AORTIC valve replacement in a patient with myasthenia gravis and radiation-induced aortic valve disease

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A 57-year-old woman was referred to our hospital for an operation on her aortic valve. She had undergone thymectomy and was treated with 4,500 rads and 1,980 rads to the anterior mediastinum 34 years earlier for myasthenia gravis. She had no history of rheumatic fever. Preoperative echocardiography showed grade II aortic regurgitation and aortic stenosis, with a valve area of 0.75 cm². On surgical inspection, the sternal marrow exhibited decreased density, the anterior surface of the proximal ascending aorta was partially covered with white fibrous tissue (Fig 1A, arrowheads), and the surrounding fibrous fat tissue showed adhesion to the pulmonary artery. Furthermore, an aortic valve was tricuspid, and the cusps and leaflets exhibited thickened fibrosis with partial calcification (Fig 1B). On the basis of the absence of commissural fusion and a bicuspid valve in addition to the very unusual features of rheumatic aortic stenosis and the patient's relatively young age, we gave her a diagnosis of radiation-induced aortic valve disease. The valve was replaced with a 21-mm bioprosthetic aortic valve (Carpentier-Edwards Perimount Magna aortic bioprosthesis; Edwards Lifesciences, Irvine, CA). On histologic examination, no typical rheumatic endocarditis changes were found (Fig 2A; hematoxylin and eosin stain, original magnification ×40, Fig 2B; Elastica-Masson stain, original magnification ×100). The patient's postoperative course was uneventful.