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COMPARISON OF RESULT OF LATERAL AND SURAL SUPRAMALLEOLAR FLAP IN PATIENTS WITH NAKED HEEL AND DISTAL TIBIA FOR COVERAGE OF SOFT TISSUE

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Abstract:

Background: *For reconstructive surgery, deformities in soft tissue surrounding ankle, is challenging.*

Objectives: *This study aimed at comparison of result of lateral and sural supramalleolar flap in patients with naked heel and distal tibia for coverage of soft tissue.*

Design of study: *It was a comparative cross-sectional study.*

Duration: *Time duration for this study was from 1st March, 2018 to 31ST February, 2019 in Mayo Hospital. Lahore.*

Patients and Methods: *This study was done in orthopedic surgery department, Mayo Hospital. Lahore. There were 32 patients which were divided randomly in two groups A and B. In group A Patients Sural flap was used for coverage of soft tissue deformity. Lateral supramalleous flap was used in group B patients in order to cover the defect. On 5th day after surgery, patients were discharged, suture were removed on 10th days. Later on, these patients were kept followed every 5th day in 2 months. Using SPSS version 12 data was analyzed.*

RESULT: *In group A, mean age of patients was 36 years. In group B, 31 years was mean age. In heel region, 21 patients showed effect in soft tissue while in distal tibia, 11 patients showed deformity. Thauma was major cause of deformity in 30 patients. On the other hand, severe Osteomyelitis was the cause in 2 patients. In group A, flap survival was 100% while in group B, it was 94%. Marginal tissues death happened in 1 and 4 patients of group A and B. wound were cleaned in all patients. In group A and B, flap edema was caused in 2 and 6 patients respectively.*

Conclusion: *Due to reliability and larger area savarage, distally based sural flap in better choices for covering deformities of soft tissue surrounding heel and distal tibia.*

Keywords: *Sural flap, Lateral supramalleolar flap, Soft tissue defect.*

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INTRODUCTION:

Deformities or Scars in soft tissues surrounding ankle are very challenging for surgeons in their reconstruction. Injuries in the foot skin, ankle skin and distal third of leg needs proper protection from infections and waning of these structures. Provision satisfactory soft tissues coverage is a big challenge for surgeons [1]. Now, different types of treatment are available including Dorsalis paedis artery flap, medical planetary artery flap, lateral Malleolar [2]. Flap and lateral calcaneal flaps are added now due to postures and rehabilitation difficulties in the patients [3] Trained surgeons are costly equipment are required for free microvascular flap which is a good choice but time-taking procedure [4].

Anterior tibial, reverse flow peroneal and posterior tibial artery flaps are described as reverse flow adipofascial flaps [5]. In 1988, lateral supramalleous flaps was described for coverage of soft tissues deformities surrounding foot and ankle [6]. Their perforating branch traversing the interosseous membrane is provided by personal artery. In 1992, Mosque let et al described distally based sural flap for the first time [7]. It is reverse flow flap involving Arial pattern fed by peroneal artery perforators in reverse manners. It is very reliable and easily performable.

PATIENTS AND METHODS:

This study was done on patients of both genders with soft tissue deformities in their heel region and distal tibia. 32 patients were selected for this study. These patients were then divided randomly in group A and B. There were 15 and 17 patients in group A and B. in group A, patient's sural flaps was used for coverage of soft tissues deformity. Lateral supramalleor flap was used for coverage of soft tissues deformity. Later on, these patients were followed on every 5th day for a for a period of 2 months. Data was then analyzed using 22 version of SPSS.

RESULT:

In group A, mean age of patients was 36 years. It was 31 years in group B. In heel region, 21 patients showed defect in soft tissue while in distal tibia, 11 patients showed deformity Trauma founded out to be prominent cause of deformity in 30 patients. On the other side, severe osteomyelitis was causative in 2 patients. In group A, flap survival was 100% while it was 94% successful in group B. Marginal tissue death happened in 1 and 4 patients of group A and B. in all patients, wounds were cleaned. In group A and B. flap edema was caused in 2 and 6 patients respectively.

Table I: Location of soft tissue defect.

Location of Soft Tissue defect	Group A n=15	Group B n=17
Heel region	9(60%)	12(70.5%)
Distal tibia	6(40%)	5(29.4%)

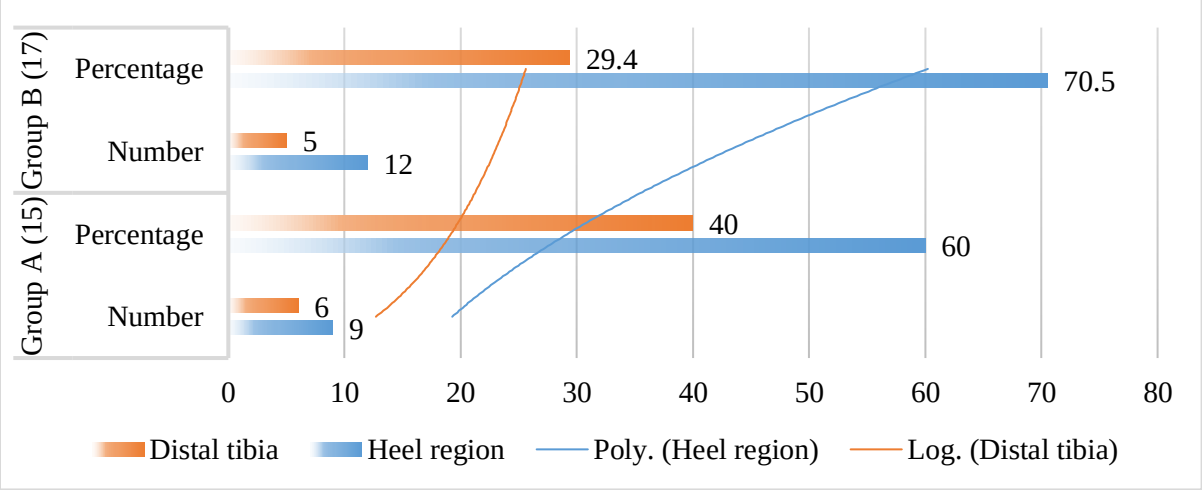


Table II: Causes of soft tissue defects of distal tibia

Causes of Soft Tissue Defects	Group A n=15	Group B n=17
Trauma	14(93.3%)	16(94.1%)
Chronic oteomyelitis	1(6.6%)	1(5.8%)

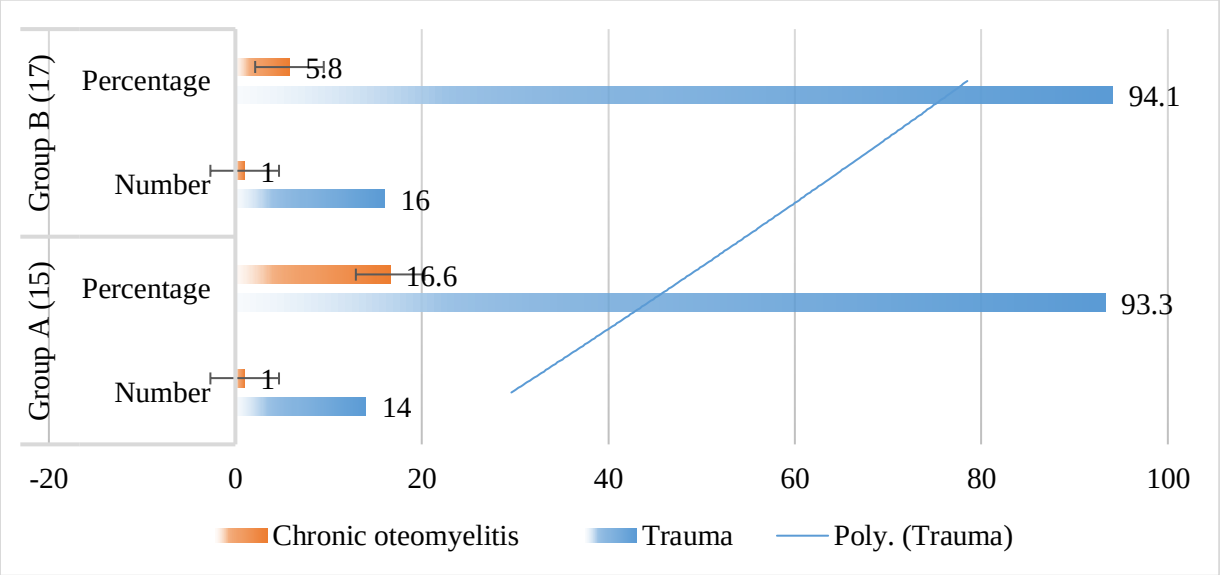
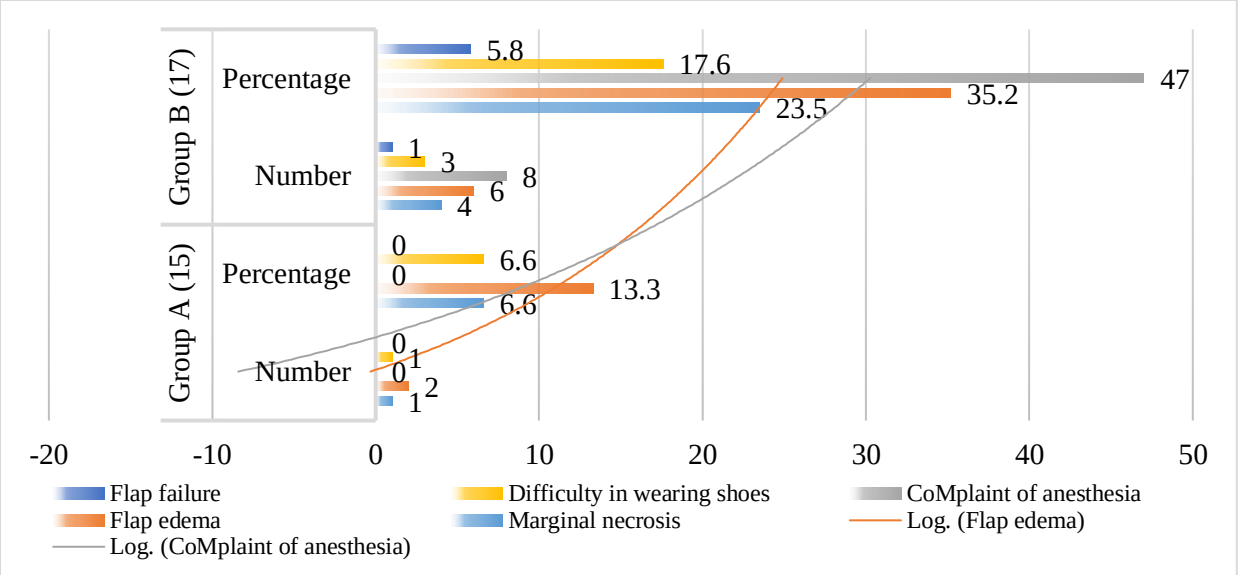


Table III: Frequency of Complications in two Groups.

Frequency of Complications	Group A n=15	Group B n=17
Marginal necrosis	1(6.6%)	4 (23.5%)
Flap edema	2 (13.3%)	6 (35.2%)
CoMplaint of anesthesia	0	8 (47%)
Difficulty in wearing shoes	1(6.6%)	3 (17.6%)
Flap failure	0	1(5.8%)



DISCUSSION:

It is challenging for surgeons to cover skin of distal third of tibia exposed during injury. Rational patches and skin grafts are found unsuitable due to absence of interposing muscle tissues around these structures. Microsurgical methods and reverse flow island of pedicle patches are needed for recovery of such critical structures [8,9]. Over the posterior heel, small deformities are easily covered using lateral calcaned artery flap [10]. Highly advanced and qualified V-Y version of this flap with donor area primary closed, has been reported [11]. For weight bearing heel, Medical Plantar artery flap is considering good. Proximally or distally, Dorsalis pedis artery flaps can be based [12]. There is minimal use of local muscle flaps [13]. For all three major leg vessels, distally based adipofascial flap with a prominent vessel in their pedicle have been reported [14]. Free flaps resist full thickness ulceration and are thought to be good weight absorbent [15]. Masque let described lateral supramaddeolar patch for the first time with practical experience of 14 cases recovering lower medial leg, posterior heel, plantar, dorsal and lateral foot aspects. Complete study of vascular channel following superficial leg, nerves was reported using colored lates injection in fresh dead bodies. Hasegava et al described major series of distally based superficial sural artery flap for the first time [16]. Serial flap was better choice for medium sized wounds according bocchi et al [17, 18]. In current study, partial tissue death detection at the wound site was 23.5% which is comparable Touam et al. In present study, reverse sural flap has been founded better than lateral supramalleolar artery flap because of it safer use and adaptability.

CONCLUSION:

In group A, mean age of patients was 36 years. In group B, 31 years was mean age. In heel region, 21 patients showed effect in soft tissue while in distal tibia, 11 patients showed deformity. Thauma was major cause of deformity in 30 patients. On the other hand, severe Osteomyelitis was the cause in 2 patients. In group A, flap survival was 100% while in group B, it was 94%. Marginal tissues death happened in 1 and 4 patients of group A and B. wound were cleaned in all patients. In group A and B, flap edema was caused in 2 and 6 patients respectively. Distally based sural neurocutaneous flap is a good choice for covering distal tibia and heel deformities due to its large area coverage and reliability.

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