Secondary Interventions for Mutilating Hand Injuries

Anthony Foo, MD*, Sandeep J. Sebastin, MD

KEYWORDS

• Mutilating hand injures • Mangled hand • Hand reconstruction • Secondary reconstruction

KEY POINTS

- Secondary procedures are frequently required to improve function of reconstructed mutilated hands.
- They should be tailored to patients' unique vocational, functional, and recreational requirements.
- Secondary procedures may be broadly divided into obligatory procedures and discretionary procedures.
- Obligatory procedures refer to interventions done to complete staged reconstructions or address complications arising from primary procedures.
- Discretionary procedures refer to interventions done to improve function or appearance of the hand. They should only be undertaken when the patient has been psychologically and physiologically optimized.

INTRODUCTION

Successful restoration of good hand function at the primary admission for a mutilating hand injury is uncommon. In most cases, primary treatment aims to salvage available functional units with staged reconstruction in mind.[1–3] The indications for secondary interventions (**Table 1**) may be broadly divided into obligatory and discretionary procedures. Obligatory procedures are required to complete staged reconstructions and address complications. These interventions are time-sensitive and are undertaken based on timeline of tissue healing. Discretionary procedures, however, are undertaken to improve function and/or enhance appearance of the reconstructed hand. Outcomes of these procedures depend largely on patient expectation and motivation. It is therefore important to psychologically and physiologically optimize patients before considering discretionary procedures.

OBLIGATORY SURGICAL PROCEDURES

Completion of Staged Primary Procedures

Primary reconstruction in mutilating injuries is aimed at providing expedient skeletal stabilization, microvascular anastomosis, repositioning of functional units, and soft tissue cover of critical defects. In most situations, this entails use of external fixators, interosseous wiring, and flap coverage. As patients recover, some of the provisional measures can be modified for comfort and mobility.

Soft tissue procedures

Large soft tissue defects are usually covered with a combination of flap and skin graft. Critical defects exposing neurovascular structures, webspaces, and joints are best covered with flap, whereas other areas may be covered with skin graft (**Fig. 1**). Tissue quality of noncritical regions may be improved with the use of negative pressure wound therapy and

Department of Hand & Reconstructive Microsurgery, National University Health System, 1E Kent Ridge Road, Singapore 119228, Singapore
* Corresponding author.
E-mail address: anthony_foo@nuhs.edu.sg

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Table 1
Indications for secondary reconstruction in mutilated hands

		Soft Tissue Procedures	Bone and Joint Procedures
Obligatory procedures	Complete staged procedures	Skin grafting/flap division Tendon grafting Nerve grafting	Conversion of ex-fix Bone grafting Arthrodesis
	Address complications	Infection Scar contracture and adhesions Neuropathic pain and neuroma	Osteomyelitis Joint stiffness Nonunion and malunion
Discretionary procedures	Augment function	Tendon transfer Toe transfer Amputation Hand transplant	
	Enhance appearance	Flap debulking Scar revision Tissue expansion Prosthesis	

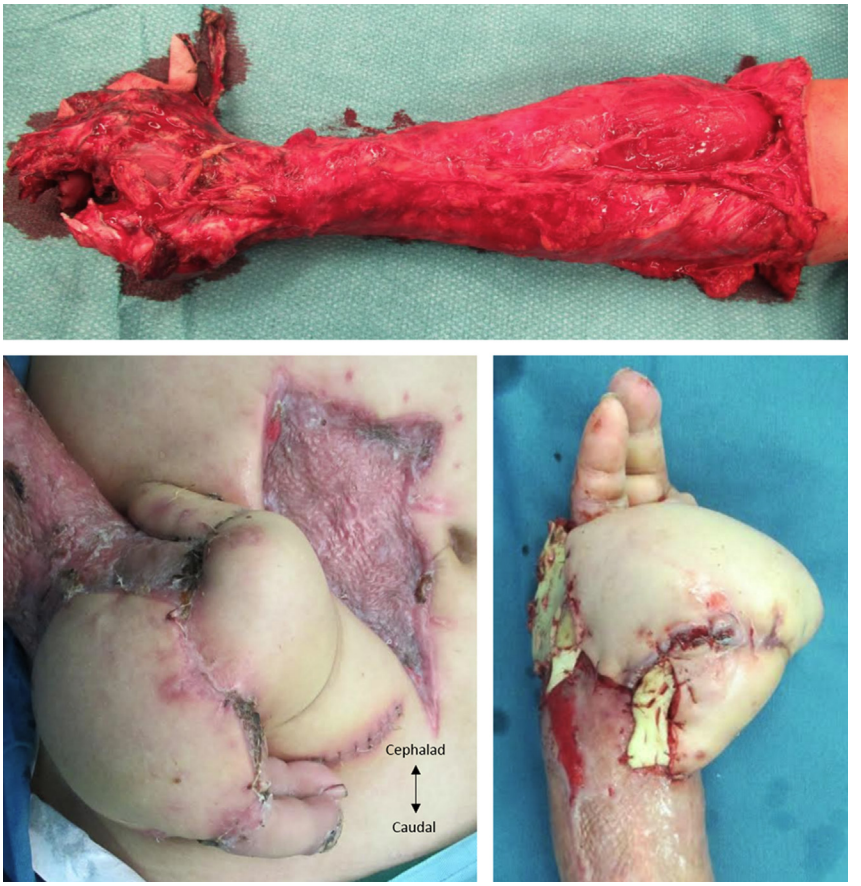

Fig. 1. Defect initially covered with skin graft can be excised and resurfaced with groin flap in preparation for second stage procedure. (*Courtesy of* Dr A. Lahiri, MD, Department of Hand & Reconstructive Microsurgery, National University Health System, Singapore.)

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