Unusual operation for tetralogy of Fallot

Opération inhabituelle pour la tétralogie de Fallot

Sherif Moustafa\textsuperscript{a}, Naeem Merchant\textsuperscript{b}, Timothy Prieur\textsuperscript{a,*}

\textsuperscript{a} Adult Congenital Heart Clinic, Department of Cardiac Sciences, University of Calgary, Peter Lougheed Hospital, 3500 26, avenue Northeast, Calgary, AB T1Y 6J4, Canada
\textsuperscript{b} Department of Diagnostic Imaging, University of Calgary, Foothills Medical Center, Calgary, AB, Canada

Received 11 August 2011; received in revised form 15 September 2011; accepted 15 September 2011
Available online 7 March 2012

KEYWORDS
Tetralogy of Fallot; Extracardiac conduit; Computed tomography

A 21-year-old woman presented with recurrent palpitations in the setting of previously documented Tetralogy of Fallot. Primary repair had been performed at the age of 9 years, with requirement for dual-chamber pacemaker implantation in the early postoperative period. Unfortunately, no operative details were obtainable. Transthoracic and transesophageal echocardiography confirmed the presence of severe RVOT obstruction with peak and mean gradients of 100 and 63 mmHg, respectively, together with trivial pulmonary regurgitation. In addition, moderate right ventricular dilatation with moderate/severe systolic dysfunction and elevated right ventricular systolic pressure (90 mmHg) were found. However, echocardiography was unable to localize the site of the RVOT/PA obstruction (Fig. 1, Video 1). CCT was carried out with a 64-row multidetector scanner after peripheral vein injection of 90 cc of the non-ionic contrast medium Ioversol (Optiray 320 mg/mL; Tyco Healthcare Canada, Inc., Pointe Claire, QC, Canada) as a bolus dose at the rate of 5 mL/s with retrospective electrocardiogram gating. CCT demonstrated a thickened small RVOT (9 mm) with a dynamic obstruction secondary to a hypertrophied muscle bundle. Additionally, there was a conduit placed between the upper right ventricular body and the normal-calibre right PA, with severe calcification and stenosis. The main PA had an unusual shape and was narrowed at the bifurcation (12 mm), with an enlarged origin of the left PA (25 mm) connected to the native RVOT (Figs. 2 and 3). The origin and course of the coronary arteries were normal. The patient underwent successful conduit excision, resection of the native RVOT muscle bundles, RVOT/proximal main PA pericardial patch,
Unusual operation for tetralogy of Fallot

Figure 1. Transthoracic Doppler echocardiogram through the right ventricular outflow tract (RVOT), showing severe stenosis with peak and mean gradients of 100 and 63 mmHg, respectively.

Figure 2. A curved multiplanar reconstruction showing a conduit between the body of the upper right ventricle (RV) and the right pulmonary artery (PA), with severe calcification and proximal stenosis of the conduit (white arrows).

Figure 3. Three-dimensional volume-rendered reconstruction demonstrating the right ventricle to right pulmonary artery (RPA) conduit (white arrow) and an enlarged left pulmonary artery (LPA) connected to the native right ventricular outflow tract (RVOT) (yellow arrow). The main pulmonary artery (PA) had an unusual shape and was narrowed at the bifurcation.

arterioplasty of the distal main PA and the proximal portions of both PA branches and pulmonary valve replacement with a 27 mm mosaic bioprosthetic valve. Surgery was uneventful.

In the presence of a contraindication to cardiac magnetic resonance imaging, such as pacemaker implantation, CCT provides superb image quality, permitting accurate, detailed evaluation of native RVOT and PA anatomy.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Appendix A. Supplementary data