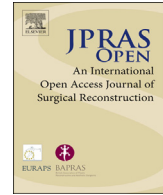




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Case report

A novel technique: Subatmospheric pressure wound therapy for treating venous congestion of replanted digits

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ABSTRACT

Venous congestion remains to be a major factor in causing digit replantation failures. The established solutions are: use of medical leech, local application of heparin gauze, and continuous nail bed massage. However, each method has its drawbacks. In theory, subatmospheric pressure wound therapy promotes continuous bleeding from the venules of the applied area, resulting in the relief of congestion. We applied subatmospheric pressure wound therapy to two replanted fingers of which venous congestion was noted shortly after the operation. The therapy was applied to each patient for one week. Both replanted fingers survived. No complication was noted.

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Introduction

Many treatments have been advocated for the management of venous congestion of finger replantation. However each option has its own drawbacks. In theory subatmospheric pressure wound therapy (SPWT) can promote continuous bleeding from the venules of the stump, relieving venous congestion. We propose the use of subatmospheric pressure wound therapy as a treatment option for venous congestion by presenting the outcome of our two cases.

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Cases

In December 2012, a 33 years old gentleman was admitted for traumatic left thumb amputation at the inter-phalangeal joint level after being caught in a filing cabinet. Soft tissue contusion was noted at both stump ends. Emergency replantation was attempted with a cold ischaemic time of 6 hours. Inter-phalangeal joint fusion using Kirschner wire was performed. Only one artery and one very small vein (<2 mm) were anastomosed as additional vein with satisfactory quality at the distal stump could not be found. Signs of venous congestion were noted 1 hour post-operatively. As medical leech was not readily available, SPWT was applied to the stump after obtaining consent from the patient. SPWT was performed as follow: the replanted site, while keeping the stitches intact, was first dressed lightly with heparin saline gauze, and two layers of porous sponge. Catheter(s) with multiple side holes was then placed in-between the two layers of porous sponge, either at the dorsal or volar aspect of the finger, across the replanted site, away from the vascular anastomosis. The surrounding skin was dried and the entire dressing was sealed by adhesive plastic dressing to achieve a SPWT environment (Figure 1). The catheter was connected to the wall suction at a pressure of 120 mmHg. The finger tip, being covered by transparent adhesive dressing only, was used for circulation monitoring. Lamp therapy which was used to keep the replanted finger warm and to enhance the vasodilatation was applied for seven days and intra-venous Dextran was given for the initial three days. A course of broad spectrum antibiotic was given in order to prevent infection. Whenever a loss of SPWT seal was noted, dressing was changed by either the surgeon or designated nursing staff. The catheter was found to be blocked more easily in the early post-operative days and was changed daily for the first four days. It was then left intact. The circulation of the replanted digit was stable after seven days of SPWT. 50 ml of blood loss was noted intra-operatively and a total of 50 ml of blood was recorded in the suction bottle during the procedure of SPWT. The patient's vital signs remained stable. No blood transfusion was needed. The replanted



Figure 1. Subatmospheric pressure wound therapy after replantation of left thumb.

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