A SIMPLE METHOD FOR EXCISING PULMONARY VENOUS OBSTRUCTION AFTER REPAIR OF TOTAL ANOMALOUS PULMONARY VENOUS DRAINAGE

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A simple excision of pulmonary venous obstruction (PVO) was carried out following a radical operation for total anomalous pulmonary venous drainage (TAPVD, Darling Ia). The results were quite satisfactory. This technique can be performed easily and effectively although hitherto relief of PVO has been considered to be very difficult.
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THE number of operations for total anomalous pulmonary venous drainage (TAPVD) has recently increased and postoperative problems such as pulmonary venous obstruction (PVO) have been encountered. We report here a case of PVO relieved by a simple excisional method.

CASE REPORT

The patient delivered after an uneventful pregnancy. Thereafter, she became progressively symptomatic, with pallor, cyanosis and dyspnea. A diagnosis of TAPVD (Darling Ia) was made based on echocardiography. The operation was conducted on the 30th postpartum day. The upper wall of the left atrium (LA) and common pulmonary vein (PV) were exposed. A side-to-side anastomosis was made with running sutures using 7-0 PDS thread with an incision about 13 mm long on the common PV and LA. The branches of the PV were not incised.

The postoperative course was uneventful.

Key words:

Total anomalous pulmonary venous drainage
Pulmonary venous obstruction
Simple excisional method

However, rapid pulmonary venous blood flow was found in the LA on an echocardiogram taken 1 month postoperatively. Cardiac catheterization, at 12 months after the operation, showed severe pulmonary hypertension (85/57 mmHg in the pulmonary artery (PA) versus 65/35 mmHg in the aorta) and increased PA wedge pressure (20 mmHg mean). The patient was followed with medication, but clinical deterioration continued with cyanosis, cardiomegaly, pulmonary congestion on chest roentgenogram and right ventricular loading on electrocardiogram. Twenty-three months postoperatively, re-catheterization was performed, with a subsequent rise in PA wedge pressure (22 mmHg mean). Angiocardiography showed that the bilateral PVs were enlarged and there appeared to be stricture at the anastomotic site between the common PV and the LA. Therefore, a repeat operation was performed 23 months after the initial operation.

Using median sternal splitting, a cardiopulmonary bypass was established with moderate hypothermia, and the LA was observed via the atrial septum. Careful

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Fig.1. The inside of the LA. Two holes communicated with each PV branch. The circumference around the holes was thickened fibrously (arrow).

Fig.2. Schematic illustration of the operation. The septum-forming portion between the two holes was resected. Re-suture was not performed.

observation of the LA showed two holes communicating with each PV branch on the upper wall of the LA. The left and right holes were 7 mm and 5 mm in diameter, respectively. The margin was thickened and constricted (Fig. 1). The holes may have

been produced by shortening and bending of the common PV with fibrous proliferation around the anastomotic site. The thickened margin was resected, as shown in Fig. 2. Fibrous scar formation tissue around the communicating holes was removed, and the

branches of the left and right PV were partially resected so as to enlarge the communicating holes. Adhesive tissue had formed due to the previous operation. Therefore, it was thought that bleeding from the resection edge would not occur and no sutures or reinforcement were made. The patient was weaned from the cardiopulmonary bypass with a small amount of isoproterenol. Intraoperative pressure after discontinuation of cardiopulmonary bypass was satisfactory; systolic aortic pressure 70 mmHg, systolic pulmonary arterial pressure 50 mmHg, mean LA pressure 7 mmHg and mean RA pressure 4 mmHg. Postoperative echocardiography indicated an improved rate of blood flow in the LA. The patient is now in fair condition and has been followed for 1 year.

DISCUSSION

PVO after surgical repair of TAPVD may arise from 1) constriction of the common pulmonary vein, 2) scar formation of the anastomosis or 3) intimal hyperplasia of PVs and branches.¹ It is difficult to correct PVO due to the last factor.

The LA-PV anastomotic site should be made as large as possible to prevent stricture.² However, development of PVO due to proliferative changes in the PV despite sufficiently large anastomosis has been reported;³⁻⁵ There is currently no method available for preventing PVO.

To relieve PVO, re-anastomosis between the LA and PV is common, but this is difficult due to the presence of adhesive tissue, bleeding and other factors. Schaefer et al reported 2 cases of PVO after repair of TAPVD.⁶ They concluded that if re-operation is necessary, simple excision of the anastomosis through the left atrium is feasible

and re-suturing would not be necessary since the dense retrocardiac adhesive tissue may be used to advantage.

The present excisional method is easy and effective. Less constriction of the PVs was needed to achieve a wide LA-PV connection. However, care must be taken to avoid producing incision scars. Furthermore, development of PVO after re-operation for PVO has been reported.⁷ Thus, careful observation of such patients is required after this operation.

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