

Recent trends for reconstruction of post traumatic dorsal hand defects

Systematic Review for comparison between radial forearm flap and posterior interosseous flap

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Abstract

Background: The hand is a very special organ , with unique functions and versatility in the human body. Our hands are pivotal in manipulating our environment, receiving feedback from our surroundings and communicating our unspoken words by gestures. Thus the loss of the hand is a tragic, disfiguring event with profound personal , vocational , financial and social implications. The dorsal skin is more vulnerable to injury than volar skin, due to it's thinness, it's loose adherence to the underlying structures and due to the constant flexed position of the hand in rest and also in function. The main advantages of skin grafts are that they are rapid and easy procedures. The main disadvantages are their limitation to well vascularized bed with no exposed tendons, bone. Local axial flap have the advantages of having good vascularity, wide arc of rotation , applicability in exposed tendons and bones , allows early rehabilitation and better cosmetic appearance. The distant flaps have the advantages of being easy and rapid technique ,well established applicability for coverage of both dorsal and palmar surfaces. Their main disadvantages are the multistaged procedure and prolonged period of immobilization. Free flaps are alternative options to cover soft tissue defects of the hand in complex injuries , however free flap coverage is a time consuming procedure requiring much efforts and high costs and needs surgical team experienced in microsurgical techniques. Proper post-operative physiotherapy and rehabilitation are also very essential for improving the functional outcome of the hand and also ensures good results . Despite that every method has it's advantages and disadvantages , all methods are important and the hand surgeon should master the different techniques so as to choose the best option for every patient.

Purpose: Radial forearm and posterior interosseous flaps are the two principle flaps used to reconstruct the dorsal hand soft tissue defects. However, each flap has its merits and pitfalls in terms of the feasibility and length of vascular pedicle, ease of harvest, arc of rotation, and the average percentage of success. Therefore, this study was designed to systematic review of the comparison between the two flaps.

Methods: Abstracts of articles identified using the search strategy following a pre set inclusion and exclusion criteria and involving the management of dorsal hand

defects by Radial forearm flap and/or posterior interosseous flap was reviewed, and articles that appear to fulfil the inclusion criteria were retrieved in full data . Two review authors will independently extract the data from eligible studies using a standardized data extraction form. Any duplicated studies will be removed. Data extracted from each paper was in the following items and recorded if mentioned : Study type(Clinical and/or anatomical), Number of patients, type of flap used (some studies used different types of flaps including those of our review topic) . Blood supply of the flap used . Demographic data as : sex and age, mechanism of injury (trauma, burn , post tumor resection) ,receiver site (Dorsum , palm, digits, web spaces, etc.),size (flap dimensions), adjacent injuries ,prior vascular integrity , operative time, follow-up period, healing ,delayed healing , flap loss (total or partial), further surgery required, scar , contour of the flap , complaints of patient subjective satisfaction, comorbidities , complications DASH score if mentioned ,donor site closure (directly or by STSG/FTSG).

Results: Eligible papers for radial forearm flap were 36 studies and for posterior interosseous 44 studies case reports and series were included in the review. An excel sheet was made summarizing the collected findings for radial forearm and posterior interosseous flap separately. In studies where full article was not available, results were extracted from abstracts.

Conclusion: Both the Radial forearm flap and posterior interosseous flap have been two mainstream forms of reconstruction of dorsal hand defects for decades . the article is to highlight the pros and cons of each through previously done randomized control trial using both techniques in eligible candidates.

Keywords: hand surgery - radial forearm flap - posterior interosseous flap - dorsal hand defects

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List of Abbreviations

DASH : Disability of arm, hand and shoulder

MCP : Metacarpophalangeal

RRFF : Reverse radial forearm flap

SEPA : Superficial external pudendal artery

VAC : Vacuum-assisted closure

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Introduction





Aim of the Work





Chapter (1):

Anatomy of dorsum of the hand





Chapter (2):
Decision Making





Chapter (3):

Introduction to Different Modalities for Reconstruction of Dorsal Hand Defects





Chapter (4):

Different Modalities for
Reconstruction of Dorsal
Hand Defects





Chapter (5):

Radial Forearm and
Posterior Interosseous
Flaps





Chapter (6): Discussion

