




HOW TO DO IT **GENERAL RECONSTRUCTION**

How to ensure a clear and dry microsurgical field: a pragmatic microsurgical suction mat

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Introduction

Microsurgery is integral to the current standard of care for a range of clinical indications in plastic surgery. Optimal visualisation of the vessel is necessary for accurate anastomosis and is thus important for free tissue transfer outcomes. Obstruction of the microsurgical field due to pooling of blood or irrigation fluid can make this process unnecessarily difficult. While irrigation is important to prevent tissue desiccation, excessive fluid in the field can lead to the adherence of suture material, which can slow down microsurgery.

Various microsuction devices have been developed to keep the surgical field dry and improve visibility. We developed a novel suction mat with a blue background that is easy to assemble and uses equipment in frequent use during microsurgery. Our suction mat aims to help create a surgical field clear of blood while maintaining sufficient moisture to prevent vessel desiccation. The mat is sufficiently pliable to prevent trauma to delicate vessels and generates good colour contrast with vessels and other critical structures.

Mat construction

Equipment

1. Paediatric feeding tube, size 5, Unomedical, catalogue number 12136182 (Convatec Limited, Flintshire, Chester, UK).
2. Surgical patty, size ½" × 1", Codman, catalogue number 80-1402 (Integra LifeSciences Corporation, Princeton, New Jersey, USA).
3. Surgical glove, size 8, Biogel Pl micro indicator underglove, Mölnlycke, catalogue number 48980 (Mölnlycke Health Care Pty Ltd, Belrose, NSW, Australia).
4. Titanium ligating clips × 4, size medium, Weck Horizon Metal Ligation System, catalogue number 002200 (Teleflex Medical, Mascot, NSW, Australia).

Assembly

The suction mat is constructed by sandwiching a paediatric feeding tube between a surgical patty and a small polyurethane rectangle cut out of a blue surgical glove (trimmed to match the surgical patty in size). The four corners of the construct are then clipped using medium ligating clips to secure the 'sandwich' and the paediatric feeding tube is attached to the suction device (**Figure 1**).

The mat is placed with the surgical patty side facing down and the blue glove facing up to act as a background sheet for the anastomosis (**Figure 2**). The assembly time for this suction mat configuration averages one minute.

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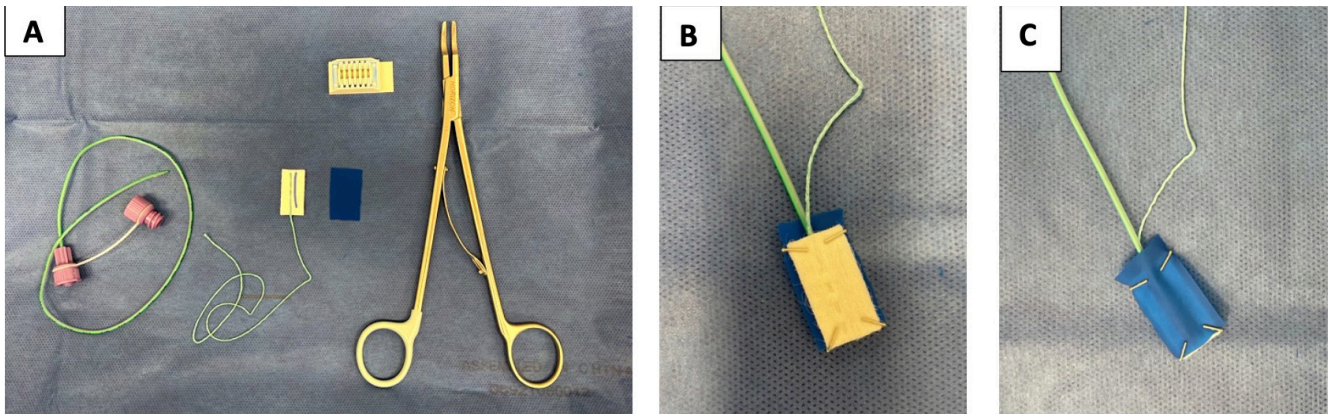


Fig 1. (A) Components of the microsurgical suction mat including paediatric feeding tube, surgical patty, blue polyurethane glove cut-out and medium-sized ligating clips. (B) Bottom side of suction mat. (C) Top side of suction mat

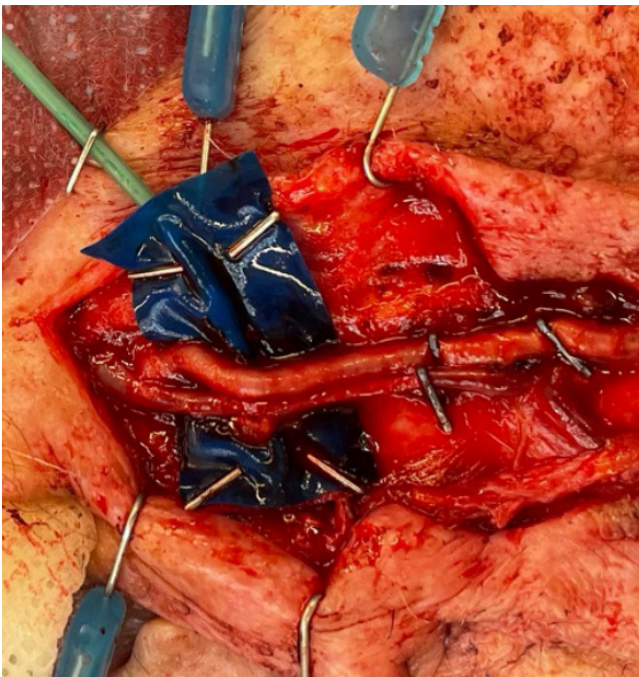


Fig 2. Microsurgical suction mat in use for vessel anastomosis

Discussion

This setup provides continuous suction from the bottom side of the mat to prevent blood or irrigation fluid pooling in the microsurgical field. The upward-facing impermeable polyurethane blue glove retains some moisture on the top surface to prevent vessel desiccation. We have found that this setup helps achieve a good balance between keeping the vessels moist while keeping the rest of the microsurgical field relatively dry. The suction mat is easy to assemble, with most

components available at public hospitals within Australia and New Zealand.

A blue background was chosen because blue and green hues provide optimum visibility in microsurgery.¹ Other colours, such as pink or yellow, can lack contrast with blood, muscle, capillaries and fat in the microsurgical field. As such, blue and green are ideal colours for background sheets.

We have used this suction mat configuration for over 50 operations with consistent success. Optimising the operative field is key to success in microsurgery. This suction mat provides a practical solution to achieving a bloodless field with added colour contrast to aid vessel visualisation without concern for vessel desiccation.

Patient consent

Patients/guardians have given informed consent to the publication of images and/or data.

Conflict of Interest

The authors have no conflicts of interest to declare.

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Reference

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