

**REVIEW AND COMPARATIVE STUDY OF VARIOUS  
FLAPS USED IN RECONSTRUCTION OF  
CUTANEOUS HAND DEFECTS**

Thesis

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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

## " وَقُلْ رَبِّ زِدْنِيْ عِلْمًا "

صدق الله العظيم

( سورة طه الآية ١١٤ )



**Dedicated To:**

**MY FAMILY**

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## CONTENTS

INTRODUCTION .....	( 1 )
AIM OF THE WORK .....	( 3 )
REVIEW OF LITERATURE	
* Anatomy .....	( 4 )
* Classification of the hand surface into units ...	(32)
* Cutaneous defects of the hand .....	(34)
* Skin cover of hand defects .....	(37)
MATERIALS AND METHODS .....	(117)
RESULTS .....	(126)
DISCUSSION .....	(131)
SUMMARY AND CONCLUSION .....	(144)
REFERENCES .....	(146)
ARABIC SUMMARY.	

# INTRODUCTION

## INTRODUCTION

Man dominates over other creatures by his mind and his hand. The hand is the main organ for touch and the tool by which, man has dealt with the surrounding environment mastering the world around.

Since infancy, touch is used to discover the surrounding world and by parent's touches, normal physiological and psychological development is gained. Moreover, it remains a desirable feeling retained for loved ones throughout life.

The powerful, yet precise, movements of the hand reflect our inner most response to the outside world. To perform its uneasy job, a unique anatomical design is supplied to the hand. A great number of helpful tools; bones, joints muscles, tendons, vessels and nerves are incorporated in a marvellous, irremissible arrangement.

All these structures are protected in a large envelop, The skin.

The skin, the largest organ of the body, doesn't only serve as a media for touch, but it also protects the underlying body structures and maintains its homeostasis. When this skin is lost, comes the role of the plastic surgeon.

Over tens of years, skin loss of the hand has been a challenge for plastic surgeons, since the local tissues available are minimal and the skin cover needed must have similar qualities to that of the hand adapting its functions.

Many means of covering hand defects have emerged, particularly, different types of flaps, increasing day after day. Each flap has its own advantage over the others eliciting confusion, which flap is to be used. When it is requested to cover a hand defect, here comes our concern, making things easy. After revising various flaps mentioned in this respect; hand is divided into units fulfilling its functional and aesthetic characteristics. Suitable flaps are then chosen, suiting the function and appearance of each unit.

## **AIM OF THE WORK**

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Our aim is to:

- 1- Revise the important points of the anatomy of the hand.
- 2- Divide the hand into functional and aesthetic units .
- 3- Review various flaps that can be used in reconstruction of skin defects of the hand illustrating their advantages and disadvantages.
- 4- Adopte the various currently used techniques and their application upon 30 cases.

# **REVIEW OF LITERATURE**

## ANATOMY

### THE SKIN

The skin cover of the hand is a highly specific type. Its texture and characteristics differ greatly over different regions of the hand, adapting their functions.

The skin of the palm is firm, adherent and it is of the thick type which is covered by thick hornified epithelium and shows the characteristic stratum lucidum layer. It has no hair follicles, sebaceous glands but numerous sweat glands.

It also shows the flexure creases and the papillary ridges which occupy the whole of the flexor aspect. These factors help the hand to grasp objects tightly.

The skin of the hand is further stabilised by its firm attachment to the deep fascia and palmar aponeurosis by fibrous bands. These bands divide the subcutaneous fat into myriad of small loculi forming a water cushion capable of withstanding considerable pressure. Though skin is firmly adherent, yet it allows tangential movement. This together with the cushions, give the grasping surface a pliant conformation to the contours of grasped objects, so the hand can identify them. On the contrast, the dorsal skin is of the thin type. It has thin keratin layer and no stratum

lucidum. It contains hair follicles, sebaceous glands and sweat glands. It is loosely attached and easily pinched off the underlying structures.

The large veins of the hand lie on its dorsal aspect subcutaneously, so gripping doesn't impair the venous return.

The skin over the fingers has the same quality as that of the hand. Its dorsal aspect shows the nail fold over its terminal phalanx. Being the most important tactile organ, in addition to the free nerve endings in the epidermis which perceive pain, temperature and light touch, the dermis is richly supplied by numerous meissner's corpuscles which are light touch and mechano-receptors and pacinian corpuscles for light touch and proprioceptive sensation.

The finger tip is richly supplied by the above receptors and in addition it shows marked tactile discs around modified epidermal cells called the merkel cells which perceive light touch.

The wide area of representation of the hand over the cerebral cortex makes the two point discrimination as accurate as 0.5 mm.