

Three-dimensional Fixation for Spliced Vein Anastomosis

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Introduction: We describe a new technique of three-dimensional fixation for spliced vein to vein anastomosis.

Report: A rig is made from two EASI — Pads with a square hole made in the middle and three cuts made on the outer edges for the stay sutures; a fourth stay suture is held an artery clip. The two ends of the spliced vein to be anastomosed are apposed using four quadrant stay sutures to aid anastomosis with minimal handling.

Discussion: This technique simplifies the technical aspects of performing a vein-to-vein anastomosis, allowing reduced handling and improved accuracy of anastomosis.

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INTRODUCTION

There have been various additions and modifications to vascular anastomotic techniques initially described by Alexis Carrel more than 100 years ago. When consideration is given to utilization of spliced vein for arterial reconstruction, the difficulty of anastomosing vein to vein is often overlooked. Because of its delicate thin wall, the vein collapses easily, making a three-dimensional (3D) operation into a two-dimensional (2D) one, posing technical challenges for three reasons.

1. The two ends of vein-to-vein anastomosis are mobile, requiring stay sutures to appose the ends.
2. Performing the vein-to-vein anastomosis on collapsed 2D vein ends requires extensive handling of the vein, with the inherent risks of intimal damage.
3. Because of the nature of the veins, despite simple stay sutures, the lumen of each vein end to be anastomosed collapses, posing the risk of catching the back wall of the vein in the anastomosis

Furthermore, in the current surgical climate there may not always be an experienced operative assistant to aid with this anastomosis.

We describe a new technique using a simple 'rig' to stabilize the vein ends to be anastomosed with four stay sutures, giving rise to a 3D fixation process (Fig. 1A,B), not only improving on the technical aspects of the anastomosis but also resulting in intraoperative time saving.

REPORT

The rig is made from two EASI — Pads (Adhesive Sharps Disposal, Leonhard Lang GmbH, Innsbruck, Austria) rotated 180 degrees to each other allowing the adhesive sections to fix the pads to each other and to the work base where the anastomosis is being performed (Fig. 1A,B). A square hole is

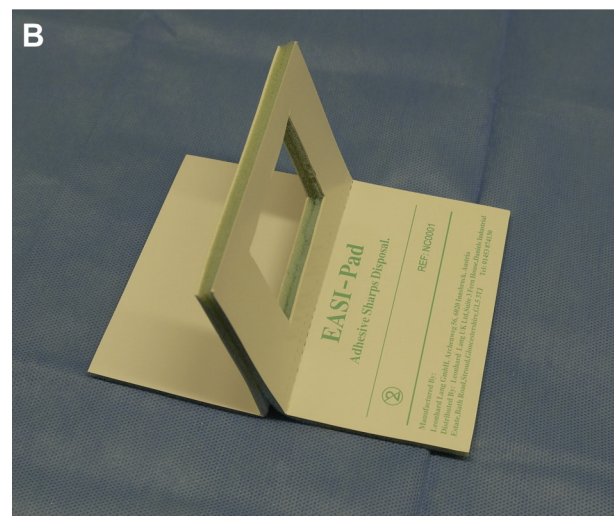
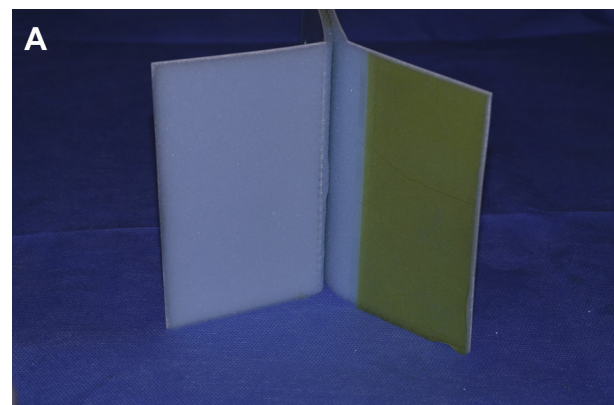


Figure 1. The vein rig made from EASI — Pad ready to be stuck on to the base (A) and the completed rig (B).

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Figure 2. Completed anastomosis with stay sutures 1, 2, and 3 (SS1, SS2, and SS3) held in place by passing through oblique cuts (red arrows) on the outer aspect of the rig and stay suture 4 (SS4) held in place by artery clip. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

cut in the centre and three oblique cuts are made in the centre of each outer edge of the lateral and superior sides of the square through which the stays can be held securely (Figs. 1B and 2).

The two ends of the spliced vein to be anastomosed are apposed using four quadrant stay sutures (Fig. 2). These sutures are then held in the three corresponding cuts in the outer square of the rig with the fourth and lower stay held using a rubber shod. This apposes the two ends of the vein without the resulting collapse of the lumen and allows for stability of the two ends of the vein. Ultimately, it produces a stable 3D operating field for vein to vein anastomosis.

CONCLUSION

This technique, using readily available materials, simplifies the technical aspects of performing a vein-to-vein anastomosis, allowing reduced handling of the vein and improved accuracy of anastomosis, ultimately reducing time taken to perform the anastomosis.

CONFLICT OF INTEREST

None.

FUNDING

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