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RESULTS OF FUNCTIONAL TREATMENT OF ANKLE SPRAIN

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ABSTRACT

Introduction: Ankle sprain is defined as an injury of the lateral ligament complex of the ankle joint. The injury is commonly managed by immobilisation, functional treatment and surgical intervention. It has been found that, functional treatment significantly reduces the time taken to return to work when compared with immobilisation.The purpose of the study was to assess the efficacy of functional treatment in the management of ankle sprain. The injury is traditionally treated by immobilization in our setup.
Material & Methods: A total of 60 adult patients with unilateral ankle sprain were included in study. Complete general and local examination was performed. The radiographs were taken to exclude fractures. The local examination was repeated five days after injury. Instability when detected was documented. Patients with grade I sprain were not included in the study. All the patients with grade II and III ankle sprain were offered functional treatment.
Results: Out of 60, 35 (58.33%) were female and 25 (41.66%) were male patients. The age range was between 18 to 36 years. Out of 60 patients, 48 (80%) were diagnosed as having Grade II and 12 (20%) as having Grade III sprain. At the start of treatment the pain was sever in all cases, the movements at ankle joint were limited and painful. Anterior drawer test was positive in 12 (20%) patients. At the end of 8 weeks 58/60 (96.66%) patients were pain free with no swelling and full range of movement at ankle joint, and claimed maximum satisfaction. At 12 weeks all the patients were fully recovered and were fully satisfied with the treatment.
Conclusion: We are of the opinion that for grade II and III ankle sprain, functional treatment offers early recovery and good results.

Keywords: Ankle, sprain, functional treatment.

INTRODUCTION

Ankle sprain is defined as an injury of the lateral ligament complex of the ankle joint. [1, 2]

Laterally, three primary ligaments stabilize the ankle joint. The anterior talofibular ligament is attached posterior to the anterior border of the lateral malleolus and anteriorly to the neck of the talus where it blends with the anterolateral joint capsule. It is the weakest and most often injured of the lateral ligaments. It primarily functions to resist anterior translation of the talus. The calcaneofibular ligament is stronger than the anterior talofibular ligament. It is attached superiorly to the tip of the lateral malleolus, extends deep to the peroneal tendons, and inserts inferiorly on the lateral surface of the calcaneus. The posterior talofibular ligament is the strongest of the lateral ligaments. It is attached anteriorly to the digital fossa of the fibula and posteriorly to the lateral tubercle on the posterior aspect of the talus.

The incidence of ankle sprain is about 14% to 21% among all sports related injuries, and 85% of ankle injuries are sprains.[3]

In acute medical care it occurs at the rate of one injury per 10,000 persons per day.[4]

Ligamentous injuries of ankle are classified as minor ligamentous “stretch” injuries

(type I sprain), incomplete ligamentous tears (type II sprain), or complete disruption of the ligament or ligaments (type III sprain).[5] This gradating system has limited practical value as both grade II and III injuries are treated similarly, and grade I injuries do not need any specific treatment after diagnosis.[6]

The commonmechanism of injury is supination and adduction of theplantar flexed foot.

High incidence of ankle sprain is seen in players of basketball, football and volleyball

Some sports (e.g., basketball, football/soccer, volleyball) are associated with a particularly highincidence of ankle injuries. Pain and intermittent swelling are the most frequent residual problems,often localised on the lateral side of the ankle.

The common residual complaints are pain, intermittent swelling, mechanicalinstability and stiffness. Patients with cartilage damage have a higher incidence ofresidual complaints.[7]

In presences of traumatic cartilage damage and recurrent instability, degenerative changes may develop in the ankle joint.

Aims of the treatment are to reduce the swelling and pain, and to restore the stability of the ankle joint and to regain full functional status.

The injury is commonly managed by immobilisation, functional treatment and surgical intervention.[8]Functional treatment isdefined as non-operative and nonimmobilizing therapy. It has a wide variety of options.[9]

The purpose of the study was to assess the efficacy of functional treatment in the management of ankle sprain. The injury is traditionally treated by immobilization in our setup.

MATERIAL AND METHODS

The study was conducted at Liaquat University Hospital and a Private practice setup between January 2010 and December 2011. A total of 60 adult patients with unilateral ankle sprain were included in studyafter obtaining informed consent. Patients with major injuries elsewhere in the body, and those with wounds around involved ankle were not included in the study.

Patients reporting with ankle injury where examined. Complete general and local examination was performed. Locally the structures palpated were, anterior tibiofibular, calcaneofibular, deltoied, syndesmotic and bifurcate ligaments, both malleoli, base of 5th metatarsal, anterior process of calcaneus, lateral process of talus, tendo calcaneus, posterior tibial, flexor hallucis and flexor digitorum longus tendons. Inversion and eversion, and anteroposterior stress test were performed. The radiographs were taken to exclude fractures. The local examination was repeated five days after injury.Local anaesthetic was injected on lateral side of ankle in patients experiencing unbearable pain during local examination. Instability when detected was documented.

Patients presenting with lateral hematoma, and tenderness in the region of anterior and lateral ligaments without instability were labelled as grade II and those presenting with lateral hematoma, tenderness and instability were placed in grade III sprain.[10]

Patients with no hematoma or tenderness were diagnosed as grade I sprain and were not included in the study.

All the patients with grade II and III ankle sprain were offered functional treatment. The patients were advised to take rest apply ice, crepe bandage and elevation (RICE). Tablet paracetamol was prescribed for pain in the initial one week of treatment. A posterior slab made of Plaster of paris was applied in such a way that patient can take it off by removing the crepe bandage and can apply again.Theremovable slab was continued for one week. Every patient was called back after five days for repeat local examination. The stability was checked and noted.Patients were advised to use a pair of crutches and allowed touchdown weight bearing on the affected side for four to six weeks. Patients were called every two weeks and checked for pain swelling, range of movement and stability and were advised to gradually increase putting weight on the involved foot according to comfort. After four to six weeks crutches were discarded and cane was used for two weeks. All the patients were followed for 12 weeks. The severity of pain was recorded on visual analogue scale (VAS I to 10) as mild (1-3) moderate (4-7) and sever (8-10). The patient's level of satisfaction was also checked on VAS 1 to 10, with 1 as lowest and 10 as maximum satisfaction.

Primary outcome measureswere return to pre injury level of activity, persistent pain and subjective instability. The secondary outcome measures were persistent swelling, stiffness at ankle joint, muscle wasting at calf, and objective instability. The anterior drawer test was used to assess the instability.

RESULTS

Out of 60, 35 (58.33%) were female and 25 (41.66%)were male patients (Table 1) . The age range was between 18 to 36 years. Out of 25 male patients, 5/25, 20 %,(5/60, 8.33%), were involved

TABLE 1

GENDER DISTRIBUTION

Males (%)	Females (%)	total
25 (41.66%)	35 (58.33%)	60

TABLE II

CAUSE OF INJURY

Cause of injury	Number (%)
twisted ankle while walking on plane surface wearing high heel	20 (33.33%)
twisted ankle while walking briskly on uneven surface	25 (41.66%)
twisted ankle while running	9 (15%)
falling in ditch	6 (10%)

TABLE III

Time of presentation since injury

Time	Number (%)
Less than 24 hours	28 (46.66)
24-48 hours	32 (53.33)

TABLE IV

Grading of Sprain

Grade	Number (%)
Grade II	48(80)
Grade III	12 (20)

in regular sporting activity on average once a week. . The causes of injury were, twisted ankle while walking on plane surface wearing high heel in 20 (33.33%) female patients, twisted ankle while walking briskly on uneven surface in 25 (41.66%)patients, twisted ankle while running in 9 (15%) and falling in ditch 6 (10%) patients (Table II). Twenty eight patients presented within 24 hrs and 32 between 24 to 48 hrs after injury (Table III)

Out of 60 patients, 48 (80%) were diagnosed as having Grade II and 12 (20%) as having Grade III sprain. All were offered functional treatment (Table IV)

At the start of treatment the pain was sever in all cases, the movements at ankle joint were limited and painful. Anterior drawer test was positive in 12 (20%) patients.

At two weekspain was moderate in 46/60, (76.66%) patients and sever in 14/60 (23.33%) patients. The movements at ankle joint were limited and painful in all patients. The anterior drawer test was positive in 12/60 (20%) patients.

At four weeks pain was mild in all patients the range of movements at ankle was improved but not full. All the twelve patients with grade III sprain noticed that ankle gives way on movement.

At six weeks the pain was completely subsided in 55/60 (91.66%) and was mild in 5/60 (8.33%) patients. No subjective or objective instability was detected in any patient. Crutched were discarded by all patients at the end of six weeks and were back to theirpre injury work level. A cane was used in one hand for two weeks.

At the end of 8 weeks 58/60 (96.66%) patients were pain free with no swelling and full range of movement at ankle joint, and claimed maximum satisfaction. Two patients had persistentpain and instability and were not satisfied with the treatment. These two patients were advised to continue to walk with cane support.

At 12 weeks all the patients were fully recovered and were fully satisfied with the treatment.

DISCUSSION

The purpose of the study was to assess the efficacy of functional treatment in the management of ankle sprain. The injury was traditionally treated by immobilization in our setup.

The age range of the patient 18-36 years in our study. Lionberger et al reported 18-65 years.[11]

De Vries et al. reported 17-40 years.[12]Kerkhoffs GMMJ et al reported median age about 25 years.[13]This coincides very well with our study.

In our study 8.33% of patients were involved insports activity. The reason could be the lack of available sporting facilities especially for women in our part of world.

To check the instability we relied on physical examination especially anterior drawer test performed at the time of first presentation and the repeated 5 days after, under local anesthesia. Frey et al reported that physical examination is 100% accurate in the diagnosis of grade III ligamentous injury at ankle joint.[14]Van Dijk et al.recommended that if physical examination is performed 5 days after injury the accurate diagnosis is possible. In our study we found this method of checking instability at ankle was quiet useful and gives accurate diagnosis. [15]

Freeman et.al reported that early mobilization of most ligamentous injuries around ankle give results that are superior to immobilization. They were of the opinion that this kind of treatment keeps the stretched ligaments at reasonable anatomical alignment and adequate length during the healing process.[16]

Kannus and Renstrom reported that most patients with grade III ankle injury get good results regardless of the type of treatment. For grade III injuries these authors recommend brief period of protection with taping or bracing, followed by functional range of motion exercises and training of ankle. According to the authors the advantages of this method were quick recovery of functional range of movement and early return to work and physical activity. They were of the opinion that delayed repaint of the ligaments and secondary reconstruction can be done years after the injury if necessary and the results are as good as primary repair.[17]

On Analysis of high quality randomized controlled trials, it was found that, functional treatment significantly reduced the time taken to return to work when compared with immobilisation. The difference reported was 12.9days to 18.7 days.[18, 19.]

In another randomized controlled trial, reported by, Ardevol J et al, 3 weeks of functional treatment was compared with immobilization in plaster cast in 121 semiprofessional sportsmen with acute grade III ankle sprain. It was found that functional treatment significantly reduces the time taken to return to regular physical training and after three months, the number of people with pain and subjective instability were proportionally reduced.[20]

Kaikkonen et al. found that in grade III injuries of ankle, treatment by early mobilization gave better results than surgery and immobilization.[21]

In our study all the 60 patients were given functional treatment for ankle sprain, and 58 out of sixty patients were fully recovered in 8 weeks time, the remaining two with grade III sprain had persistent instability and they also become symptom free in 12 weeks time. The results were comparable with those reported in other studies.

All of our patients recover fully in 12 weeks time and were advised to return to their pre injury level of activity.

CONCLUSION

We are of the opinion that for grade II and III ankle sprain, functional treatment offers early recovery and good results.

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