Successful Repair of Symptomatic Aortic Coarctation With the Technique of Resection and End-to-end Anastomosis

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Citation

Abstract
We describe a case of successful repair of symptomatic aortic coarctation with the technique of resection and end-to-end anastomosis in this study. Aortic coarctation is recommended to be relieved by surgery during the ages of 2 and 5 years. Results of surgery are generally good.

INTRODUCTION
Coarctation of the aorta is an important and treatable cause of secondary hypertension. The prevalence of aortic coarctation varies from 5% to 8% of all congenital heart defects[1]. An extended end-to-end anastomosis is considered the best option by most authors[2].

CASE PRESENTATION
Our case was a 9-year-old child who was admitted to a health facility with a possible diagnosis of upper respiratory tract infection. During physical examination, a cardiac murmur was detected and she was referred to the Department of Pediatric Cardiology. Echocardiographic examination revealed that ascending aorta and aortic arch were dilated and a postledge image distal to the left subclavian artery was visible. But no pressure gradient could be calculated. Therefore, cardiac catheterization was conducted. Cardiac catheterization showed that no passage of blood was available within aorta distal to the left subclavian artery. Severe narrowing of aortic segment and well-developed collateral circulation were the other findings (Figure 1).

Moreover, ascending aorta and aortic arch were identified as dilated. No additional cardiac pathology was detected.

Our patient was operated on under general anesthesia. The left hemithorax was entered through 5th intercostals space. Mediastinal pleura were opened. Aorta and subclavian artery were finely dissected. There was a juxtaductal coarctation. The aortic segments proximal and distal to the coarcted...
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Segment were turned around. Severely dilated collateral branches were suspended by silk materials (Figure 2).

**Figure 2**
Figure 2

Ligamentum arteriosum was ligated on both sides and divided. Cross-clamps were placed. The coarcted segment of 2 cm was resected from aorta (Figures 3, 4&5). Histologic examination of coarcted segment revealed total occlusion of aorta.

**Figure 3**
Figure 3

After this resection, end-to-end anastomosis of distal to proximal segments of aorta were successfully performed (Figure 6).
The post-operative course was uneventful with successful correction. Postoperative echocardiographic data confirmed complete correction of the lesion.

**DISCUSSION**

Children beyond infancy are usually asymptomatic and are most often diagnosed because of a murmur or hypertension on a routine examination[1]. Delayed or absent femoral pulses and an arm/leg systolic blood pressure difference of 20 mm Hg or more in favor of the arms may be considered as evidence for aortic coarctation[3].

The coarctation can be demonstrated on suprasternal notch two-dimensional echocardiographic views along with increased Doppler flow velocity across the coarctation site[1]. Cardiac catheterization reveals significant systolic pressure gradient (> 20 mm Hg) across the coarctation and angiography demonstrates the degree and type of aortic narrowing[3].

Surgical relief of coarctation may be achieved by resection and end-to-end anastomosis or by subclavian flap or prosthetic path angioplasty[1]. Elective repair of isolated aortic coarctation is nowadays indicated at 3-6 months of life or at the time of diagnosis[4]. Complications, such as recoarctation or secondary hypertension, probably related to the loss of arterial elasticity, frequently occur after aortic coarctation surgery[4].

In the study of Tabbutt et al., patient age and type of coarctation did not affect the aortic crossclamp time. Younger age, but not aortic crossclamp time, was associated with a significantly longer time to extubation and longer hospital length of stay[5].

The surgical repair of aortic coarctation in adults can be performed with low surgical risk. Surgery reduces hypertension and permits more effective medical treatment[4].

In the study of Cobanoglu et al., the most common reoperation technique was patch aortoplasty. The high incidence of early recurrence with subclavian flap angioplasty in infants under 3 months of age suggests end-to-end anastomosis as the procedure of choice when applicable[7].

Patients repaired by end-to-end anastomosis had shorter aortic crossclamp time[5]. It appears to be advantageous, whenever possible, to use the end-to-end anastomosis approach, which appears to lessen the incidence of the most common complications after aortic arch surgery[6].

**References**

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