The impact of an Acute Knee Clinic

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ABSTRACT

INTRODUCTION The aim of this audit was to analyse the impact of an open access clinic for the treatment of soft tissue knee injuries with regard to delay to treatment.

PATIENTS AND METHODS Data from 100 consecutive patients seen in our sports clinic in 2000 were collected. Following this audit, an Acute Knee Clinic was introduced and took place once per week. In 2006, the audit loop was closed and data from 100 consecutive patients seen in the Acute Knee Clinic were collected.

RESULTS The time from injury to the first review by a specialist is referred to as the time to diagnosis. The introduction of the Acute Knee Clinic led to an 89% reduction in the time to diagnosis for accident and emergency referrals and a 32% reduction for general practitioner referrals. The average number of visits of any sort made by the patient prior to review by a specialist in 2000 was five as opposed to one in 2006.

CONCLUSIONS An Acute Knee Clinic with open access is a simple method of dramatically reducing the delay to diagnosis. This decreases the total delay to treatment which is of particular importance in patients requiring anterior cruciate ligament (ACL) reconstruction due to the risk of secondary meniscal and chondral injuries. Decreasing the delay to diagnosis and appropriate treatment reduces the recovery time. This not only reduces the socio-economic cost of soft tissue knee injuries but may also decrease the psychosocial consequences for the patient. By reducing the number of times a patient is seen by medical practitioners prior to review by a specialist has the potential to decrease the total cost of treatment. The socio-economic impact and potential actual cost savings of treatment are particularly important with the current economic climate.

KEYWORDS

Acute knee clinic – ACL – Meniscus – Knee injury

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Our knowledge and understanding of the natural history of acute knee injuries has vastly increased over the last decade. Superspecialism has also come to the fore with the advent of surgeons who are particularly interested in the management of sports injuries of the knee. With specific relevance to anterior cruciate ligament (ACL) injuries, recent studies suggest that patients who have had a delay in diagnosis and appropriate treatment are at serious risk of developing secondary damage to the knee joint.^{1–6}

In the same time period, there have been improvements in the technology available to investigate and treat such injuries. Magnetic resonance imaging (MRI) is now widely available within most hospitals and the improved operative technique in ACL reconstruction has led to patients treated as day-cases or only requiring an overnight stay. This increased availability should theoretically enable us to diagnose and treat these injuries earlier. However, there is often a significant delay from the time of injury to diagnosis.^{7,8}

In the treatment of knee injuries, we believe there are two identifiable delays. First, the delay from the time of injury to diagnosis by the specialist and second the delay

following diagnosis to appropriate investigations and treatment. This second delay is potentially difficult to control and is heavily influenced by funding and resources but is being reduced in many centres by the impact of the 18-week pathway.

In this study, we highlight the impact of an acute knee clinic on the delay to diagnosis and discuss the psychosocial and socio-economic impact for the patient and the potential cost savings for the NHS.

Patients and Methods

Data from 100 consecutive patients presenting with knee injuries to our sports clinic in 2000 were collected. Information was collected prospectively using a standardised proforma. The date of the injury along with the dates of the referral and review in the specialist clinic were recorded. The total number of medical visits of any sort (general practitioner [GP], physiotherapist, other surgeon, MRI scan) made by the patient regarding the injury prior to review in the specialist clinic was noted. At the first clinic appointment with

the specialist, the patient was given a working diagnosis and a management plan was agreed. We, therefore, use the term 'time to diagnosis' for the period from the date of injury to the date of the first clinic appointment with the specialist. The mechanism of injury was recorded along with the diagnosis made by the referring doctor and that made by the specialist. Treatment received prior to the review by the specialist was recorded. Subsequent dates of any investigations or surgery were noted. For those undergoing surgery, we calculated the delay from referral to surgery.

Following the results of the audit in 2000, change was implemented. An Acute Knee Clinic was introduced and took place once per week. This replaced an existing fracture clinic streamlining all soft tissue knee injuries to one clinic thus increasing the capacity for fracture patients in the other fracture clinics that no longer had to deal with acute knee injuries. The accident and emergency (A&E) department had open access to the clinic. This had not previously been the case; in the past, patients with soft tissue knee injuries were referred to any fracture clinic, to a physiotherapist or back to their GP (Figs 1 and 2). Local GPs were informed about the clinic and were encouraged to fax urgent referrals for patients presenting with an acute soft tissue knee injury. Following the introduction of the clinic, there was a repeat audit in 2006. Again, data from 100 consecutive patients seen in the clinic were collected prospectively using a standardised proforma.

Results

The mean age (31 years [range, 15–53 years] and 36 years [range, 14–85 years]) was similar in 2000 and 2006. There were 56 and 64 men in the two samples. The majority of the referrals to the knee clinic were from GPs (65 in 2000; 52 in 2006). There was a higher proportion of referrals from A&E

after the creation of the knee clinic (28 rising to 41). The reason for the referral to the knee clinic is shown in Table 1. In 2000, many patients had a 'trial' of conservative treatment which led to the late referral of patients who had developed a chronic knee problem; hence, the main reason for referral in 2000 was anterior cruciate ligament injury. In 2006, there is a more varied range of diagnoses which reflects the open access nature of the clinic to which all patients with acute knee injuries are referred early for a specialist opinion.

The delays from injury to referral and to first clinic date are shown in Table 2. The 'time to diagnosis' is the period from the date of injury to the date of first clinic appointment with a specialist. The mean time to diagnosis for A&E referrals in 2000 was 123 days as opposed to 14 days in 2006. The reason for the delay in 2000 was that A&E patients were either referred to a general fracture clinic or to a physiotherapist or discharged back to their GP without initially having a specialist review (Fig. 1). This was rectified by the open access nature of the Acute Knee Clinic (Fig. 2) with a resultant 89% reduction in the time to diagnosis with the majority of the patients being seen between 7–14 days, 85% of patients being seen within 14 days and over 90% of patients being seen within 21 days. Delays of over 14 days

Table 1 The diagnosis made by the referring clinician

Reason for referral/diagnosis	2000	2006
Meniscal injury	24	27
ACL injury	47	24
Anterior knee pain	18	10
Soft-tissue injury	–	13
MCL injury	4	9
LCL injury	–	3
Dislocated patella	4	2
Osteochondritis	3	2
Fracture	–	8
Loose body	–	1
Pain after TKR	–	1

Table 2 The mean time to diagnosis

	A&E 2000 (days)	A&E 2006 (days)	GP 2000 (days)	GP 2006 (days)
Mean TFI to referral date	12	3	136	96
Mean time from referral to first clinic date	112	11	68	43
Mean TFI to first clinic date ('time to diagnosis')	123	14	204	139
TFI, time from injury.				

refer to patients who did not present acutely to A&E. The mean time to diagnosis for GP referrals was 204 days in 2000 and 139 days in 2006, equating to a 32% reduction in the delay. It should be noted that the delay from date of injury to referral by the GP accounts for a large proportion of the delay to diagnosis (67% and 69% in 2000 and 2006, respectively). The delay from actual referral date by the GP to the date of review by a specialist was 68 days in 2000 and 43 days in 2006 (37% reduction) which demonstrates the improved access the Acute Knee Clinic provided to GP referrals.

Further to reducing the time to diagnosis, the improved referral pathway decreased the number of medical visits the patient had to make. The average total number of medical visits of any sort (A&E, physiotherapist, surgeon, MRI) made by the patient prior to review by a specialist was five in 2000 as opposed to one in 2006.

Of the 100 patients reviewed in 2000, 62 underwent surgery and 38 were treated conservatively. Of those who had surgery, 40 (64%) had ACL reconstruction and 16 (26%) had arthroscopy with or without meniscal repair/debridement.

Of the 100 patients reviewed in 2006, 48 underwent surgery and 52 were treated conservatively. Of those who had surgery, 26 (54%) had ACL reconstruction and 18 (37%) had arthroscopy with or without meniscal repair/debridement.

In 2000, for those who had operations, the mean time to surgery from the first clinic date was 196 days (range, 3–486 days) whereas in 2006 the mean time to surgery from first clinic date was 126 days (range, 8–480 days). This equates to a 36% reduction in the wait for surgery from the first clinic date. In both cohorts, a large proportion of the delay was caused by the long wait for investigations. The longest delays relate to patients who elected to undergo a trial of physiotherapy rather than have an operation acutely.

Discussion

The natural history of the ACL deficient knee is well known. If left untreated, the torn ACL leads to anterior laxity and rotatory instability which increases the risk of secondary damage to the knee. Recent research has shown that, in the ACL deficient knee, the deterioration in meniscal tears and

osteochondral lesions is statistically greater with increased interval between diagnosis of ACL rupture and reconstruction.^{1–6} O'Connor *et al.*² performed a retrospective study of 1375 patients who sustained ACL injuries. They found that the risk of meniscus injuries increases when ACL reconstruction is performed more than 6 months after injury whilst the risk of articular cartilage lesions increases when ACL reconstruction is performed more than 1 year after injury. In a similar study, Church and Keating³ reviewed 183 patients who had undergone reconstruction of the ACL. The incidence of meniscal tears and degenerative change was assessed and related to the time of injury. They found that there was a significantly higher incidence of meniscal tears and degenerative change in patients undergoing reconstruction after 12 months compared to those having surgery within 12 months of injury. This increasing risk of secondary damage with increased time from injury to surgery has also been demonstrated in paediatric and adolescent cases of ACL injury.⁴ Our study demonstrates that introducing an Acute Knee Clinic is a simple, but effective, way of dramatically reducing the delay to appropriate treatment of soft tissue knee injuries. In 2006, all patients requiring ACL reconstruction had their operation within 12 months from the injury date which is the accepted gold standard.

British Orthopaedic Association (BOA) best practice guidelines for ACL reconstruction comment that each patient should be individually assessed by a specialist whom is able to take into account the type and frequency of physical activity and the degree and type of instability at presentation.⁹ A decision can then be made as to whether or not reconstruction is appropriate. The BOA guidelines also state that early stabilisation reduces the risk of meniscal damage.⁹ We believe patients who are unlikely to improve with conservative treatment and would benefit from early surgery are more accurately identified by a specialist.

ACL injury was not the only condition seen in our clinics. A wide variety of soft tissue knee injuries were encountered although suspected meniscal or ACL injury was the most common presentation in both 2000 and 2006 (Table 1). All soft tissue knee injuries have a significant impact on patients' well-being. Robling *et al.*¹⁰ identified broad physical and psychosocial consequences for patients with knee

injuries experiencing delays in clinical management. Further to this, soft-tissue knee injuries have a significant socio-economic impact resulting from multiple days of absence from work which is of particular importance when patients are self employed.¹¹ Early directed treatment, whether surgical or conservative, may improve outcome and result in earlier return to normal activities. This will reduce the psychosocial consequences and lower the socio-economic burden of soft tissue knee injuries. This is of particular importance in the current economic climate.

The average total number of medical visits made by the patient prior to review by a specialist in 2000 was five as opposed to one in 2006. The increased number of appointments not only delays appropriate treatment but also increases the total cost of treatment of the patient's injury. With the current economic climate, the NHS is under pressure to deliver a first-class service in a cost-effective way. Efficiency savings will become essential. The acute knee clinic enables early accurate diagnosis and commencement of appropriate treatment. This should decrease the time to recovery and reduce the total number of medical follow-ups required. This coupled with the socio-economic impact of an earlier return to work makes the acute knee clinic a cost-effective way of managing soft-tissue knee injuries without any compromise to the quality of care received.

We acknowledge there are limitations to this study. The numbers are relatively small and the exact cost savings and socio-economic impact is difficult to calculate accurately. However, this study quite clearly demonstrates that the

introduction of an acute knee clinic is a very simple and effective way of reducing the time to diagnosis and treatment for patients who have sustained a soft-tissue knee injury.

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