

ENDOVASCULAR AND SURGICAL TECHNIQUES

A Method for Reinforcing an Aortic-graft Anastomosis by a Strip of Dacron

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Introduction

In surgery for abdominal aortic aneurysm (AAA) the posterior aortic wall is commonly left intact when suturing the proximal aortic-graft anastomosis by the inlay technique. Often there is a well-developed “lip” of the posterior aortic wall which lends itself well for this method, but sometimes the aneurysm tapers down like a funnel. This makes it more difficult to get good and secure suture bites of the posterior aortic wall.

In 1986 when operating on a ruptured aortic aneurysm I accidentally put some of the stitches in the posterior wall into a piece of rubber tubing that was used to pull the posterior aortic wall forwards. This was discovered only when the anastomosis was completed and I had to leave a small piece of the tubing behind, fortunately with no long-term ill-effects since the patient lived for another 6 years. However, this experience led me to develop an alternate method which has proven to be quite useful.

Technique

The aorta is dissected below the renal arteries and a curved vascular clamp is passed behind the aortic neck to pull a thin (4 mm) rubber tubing behind it. By elevation of the tubing and further dissection, space is created for the clamp proximal to the tubing, usually a right-angled, spoon-shaped DeBakey clamp. After clamping, opening of the aorta and oversewing the lumbar arteries, the anterior aortic wall is divided at a suitable level but the posterior wall is left intact. A strip approximately 3 mm wide of the body of the

Dacron graft is cut as a spiral from the graft. The strip should be approximately 20 mm longer than the transverse measure of the flattened aortic wall. The strip is secured to the ends of the rubber tubing by sutures (Fig. 1(a)) and is rotated down so that it is located behind the aorta. A little tension is applied to it by securing the tubing to a convenient object outside the wound, usually the retraction device. The posterior row of 3-0 polypropylene sutures are placed using the parachute technique including the Dacron strip (Fig 1(b)). The anterior side of the anastomosis is sutured without reinforcement. After completion of the anastomosis the strip is cut where it emerges at the sides of the aorta.

Results

I have utilised this method for 36 aortic anastomoses and rarely need to put any extra stitches on the posterior side of the anastomosis. No obvious drawbacks such as venous damage have been observed and little time is needed for inserting the strip.

Discussion

Other methods for reinforcing the aortic-graft anastomosis have been described such as pledget sutures or pulling a sleeve of graft over the anastomosis.¹ The latter method requires the division of the posterior aortic wall and requires a long aortic neck. Another technique that has been used is an intraluminal Dacron

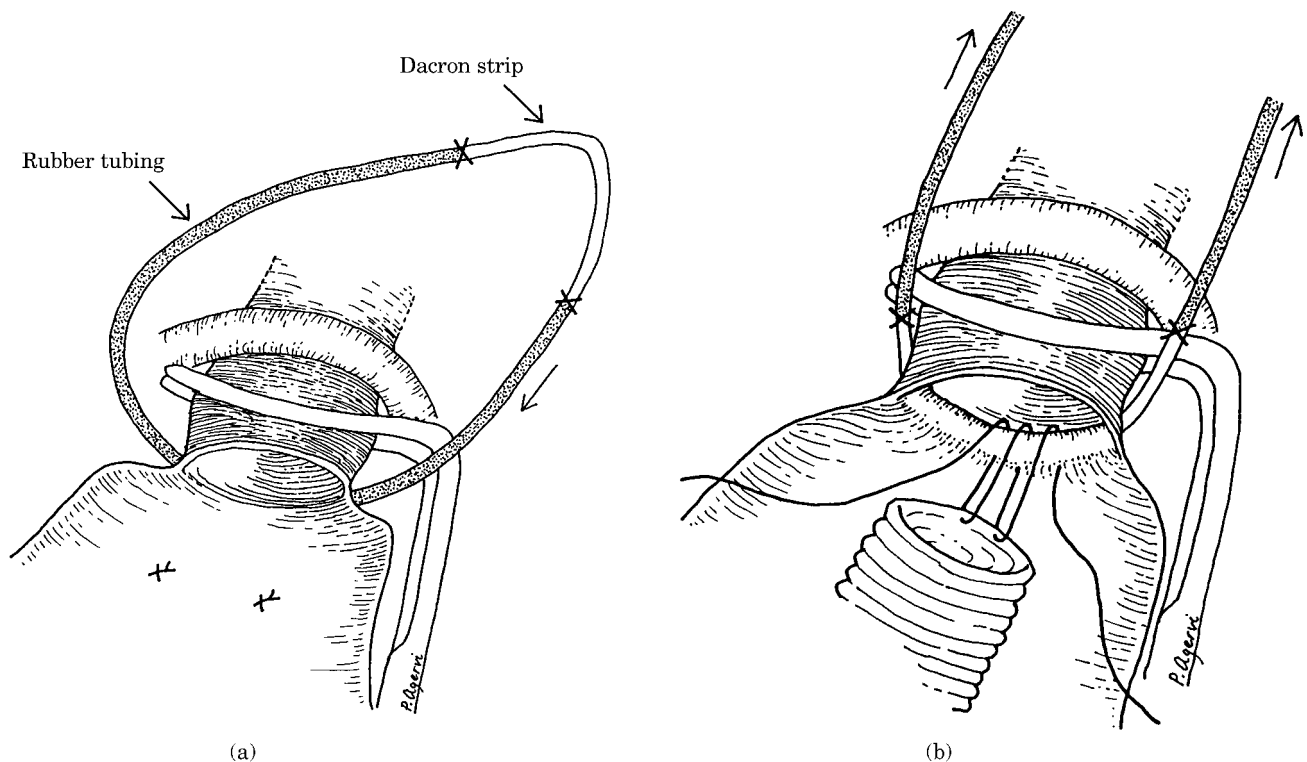


Fig. 1. (a) A strip of Dacron cut from the body of the graft has been secured to the thin rubber tubing with sutures and the Dacron strip is rotated down behind the aorta. (b) By applying a little tension on the rubber tubing the posterior wall of the aorta is elevated and the posterior row of sutures is made taking bites deep enough to include the Dacron strip.

graft with an inner stiff-grooved tube secured by tying a strip around the aortic wall resulting in a non-sutured anastomosis,² but this method also requires an aortic neck of unusual length, and it has predominantly been used in thoracic aortic aneurysm.^{3,4} Other rather complex methods have been described to be used in special situations such as juxtarenal aneurysms.⁵ The method described here is quite simple and results in an anastomosis which rarely requires any additional sutures.

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