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Outcomes of People with Diabetes Admitted to Hospital with Ankle Fractures – a Single Centre Experience Over 5 years

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Background: Ankle fractures are common injuries, with an incidence of 3.6:100/year. Treatment protocols for ankle fractures in people with diabetes vary between centres with no clear consensus[1]. However, previous data has shown that people with diabetes are at greater risk of developing complications, including delayed bone-healing, impaired wound-healing and infection[2,3]. The aim of this project was to look at complications in patients with diabetes admitted for surgical treatement of an ankle fracture to our large secondary care centre.

Methods: We performed a retrospective analysis of patients presenting between 2008-12 with a diagnosis of diabetes and an ankle fracture treated in hospital. Clinic records and radiographic images were reviewed to determine the number and nature of any complications after ankle fracture treatment.

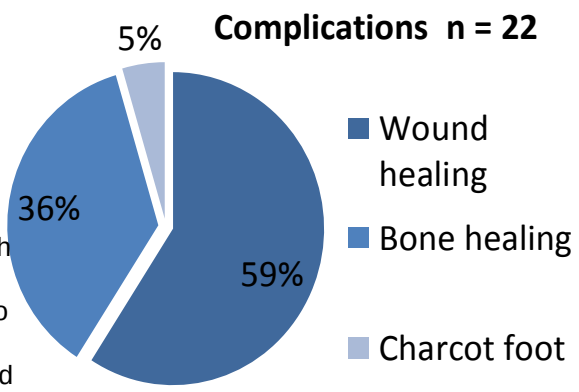
Baseline characteristics	(SD)
Age	67.4 (15.2)
Male-female ratio	66% - 34 %
Type of diabetes (T1:T2)	17 % - 83%
HbA1c (mmol/mol)	63.3 (20.8)
CKD stage	
1-2	59.5
3-4	36
5	4.5
Presence of retinopathy	25%

Results: 84 cases met the criteria of diabetes and ankle fractures. Seven patients were excluded because they were lost to follow up. The mean age at presentation was 67.4 years (SD ± 15.2). Twelve patients had type 1 diabetes. Mean HbA1C was 63 mmol/mol (SD ± 20.8). At the time of the fracture, 36% of patients had CKD stage 3-4 and 4.5% CKD stage 5. Retinopathy was present in 25% of cases. However, our data showed almst no correlation between treatment time, HbA1C, eGFR, CKD stage, presence or absence of retinopathy, and age.

59% of patients were treated with ORIF, the rest were treated with a cast but required admission. The mean duration of treatment until discharge from the outpatient clinic was four months (SD ±5.3).

A third of patients (n=22) had a complication - 13 patients had wound complications; eight bone healing problems and one patient developed a charcot foot leading to a below knee amputation. In total, 94% of fractures healed (clinically or radiologically).

Discussion: Our date confirm high complication rates in patients with diabetes who sustained an ankle fracture. Treatment time differed among orthopedic consultants which highlights the need for further research, in particular with a longer follow-up period, aiming to develop a diabetes specific treatment protocol.



Conclusion: Our date are consistent with that of others to show high complication rate in patients with diabetes who sustained an ankle fracture. The mean treatment time in patients with diabetes seems to be longer then in those without diabetes. This study highlights the need for a longer follow-up period and the development of a standard treatment protocol. Further work is needed to assess the outcomes of people treated exclusively as outpatients

1. Rosenbaum AJ, et al The management of ankle fractures in diabetics. Results of a survey of the American orthopaedic foot and ankle society membership. *Foot Ankle Spec.* 2013;**6**:201-5. 2. Wukich DK, et al Outcomes of ankle fractures in patients with uncomplicated versus complicated diabetes. *Foot Ankle Int.* 2011;**32**:120-30. 3. Shibuya N, et al Factors associated with nonunion, delayed union, and malunion in foot and ankle surgery in diabetic patients . *J.Foot Ankle Surg.* 2013;**52**:207-11.

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