A 57-year-old man with a history of tertiary syphilis and previous aorto-bifemoral bypass surgery to treat one obstructed branch and another with severe stenosis was referred from another hospital with a diagnosis of aneurysm of the ascending aorta of 57 mm, aortic arch of 44 mm, and descending aorta of 67 mm in diameter (Fig. 1). The surgery consisted of a median sternotomy with on-pump circulation, hypothermia at 25°C, selective perfusion of the supra-aortic vessels through the right subclavian artery, and replacement of the descending aorta with a 33 × 15 E-VITA Open® hybrid prosthesis (Jotek Vascular; Hamburg, Germany). The prosthesis was placed with an anterograde approach using a frozen elephant trunk technique. The aortic arch and ascending aorta were replaced with the unsupported portion of the Dacron prosthesis up to the supracoronary plane. The supra-aortic vessels were revascularized with a 12 × 7-mm bifurcated Dacron prosthesis and reimplanted on the ascending aorta prosthesis. The left subclavian artery was ligated. The postoperative period was uneventful and follow-up computed tomography angiography was performed (Figs. 2 and 3).