Case report

Aneurysmal dilation of a pericardial patch prepared with glutharaldehyde and used for closure of a ventricular septal defect

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Aneurysm; Patch; Pericardium; Ventricular septal defect.

Pericardium patches are commonly used for the repair of congenital heart diseases. Aneurysmal dilation is a complication specific to the use of pericardial patches. Preparation of the pericardium with glutharaldehyde is considered to avoid this risk.

In the present case report, we describe the development of a giant aneurysm of a heterologous patch used for closure of a ventricular septal defect in a child aged 14 days.

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Introduction

Heterologous or autologous pericardium patches for the repair of congenital cardiac malformations are commonly used. Aneurysmal dilation may be a complication of the use of pericardial patches. This complication following preparation of the pericardial patch with glutharaldehyde has not been previously described[1]. The present case report describes the development of a giant aneurysm of a patch of heterologous pericardium prepared with glutharaldehyde and used for closure of a ventricular septal defect (VSD) in a child aged 14 days.

Case report

We report a giant aneurysm of a heterologous pericardial patch used for closure of a VSD in a patient with coarctation, subaortic stenosis and VSD. Coarctation repair and VSD closure were carried out at the age of 14 days. The pericardial patch for VSD closure was harvested in 0.6% glutharaldehyde. The child was discharged on the seventh postoperative day. Two-dimensional echocardiography performed at discharge did not reveal any abnormalities and confirmed the correct size of the patch. At the age of 2 months, the child was readmitted due to respiratory distress necessitating assisted ventilation. At this time re-coarctation and aneurysm of the VSD patch associated with moderately dilated and hypokinetic ventricles were discovered. The re-coarctation was successfully dilated but in the following weeks, the aneurysm further increased in size and catheterization revealed a giant aneurysm leading to the right ventricle and causing pulmonary artery obstruction (systolic pressure gradient 70 mmHg) (Fig. 1). Right ventricular dysfunction could be explained by the high pressures in the right heart. Left ventricular dysfunction was due to the paradoxical movement of the aneurysm associated with the left ventricular-aortic obstruction. At the age of 3 months the child underwent surgical resection of the subaortic stenosis and the aneurysmal patch was replaced by heterologous pericardium. After this intervention his conditions improved. One month later it was discovered that the coarctation had again developed and was dilated for the third time. The residual gradient was 10 mmHg. At 1-year follow-up, no aneurysm of the patch used for closure of the VSD was evident and the systolic function of both ventricles had almost entirely recovered.

Discussion

The advantages of pericardial tissue compared to synthetic materials are related to its soft properties. Indeed, sutures are more

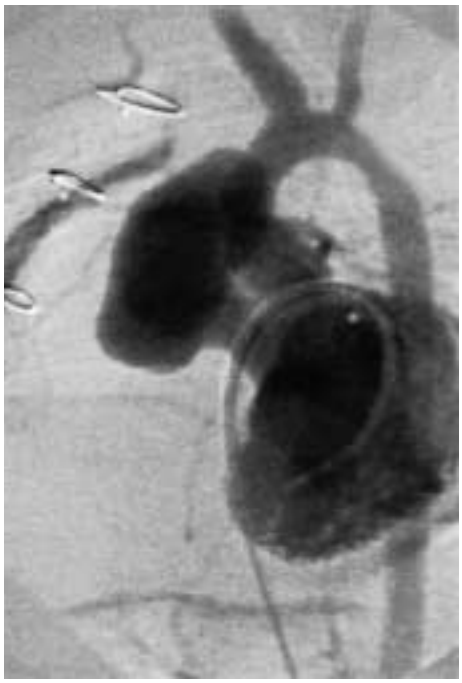

Figure 1. *Left ventricular angiogram in the left anterior oblique view.*

easily applied and consequently the incidence of residual VSD is lower. However, complications specifically related to the use of pericardial patches have been described. These include the development of aneurysms on infundibular patches used for repair of tetralogy of Fallot and, less commonly, on patches used for VSD closure[2,3]. This complication arising after preparation of the pericardium with glutharaldehyde has not been previously described[1]. In fact, prepared heterologous pericardium is now the patch of choice for neonatal cardiac surgery.

Here, we report on a giant aneurysm of a heterologous pericardial patch used for closure of a VSD in a patient with coarctation, subaortic stenosis and VSD. The aneurysm had a rapid onset and evolution and was responsible for the dysfunction of both ventricles. Further, the aneurysm in the pulmonary outflow tract potentially damages the pulmonary valve; this could compromise the performance of a Ross intervention which might be necessary in the follow-up of our patient.

In conclusion preparation of the pericardium with glutharaldehyde might not be sufficient to prevent the formation of an aneurysm, in particular in patients with abnormally high left ventricular pressures.

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