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Fifth metatarsal fractures – Is routine follow-up necessary?

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ABSTRACT

Background: Fifth metatarsal fractures are common, and the outcome with conservative treatment is generally very satisfactory. Operative treatment is only used for selected injuries, particularly stress fractures. Traditionally these patients are routinely reviewed at a fracture clinic, mainly due to the perceived risk of non-union with a Jones' fracture. In 2011 we introduced a standardised protocol to promote weight bearing as pain allowed with an elasticated support or a removable boot. Patients were discharged with structured advice and a help-line number to access care if required, but no further face-to-face review was arranged. More complex cases were reviewed at a "virtual clinic." Our hypothesis was that the introduction of this standardised protocol would be safe, patient-centred and significantly reduce unnecessary outpatient clinic review.

Patients and methods: We audited fracture clinic attendance and outcomes 1 year before and 1 year after the protocol was introduced in 2011. All radiographs taken at the Emergency Department (ED) presentation were reviewed and classified independently for validation.

Results: From 2009 to 2010, 279 patients who presented to the ED with fifth metatarsal fractures were referred to a fracture clinic. Of these 279 patients, 267 (96%) attended the fracture clinic, resulting in an overall total of 491 outpatient attendances. Three (1%) were treated operatively for delayed/non-union.

From 2011 to 2012, 339 patients presented to the ED with fifth metatarsal fractures – only 67 (20%) were referred to a fracture clinic. 62 (18%) attended clinic appointments with 102 appointments in total. Five (1%) required operative intervention.

Conclusion: Our study showed no added clinical value for routine outpatient follow-up of fifth metatarsal fractures. Patients can be safely discharged and allowed to bear weight at the time of initial ED presentation if they are provided with appropriate information and ready access to experienced fracture clinic staff.

Introduction

Acute traumatic fifth metatarsal fractures are the most frequent skeletal injuries of the foot. The majority are tuberosity avulsion fractures (Zone 1, Lawrence and Botte classification [1]) which have an excellent prognosis as the natural history is benign and only symptomatic treatment is required [2]. However, considerable variation in the management and follow-up of fifth metatarsal fractures still exists, especially if a Jones' fracture is suspected. This transverse fracture at the base of the fifth metatarsal at the metaphyseal–diaphyseal junction has been shown to be a watershed area for blood supply with a high incidence of delayed/non-union [3,4]. However, the clinical outcome is controversial partly due to the disparity in defining a Jones' fracture. Torg et al's recommendation of conservative treatment for Jones' fractures with a non-weight bearing cast for a period of 3–12 weeks or operation is still frequently followed [5].

However, a recent critical review of the current evidence has re-evaluated the classification systems and treatment recommendations [6]. There is now strong evidence for functional treatment for fifth metatarsal fractures (including Zone 1 and 2 but excluding stress injuries) with early weight bearing in a walker-boot or an elasticated bandage as these injuries heal well. An extensive evidence base exists with excellent outcomes following early mobilisation without the need for regular review. It has been demonstrated that treatment with a short leg cast leads to a significant delay in return to pre-injury levels when compared to functional treatment [7]. However, definitive management is usually only commenced at an orthopaedic fracture clinic within a few days from injury rather than at initial

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presentation in an ED, where patients are often immobilised in plaster slabs and have to use crutches.

We therefore introduced a new protocol for the management of fifth metatarsal fractures starting at initial presentation in the ED or Minor Injuries Unit (MIU). The policy was to manage all fractures, including Jones' fractures, with an elasticated bandage or a removable boot and early weight bearing as tolerated was advised. Each patient received a standardised advice reinforced by an information leaflet (Fig. 1) that explained their treatment and expected recovery time. It was backed up by a telephone help-line and no routine follow-up was arranged. If in doubt the ED/MIU staff could refer any patient to a Virtual Fracture Clinic (VFC) where a consultant orthopaedic surgeon reviewed the patient's ED notes and the radiographs. An appropriate management plan was then decided for the patient based on the available information. The patient was contacted by telephone by the dedicated nursing staff member on the same day. The resulting management plan was discussed and agreed with the patient; options included a "virtual discharge" at that stage or review in the next sub-specialty foot clinic. Patients were encouraged to contact the department if there is 'failure to progress'. Surgical intervention was recommended for those with a symptomatic non-union or re-fracture, as well as the occasional patients with acute injuries with severely displaced fractures.

The aim of this study was to investigate the change in the number of fracture clinic appointments required by patients with fifth metatarsal fractures before and after the new protocol was introduced. The secondary aims were to assess changes in treatment methods, adverse outcomes and patient satisfaction with the new protocol.

Patients and methods

Our institution is the main provider of secondary and tertiary orthopaedic trauma care to a metropolitan population of approximately 300,000 people. This study was classed as a clinical audit as the aim was to measure compliance and satisfaction with a routine standard of care. A simple questionnaire was administered to measure satisfaction with this provision of care. This fell within UK guidelines for clinical audit, and therefore research ethics committee (REC) approval was not required.

A retrospective study was carried out to identify two cohorts of patients presenting with fifth metatarsal fractures over 2 one-year periods before and after a change in standard practice. The first (Group A $n = 279$) had presented with a fifth metatarsal fracture prior to the introduction of the new protocol (October 2009 to October 2010) while the second (Group B $n = 339$) presented after the new protocol was established (October 2011 to October 2012). The ED electronic patient record (EPR) was used to identify patients with a discharge diagnosis of "isolated fifth metatarsal fracture". The minimum follow-up for the second cohort was one year from time of injury. There were no significant differences between groups in age, gender and fracture pattern (Table 1).

The radiographs were reviewed and classified independently by two orthopaedic registrars who were blinded to the other's results. The fractures were classified using the Lawrence and Botte classification [1]. Any discrepancies were reviewed by a consultant orthopaedic foot and ankle surgeon whose judgement was taken as final.

The discharge destination from ED (discharge without referral; referral to fracture clinic; referral to virtual fracture clinic) was noted from the ED EPR. Our unit's EPR (Bluespier®) was used to collect demographic data (age and gender), treatment method, and follow-up. It was also used, along with the regional EPR to determine whether any patients had presented to another hospital with their injury. Complications such as re-fracture or non-union were noted, along with the need for secondary intervention such as open reduction and internal fixation (ORIF). For those patients who were reviewed in the fracture clinic, the number of times they attended appointments and the reason for the review were recorded.

Satisfaction questionnaires were sent to patients in Group B. Satisfaction was assessed using a 4 level Likert scale: very satisfied, satisfied, unsatisfied and very unsatisfied. They were asked to report their satisfaction with the outcome from their injury, along with satisfaction with the written information provided at the time

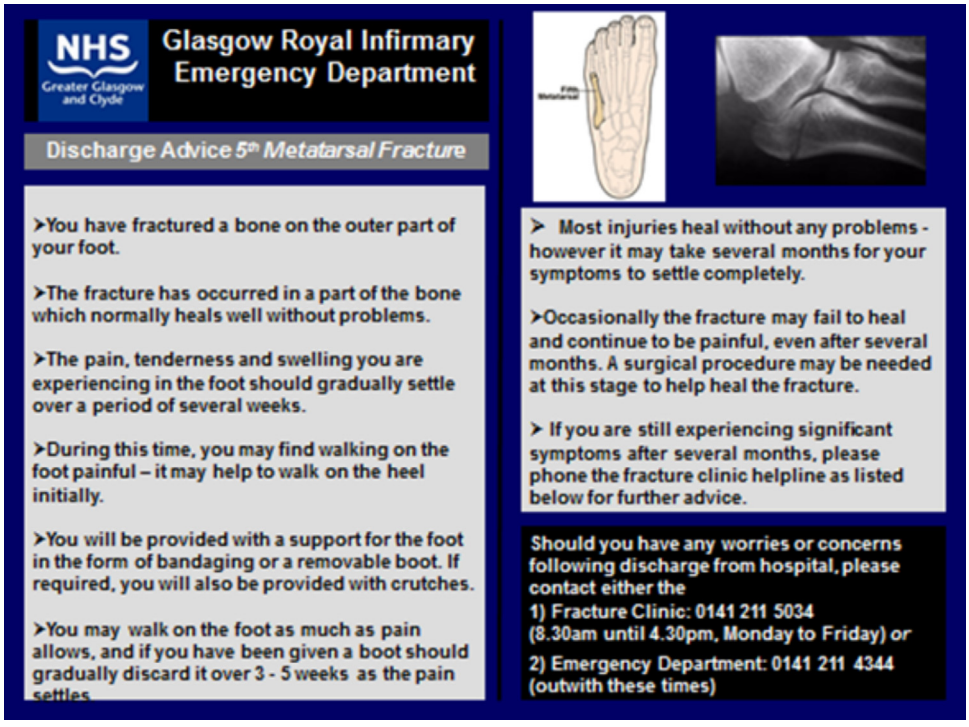

Fig. 1. Patient information leaflet.