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Case report

Physiotherapy Rehabilitation in a patient with ankle laceration

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ABSTRACT

The foot is a complex structure of more than 26 bones, 30 joints, numerous tendons, ligaments, and muscles responsible for our ability to stand upright, supporting the entire body's weight, and providing the basis for the bipedal gait mechanism. Ankle joint is the commonest joint injured in the musculoskeletal injuries without adequate rehabilitation function can be severely impaired, but access to the physiotherapy rehabilitation service can be limited due to geographical remoteness and inadequate or absence of services in the rural areas. Wound complications have been reported to occur in 1.4% to18.8% of patient with ankle injuries. In 2005, nearly 12 per cent of all ER visits or 13.8 million visits for laceration care were reported. Depending on the location and severity of the injury, lacerations can be managed in the ambulatory environment as well. Foot and ankle conditions are common in older adults. The commonest ankle injury is ankle sprain, ankle instability these type on injury are more commonly seen in sports person. Ankle Laceration is a debilitation condition which leads to lack of mobility and if not treated properly may lead to wound infection. As the tendon in the ankle region are more superficial there is high chances of tendon or nerve injury in the cases of ankle laceration. Here presenting a 19 year old girl with a laceration injury on the left ankle while mowing the lawn, she has undergone grafting and since then on physical therapy management.

Keywords: Ankle Laceretion, Graft, Physical Therapy, Rehabilitation.

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INTRODUCTION

Ankle joint is the commonest joint injured in the musculoskeletal injuries without adequate rehabilitation function can be severely impaired, but access to the physiotherapy rehabilitation service can be limited due to geographical remoteness and inadequate or absence of services in the rural areas [1]. A research was done on literature yields clinical reports on only Patients with open injuries of various tendons about the foot and ankle [2]. Foot and ankle conditions are common in older adults are associated with mobility and balance impairments disability, falls and fractures, although this conditions are commonly seen in older adults [3].

Agriculture injury are common in preadolescents globally which are important factors for morbidity and mortality in pre adolescents [4]. Wound complications have been reported to occur in 1.4% to18.8% of patient with ankle injuries [5]. Nerve and tendon lacerations of foot and ankle region are relatively common, the restoration of the injured tissue with appropriate technique at the time of wound exploration is important, primary nerve repair reduces the risk of painful neuroma formation. Early tendon repair have better prognosis as compared to the delayed repair.

Untreated tendon lacerations of ankle and foot have fewer sequalae in comparison to untreated laceration of the hand. Proximal injury or multiple distal injury can lead to greater area of insensitivity and impairment [6]. In Such reconstructive cases early physical therapy has shown a good impact on the recovery of the patient [7]. The rehabilitation program consist of stretching strengthening and pain relief modality to improve the overall condition [8]. Minor foot adjustment are necessary for the maintaining the balance and prevent falls [9].

This case report is about lacerated wound over foot in 19 years old female who underwent acellular grafting was done and the ankle was immobilized and subsequently treated under physiotherapy rehabilitation department at academic hospital Sawangi (M), Wardha with proper rehabilitation protocol.

Patient's presentation

Patient was apparently alright till Sunday morning while mowing the lawn patient was talking on phone the mower accidently moved to the patient's leg and the patients had a lacerated wound near

the left ankle after that the patient call her parents they took her to hospital in car with the wound covered with a clean cloth. In hospital in wound examination and cleaning was done and x ray was done to avoid any chances of bony injury after that grafting was done after graft acceptance the patient was referred to the physical therapy department for further management. Since then patient in on medical and physical therapy management.

Pain History

Pain at rest on NPRS is 4/10 while on movement 6/10, past medical / surgical history not significant.

Personal History

Patient is on balanced diet with adequate intake of essential components. Sleep in minimally disturbed because of pain.

On observation, the patient was in supine with both the lower limb externally rotated. Wound was present on the left ankle behind the lateral malleolus. Tibial nerve was exposed. On palpation, grade 3 tenderness at the site of injury, warmth, oedema cannot be assessed because of the bandage.

On Examination

Bilateral upper limb Ranges are full and functional.

Right lower limb and left hip and knee ranges are full and functional.

A left ankle ranges are mentioned in table 1.

Table 1. Left ankle ROM

Joint	Movement	Left
Ankle	Plantarflexion	0-10*
	Dorsiflexion	0-05*
	Inversion	-
	Eversion	-

Grade 5 strength in present in bilateral Upper limb and Right lower limb. Left lower lip hip and knee strength in grade 5. Left ankle static strength is measured table 2.

Table 2. Static ankle strength

Planter flexion	Good
Dorsi flexion	Good
Eversion	-
Inversion	-

Mild tightness is present in bilateral hamstrings. Moderate tightness in pectorals.

Medical management

Patient is on anti-inflammatory, antibiotics, and antacids.

Physical Therapy Management

1. On day one of treatment we evaluated the patient for strength, range of motion, tightness and pain.
2. Before starting the treatment education regarding the operative procedure and graft was explained to the patient.
3. Patient was explained the importance of exercise for his better rehabilitation and early return to ADLs.
4. Patient was taught how to safely mobilize using walker.
5. Further management is in Table 3.

Table 3. Management

Intervention	Dosage	Rationale
Statics	5 sec hold 10 repetition	To maintain muscle contractility and maintain strength
Active assisted ROM for Ankle	10 repetition as much as possible	To maintain mobility of the joint
Pre-crutch training	To help patient in walking in initial phase	To strengthen upper limb muscle.
Toe touch ambulation	2 times a day	To train proprioceptors.
Breathing Exercise	10 repetition every hourly	To maintain lung compliance and avoid accumulation of secretions.
Strengthening	Strengthening of sound lower limb and bilateral Upper extremity.	To prevent weakening due to bed rest
Stretching	30seconds 3 times	To lengthen the tighten structures.

DISCUSSION

Lawrence A et, al treated a patient with complete laceration of anterior tibial tendon using dermal tissue matrix followed by physical therapy the athlete returned to sports withing 7 weeks post treatment. They conclude that a efficient grafting method along with dedicated physical therapy improved the patient condition[10]. A study was conducted by Robert M. Joseph et, al on individuals with lacerated wound of extensor hallucis longus in this study allograft was used for the treatment and post-operative physical therapy was initiated 3 weeks after the surgery, the patient showed a good recovery [11]. A study conducted by Lisa Ellis et, al, on patient with post-operative lower limb split thickness graft in Australia which showed early physical therapy has no adverse effect on the patient's condition it augment the patients general condition [12]. Our treatment consist of proper education regarding the condition and education regarding the ergonomic advice [13]. In certain cases virtual reality can be used for speedy recovery of the patient the use of VR device like oculus may be useful in the recovery [14]. Patient education is the most important factor in preventing the secondary complication post injury [15].

CONCLUSION

We conclude that early mobilization post grafting in case of lacerated wound show a good recovery with no adverse effect and speedy recovery, education regarding the graft care while doing ADLs, importance of exercise, pre crutch training showed good response and avoided the adverse effect of bed rest, education regarding wound care and wound examination was taught to the patient.

Competing interests

All the authors declares no competing interests

Author's contribution

All authors contributed equally.

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