

ASSESSMENT OF OUTCOME OF REVERSE SURAL FASCIOCUTANEOUS FLAP FOR COVERAGE OF SOFT TISSUE DEFECT OF DISTAL LIMB

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ABSTRACT

Background: Distal limb soft tissue injuries are problematic defects of distal limb. **Objective:** To assess the success rate of reverse sural fascio-cutaneous flap for the coverage of soft tissue defect of distal limb. **Methodology:** This cross sectional study was conducted at Department of Plastic surgery, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan from 1st May to 31st December, 2016. Total 40 patients having defects of soft tissues involving lower 3rd of leg were selected for this study. Reverse sural fasciocutaneous flap was designed on posterior aspect of affected leg based upon septocutaneous perforator vessels and placed over defect, anchored with vicryl 4/0 and half buried mattress suture. Success of flap survival was assessed after 4 months. **Results:** Age range in our study was from 5-60 years and mean age was 34± 17 years. Success (in term of flap survival) of treatment was noted among 36 (90%) patients. Male patients were 30 (75%) and female patients were 10 (25%). Cause of defect was road traffic accidents in 24 (60%) cases, followed by wheel spoke injury in 9 (22%) and gun shot in 7 (18%) patients. **Conclusion:** This study found that perforator based sural flap has high success rate and may be used as a first line therapy for the coverage of defects of soft tissues of distal limb.

Key words: Lower leg, Fasciocutaneous flap, Soft-tissue, Reconstruction

INTRODUCTION

The management of defects of soft tissues is a challenge for reconstructive surgeons. Operation timing, suitable tissue type and decision between the local and free flap coverage still remains under discussion.¹ There is frequent exposure of tendons, bones and hardware requiring flap coverage with reliable vascularity and good skin texture. We also prefer flap that is easy to dissect with minimal donor site morbidity.² Free tissue transfer is considered to be standard for lower limb and foot reconstruction but it require stable patient, long operative time, technical expertise and specialized centers.³ Local neurovenocutaneous flap was introduced by Ponten for coverage of lower leg and ankle defect.⁴ Later Masquelet in 1992 elaborated skin island neuro-cutaneous flap for the coverage of lower limb, ankle and foot defect,⁵ so it became an attractive option due to simplicity and cost effectiveness. In our study we assessed the success of reverse sural artery flap for distal tibial, ankle and heel defects.

METHODOLOGY

This cross sectional study was conducted at Department of Plastic surgery, Sheikh Zaid Medical College/Hospital, Rahim Yar Khan from 1st May 2016 to 31st December, 2016. Total 40 cases, either male or female, having defects of soft tissues involving lower 3rd of leg, achilles tendon,

malleoli, dorsum of foot and heel were selected for present study. Demographic profile and history were taken.

Surgical technique: In prone position and under general anesthesia, a line was marked from midpoint of lateral malleolus and tendoachilles to the midline at junction of proximal and middle third of leg which correspond middle of two heads of gastrocnemius. The pivotal point was marked at least 5-6 cm above superior margin of lateral malleolus. We designed template by measuring the defect area. Skin island on the middle to proximal 3rd of the lower leg was marked by using that template in a tear drop shape. Flap was incised on its proximal border through the deep fascia. The lesser saphenous vein and sural neuro-vascular bundle were identified and ligated proximally in the mid axis of flap. The flap and pedicle of at least 4 cm wide was raised down to pivot point. The flap was then transposed or tunneled to reach the defect. Donor sites were closed in a linear fashion or, covered with a split-thickness skin graft. In two cases we delayed the flap by incising lateral and superior portions of flap through the fascia.

The sural vessels and lesser saphenous veins were divided and ligated. Patients were discharge on 3rd post operation day in case of uneventful recovery and followed up on 5th, 15th day and then monthly till 4th month and outcome was measured in terms of flap survival without need of other reconstructive procedure for coverage of defect, any major complication like complete or partial necrosis after 4

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months. The data was entered and analyzed by SPSS version 16. Numerical data like age was presented as mean and standard deviation and categorical data was presented as frequencies and percentages.

RESULTS

This study included on 40 patients. Age range was from 5 to 60 years with mean age of 34 ± 17 years. Success of treatment was noted among 36 (90%) patients. (Figure I) Male patients were 30 (75%) and female patients were 10 (25%). Cause of defect was road traffic accidents (RTA) in 24 (60%) cases, followed by wheel spoke injury in 9 (22%) and gun shot in 7 (18%) patients. Heal and tendon Achilles was involved in 18 (45%) cases, distal tibia was in 14 (35%), medial maleolar and para maleolar was in 8 (20%) patients. (Figure II)

Figure I: Success rate among patients

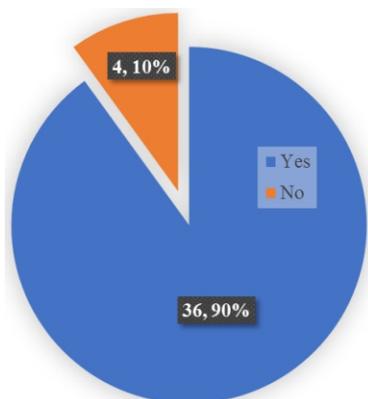
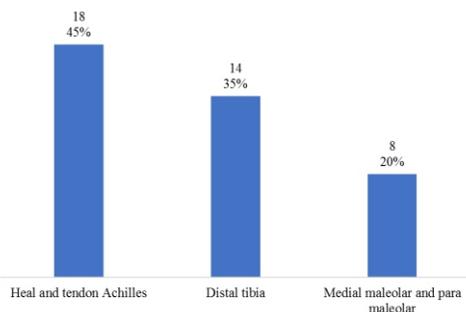


Figure II: Site of injury



DISCUSSION:

The efficacy rate of reverse sural fascio-cutaneous flaps for the coverage of soft tissue defect of distal limb, was assessed in this study. In present study, success rate of treatment (absence of necrosis and 100% coverage of the defect) was 36 (90%)

patients. In a study, by Baumeister et al,⁶ survival rate of flap was 86%. Total 70 sural flaps were used for the coverage of soft-tissues of the distal leg, the overall success rate was 86% for the flap alone or combined with a skin graft. Age of the patients, venous insufficiency, diabetes mellitus, use of tobacco and alcohol, minimal family support were the risk factor for the failure of flap.⁷⁻⁹

The distally based sural fasciocutaneous flap is a versatile and reliable procedure which is useful in reconstruction of the lower limb. This flap remains a good choice for reconstructive surgery of calcaneal and malleolar areas.¹⁰ Ali MA et al,¹¹ in their study reported flap survival rate as 68.1% which is not comparable with our study. In another study, Kalam MA et al,¹² showed that 86.67% flaps taken off without any complications. Jeng SF et al¹³ reported success rate as 20 (90.91%) which is in agreement with our findings.

This technique was also used by Heisinga SF et al¹⁴ and flap survival was noted in 80% patients and partially survival of flap was noted in 13.33% patients. In another study by Jeng SF et al,¹⁵ flap survival was noted in 87.5% patients. In series of 39 cases by Park JS et al,¹⁶ success rate of 100%. Complications were noticed in 9 patients: partial necrosis (10.26%), wound dehiscence without necrosis (7.69%), hematoma (2.56%), and infection (2.56%). In another study by Baumeister et al,⁶ complications was noted in 59% patients, partial necrosis was seen in 17% patients and complete necrosis in 19% flaps. Comparable (82%) flaps survival rate was reported in meta analysis of 50 articles. Akhtar S et al¹⁸ reported flap survival rate as 78.5% in 84 patients.

CONCLUSION

Results of present study showed a high flap survival rate. We recommend that perforator based sural flap should be used as a first line therapy for coverage of soft tissue defect of distal limb.

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