A 26-year-old Chinese man was found to have a mass in the right chest according to a chest roentgenogram during a routine medical checkup (A, arrow). The patient was asymptomatic. Transthoracic echocardiography revealed a hypoechoic mass close to the epicardium of the right atrium (RA) (B, arrow). Computed tomography confirmed a 7.4 × 6.6 × 5.3-cm mass in the right mediastinum (C, arrow). During an exploratory sternotomy, a firm extrapericardial mass infiltrating the wall of the RA was noted (D, arrow). After blocking up of the superior vena cava and inferior vena cava, the mass was confirmed as originating from the epicardium of the RA and was completely removed under cardiopulmonary bypass (E, Online Video 1). Macroscopically, the rubineous tumor was 6.5 × 6.0 × 5.0 cm with blood vessels of various sizes (F). Microscopic examination confirmed the final diagnosis of primary cardiac cavernous hemangioma originating from the RA epicardium (G, H) (hematoxylin and eosin stain, ×100, ×400 magnification). The patient showed no evidence of recurrence on 13-month follow-up.