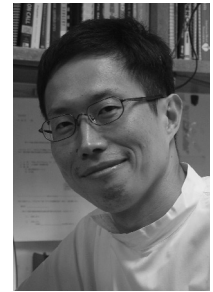


## HOW I DO IT

# Modified Technique for Vein Preparation Using the SaphLITE Retractor and PAS-Port System

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### ABSTRACT

We describe a modified technique of vein preparation using the SaphLITE retractor and PAS-Port aortic connector system in off-pump coronary artery bypass. The combination of these devices can minimize leg wound complication, shorten time to harvest, and enable us to obtain reliable hemostasis.

### INTRODUCTION

Off-pump coronary artery bypass grafting (OPCAB) and total arterial revascularization have been gaining in popularity in recent years [Puskas 2003; Baskett 2006]. In our unit, we believe that the majority of cases can be done by OPCAB; however, the greater saphenous vein (GSV) is still required as a conduit in certain settings. In OPCAB, proximal anastomosis of the GSV is usually performed first, which is different from on-pump coronary artery bypass, because ischemic myocardial area is revascularized immediately after distal anastomosis. In that sense, an aortic connector system is an essential tool in OPCAB.

In this paper, we describe a modified technique of vein preparation using the SaphLITE retractor (Genzyme, Cambridge, MA, USA) [Greenfield 2001] and the PAS-Port aortic connector system (Cardica, Redwood City, CA, USA) [Gummert 2006] in OPCAB. The combination of these devices can minimize leg wound complication, shorten time to harvest, and enable us to obtain reliable hemostasis.

### TECHNIQUE

The SaphLITE retractor and the PAS-Port system were both used for vein harvesting and grafting in 30 consecutive patients who underwent OPCAB in Tokyo Medical

University Hospital in 2006. First, the donor leg was abducted and the vein was isolated through a 3- to 6-cm longitudinal incision in the groin. After creating a tunnel anterior to the vein, the SaphLITE retractor was inserted into the incision and the vein was dissected (Figure 1). A subsequent incision was made just above the medial aspect of the knee. After the side branches of the GSV were identified, they were cauterized and divided 2 to 3 mm away from the main trunk, enabling us to shorten harvesting time. For example, a 20-cm GSV can be harvested within 30 minutes in most cases. Simultaneously, the left internal thoracic artery was harvested in a semi-skeletonized fashion and anastomosed first onto the left anterior descending artery. Thereafter, epi-aortic echocardiography was performed to examine the aortic wall, and proximal anastomosis of the GSV was performed using the PAS-Port system. The branches of the GSV, which were already cauterized, were clipped easily within several tens of seconds in the blood-filled GSV (Figure 2). All branches, even if they were not bleeding at that time, were clipped by way of precaution. Finally, all distal anastomoses were performed in a routine fashion. Postoperative angiography



Figure 1. The SaphLITE retractor blade inserted into the right groin incision. After the anterior part of the greater saphenous vein was exposed, the side branches were cauterized.

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Figure 2. The greater saphenous vein connected to the ascending aorta using the PAS-Port aortic connector system. All branches, which were already cauterized in harvesting, were clipped. Because the greater saphenous vein was filled with blood under arterial pressure, it was easy to clip to the side branches.

was performed in all cases, and the patency rate of the GSV was 100%.

## DISCUSSION

One of the concerns with regard to GSV harvesting in a traditional way is leg wound complication [Greenfield 2001]. To obtain the satisfaction of the patients, we introduced the SaphLITE retractor system as part of a trend toward less-invasive surgery, which we have worked on since the 1990s [Watanabe 1999]. However, we sometimes encounter some difficulty in harvesting the GSV using the SaphLITE; for example, we have encountered side-branch tearing, bleeding, and difficulty in clipping. In those cases, we found that

cauterizing and dividing the branches of the GSV is quite easy and enables us to harvest in a short time, as compared to clipping. Moreover, we found that it is also easy to clip the side branches in the blood-filled GSV after connecting the GSV to the ascending aorta using the PAS-Port system. Usually it takes several tens of seconds to complete clipping, and it can ensure hemostasis because the vein is filled under systolic pressure.

There are several reports describing the usefulness of the SaphLITE retractor; in these reports, the side branches were clipped in harvesting of the GSV. However, to our knowledge, this is the first report describing the modified technique, which was made possible by a combination of both the SaphLITE retractor and PAS-Port system. We believe that this technique is quite useful from a practical viewpoint and can be applied to even an emergency case. Although early-term graft patency was 100%, further clinical trials will be needed to clarify long-term graft patency.

## REFERENCES

- Baskett RJE, Cafferty FH, Powell SJ, Kinsman R, Keogh BE, Nashef SAM. 2006. Total arterial revascularization is safe: multicenter ten-year analysis of 71,470 coronary procedures. *Ann Thorac Surg* 81:1243-8.
- Greenfield GT, Whitworth WA, Tavares LL, et al. 2001. Minimally invasive vein harvest and wound healing using the SaphLITE retractor system. *Ann Thorac Surg* 72:1046-9.
- Gummert JF, Demertzis S, Matschke K, et al. 2006. Six-month angiographic follow-up of the PAS-Port II clinical trial. *Ann Thorac Surg* 81:90-6.
- Puskas JD, Williams WH, Duke PG, et al. 2003. Off-pump coronary artery bypass grafting provides complete revascularization with reduced myocardial injury, transfusion requirements, and length of stay: a prospective randomized comparison of two hundred unselected patients undergoing off-pump versus conventional coronary artery bypass grafting. *J Thorac Cardiovasc Surg* 125:797-808.
- Watanabe G, Takahashi M, Misaki T, Kotoh K, Doi Y. 1999. Beating-heart endoscopic coronary artery surgery. *Lancet* 354:2131-2.