

Aorto-coronary Bypass via the Oblique Sinus

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When the radial artery is used as a conduit for the postero-lateral branches, simple aorto-coronary bypass is sometimes impossible in a hypertrophic heart because of its limited length. Passing the graft through the oblique sinus, and making the proximal anastomosis on the right side of the ascending aorta, the postero-lateral branches can be revascularized with a short graft even for a dilated heart. (Ann Thorac Cardiovasc Surg 2002; 8: 56–57)

Key words: radial artery, coronary artery bypass grafting, oblique sinus

Introduction

The postero-lateral branches; the terminal branches of the right or circumflex coronary artery are usually regarded as the most remote coronary vessels from the ascending aorta. Preparation of about 22 cm of vein graft is recommended for the postero-lateral branches.¹⁾ In a hypertrophic heart, an even longer graft sometimes might be necessary. In recent years, interest in the use of the radial artery (RA) as a coronary bypass graft conduit is increasing.²⁾ Although the radial artery (RA) has some potential advantages over the vein graft, its length is reported to be 18 to 20 cm at the most,³⁾ and sometimes does not reach the postero-lateral branches. Herein a new technique to revascularize the postero-lateral branches in aorto-coronary fashion with a short graft is described.

Technique

The RA about 15 cm in length is harvested. The distal anastomosis is performed in a usual manner. The epicardium between the right pulmonary artery and the roof of the left atrium is divided at the right side of the ascending aorta to make a connection between the transverse and the oblique sinus of the pericardium. The graft is passed via the oblique sinus to the right side of the ascending aorta with large angled forceps. The graft is then cut down to the appropriate length with the heart in a relaxed posi-

tion. The proximal anastomosis is made on the right antero-lateral aspect of the ascending aorta (Fig. 1).

Comment

The length of the graft for postero-lateral branches varies considerably depending on the size of the heart when the grafts run anterior to the pulmonary artery. With this technique, postero-lateral branches can be revascularized without depending on the size of the ventricle. The appropriate length of the graft seemed to be about 15cm. For further shortening of the length of the graft, distal anastomosis should be made close to the cardiac base.

The route through the transverse sinus⁴⁾ also saves the length of the graft to the circumflex branches. However, the oblique sinus route seemed to give an even shorter passageway because the graft runs almost directly posterior to the left atrium instead of circumventing the left pulmonary veins.

Patients with a normal sized heart could also benefit from this technique. The distal part of the RA may be subject to intraluminal trauma from previous cannulation for blood pressure monitoring or coronary angiography, and prone to spasm.⁵⁾ Posterior branches can be revascularized with a shorter segment of the RA avoiding using the potentially diseased distal portion. A shorter graft might also lead to better patency.

This technique, however, has some limitations. Firstly, most segments of the graft become invisible after completing the anastomoses. Therefore, meticulous hemostasis of side branches before anastomosis is indispensable. In addition, care should be taken to avoid twisting and kinking of the graft during its passage through the oblique sinus. Secondly, sequential bypass to diagonal or

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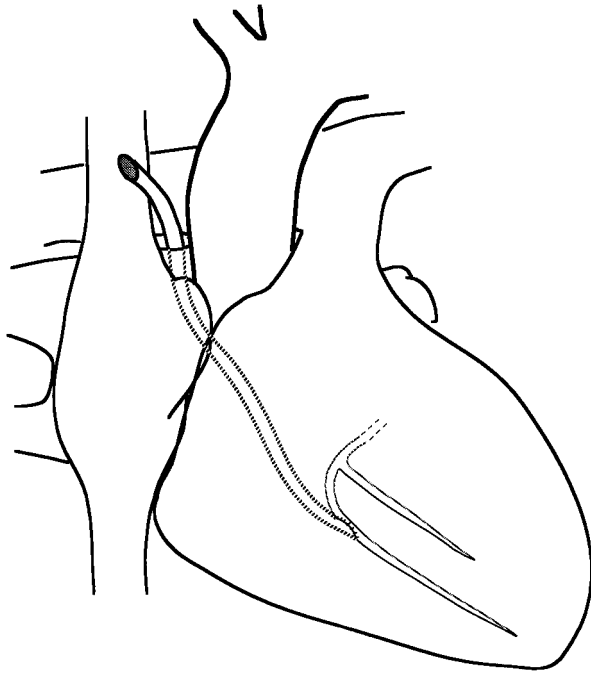


Fig. 1. Aorto-coronary bypass through the oblique sinus to the marginal branch. The graft is passed between the right pulmonary artery and the roof of the left atrium.

obtuse marginal branches is impossible. Therefore, this technique should be applied when the marginal branch is grafted independently.

I have used this technique in five patients without any complications since October 2000. Postoperative angiography showed a patent graft in all cases.

This technique could easily be adopted even after completion of the distal anastomosis if the graft seemed to be relatively short to reach the ascending aorta. Aorto-coronary bypass via the oblique sinus may be a useful option in coronary artery bypass grafting.



Fig. 2. Right anterior oblique view of the post-operative angiography. The radial artery graft is anastomosed to the terminal branch of the circumflex coronary artery. Note the graft running parallel to the target vessel.

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