



Clinical audit of ankle fracture management in the elderly[☆]



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HIGHLIGHTS

- The audit aimed to clarify whether surgical management of ankle fractures in the elderly was favoured.
- Malunion (63%) and failed fracture fixation (25%) were more commonly reported in patients managed non-operatively.
- Our results have shown considerably improved anatomical reduction rates following internal fixation in eligible patients.

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ABSTRACT

Introduction: Ankle fractures in the osteoporotic patient are challenging injuries to manage, due to a combination of poor soft tissue, peripheral vascular disease and increased bone fragility, often resulting in more complex fracture patterns. I aim to audit current practice and introduce change by producing recommendations to help improve longer-term functional outcomes.

Patients and methods: A retrospective 3-week audit was conducted reviewing results of ankle fracture management in 50 patients aged between 50 and 80 years. Patients admitted for either manipulation under anaesthesia (MUA)/application of cast or open-reduction and internal fixation (ORIF) were considered. Medical notes, including discharge summaries, were used for data extraction.

Results: From the 50 patients included within the cohort, forty-two patients (84%) underwent surgical intervention, with eight patients (16%) managed non-operatively. Malunion (63%) and failed fracture fixation (25%) were more commonly reported in patients managed non-operatively. Surgery performed by trainee surgeons was unlikely to prolong theatre time with no statistical significance observed with the consultant led cohort ($p = 0.380$). However, incidence of fracture malunion and failed fixation were significantly higher following surgery without consultant supervision in the junior trainee group ($p = 0.043$).

Conclusions: Poor bone quality and associated co-morbidity can present technical difficulties when managing patients surgically. However, our results have shown considerably improved anatomical reduction rates following internal fixation in eligible patients, irrespective of age or gender.

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1. Introduction

Fragility fractures of the ankle are common, and mainly occur in elderly osteoporotic women. Bi or tri-malleolar fractures together with supra-malleolar fractures of the tibia and fibula are frequently reported [1]. Between 1970 and 2000, a fourfold increase in ankle fragility fractures was observed by Kannus et al. [2], in patients

aged over 60 years. Low-energy, trivial trauma often associated with osteoporotic fractures can predispose to more unstable, severe patterns of injury (e.g. Lauge-Hansen supination-eversion stage 4) [1]. Establishing a positive treatment outcome is therefore vital to promote early mobilisation, restore independence, and reduce hospital-associated morbidity (e.g. pressure sores). Despite its high incidence, management remains controversial. Although surgery may be warranted in the majority of younger patients, osteoporotic bone can be associated with poor vascularity, prolonged healing, and failure of fixation [1,2]. Fixation using hind-foot nailing or locking-plate constructs to preserve vascularity has been documented [3] (see Fig. 1); however, post-operative complications are not unusual. Srinivasan and Moran [4] reported wound edge

^{*} This project is all my own work unless otherwise stated. All text, figures, tables, data or results which are not my own work are indicated and the sources acknowledged.

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Fig. 1. Pre- (A + B) & post-op (C + D) images of an osteoporotic trimalleolar fracture dislocation of the ankle, treated with a modern locking plate system.

necrosis and delayed healing in 9% patients aged over 70 years following ORIF ankle. Time to weight bear (TWB) and length of hospital stay (LOS) was also prolonged. This fuels further debate as to whether less invasive methods, including cast application following MUA, should be routinely advocated in the elderly.

Age is an important predictor of functional outcome; however literature explicitly comparing both operative and non-operative management in elderly patients is sparse. There is potential to advocate change with no uniform guideline in place, and this can help reduce in-patient stay, waiting times, encourage early mobilisation, and reduce patient morbidity. Cumulatively, this creates a more cost-effective system which can attract lucrative tertiary

recommendations and encourage patient-flow.

The aim of the audit is to assess current management of ankle fragility fractures locally and advocate change in practice to improve longer-term functional outcomes. Several objectives need to be achieved. Firstly, it is important to isolate trends in surgical and non-surgical patients to ensure radiographic outcomes can be compared, including rates of malunion and non-union with talar displacement. Secondly, all patients meeting inclusion criteria will be reviewed for various outcome measures (e.g. LOS). Finally, any recurring trends facilitating better outcomes will be identified and used to propose future improvements in clinical practice. Recommended standards can then be piloted with data collection forms

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