

# Microsurgery in the urgent and emergent management of the hand

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**Abstract** Appropriate use of microsurgical techniques in the emergency management of injured hands increases the salvage rate of complex upper limb injuries. Over time, the indications for replantation, both major and minor, have expanded and techniques refined to get better functional outcomes. The wide choice of free flaps available has made primary reconstruction possible to obtain a good functional and aesthetic outcome. The benefits microsurgery offers in the emergent management of the injured hand are now firmly established. The challenge is to create and maintain centers which can provide around-the-clock, high quality microsurgery services. The issues of adequate training opportunities, obtaining adequate work load to maintain high skill levels, attracting talent into the field are the challenges faced in maintaining high levels of service. In the developing countries, in addition to these issues, increasing the awareness of the potential of microsurgical services among the medical personal and the public has to be addressed.

**Keywords** Hand Injury management · Digital replantation · Major replantation · Free flaps for hand · Replantation center

## Introduction

The introduction of microsurgery into hand surgery practice is an important advance that resulted in the salvage of many severely injured upper extremities and improved the treatment

outcome. Microsurgery made possible the replantation of totally amputated hands and fingers, and improved the survival of compromised tissues by revascularization. Early or immediate cover for large soft tissue defects became possible by free flaps. The capacity to provide immediate soft tissue coverage facilitated primary reconstruction of injured structures thereby reducing the length of hospital stay and cost of care [1, 2] Fig. 1.

Now that the advantages of microsurgery in the acute management of hand trauma have been well established, the challenge has shifted to the provision of around-the-clock microsurgical services to patients at a time when they need it the most.

The outcome in the management of any injury depends on the interplay of 3 variables. These are the nature of injury, factors related to the patient, and factors related to the surgical team. Of the 3 variables in this equation, the surgeon has no control over the first 2 factors, and what ultimately tilts the balance toward salvage, or determines the functional outcome are: the surgeon's training and capability, his/her attitudes, and the availability of adequate infrastructure.

In this article, in addition to dealing with the current evidence on the role microsurgery in hand injury management, the role of establishing microsurgical centers and training will also be discussed.

## Replantation

### Fingertip replants

Conventionally, the success rate and the functional outcome of replantation of distal digital amputations are regarded with much skepticism with revision amputation and closure of the amputated stump often being suggested as a simpler option. There is enough evidence to counter this view. Sebastian and

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