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Assessment of operative outcome of ankle fractures: A clinical study

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Abstract

Background: Ankle fractures are one of the most common fractures presenting in public hospitals. Most of the studies report the short term functional outcome post-ankle fracture surgery. Hence; the present study was undertaken for assessing operative outcome of ankle fractures.

Materials and methods: A total of 40 patients operatively treated for an unstable ankle fracture were entered into a database and prospectively followed. The postoperative protocol was standardized for all patients. Complete demographic and clinical details of all the patients were obtained. Baseline characteristics, complications, additional surgery, functional status and the American Orthopaedic Foot and Ankle Society score (AOFAS) were assessed. The intervention chosen was open reduction and internal fixation of unstable ankle fractures. Functional outcome was evaluated.

Results: Level of pain decreased consistently over the 3-, 6-, and 12-month follow-up periods in both study groups as measured by the AOFAS questionnaire. At 3 months, 6 months and 12 months follow-up, mean AOFAS score was 75.5, 80.3 and 85.3 respectively.

Conclusion: Patients undergoing operative fixation of unstable ankle fractures showed reasonable functional result at the 1-year follow-up.

Keywords: Ankle fractures

Introduction

Ankle fractures are one of the most common fractures presenting in public hospitals of the ankle fracture studies available, it was found that they could be put into several categories. The first was intervention studies. These types of studies focus on the success of particular operative techniques, usually compared to a non-invasive intervention. Another type of study is to compare postoperative treatments; this typically involves comparing one type of postoperative intervention to another. The remainder of the ankle fracture studies available encompassed testing functional outcome after a period of time. There is a great amount of variation in the way these studies are conducted and what parameters are used. Parameters range from what type of fractures were analysed, what type of intervention was implicated, surgery or otherwise^[1-3].

The aim of the surgical treatment in these fractures is the anatomic restoration of the ankle mortise with reinstatement of fibular length and rotation to avoid abnormal contact pressures, which may result in degenerative arthritis. The mid-to long-term follow-up following ankle fracture fixation is sparsely documented in the literature. Most of the studies report the short term functional outcome post-ankle fracture surgery^[4-6]. Hence; the present study was undertaken for assessing operative outcome of ankle fractures.

Materials and Methods

The present study was undertaken for assessing operative outcome of ankle fractures. A total of 40 patients operatively treated for an unstable ankle fracture were entered into a database and prospectively followed. The postoperative protocol was standardized for all patients. Complete demographic and clinical details of all the patients were obtained. Baseline characteristics, complications, additional surgery, functional status and the American Orthopaedic Foot and Ankle Society score (AOFAS) were assessed.

The intervention chosen was open reduction and internal fixation of unstable ankle fractures. Functional outcome was evaluated. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results

Mean age of the patients was 38.4 years. Out of 40 patients, 28 were males while the remaining 12 were females. Level of pain decreased consistently over the 3-, 6-, and 12-month follow-up periods in both study groups as measured by the AOFAS questionnaire. At 3 months, 6 months and 12 months follow-up, mean AOFAS score was 75.5, 80.3 and 85.3 respectively.

Table 1: Demographic data

Variable	Number	Percentage
Males	28	70
Females	12	30
Mean age (years)	38.4	

Table 2: Comparison of AOFAS score

Time interval	Mean	SD
3 months	75.5	4.3
6 months	80.3	3.2
12 months	85.3	3.1
p-value	0.00 (Significant)	

Discussion

Ankle fractures are among the most common orthopaedic injuries and many within the orthopaedic community perform operative treatment of unstable ankle fractures. Associations between the final postoperative radiographic result and the clinical outcome have been well established. In addition, other factors under the surgeon's control, such as postoperative immobilization protocols, may lead to a faster return of function. While the results of open reduction and internal fixation of isolated fibular, Bimalleolar and trimalleolar ankle fractures have been frequently reported, studies of patient oriented, validated functional outcomes are scarce in the literature [7-10]. Hence; the present study was undertaken for assessing operative outcome of ankle fractures.

In the present study, mean age of the patients was 38.4 years. Out of 40 patients, 28 were males while the remaining 12 were females. Level of pain decreased consistently over the 3-, 6-, and 12-month follow-up periods in both study groups as measured by the AOFAS questionnaire. Kenneth A Egol *et al.* evaluated predictors of short-term functional outcome following surgical stabilization of ankle fractures. Over three years, 232 patients who sustained a fracture of the ankle and were treated surgically were followed prospectively, for a minimum of one year. Trained interviewers recorded baseline characteristics, including patient demographics, medical comorbidities, and functional status according to the Short Musculoskeletal Function Assessment (SMFA). Laboratory findings, the American Society of anaesthesiologist's (ASA) class, and operative findings were recorded from the chart during hospitalization. Follow-up information included the occurrence of complications or additional surgery, weight-bearing status, functional status according to the SMFA, and the American Orthopaedic Foot and Ankle Society (AOFAS) ankle-hindfoot score. The data were analyzed to determine predictors of functional recovery at three months, six months, and one year postoperatively. Complete follow-up data were available for 198 patients (85%). At one year, 174 (88%) of

the patients had either no or mild ankle pain and 178 (90%) had either no limitations or limitations only in recreational activities. According to the AOFAS ankle-hindfoot score, 178 (90%) of the patients had $\geq 90\%$ functional recovery. A patient age of less than forty years was a predictor of recovery, as measured with the SMFA subscores, at six months after the ankle fracture. At one year, however, age was no longer a predictor of recovery. Patients who were younger than forty were more likely to recover $\geq 90\%$ of function ($p = 0.004$), and men were more likely than women to recover function ($p = 0.02$). ASA Class 1 or 2 ($p = 0.03$) and an absence of diabetes ($p = 0.02$) were also predictors of better functional recovery at one year. SMFA subscores were below average at baseline, indicating a healthy population. At three and six months postoperatively, all SMFA subscores were significantly higher than the baseline subscores ($p < 0.001$); however, at one year, the SMFA subscores were almost back to the baseline, normal level. One year after ankle fracture surgery, patients are generally doing well, with most experiencing little or mild pain and few restrictions in functional activities [11].

In the present study, at 3 months, 6 months and 12 months follow-up, mean AOFAS score was 75.5, 80.3 and 85.3 respectively. KA Egol *et al.* randomised prospectively 60 consecutive patients who were undergoing internal fixation of similar fractures of the ankle into two groups, one of which was treated by immobilisation in a below-knee cast and the other by a functional brace with early movement. Their findings supported the use of a functional brace and early movement after surgery for fractures of the ankle [12]. NH Shah *et al.* examined retrospectively the functional outcome of patients at 5 years following their ankle fracture surgery using the Olerud-Molander Ankle Score (OMAS) and SF-12 questionnaire. Of 69 patients, 43 were females and 26 males. The mean age was 50.7 years. There were 74 and 26% of Weber 'B' and 'C' fractures, respectively. The mean OMAS was 75.2. About 63% of the patients were still complaining of stiffness, around 45% patients were still complaining of ankle swelling, 50% of patients still had some sort of pain, 39% still thought that they had not fully recovered and 38% did not return to their pre-injury sporting activity. Apart from the age, no significant difference was seen in the OMAS due to gender, fracture type or timing of surgery. Their findings show that many patients who have had surgery for ankle fractures will still have some functional limitations even 5 years after the injury [13].

Conclusion

Patients undergoing operative fixation of unstable ankle fractures showed reasonable functional result at the 1-year follow-up.

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