Bridging the gap

The Glasgow Fracture Pathway: a virtual clinic

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SUMMARY

We redesigned the process for the non-operative management of our fractures. This has significantly reduced attendances at the fracture clinic by avoiding unneccessary visits, thereby increasing the time available for improving standards of patient care, teaching and training without the need for additional resources.

INTRODUCTION

The non-operative, outpatient management of trauma includes 75% of all limb fractures, and has remained unchanged despite the evolution in orthopaedic practice elsewhere. The unnecessary review of simple, stable injuries which are often needlessly immobilised, still occurs, diverting resources from patients with more complex injuries. This tendency is not new and was noted by Charnley[1] in the 1950s:

"How often we see plaster of Paris applied merely because X-ray examination has revealed a small crack or undisplaced fracture! On many such occasions the surgeon would probably have treated a case without plaster had he used his clinical sense alone...patients are frequently prevented from returning to work by plasters which are not essential."

Some units have developed triage systems run by healthcare professionals other than doctors,[2,3] but the universal principle of face-to-face consultation two to three days post-injury has been retained. Although well-meaning, it is often difficult for patients to attend a clinic during the most painful and functionally restricted period of their recovery and frequently no new information or change in management results. The consultation is often brief, as fracture clinics traditionally serve many patients. Trainee doctors make a major contribution to the fracture clinic service but recent and future changes in the medical workforce will reduce their input. The NHS is also under significant pressure to provide an evidence-based, cost-effective service. Elsewhere, the redesign of outpatient clinics for the management of other acute and chronic diseases have shown quality improvement and cost saving.[4,5]

We have worked closely with our Emergency Department (ED, Fig. 1) to develop a comprehensive, evidence-based protocol (Glasgow Fracture Pathway) for the management of orthopaedic injuries.

THE GLASGOW FRACTURE PATHWAY

The new process, introduced in October 2011, comprises two main components. Patients with simple, self-limiting stable fractures (fifth metatarsal, fifth metacarpal, distal radius, torus, minor radial head/elbow fat pad sign, mallet finger, child's clavicle) are given structured verbal advice at their original presentation to the ED and are not automatically followed up (ED Direct Discharge). The selection of this core group of injuries is based on an extensive evidence base for excellent outcomes with early mobilisation and without the need for regular review.[6-13] The advice in the ED is reinforced by a patient information leaflet which explains the injury, treatment and expected recovery. It is backed up by a telephone help-line provided by the orthopaedic department during working hours, and the ED at other times. Removable Velcro splints are supplied where required.

Patients with fractures that do not require immediate admission are referred to the Virtual Fracture Clinic (VFC). This is a regular multidisciplinary meeeting, led by an orthopaedic consultant, where the history, examination and ED radiographs are reviewed. The resulting management plan is outlined and agreed with the patient by telephone immediately afterwards. There are three possible outcomes from this "virtual" assessment: telephone advice alone with discharge from follow-up (VFC Direct Discharge), review in a nurse-led fracture clinic (NLC), or review in a sub-specialty clinic (SSC - shoulder and elbow, hand and wrist, foot and ankle and knee).

RESULTS

In the first year (2011-12) the ED managed and discharged 2115 of 6385 patients (23%) who would previously have been referred to a fracture clinic. The remaining 4270 (67%) were reviewed at the VFC (Fig. 2). Of these 1687 (26%) were discharged after virtual review by an orthopaedic consultant, followed by a nurse-led telephone consultation. This left 1889 patients (29%) to be reviewed in sub-specialty clinics and 395 (6%) in the nurse-led clinic. There were 233 patients (4%)

Fig. 1 The real team behind the virtual clinic

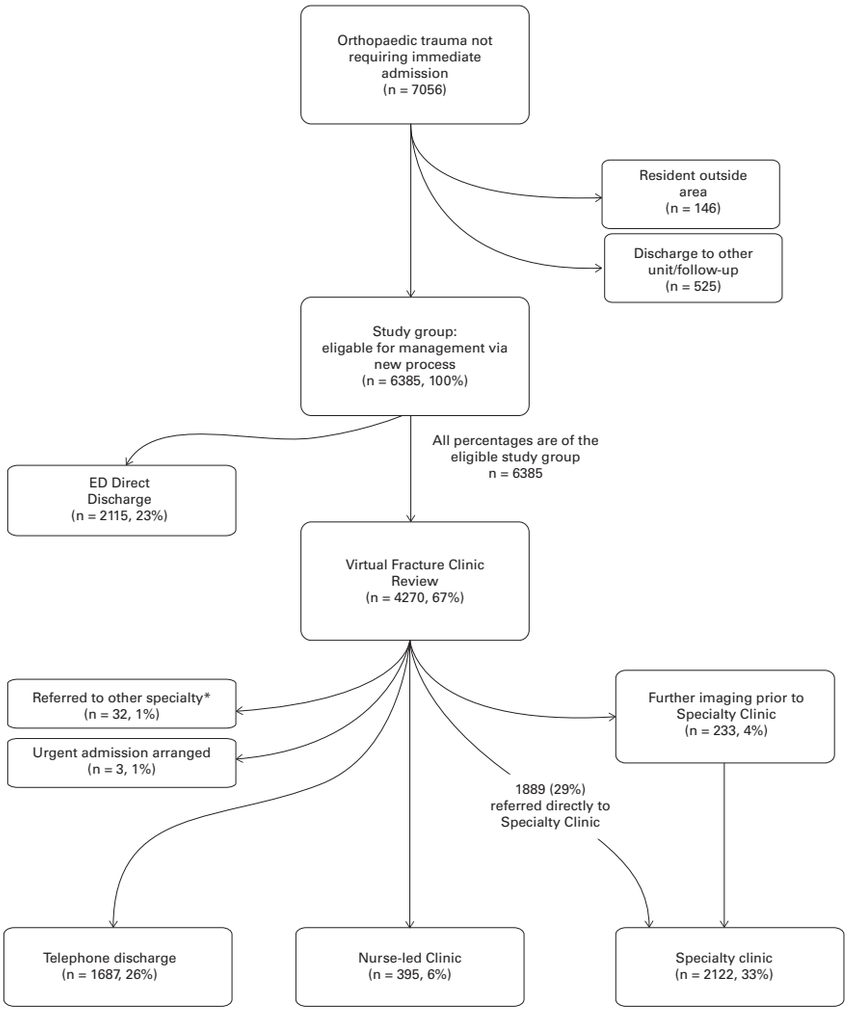

Fig. 2 Flow chart demonstrating the pathway of patients through the redesigned fracture clinic process

who were referred directly for further imaging based on the VFC discussion (mostly suspected scaphoid fractures) and subsequently followed up in the NLC or SSC. Only 34 patients discussed at the VFC required semi-urgent admission for surgery (Figs 1 and 2), mostly for fractures of the distal radius. The overall rate of ED and VFC discharge, without further face-to-face review, was 3802/6385 (60%).

The total direct cost of reviewing all these patients in a consultant-led fracture clinic would have been £585,951. Under the redesigned system, the overall cost was £429,780, leading to a saving of £156,171 for the period of study. This saving allowed more consultant time to be devoted to complex cases, and to release other resources to respond to clinical pressures.

These changes brought benefits both to patients and the department but did not require additional investment. Self-care was promoted and medicalisation of benign injuries avoided, as with the management of low back pain. Patients suffered less discomfort and inconvenience, as they only attended a fracture clinic for "something to be done", either for assessment or treatment at the appropriate sub-specialist clinic at a suitable time. The need for attendance was also reduced with the routine use of removable splints rather than plaster casts and backslabs. At a service level, significant benefit was derived from freeing up clinical and administrative time.

We examined patient satisfaction and the clinical outcome in sub-groups managed with the new protocol. In patients with suspected and definite radial head fractures (Mason 1 and 2), 90% were managed by direct discharge from the ED.[14] The satisfaction rate ranged from 87% to 95%. Only two patients needed surgery for a late complication after they recontacted the fracture clinic when their pain and stiffness did not settle in the period that had been discussed with them during their initial visit to the ED. A separate comparison of fractures of the fifth metatarsal treated before and after the new protocol showed an overall reduction in total appointments from 491 (1.76 per patient) to 102 (0.32 per patient).[15] There was no difference in the rate of subsequent open reduction and internal fixation for nonunion (OR 0.72, 95% CI 0.17 to 3.07, p = 0.735), suggesting that these were adequately detected with this protocol.

The modernised system has brought reductions in both direct and indirect costs. In addition to the savings described, reduction in attendance gives further, less easily quantifiable, gains for services such as patient transport, secretarial support and a reduction in unneccessary radiographs. There are also cost savings to the patient and society from reduced absence from work, transport and hospital parking. The nursing support for the VFC and the telephone consultation afterwards was met through reallocation of resources as the numbers of staff required to run traditional clinics fell. The redesigned process also improves training as trainees can attend the VFC, participate in decision making[16] and are therby better prepared for subsequent face-to-face consultations and providing advice to the ED when on-call. As there is less pressure than in a fracture clinic discussion of diagnosis and treatment can be more comprehensive. The beneficial effect on training of consultant review of all the new cases prior to the clinic has been described in another unit.

BARRIERS TO REDESIGN

Inevitably, there were a number of barriers to overcome during the implementation of this new protocol. Face-to-face review of every patient a few days after a fracture was traditionally believed to be the safest, most effective form of management. This has led to a reluctance to discharge simple, stable, fractures at first presentation to the ED. An essential step in the modernisation programme was for all the ED and orthopaedic consultants to agree regularly-updated, local treatment protocols. The development of evidence-based patient information leaflets, using simple, ▶

unambiguous language allowed the documentation needed for the two departments to achieve a consensus. A real-time database allowed regular audit to establish confidence in the process and rapid resolution of any problems.

False-positive referrals to the virtual clinic are managed by an appropriate telephone conversation, and false-negatives are mitigated by correlation with timely radiological reporting and an effective system of recall. Patients who fail to achieve the expected recovery can contact the telephone advice line for help and review if required. The availability of removable splints in preference to plaster backslabs and casts has allowed us to promote patient self-care and removed the need for patients to make frequent hospital trips for plaster checks or removal.

THE FUTURE

The literature provides us with an excellent understanding of the natural history of many simple, stable injuries. There is a need to justify our clinical management and follow-up processes to deliver seamless, evidence-based patient-focused services that are completely. The financial and staffing pressures facing the NHS make the *status quo* unsustainable. Orthopaedic departments embarking on redesign can use these principles to analyse local problems and implement safe and effective processes for managing most fractures. The website www.fractureclinicredesign.org is useful in this regard.

The editors would welcome letters discussing the contents of this article
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Fellowships

D. Kader

BOSTAA / Arthrex Travelling Fellowship 2013

Many colleagues have asked what motivated me to apply for a BOSTAA (British Orthopaedic Sports Trauma and Arthroscopy Association) Fellowship after practising as an orthopaedic consultant for over eight years, providing a broad range of knee services locally, including specialised patella and painful knee arthroplasty clinics. Surely fellowships were for newly-appointed consultants with new techniques to learn? Despite this, in many ways I believe an established consultant may benefit more from such an experience.

It is easy to become complacent and remain in one's comfort zone without taking on new challenges or techniques. It is even easier to be sceptical and dismissive of any new developments in knee surgery. Also, a more established surgeon has the benefit of maturity of practice, knowing which surgical techniques generally work and the