Clinical Research on Foot & Ankle

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Surgical Interventions for Ankle Fractures in Patients with Dominant Characters

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Abstract

Background: Common injuries like ankle fractures usually demand for surgery to be treated. Complications could occur, forcing repeat procedures with poorer patient outcomes and lower quality of life. This study sought to identify the features and contributing factors of patients who received surgical reintervention for ankle fractures.

Methods: The number of patients at General Hospital Zone No1 IMSS in Colima who needed surgical intervention for ankle fractures over the course of two years was examined in a cross-sectional study. Age, gender, comorbidities, laterality, the reason for the surgical reintervention, Weber classification, and the amount of time after the initial intervention were all examined.

Results: This study involved 33 patients in all, with a 63.3% male gender distribution and ages ranging from 18 to 51. Both sexes primarily fell within the Danis-Weber Type C suprasyndesmotic fracture classification. Comorbidities were not shown to be significantly correlated with the need for surgical reintervention, however home accidents were significantly correlated with this need.

Conclusion: Male patients and those who suffered the injury at home are more likely to require reintervention after having their ankle fractures operated on before.

Keywords: Ankle fractures; Surgical intervention; Weber classification

Introduction

Ankle fractures occur often, with an annual incidence of 187 per 100,000 persons. Ankle fractures are more common in women in their latter years than they are in males when they are younger. Patients with diabetes mellitus, peripheral artery disease, and osteoporosis are more likely to experience them, with the latter presenting three times more postoperative problems. 15% of emergency room patients who have been treated for ankle injuries had fractures. In Mexico, there were 3755 procedures for ankle fractures in a single year. The medial collateral ligament complex (deltoid), the syndesmotic ligament complex, and the lateral collateral ligament complex work together to maintain the ankle. Pronation (eversion) and supination (inversion) are two possible postures for the ankle during trauma. Additionally, three deforming forces—abduction, adduction, and external rotation—can occur, resulting in the four damage mechanisms of supination-adduction, pronation-abduction, pronation-external rotation, and supination-external rotation. Torsion that is sustained, usually as a result of a low-energy injury, frequently results in ankle fractures. The fracture pattern is typically determined by the location of the ankle at the time of injury and the posterior direction of stress. Surgery for an ankle fracture aims to reestablish the ankle joint's anatomical congruence. When achieving this anatomical relationship is not achievable, the tibiotalar joint experiences abnormal loading, which has detrimental effects. According to the type of fracture and the patient's features, the type of surgery needed for fracture reduction and fixation will vary [1].

Material and Method

For fractures with extensive lines or with multi fragmentation, an open reduction with internal fixation was performed; screws were utilized for fractures with simple lines. Following surgery, patients received wound care, as well as antibiotics, analgesics, and anti-inflammatory medications. Joint mobilization without weight-bearing was started the next day. 15 days after surgery, the patients had their sutures removed, and then they had radiographic evaluation. After that, they underwent follow-up exams every month for three months, then at six months, and finally at one year following the procedure. Following ankle fracture surgery, a patient is eligible for discharge if they have ranges of mobility more than 80% and don't have incapacitating pain. All eligible patients who met the predetermined inclusion criteria—which included those who required further surgical procedures to treat their ankle fracture—were enrolled in the study. This study included people of both sexes who were 18 years of age or older and who met the criteria for an ankle fracture diagnosis according to the Danis-Weber classification [2].

The Electronic Medical Record and the Official Bed Information System, which are the electronic platforms used to store all patient's information for outpatient consultation and hospitalizations, respectively, were used to gather data on age, gender, comorbidities (diabetes mellitus, high blood pressure, hyperuricemia, and chronic renal disease), laterality, cause of surgical intervention, Weber classification, and time elapsed until re-intervention [3 , 4].

Diagnosis and treatment of ankle fracture

The majority of patients needing surgical reintervention, as per the Weber classification, had a greater frequency of Weber C classification at 81.8% (n = 27), followed by Weber B classification at 18.2% (n = 6). 1. In addition, 16 (48% of the patients) had unimalleolar fractures,

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7 (21.1%) had bimalleolar fractures, 9 (27.3%) had trimalleolar fractures, and 1 (3%) had pseudoarthrosis. 27 patients in all (82%) had syndesmosis instability, and they had to have placing screws and plates put in. Three patients (9%) underwent medial malleolar screw placement, two patients (6%) experienced solo plate fixation, and one patient (3%) received a plate and suture on the medial malleolus. An extensive range of variation, spanning from 1 to 1095 days, was seen when assessing the time period between the initial open reduction with internal fixation and the surgical reintervention for ankle fracture. The mode, which corresponded to 12 instances (36.4%), was 3 days [5].

Discussion

14% of the patients needed a surgical reintervention, which is a little less than what was previously reported. This variance could be explained by variations in study design and the applied inclusion criteria. The most prevalent age range for patients needing reintervention was found to be 18 to 51 years old , with men accounting for the majority of cases. This is consistent with other research that showed a higher incidence of ankle fractures in this age range, maybe as a result of the occupational and athletic activities they participate in. This group is more likely to sustain ankle fractures, which makes them more likely to need surgical reinterventions. Weighing an average of 70 kg, which is within the normal range, we discovered no correlation between weight and the need for surgical reintervention in our study, contrary to what has been previously described [6, 7].

However, according to some studies, diabetes mellitus and a high body mass index are risk factors for ankle malleolar fractures that require open reduction and internal fixation of the syndesmosis, as well as for poorer outcomes and functional outcomes. These discrepancies can be the result of different study designs and larger samples than in earlier studies. This study's findings are consistent with earlier research that shows accidents occurring while performing domestic or daily tasks account for 64% of ankle fractures. According to earlier research on postoperative complications and reoperation rates in ankle fractures, the right side of the body experienced a higher frequency of fractures. 51.2% of the reinterventions were categorized as Danis-Weber C, according to their findings. Type 2 diabetes mellitus was discovered to be the most prevalent condition in patients undergoing reintervention for ankle fracture when comorbidities were examined, albeit this link was not statistically significant. Diabetes mellitus, in contrast to the general population, has an impact on fracture risk and is linked to increased morbidity. Patients with diabetes mellitus have been found to have a higher risk of fractures, including a higher risk of lower extremity fractures and other fractures [8, 9].

In patients with ankle fractures, it was discovered that 3 days passed between open reduction, internal fixation, and surgical reintervention. The majority of the intervention patients in a prior study—which met one of the inclusion criteria—went back to the hospital eight weeks or later after the initial surgery, as opposed to the current finding [10].

Conclusion

Male patients and those who suffered the injury at home are more likely to require reintervention in patients who have already undergone surgery for an ankle fracture.

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