IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Clinical Evaluation and Funcational Outcome of Conservative Treatment of AO –Weber B- Fibular Fracture.

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Keywords: conservative , fibular fracture , weber b .

Abstract:

Ankle injuries are common and account for more than five milion emergency department consultations annually. The most common causes of ankle fractures are twisting injuries and falls, followed by sports injuries. Diabetes mellitus and obesity are associated with ankle fractures in middle aged and older adults.

The aim of this work to evaluate the outcome in conservative treatment of AO-Weber B fibular fractures.

This work involved the (prospective) study of a randomized cases of weber B fibular fracture. A total of 15 cases included, underwent a conservative treatment by immobilization by plaster cast for 6 weeks for follow up period 6 months.

Result: The ages of patients ranged from 27 – 60, with mean age 44.3 years. There were 8 females and 7 males, percentage with females was (73.3%) and 7 males with (26.7%), the affected side nearly equal according to the side (53.3%) Right, left (46.7%), 3 patients was diabetics with (33.3%). At the end of the follow up period, patients were assessed by a clinical scoring system. Results showed that the mean was 81.0 ± 7.78, that is statistically significant with p value (0.041*). satisfactory score show 8 of the patients are excellent (66.7%), 5 patients were good (33.3%), and the other 2 patients were unsatisfactory 1 faire (6.7%) and one poor (6.7%)., patients were assessed according to the pain in the affected ankle , most of the patients were pain free (66.7%) ,none in 10 cases (66.6), mild in 3 cases (20%), moderate were 2 cases (13.3%), (66.6.%) of the patent had a normal range of motion and the mean time of healing was 7.4 weeks with early return to work and function.

Conclusion:

1. Conservative treatment of weber b fibular fractures has a significant outcome compared with the other types of management.

2. The younger patients have more satisfactory results than the older one

3. No significant effect of sex, side affected and occupation on the management outcome.

4-.Diabetic patients and elderly patients are more at risk of particular complications including infection and failure of soft tissue and bone healing.

INTRODUCTION

Ankle injuries are common and they account approximately 10% of all fractures, making these the second most common fracture after the hip, representing a significant portion of the trauma workload.[1,2,3,4] The annual incidence of ankle fractures is between 107 and 184 per 100,000 persons and around 2% of which are open.[5,6]

Ankle fractures usually affect young men and older women.[7] However, below the age of 50, ankle fractures are the commonest in men. After this age, females become predominant. In contrast to other fractures, malleolar fractures in older women are unlikely to be due to osteoporosis. One prospective cohort study found that women who sustained malleolar fractures had no differences in bone mineral density

compared to healthy women.[8] The most common causes of ankle fractures are twisting injuries and falls, followed by sports injuries.[5,9] Diabetes mellitus and obesity are associated with ankle fractures in middle aged and older adults.[9]

AIM OF THE WORK

The aim of this work to evaluate the clinical outcome in conservative treatment of AO-Weber B fibular fractures

PATIENTS

This study included 15 patients, were treated with below knee cast, for follow up period 6 months, all patients aged between 27 and 60 years treated through April 2019 till December 2019 at Althowra Central Hospital – Albida – Libya .

Occupation

Most of patients including of this study were housewives (8) with (73.3%)

Informed consent was taken from every patient involved in the study according to the ethical rules .

Inclusion criteria

1. Isolated closed lateral malleolus fractures.
2. Patients of any sex and age.
3. Treatment characteristics (below knee cast)

Exclusion criteria

1. Open ankle fracture.
2. Associated injuries..

METHODS

Concerned immobilization of the ankle fracture, in a below – knee plaster cast usually for 6 weeks, a manual reduction was tried by reversing the trauma mechanism. Below –knee cast is the most common cast used for lower limb injury including ankle fractures, foot and soft tissue injury, the cast is applied from below the level of the fibular neck proximally to the level of the metatarsal head distally with the ankle at 90 degree and the foot in the plantigrade position. **Figure (1)**

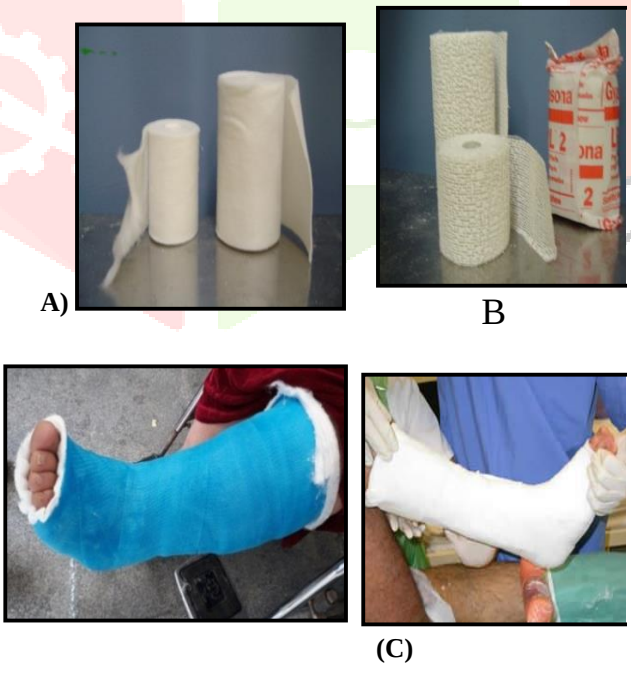

Figure (1) Picture show A) 10 cm cotton padding, B) 10 or 15 cm plaster of paris, , C) Below knee plaster cast, Fiberglass.

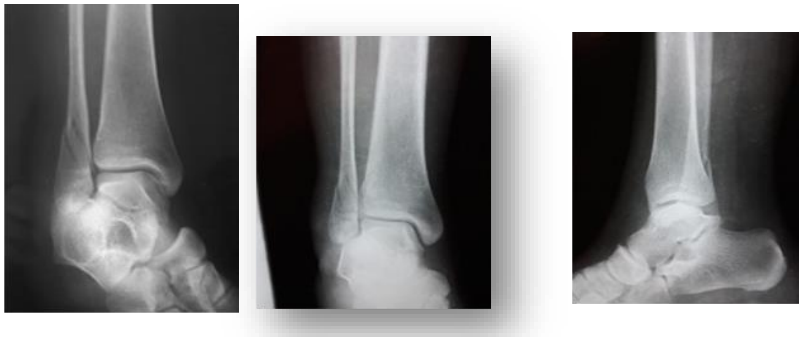

Figure 2: precast x-ray a- AP , lateral , mortise

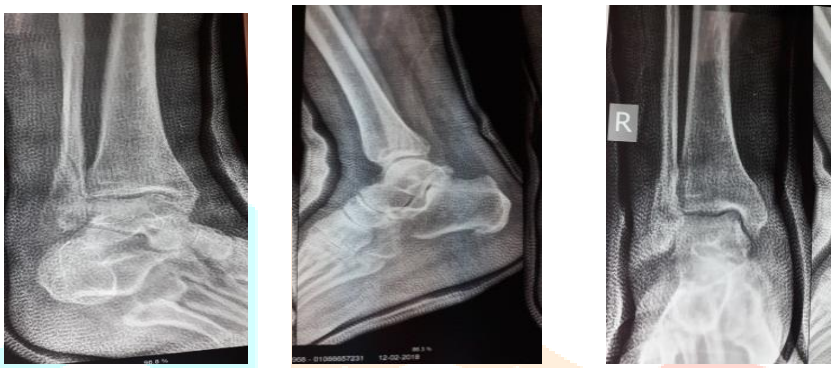

Figure 3 : two weeks after casting .

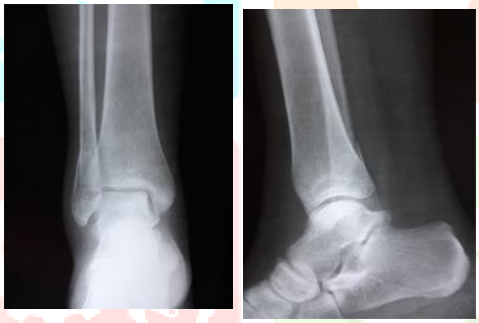

Figure 4: after healing 6 weeks in below knee cast, x-rays Ap, lateral veiws

Methods of assessment of the result American Foot and Ankle Society scoring system (AOFAS).[10]

Follow up

Clinical follow-up visits were scheduled after randomisation at 2, 6, 8, 12 & 24 weeks, at the orthopaedic outpatient clinic of the study hospitals. These visits included clinical examination and radiography (mortise and lateral projections) of the injured ankle to assess ankle joint congruity. The participants independently completed questionnaires assessing ankle functional outcome, pain, and quality of life. American Foot and Ankle Society scoring system**(AOFAS).**

RESULTS

This work involved the (prospective) study of a randomized cases of weber B fibular fracture treated from April 2019 to september 2019 a total of 15 cases included, underwent a conservative treatment by immobilization in plaster cast for 6 weeks .

Final Score

At the end of the follow up period, patients were assessed by a clinical scoring system out of 100 points. Results showed that the mean was 81.0 ± 7.78, that is statistically significant with p value (0.041*) **Table (1)**

Table (1): conservative treatment by immobilization of cast according to score scale.

Score scale (%)	(n = 15)		
	No.	%	
Min. – Max.	64.0 – 94.0		
Mean ± SD.	81.0 ± 7.78		0.041*
Median	83.0		

*: Statistically significant at $p \leq 0.05$

Pain

At the end of the follow up period, patients were assessed according to the pain in the affected ankle , most of the patients were pain free (66.7%) ,none in 10 cases (66.6), mild in 3 cases (20%), moderate were 2 cases (13.3%) **Table (2)**

Table (2): according to ankle pain in the follow up period .

	Total 15	
	No.	%
None	10	66.6
Mild	3	20.0
Moderate	2	13.3

Range of motions

At the end of the follow up period (66.6%) of cases was normal range of motion .

Table (3),

Table (3): according to ankle range of motions in the follow up.

range of motions	Total(n = 15)	
	No.	%
Normal	10	66.6
Restricted	5	33.3

Time of healing

As regard time needed for union the mean was 7 wks in the patients included in this study .

Table (4)

Table (4): according to time of healing.

Time of healing (weeks)	Total (n = 15)	
	No.	%
6 weeks	8	63.3
8 weeks	5	33.0
10 weeks	2	6.3
Min. – Max.	6.0 – 12.0	
Mean ± SD.	7 ± 1.93	
Median	8.0	

DISCUSSION

One of the methods of restoring function and preventing arthritis have been used: closed treatment, including manipulative reduction and immobilization in a plaster cast.[11]

The supination–external rotation (SER) injuries in the Lauge-Hansen classification are known as Weber B or OTA Type B fractures and account for approximately 50% of all ankle fractures, In SER type II fractures, a rupture of the anterior syndesmotic ligament or avulsion fracture of the lateral malleolus is combined with a spiral fracture of the fibula starting ventrally at the level of the joint space.[12]

The degree of fibular displacement played a significant role with respect to the decision whether to operate or not. This is reflected in the finding that most AO-B1.1 and SER-2 type ankle fractures (without fibular displacement) were treated conservatively with a below-knee cast for 6 weeks.[13]

Donken et al. found that ankle fractures usually affect young men and older women. However, below the age of 50, ankle fractures are the commonest in men. After this age, females become predominant.[7] This coincide with this study as the number of males below the age of 50 was 11 patients (91%), compared to the number of females above the age of 50 was 7 patients (38.8%).

The aim of this work to evaluate the outcome in conservative treatment of AO-Weber B fibular fractures.

At the end of the follow up period, patients were assessed by a clinical scoring system out of 100 points. Results showed that the mean was 81.0 ± 7.78, that is statistically significant with p value (0.041*)

These patients were taken from Althowra Hospita, Department of Orthopaedic and traumatology , Albyda -Libya.

The ages of patients including in this study ranged from 27 – 60, with mean age 44.3 years,

Satisfactory score show 8 of the patients are excellent (66.7%), 5 patients were good (33.3%), and the other 2 patients were unsatisfactory 1 faire (6.7%) and one poor (6.7%)

This study reveals that young patients (less than 30) had more satisfactory outcome than older patients. This coincides with the study of Egol et al. who found that younger age, male gender, and absence of diabetes were predictive of improved functional recovery at 1 year following ankle fracture surgery.[14]

In this study found that there is a significant delay in healing in diabetic patients (3 cases out of 15), this coincides with Boddenberg et al. who concluded that ankle fractures in patients with diabetes heal with a significant delay.[15]

In this study found that the mechanism of injury in most of the patients were twisting injuries (93.3%) ,and small percentage of patient presented with RTA .compared to 80% in Solonen and Lauttamus' series [16] and 44% in Burwell and Charnley's study.[17] Road traffic accidents precipitated 13 % of fractures compared to 5% in Solonen and Lauttamus' study and 24% in Burwell and Charnley's series. Slipping while walking was found to be a dominating cause in this study as well as in others.

Other studies show no significant differences in functional outcome . Makwana et al. Bauer et al. Showed no difference at the long term between patients treated surgically or by closed reduction and casting, but the surgical group recovered quicker. Rowley on the other hand, found that surgically treated patients took longer to recover normal movement and gait. Philips showed better radiological outcomes in operatively treated patients, but the clinical outcomes were the same in conservative treatment.[18,19,20]

In the current study found that at the end of follow up period (6 months), (66.6.%) had a normal range of motion and the mean time of healing was 7 weeks with early return to work and function, , this coincides with Egol et al. who evaluated that ankle fractures with the main outcome measure being time to return to work.[21]

Effect of age on the results

Young patients had a better prognosis in ankle stability and movements with less complications than the old patients.

Effect of sex on the results

After clinical assessment of ankle there is no difference between males and females.

Effect of side on the results:

There is no difference in clinical status between the ankle sides.

Effect of skin condition and history of infection

Superficial skin infection (cellulitis) occurred in two cases (13.3%) in this study This coincide with Finsen's study on 56 patients, superficial wound infection occurred in only 5.4% of the ankles.[22] Boden's series showed 6.3% infection of cases.[23]

Complications

1.Superficial skin infection (cellulitis) occurred in 2 cases (13.3%)

2.Delayed healing (more than 3 months) occurred in 3 patients (20%) 1 was male with history of smoking, the other 2 patients were females with history of diabetes , hypertension and obesity.

CONCLUSION

1. Conservative treatment of weber b fibular fractures has a significant outcome in compared with the other types of management.
2. The younger patients have a more satisfactory results than the older one
3. No significant effect of sex, side affected and occupation on the management outcome.
4. Diabetic patients are more at risk of complications e.g delayed union.
5. The challenge of treatment lies mainly with the minimally displaced Weber B-type fractures

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