

Immobilization of Ascending Aorta with Starfish Positioner in Off-Pump CABG

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ABSTRACT

We describe an easy and simple way to immobilize the ascending aorta with the Starfish heart positioner during proximal anastomosis in off-pump coronary artery bypass grafting.

INTRODUCTION

Off-pump coronary artery bypass grafting (OPCAB) has been gaining popularity in recent years. OPCAB may decrease the mortality and morbidity related to cardiopulmonary bypass heart surgery. Although some devices, including the heart stabilizer and the heart positioner, have evolved in OPCAB, one of the concerns regarding OPCAB is the quality of distal or proximal anastomoses.

Some surgeons, when performing OPCAB, try to use in situ arterial grafts to avoid the side-biting clamp of the ascending aorta, because they believe that the aortic no-touch technique might decrease the incidence of stroke [Lev-Ran 2005]. In situ total arterial vascularization looks very attractive, but it is sometimes difficult to perform from a practical point of view. In that case, we tend to use a clampless anastomotic system for proximal anastomosis of radial arteries to avoid the side-biting clamp [Medalion 2004], and we found that proximal anastomosis with a clampless anastomotic system, such as the Heartstring system, is often more difficult to make than distal anastomosis with a heart stabilizer because the ascending aorta can move with heart beats.

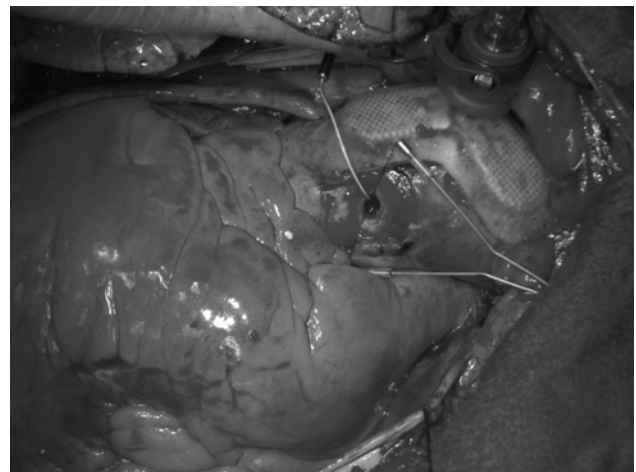
In this report, we describe the simple and easy way to immobilize the ascending aorta with the Starfish heart positioner [Grundeman 2004] during proximal anastomosis of the radial artery in off-pump coronary artery bypass grafting, and evaluated the efficacy of this technique.

Received May 1, 2005; received in revised form September 7, 2005; accepted September 21, 2005.

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TECHNIQUE

The Starfish heart positioner (Medtronic, Minneapolis, MN, USA) was used in 20 consecutive patients who underwent OPCAB in Kanazawa University Hospital in 2005 for anastomoses of free grafts onto the ascending aorta. It was also used for the exposure of the posterior wall in all cases. After harvesting the left internal thoracic artery and/or right gastroepiploic artery, we routinely attached free grafts, including the radial artery and saphenous vein, to the ascending aorta. Epiaortic echocardiography was performed in all cases to examine the aortic wall before manipulation of the aorta. In the cases where we decided to use the Heartstring system for proximal anastomosis, the Starfish heart positioner was employed to immobilize the ascending aorta (Figure). Before employing the Heartstring system (Guidant, Santa Clara, CA, USA), we usually attached this device to the right-sided wall of the aorta just below the brachiocephalic artery because we can place a distance between the device and the anastomotic site, which is usually on the left-sided wall of the ascending aorta for the circumflex artery or the anterior wall near the right atrial appendage for the right coronary artery. It was quite easy to



The Starfish heart positioner was attached to the right-sided wall of the ascending aorta, just above the saphenous vein graft. The Heartstring system was already inserted into the ascending aorta.

anastomose free grafts to the nearly motionless ascending aorta, and we believe the quality of anastomosis may be equivalent to that in the arrested heart. After proximal anastomoses, we completed distal anastomoses, as previously described [Kamiya 2004].

DISCUSSION

As OPCAB has evolved into a widely accepted procedure worldwide, many surgeons may encounter some difficulty in anastomosis because the heart is beating. There are lots of instruments that have been developed recently to immobilize the surgical field, but all of them are made only for distal anastomosis. We recently found that proximal anastomosis was more difficult to make than distal anastomosis in some cases because the ascending aorta can move longitudinally with heart beats. Moreover, we should be careful in the handling of small-bore radial artery because endothelial injury or laceration can occur during anastomosis. In those cases, the Starfish heart positioner is a useful instrument for

obtaining a motionless surgical field in the ascending aorta, and it can be also used for the exposure of the back wall afterwards.

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