

LATERAL CALCANEAL FLAP FOR WOUND AROUND ANKLE

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ABSTRACT

Soft tissue defects of the posterior heel of the foot is very challenging for reconstruction due to the bony prominence and limited local tissue availability. The study was conducted in the department of general surgery, Muzaffarnagar Medical College & Hospital, Muzaffarnagar between June 2022 to December 2023. Ten patients with soft tissue defects over the posterior heel underwent reconstruction using a lateral calcaneal flap. The etiology is trauma in 03 patients (30%), chronic ulcer in 01 and surgical wound dehiscence for repair of Tendo-Achilles in 06 patients (60%). All flaps had good perfusion and survived completely. In 3 cases there was partial loss of skin graft managed conservatively. The lateral calcaneal flap can be used safely to provide sensory skin coverage of posterior heel in single stage.

Key Words: Soft tissue defects, Ankle, Lateral Calcaneal Flap, Posterior heel

INTRODUCTION:-

Lateral calcaneal flap is frequently used for coverage of lateral calcaneum and posterior heel defects. Soft tissue defect of posterior heel of foot present challenging problem to surgeon because of their osseous and tendinous bed, poor area vascularisation, high functional demands, continuous movement.^[1] This area is subject to weight bearing and shearing force that exceed those of any other area of body. Therefore defect in this area is difficult problem for patient because of the inability to wear shoes.^[2]

According to basic principle tissue defect should be replaced with like tissue. It is very difficult in case of heel because amount of soft tissue around ankle is thin and limited and graft may not take or maybe inappropriate.^[3] Various methods of reconstruction of soft

tissue defect of heel , which include skin graft, local skin flaps, cross leg flaps, muscle flap, musculocutaneous flap and free flap.^[4]

Local muscle and musculocutaneous flap sacrifice the main arteries and nerves (i.e dorsalis pedis, medial plantar and lateral plantar arteries and nerves) and disrupt the sensory innervations of the weight bearing plantar area.^[3] Free flap transfer is technically demanding.^[5] Lateral calcaneal artery is an axial pattern flap that include lateral calcaneal artery, lesser saphenous vein and sural nerve.^[6] Lateral calcaneal artery flap was first described by Grabs and Argenta since then it has been used with different modification.^[7]

The aim of this paper was to describe our experience with lateral calcaneal flap in 10 patient. This flap covering defect over wound around ankle. It's advantage included low post op morbidity, good functional result and high success rate.

MATERIAL AND METHOD:-

This is a hospital based prospective observational study involving 10 patients presenting with wound around ankle and conducted in department of surgery in Muzaffarnagar Medical College & hospital during the period from June 2022 to December 2023.

Inclusion Criteria:-

- Age 18 -55 years
- Soft tissue defects from trauma
- Chronic leg ulcers.
- Wound dehiscence.
- Patients's informed consent was taken in every case.

Exclusion Criteria:-

- Age < 18 years
- Patients who were unfit for surgery
- Patient who did not give consent



Fig. a



Fig. b



Fig. c



Fig. d

Fig. (a,b,c,d) 55 years patient with pressure sore posterior heel due to namaz performed by him regularly treated with lateral calcaneal artery flap



Fig. e



Fig. f

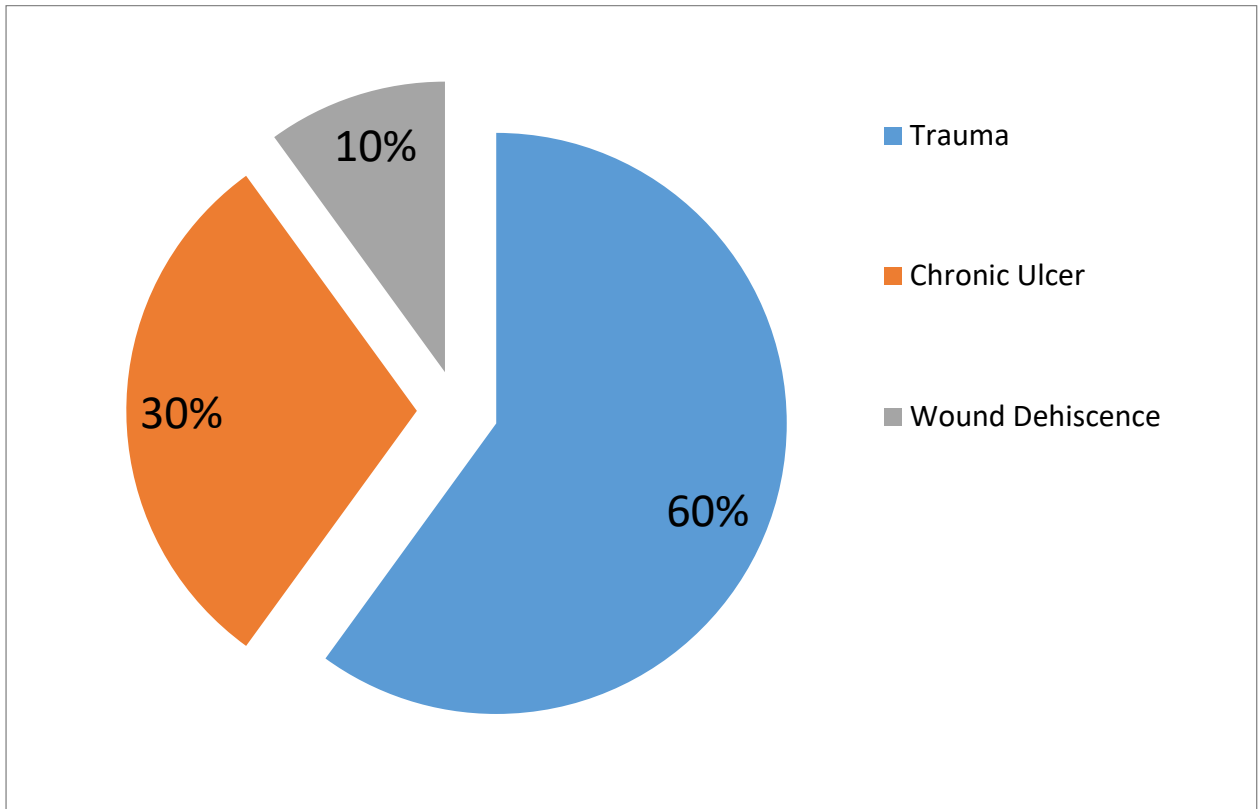


Fig. g

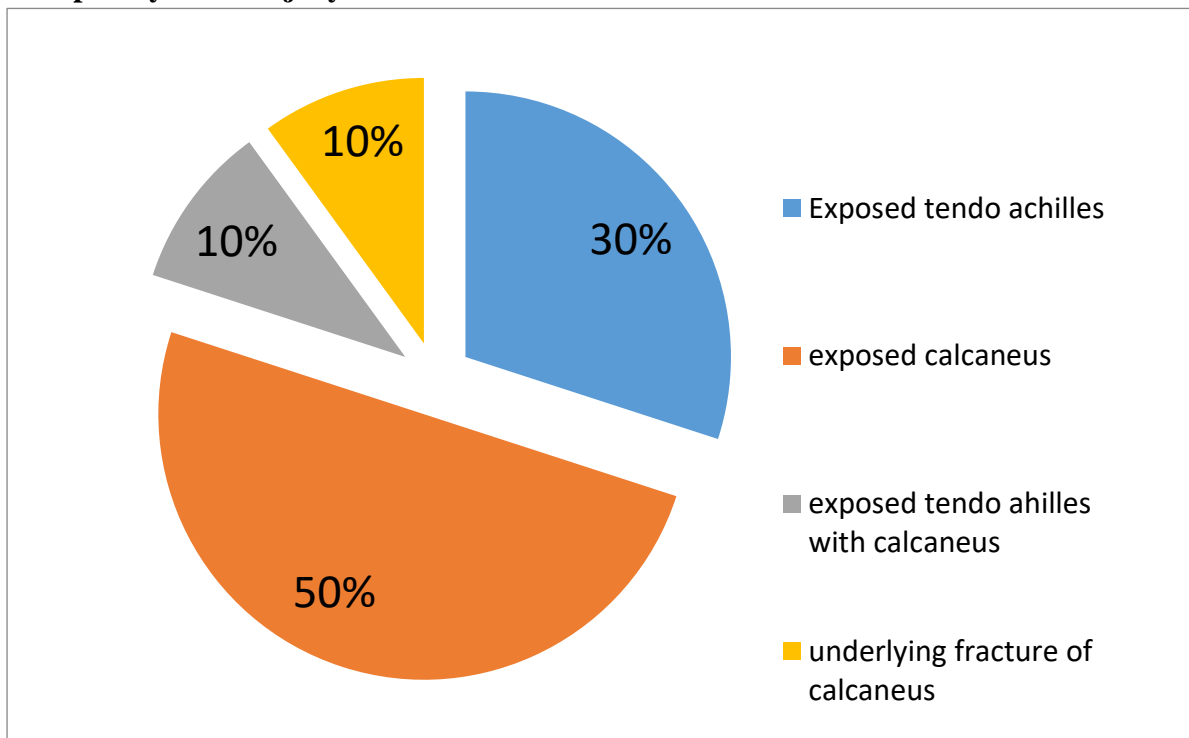
Fig (e,f,g) 40 years old patient with post traumatic wound with exposed tendo-Achilles , treated with lateral calcaneal flap.

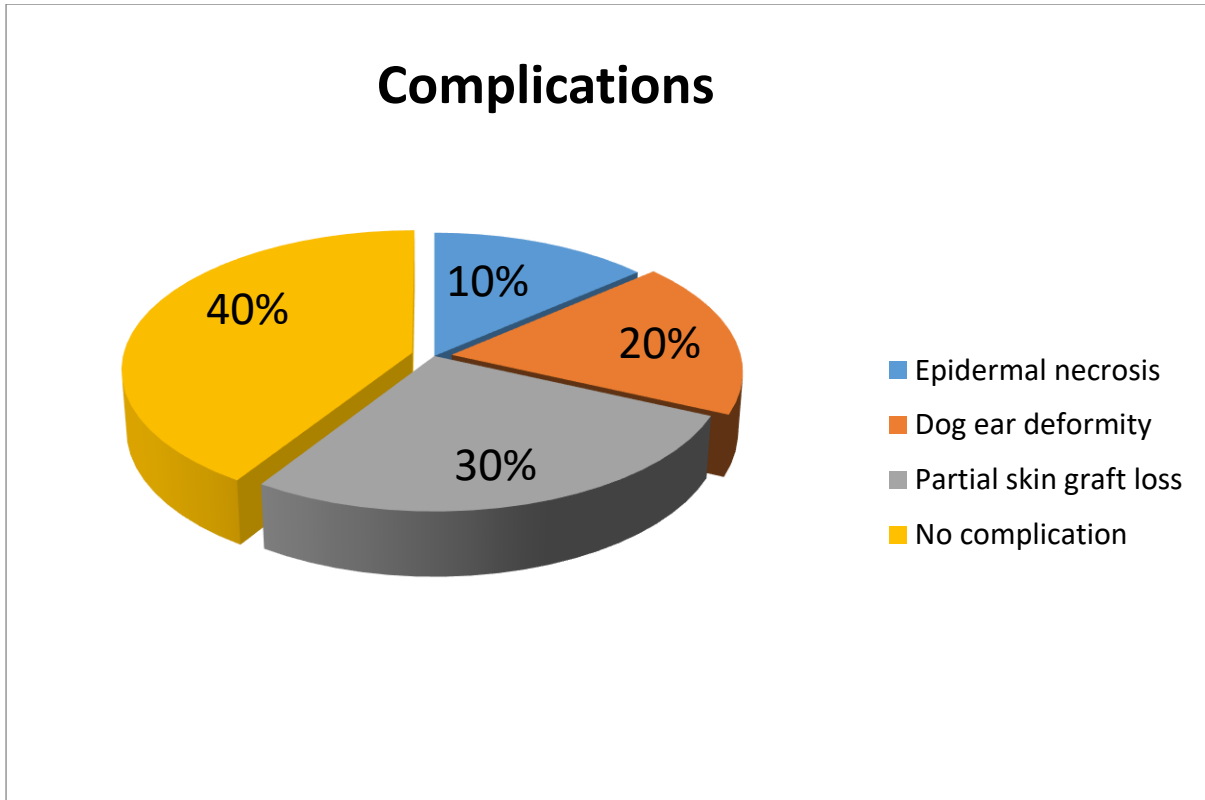
Result:-

Distribution of causes of the defect.



Complexity of the injury





DISCUSSION

Reconstruction of soft tissue defect of wound around ankle is demanding because of their osseous and tendinous bed, constant area of movement, poor vascularization. Many options are available for coverage of posterior heel defect and ankle like local random pattern flap, lateral calcaneal flap, reverse sural island flap, cross leg flap and free flap. The reverse sural flap, distally based is most commonly used flap for reconstruction of posterior heel because of its larger vascular territory and greater arc of rotation.

Grab and Argenta has clearly explained the anatomy of lateral calcaneal artery and associated structures, and they point out the peroneal artery and its terminal branch are least affected by atherosclerosis of lower extremity vessels.^[3] Doppler examination is must in all patient in whom island flap is planned and in case of trauma, angiography should be done before proceeding with flap.

Lateral calcaneal flap for ankle reconstruction has been reported since 1981. It is axial pattern fasciocutaneous flap which is simple, stable. It is nourished by lateral calcaneal artery, terminal branch of peroneal artery, drained by lesser saphenous vein, innervated by sural nerve.^[2] Lower limb vessels are affected in diabetes mellitus, smoking, but peroneal vessels are last to be affected by age, diabetes mellitus or smoking and it is safest flap in these patients.

These fasciocutaneous flap is moved as transposition flap from area below lateral malleolus so dog ear or kinking of pedicle may occur. Disadvantage of flap is that donor site requires grafting which is put on periosteum giving depression and causes poor cosmetic appearance. Patient also have sensory disturbance at lateral part of dorsum of foot. A study by MT Islam et al, 10 patient two of donor sites had partial loss of skin graft which were healed with regular

dressings. In our study of 10 patients 3 had partial skin graft loss in donor sites and 2 had dog ear deformity which was managed conservatively.

CONCLUSION:-

Lateral calcaneal flap presents good functional and aesthetic results for coverage of posterior heel and lateral calcaneal defect.

Its benefits include:

- Its good functional outcomes.
- Low perioperative morbidity.
- Very simple design and production.
- Atherosclerosis, a major issue in older patients with heel defects, is also resistant to the flap.

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