A case of subaortic stenosis

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A 56-year-old woman who reported dyspnea and was in New York Heart Association functional class III was admitted initially to undergo aortic valve replacement for severe aortic stenosis. Echocardiography performed 2 months previously had found a severe aortic stenosis with valve area less than 1 cm², mean gradient 40 mm Hg, and maximum jet velocity 4 m/s, associated with low aortic regurgitation. The preoperative echocardiography showed no major aortic

valvular abnormalities (tricuspid valve, no calcification) but did demonstrate the presence of a subvalvular proximal isovelocity surface area (Figure 1, B) of 0.45 cm² and reveal a subvalvular fixed obstruction (Figure 1, C) of area 0.8 cm² and mean gradient 48 mm Hg, associated with left ventricular hypertrophy and moderate aortic regurgitation. A cardiac computed tomographic scan (Figure 1, A) confirmed the presence of a circumferential aortic subvalvular membrane in the left ventricular outflow tract, located 14 mm away from the aortic ring. This membranous or fibromuscular ring below the aortic valve was 8 mm, whereas the left ventricular outflow tract was 15 mm. Surgical procedure showed, after removal of the native aortic valve, a thick membrane located 15 mm from the aortic annulus. The membrane (Figure 1, D) was removed, and the aortic valve was replaced with a mechanical prosthesis. Echocardiographic control showed no more stenosis, and the patients symptoms resolved.

Subaortic stenosis is a manifestation of a geometric anatomic alteration in the left ventricular outflow tract. It seems

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FIGURE 1. A, Heart computed tomographic scan showing the circumferential subvalvular membrane along the interventricular septum and mitral valve. B, Echocardiography showing subvalvular proximal isovelocity surface area, 0.45 cm². C, Aortic Doppler echocardiography showing severe fixed stenosis with maximum jet velocity 4 m/s. D, Image of the thick membrane after surgery. Ao, Aorta; LV, left ventricle; LA, left atrium.

to be acquired, because it is almost never present at birth. It is sometimes associated with various other cardiac malformations, such as interventricular communication, double-inlet right ventricle, and aortic coarctation, that

must be monitored and treated surgically when necessary. Apart from congenital cardiac abnormalities, acquired aortic insufficiency is the most common lesion found in association with subaortic stenosis.