Case Report

Endoscopic Radial Artery Harvest in the Presence of a Forearm Scar and a Recurrent Lipoma

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Abstract

A 42-year old man with previous history of lipoma excised from the left wrist with recurrence underwent coronary artery bypass grafting (CABG) using complete arterial revascularization. Left radial artery (non - dominant hand) was successfully harvested using endoscopic technique completely avoiding the scar and the lipoma in the patient’s forearm, allowing complete arterial revascularization to be performed.

ABBREVIATIONS

CABG: Coronary Artery Bypass Graft; LIMA: Left Internal Mammary Artery; RIMA: Right Internal Mammary Artery; RA: Radial Artery; ERAH: Endoscopic Radial Artery Harvest

INTRODUCTION

Radial artery is commonly used as arterial conduit in coronary artery bypass graft surgery with higher patency rates than saphenous veins. Recently, endoscopic radial artery harvest has been utilized allowing minimal access, better cosmetic appearance and lower complication rates. The presence of surgical scar and lipoma along the course of radial artery can preclude its harvest by open method. However, endoscopic approach may still be utilized as we report in this case allowing safe radial artery harvest.

CASE PRESENTATION

A 42-year old man presented to our clinic with angina on minimal exertion (Canadian classification class III). The patient had arterial hypertension, hyperlipidemia and a strong family history of ischemic heart disease. He was non -smoker and had no history of diabetes mellitus. He was a manual worker with a dominant right hand. Total arterial coronary artery bypass graft was planned utilizing in situ left internal mammary artery (LIMA), in situ right internal mammary artery (RIMA) and left radial artery (RA). However, the patient had previous left wrist surgery for lipoma excision with recurrence of the lipoma on the wrist along the distribution of radial artery course, potentially complicating radial artery harvest. We elected to proceed with endoscopic left radial artery harvest despite the recurrent lipoma and despite the previous scar to complete the arterial revascularization planned as the patient was young with no significant past medical history.

After median sternotomy, both LIMA and RIMA were harvested skeletonized. Both were used in situ to revascularize the left anterior descending artery and right coronary artery, respectively. Left radial artery was harvested simultaneously using endoscopic technique (VASOVIEW HEMOPRO 2, MAQUET Cardiovascular, Wayne; USA). A modification of the classic incision site for endoscopic radial artery harvest (ERAH) was performed slightly lateral and superiorly to the previous wrist surgery incision. A pneumatic tourniquet was applied to the upper arm and dissection of the radial artery and its branches were performed in a routine fashion. After heparinization, radial artery was removed with an excellent quality and adequate length that permitted its use as sequential anastomosis graft to the two obtuse marginal branches of circumflex artery. Thus complete arterial revascularization was performed using three arterial grafts and the procedure was performed using cardioplegic cardiac arrest with a single aortic cross clamp. Post -operatively, there was no complication at the radial artery harvest site and the innervations to the hand remained intact with no sensory disruption. The patient was discharged home on 6th post-operative day.

DISCUSSION

The radial artery has multiple advantages over saphenous vein grafts and other conduits. It has superior long term patency [1,2] it is of sufficient length to reach distal sites and it is well tolerated when harvested in the absence of contraindications. Multiple tests are used to assess adequacy of radial artery as
a conduit for CABG. These include: Allen test, arterial duplex ultrasonography, thumb systolic arterial pressure measurement & plethysmography [3].

Various contraindications are currently reported to radial artery harvest and use. These include 4: Prolonged Allen test, diffuse intimal or medial calcification, inner diameter less than 2 mm, anomalous radial artery pattern such as high bifurcation of brachial artery, hypoplasia of ulnar artery, absence of reverse flow in radial artery during radial artery compression [4,5]. Other reported contraindications include: hemodialysis or chronic renal failure that might require hemodialysis access, Reynaud disease and recent radial artery catheterization [2]. Traditionally, the non-dominant arm is used for harvesting the radial artery to avoid ischemic and neurological complications in the dominant arm. Although, recently, it was reported that up to 73% of patients with contraindication to RA harvest in the non-dominant arm will also have a contraindication to radial artery harvest in the dominant arm indicating that it might be a bilateral problem [5]. The presence of surgical scar along the course of radial artery can also be considered a contraindication to the harvest as it is technically very challenging to harvest radial artery by the open technique. In addition, the presence of recurrent lipoma along the course of the radial artery adds to the difficulty of arterial harvest. We have modified the technique by performing our incision lateral to the course and beginning more proximal at the wrist. This had helped us achieving excellent conduit harvest with no complications allowing for complete arterial revascularization to be performed for a young patient.

CONCLUSION

This case illustrates that previous wrist surgery and/or presence of a mass at the classical site of endoscopic radial artery harvest is not necessarily a contraindication for ERAH. While the procedure can be challenging, proper planning and careful surgical technique can result in an excellent graft quality and length allowing for complete arterial revascularization to be accomplished.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

AUTHOR CONTRIBUTION

AM and NAS designed the case report and acquired data with drafting article.

AHA and RYT: acquisition of data and drafting the article.

REFERENCES


