รายงานผู้ป่วย

Posterior tibial artery : A new alternative graft conduit for redo coronary artery bypass grafts

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A 64 – year – old male had a restenosed coronary artery eight years after a coronary artery bypass graft (CABG) due to needing a redo CABG. The usual graft conduits were not sufficient for his condition. Therefore, a posterior tibial artery was selected and used for graft conduit. This graft conduit had never previously been used. The operation was successful without any morbidity.

Key words : *Posterior tibial artery, Arterial graft conduit, Coronary artery bypass graft.*

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วิชัย เบญจชลมาศ, ศิรชัย จินดารักษ์. Posterior tibial Artery: **เส้นเลือดเส้นใหม่ ที่สามารถเลือกใช้เป็นกร๊าฟในผู้ป่วยที่ทำการผ่าตัดต่อเส้นเลือดหัวใจซ้ำ. จุฬาลงกรณ์เวชสาร** 2543 **เม.ย**; 44(4): 277-81

ผู้ป่วยชายอายุ 64 ปี เคยได้รับการผ่าตัดต่อเส้นเลือดหัวใจไปเมื่อ 8 ปีที่แล้ว ครั้งนี้ผู้ป่วยมีอาการของเส้นเลือดหัวใจตีบอีก และต้องได้รับการผ่าตัดต่อเส้นเลือดหัวใจใหม่ เนื่องจากสภาพของผู้ป่วย เส้นเลือดที่จะนำมาใช้เป็นกร๊าฟโดยทั่วไปที่ใช้กันอยู่มีไม่พอเพียง ดังนั้น posterior tibial artery จึงถูกเลือกและนำมาใช้เป็นกร๊าฟในผู้ป่วยรายนี้ กร๊าฟนี้ไม่เคยมีการนำมาใช้สำหรับต่อเส้นเลือดหัวใจมาก่อน ผลการผ่าตัดเป็นที่น่าพอใจและไม่มีอาการแทรกซ้อนแต่อย่างใด

A large number of coronary artery bypass grafts have been performed in our country. Some of them developed restenosed coronary arteries or stenosed graft conduits. Great saphenous veins, internal thoracic arteries, radial arteries and right gastroepiploic arteries were used for the redo CABG.[1-4] But even with many conduits of choice, sometimes there are insufficient quantities of graft conduits. We report a case of a redo CABG where a posterior tibial artery was harvested for the graft conduit.

Case Report

Eight years prior, a 64 - year - old male had a previous coronary artery bypass graft for angina. At that time, the left internal thoracic artery (LIMA) was grafted to the left anterior descending artery (LAD). An entire great saphenous vein of the right leg and great saphenous vein of the lower half of the left leg were harvested and used for the graft conduits. He was symptom free for eight years. During the last six months he developed dyspnea and his functional class (New York) changed from I to II or III. He underwent a repeat angiography. It showed that the left internal thoracic artery was occluded, the vein graft to the obtuse marginal branch (OM) was totally occluded, the vein graft to the posterior descending artery (PDA) was patent, the diagonal (DG) and posterolateral (PL) branches were stenosed at their origin and the mid right coronary artery and proximal PDA were also severely stenosed. The left ventricular function was fair, as the ejection fraction was 0.45.

He was scheduled for redo CABG and four graft conduits were required. Both radial arteries could not be used for graft conduits because an Allen's test was positive on both sides. Also, the right gastroepiploic artery could not be used for graft conduit because of a previous intra-abdominal operation (gastric operation) 20 years earlier. The right internal thoracic artery and proximal part of greater saphenous vein of the left leg were selected for two graft conduits leaving a need for two other graft conduits. The patient did not have history of diabetes mellitus or claudication of both legs. All distal pulses of both legs were full. Therefore, it was decided to use the left posterior tibial artery for the two graft conduits.

On May 24,1999 he underwent redo CABG through the previous median sternotomy wound under cardiopulmonary bypass with moderate hypothermia. Cold blood cardioplegia was infused antegrade via the ascending aorta and retrograde via the coronary sinus. The saphenous vein graft to the PDA was left intact. With moderate hypertrophy of the left ventricle, the right internal thoracic artery pedicle could not reach the LAD. Therefore, the right internal thoracic free graft was anastomosed to the LAD distal to the previous anastomosis. A saphenous vein graft was anastomosed to the PL branch. A 23 cm posterior tibial artery was harvested. The posterior tibial artery was divided into two segments. The longer one was anstomosed to the DG branch. The shorter one was anastomosed to the distal right coronary artery and the proximal part was anastomosed to the new saphenous vein graft in a Y fashion. All other proximal grafts were anastomosed to the ascending aorta.

The postoperative course was uneventful. There was no wound infection at the sternum or both legs. The patient could walk well without claudication.

Discussion

Currently, radial and gastroepiploic arteries are widely used. But some patients, such as this one, lack graft conduits for redo CABG, thus another source of conduit must be considered. The inferior epigastric arteries could not be selected because both internal thoracic arteries had already been used. In coronary heart disease patients, approximately 16 percent are associated with peripheral artery disease.[5 - 9] The posterior tibial artery has been widely used for vascular flaps in plastic and reconstruction surgery.[10 - 18] This patient did not have diabetes mellitus and also did not have peripheral vascular disease. Therefore, it was decided to use the posterior tibial artery for this patient. The diameter of this artery is than larger the radial artery. The distal diameter was around 2.5 mm. and the proximal diameter was about 3.5 mm. A proximal anastomosis at the ascending aorta is easier when compared to the radial artery. At first, we hesitated to use it because this conduit has not previously been used. But after this case, we believe that this conduit can probably be used in the future, if long - term follow - up demonstrates good function without morbidity of the legs.

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