ischaemia or inappropriateness of blood pressure on stress test, signs of left-ventricular hypertrophy and transvalvular gradient above 60 mmHg before one year of age and above 70 mmHg after.
Figure 1. Two-dimensional echocardiography from the parasternal long axis. Left. The subaortic membrane is attached to the ventricular septum. Right. The jet lesion causes mild aortic regurgitation.

Figure 2. Three-dimensional echocardiography from the left-ventricular view. The membrane resembles an open circular ring from the septum (superior arrow) to the anterior mitral valve (AMV) (inferior arrow).

Figure 3. Pathological specimen. The membrane was resected. The red segment, from the myectomy, was attached to the septum and the white segment to the mitral valve.

Conflicts of interest

None.

Appendix A. Supplementary data