

Case Report

Salvage of thumb in a crush injury by a groin flap

Prachi P. Salunke*, Pushkar L. Davhale, Nayan R. Khedkar, Ananta A. Kulkarni

Department of Surgery, BAVMC, Pune, Maharashtra, India

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***Correspondence:**

Dr. Prachi P. Salunke,

E-mail: prachi.salunke1698@gmail.com

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ABSTRACT

The primary function of the hand and fingers is to grasp or manipulate objects of any size or shape with fine touch, strength and the required amount of pressure. The thumb plays a crucial role as unlike other fingers it can work opposite of all digits and carry functions like pinching and grasping, which most of the human activities are dependent on. Crush Injuries of the hand can be severe which can lead to amputation of the digits. Hereby discussing a case of 54-year-old gentleman who met with a road traffic accident with resultant crush injury to the right hand and thumb managed by microsurgery using a groin flap reconstruction of the thumb followed by skeletal stabilization of right-hand digits. The following case report is a concise approach to manage a crush injury with restoration of maximal function of the thumb using a groin flap.

Keywords: Skin graft, Groin flap, Revascularization

INTRODUCTION

The primary function of the hand and fingers is to grasp or manipulate objects of any size or shape with fine touch, strength and the required amount of pressure.¹ The thumb plays a crucial role as unlike other fingers it can work opposite of all digits and carry functions like pinching and grasping, which most of the human activities are dependent on.^{1,2} The hand is a complex organ which exhibits great flexibility and mobility with tissues, vessels, nerves, muscles meticulously packed in a small space with thumb as the 'master digit'.¹

Successful thumb reconstruction must therefore result in a construct that has sufficient length to oppose the remaining fingers; mobility of all joints involved in opposition and flexion; adequate sensation for pulp pinch; and finally acceptable aesthetic appearance.^{2,3} The defects created on the hand by skin-loss require immediate cover, in many cases with a distant flap sufficiently large to give total cover of the defect. In cases with limited resources and lack of availability of microsurgery groin flap is used in reconstructive surgery as a reliable and rapid technique to close the soft tissue defects.³ We present you a case report

of a 54-year-old gentleman who met with a road traffic accident with resultant crush injury to the right hand and thumb managed by microsurgery using a groin flap reconstruction of the thumb followed by skeletal stabilization of right-hand digits.

CASE REPORT

54-year-old gentleman with alleged history of road traffic accident was rushed to the emergency department of a tertiary hospital with a crush injury on the palmar aspect of right hand was run over by the wheels of a tempo. Fractures were detected on the metacarpals with avulsion of right hand and a cyanosed thumb. On admission and clinical examination except for tachycardia, patient was vitally stable. No abnormality was detected in his systemic examination.

Upon local examination there was avulsion injury over palmar aspect of right hand with oedema, erythema and tenderness over the palmar aspect of the right hand with restricted movement of digits of right hand. No evidence of active bleeding. Right hand radial ulnar pulses and sensations over radial ulnar aspects normal.

Radiologically, fracture of metacarpal with proximal phalanx of right thumb. After initial resuscitation patient was planned for initial skin debridement and k-wiring of metacarpal and proximal phalanx of right thumb fracture followed by right pedicled groin flap.

The flap was divided after 3 weeks and thumb survived and defect over right palm was managed skin grafting. Distal part of the flap was necrosed for which skin grafting was done. After 6 months flap is settled, thumb and fingers have reasonable movements and the hand is functional.



Figure 1: Right hand preoperative view.



Figure 2: Intraoperative view of right pedicled groin flap.



Figure 3: After dividing the flap the remnant defect over right palm covered with split skin grafting.



Figure 4: Post-operative view of the hand and the flap.

DISCUSSION

In this case report, importance of choosing a reconstructive technique to help restore maximal function of thumb and hand in the shortest period of time and to prevent morbidity as well as disability of the patient. We highlight the importance of using a pedicled groin flap for thumb reconstruction if distal stump is available and stabilizing the bone with external fixation.

The groin flap, supplied by the superficial circumflex iliac artery system, was defined by McGregor and Jackson in 1972.⁵ Free groin flap was first used in 1973 by Daniel and Taylor. In cases with co-existent soft tissue and bone defects, groin flap is an easy and reliable option for composite tissue transfer.^{5,6} Historically the groin flap was the first cutaneous flap to be shifted from an experimental background to a clinical background. Circulation to the extended portion is maintained by the communicating branches between the lateral femoral cutaneous artery and Superficial circumflex iliac artery.⁶

CONCLUSION

With the increasing incidences of free tissue transfer flaps that provide excellent coverage for hand defects, we should also take into consideration the long operating time with the risk of post-operative complications.⁶ Groin flap has a valuable place in the reconstruction surgery as it is feasible and a reliable option.⁷

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