

Patent Ductus Arteriosus with Hemiazygos Communication to Left Superior Vena Cava

Yoshihisa Tanoue, MD, Munetaka Masuda, MD, Masataka Eto, MD, and
Ryuji Tominaga, MD

We experienced the ligation of patent ductus arteriosus (PDA) via the left thoracotomy in a 24-day-old infant with inferior vena cava defect and hemiazygos communication to a persistent left superior vena cava (LSVC). Although the large hemiazygos vein (HAzV) crossed just in front of PDA, its mobilization enabled the smooth ligation of PDA without hemodynamic instability. The postoperative course was uneventful. (*Ann Thorac Cardiovasc Surg* 2008; 14: 256–257)

Key words: patent ductus arteriosus, inferior vena cava defect, hemiazygos communication, persistent left superior vena cava, infant

Introduction

The simple ligation of patent ductus arteriosus (PDA) via the left thoracotomy is one of the most common operations in the cardiovascular field.¹⁾ However, a surgical approach to PDA with inferior vena cava defect and the hemiazygos communication to a persistent left superior vena cava (LSVC) is rare in an infant, and there are no surgical reports. The disturbance of the exposure of PDA by the large hemiazygos vein (HAzV) and the hemodynamic instability on the mobilization of the vein would occur in some situations because the HAzV covers the venous return from the lower body.

Case Report

The patient was born at 37 weeks gestation. Physical examination revealed a well-developed girl, and her body weight was 2,822 g. A continuous murmur was heard at the age of 2 days. Transthoracic echocardiography revealed PDA, bilateral superior vena cava, inferior

From Department of Cardiovascular Surgery, Kyushu University, Fukuoka, Japan

Received December 20, 2006; accepted for publication July 30, 2007

Address reprint requests to Yoshihisa Tanoue, MD: Department of Cardiovascular Surgery, Kyushu University, 3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, Japan.

vena cava defect, and a small muscular ventricular septal defect. Surgical intervention was considered necessary because of poor weight gain. Cardiac catheterization and angiography before operation demonstrated the hemiazygos communication to the persistent LSVC and a large HAzV adjacent to the PDA (Fig. 1). The shunt of ventricular septal defect was small and did not influence the hemodynamic state.

The operation was performed at the age of 24 days (body weight 2,900 g). The patient was placed in a right lateral position. Anesthesia was administered via a standard intravenous technique with fentanyl, midazolam, and pancuronium for muscle relaxation.

A left lateral thoracotomy was performed at the 3rd intercostal space. The large HAzV crossed just in front of the PDA. After the pleura was opened and suspended, the HAzV (diameter 6 mm), descending aorta (6 mm), distal arch (4.5 mm), and PDA (4 mm) were isolated (Fig. 2). A single ligation of the PDA was performed with a silk suture. The hemodynamic state was stable throughout the operation period. The patient was extubated the morning after the operation and had an uneventful postoperative course.

Discussion

We experienced the simple ligation of PDA via the left thoracotomy in a 24-day-old infant with inferior vena

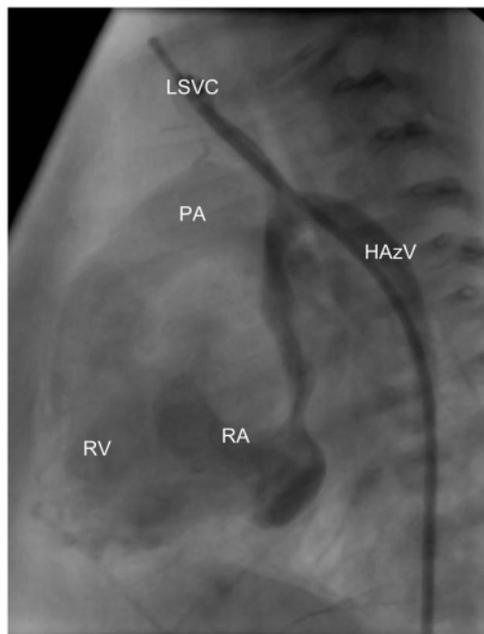


Fig. 1. Angiography of left superior vena cava (LSVC).

A catheter was inserted into the LSVC via hemiazygos communication.

HAzV, hemiazygos vein; LSVC, left superior vena cava; PA, pulmonary artery; RA, right atrium; RV, right ventricle.

cava defect and the hemiazygos communication to a persistent LSVC. Although the large HAzV crossed just in front of PDA, the mobilization of this vein enabled the smooth ligation of PDA without hemodynamic instability. The infant had a small muscular ventricular septal defect, but the surgical closure of the ventricular septal defect was out of the question because of a small shunt. The only ligation of PDA was a necessary operation in the present case.

This surgical situation is rare, and there is no surgical report. We were concerned about the possibility that the large HAzV would disturb the exposure of PDA,

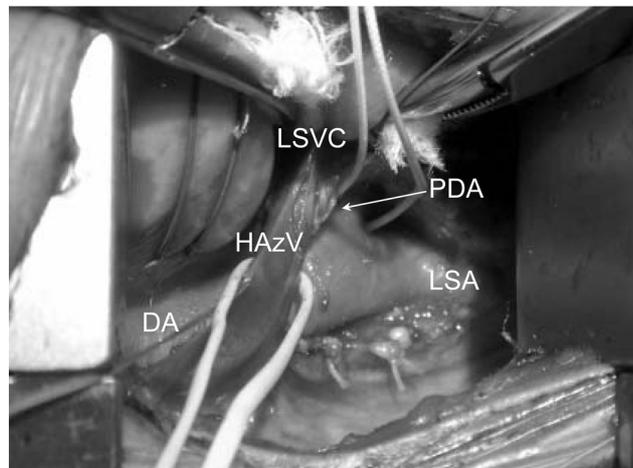


Fig. 2. Operative findings.

Large hemiazygos vein (HAzV) crossed just in front of the patent's ductus arteriosus.

DA, descending aorta; HAzV, hemiazygos vein; LSA, left subclavian artery; LSVC, left superior vena cava; PDA, patent ductus arteriosus.

and that the mobilization of the vein would cause hemodynamic instability. We also considered the possibility of the median sternotomy approach before operation. However, no difficulties were encountered during or after the operation.

In conclusion, PDA with inferior vena cava defect and the hemiazygos communication to a persistent LSVC can be safely ligated via the left thoracotomy. The disturbance of the exposure of PDA by the large HAzV and the hemodynamic instability on its mobilization in most cases would be no reason for concern.

References

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