Cardiol Young 2007; 17: 336–337

ISSN 1047-9511
doi: 10.1017/S1047951107000315

Images in Congenital Heart Disease

Occlusion of a fenestration in the Fontan circulation using a coil inserted through a catheter

Joanna Kwiatkowska, Robert Sabiniewicz, Jan Erecinski

Department of Paediatric Cardiology and Congenital Heart Disease, Medical University of Gdansk, Poland

Keywords: Functionally single ventricle; isomerism; visceral heterotaxy

A FIFTEEN-YEAR-OLD GIRL WITH DOUBLE INLET to a solitary and indeterminte ventricle, common atrium, and visceral heterotaxy with right isomerism had undergone construction of a fenestrated extracardiac conduit to produce the Fontan circulation in a single stage at the age of 9 years. The aorta arose anteriorly from the solitary ventricle in association with pulmonary atresia. During the creation of the Fontan circulation, the left-sided inferior caval vein was connected with the left superior caval vein and pulmonary arteries using an extracardiac homograft of 23 millimetres diameter. At the same time, the right superior caval vein was connected directly in end-to-side fashion to the right pulmonary artery. A Gore-Tex graft, 55 millimetres in length, was interposed between the homograft conduit and the common atrium to produce a fenestration. During follow-up, mild cyanosis was observed, with saturations of oxygen measured below 90%, probably due to right-to-left shunting through the fenestration. Three-dimensional reconstruction of angiographic computed tomography revealed the arrangement of both the fenestration and the complicated, post-surgical anatomy (Fig. 1). Angiography (Figs 2 and 3) also showed the extracardiac tunnel and the fenestration to the atrium (arrow). The fenestration was closed with 6.5 millimetre detachable coils (Fig. 4), causing the saturations of oxygen in the aorta to increase to levels as high as 97%. The pressures in the Fontan circulation rose only from 23/14/16 to 25/15/18 millimetres of mercury, and the pressure in the atrium decreased from 15/7 to 12/6 millimetres of mercury. During a period of 24 months follow-up, there has been no recurrence of cyanosis, and the saturations of oxygen have remained unchanged. Our experience illustrates some of the possibilities now available for imaging post-surgical anatomy in the setting of patients with complex congenital cardiac malformations, as well as demonstrating the use of detachable coils safely and effectively to eliminate right-to-left shunting through selected communications used to create fenestrations after an extracardiac Fontan procedure.

Correspondence to: Joanna Kwiatkowska, PhD, Department of Paediatric Cardiology and Congenital Heart Disease, Medical University of Gdansk, Debinki 7, 80-211 Gdansk, Poland. Tel: +48 58 349 28 82; Fax: +48 58 349 28 95; E-mail: joannak@amg.gda.pl

Accepted for publication 21 June 2006

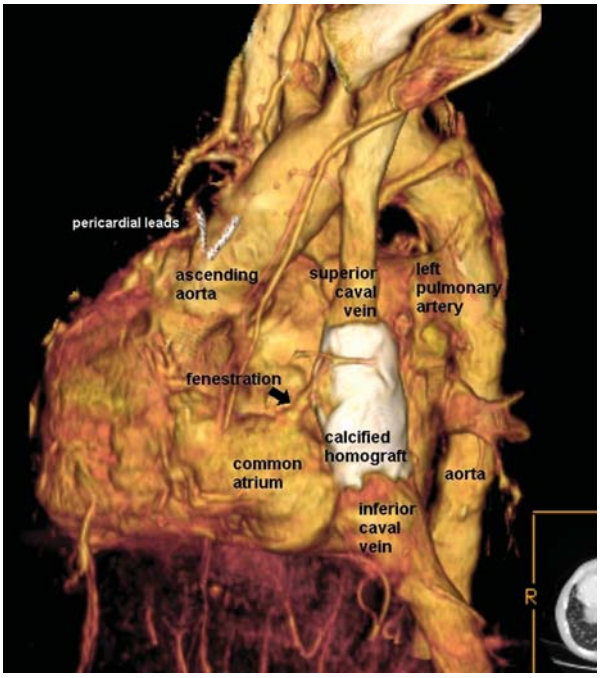

Figure 1.

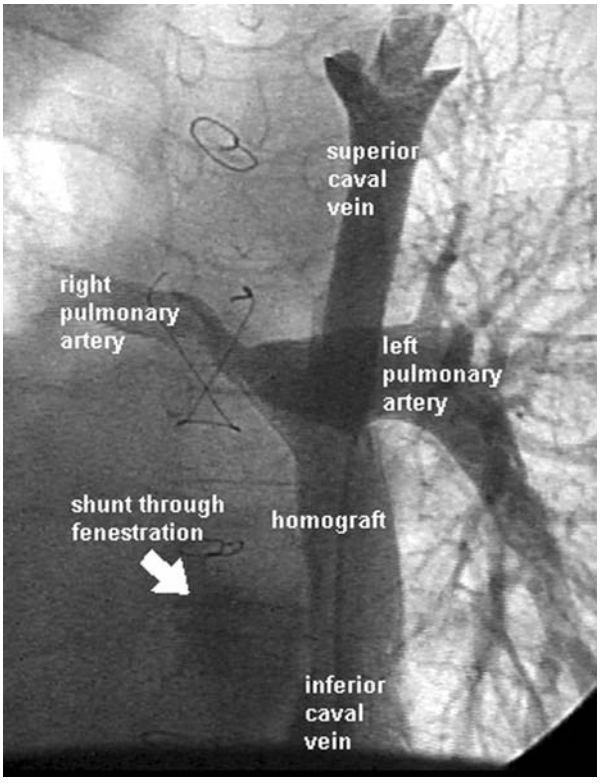

Figure 2.

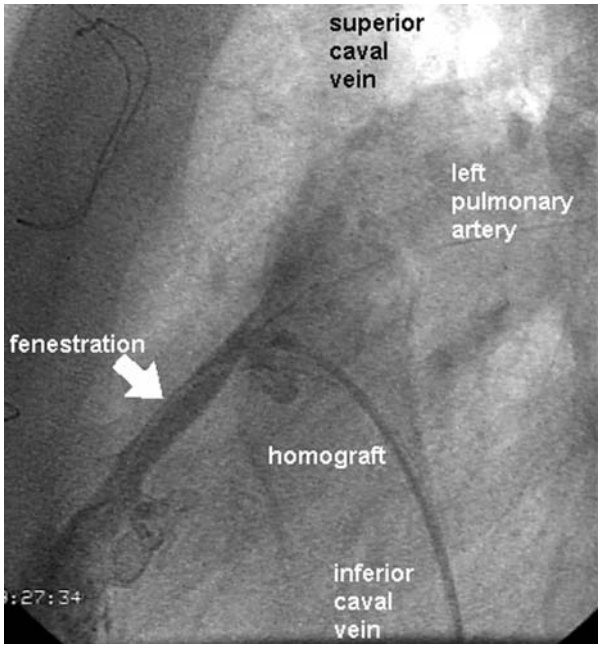

Figure 3.

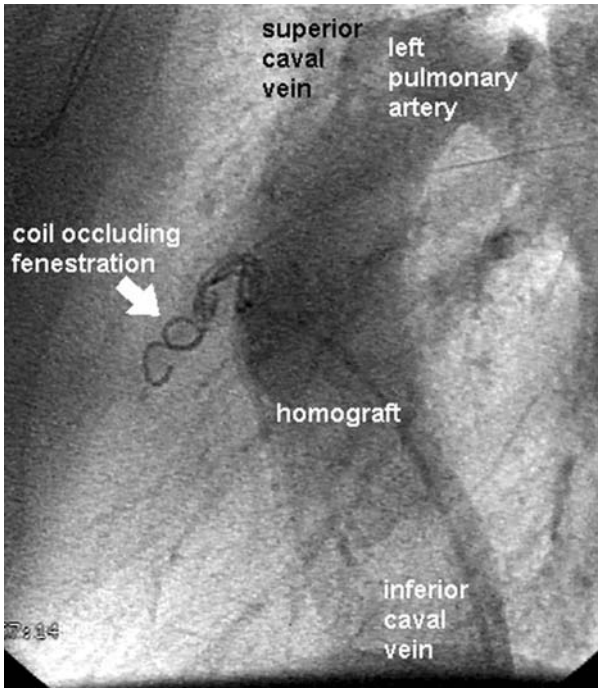

Figure 4.

https://doi.org/10.1017/S1047951107000315 Published online by Cambridge University Press