

A Novel Technique of Nerve Grafting without Flap Elevation in Post Electric Burn Wrist Defect

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Nerve reconstruction is a priority after soft tissue reconstruction with a free/pedicled flap in acute electrical burns of hand. Autologous cable nerve grafting is the method of choice of nerve reconstruction in such cases. Successful nerve graft revascularization is a significant determinant of the quality of nerve regeneration.¹

A 32-year-old patient with high voltage electrical burn of right hand underwent groin flap cover for the soft tissue defect over right wrist region. On exploration, the nerve gap was 15 cm (→Fig. 1). A sural nerve graft was harvested for achieving nerve continuity. A tunnel was made in the subcutaneous plane of the flap from the proximal and distal incisions with a tendon tunneler, and a 14 Fr Ryle's tube was pulled through the tunnel (→Fig. 2). The tube was cut 3 cm longer at both ends. A 3-0 silk suture was passed across the Ryle's tube with the help of a probe and its proximal end was tied to the reverse end of the sural nerve graft. The nerve graft was tunneled across the flap within the Ryle's tube gently (→Fig. 3). And the Ryle's tube was pulled out from the distal end after securing the proximal end of the nerve. The nerve ends were coapted using 8-0 nylon sutures and supplemented with fibrin glue (→Fig. 4). The wounds were closed in layers and the limb was immobilized for 6 weeks. One-year follow-up of the patient showed Medical Research Council (MRC) grade III sensory recovery and is planned for tendon reconstruction.

The advantages of this technique are as follows:

Minimally invasive, avoid tractional injury during graft handling, nerve graft placement in a well-vascularized bed rich in adipose tissue, easier monitoring with Tinel's sign, tension-free proximal and distal nerve ends coaptations, multiple tunnels adequately spaced for multiple cable grafts help to avoid ischemia in the core of bundle of multiple cable grafts, tendon reconstruction can be planned at a later stage in a deeper plane without disturbing the nerve continuity,

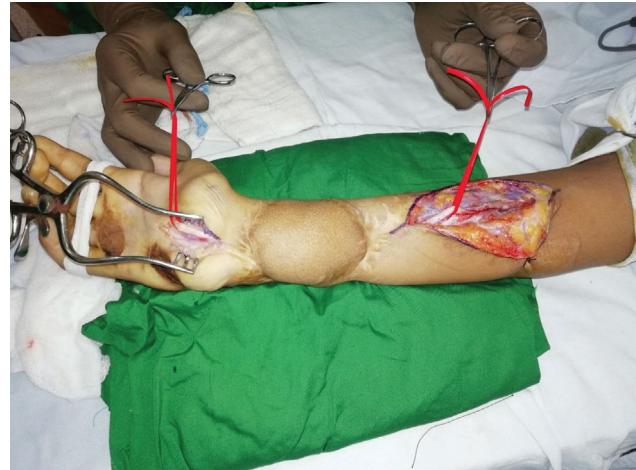


Fig. 1 The proximal and distal ends of median nerve explored by giving incision proximally and distally to the flap.



Fig. 2 Ryle's tube in the tunnel with probe and carrier suture.

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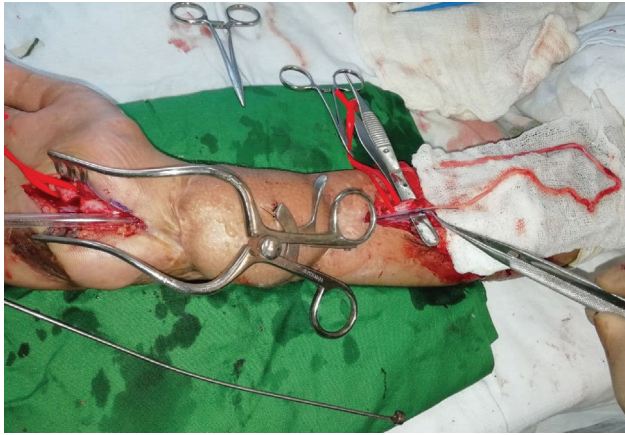


Fig. 3 Nerve graft passed through the Ryle's tube atraumatically.

and a potential advantage of availability of dermis, adipose tissue-derived stem cells, and local nerve regeneration promoting factors.^{2,3} However, this technique is only possible in a case where composite defects are reconstructed with flaps having thicker subcutaneous layer.

An easy, quick, and less invasive technique of nerve grafting, in a case of high voltage electrical contact burn of hand reconstructed with skin flaps, has the potential to give better outcome of nerve reconstruction with graft in optimum unscarred milieu.

Conflicts of Interest

None.



Fig. 4 Nerve graft in situ with both ends coapted to the ends of the median nerve.

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