A podiatric surgery high-risk community foot clinic: surgical and financial outcomes

Robert Morley, Frank Webb and Aaron Barber

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Key words

- Diabetes
- Foot surgery
- Foot ulceration
- Infection

Article points

1. Healthcare systems need to consider how to deliver high-quality and cost-effective services for the high-risk foot.
2. There are a proportion of patients without diabetes, often neuropathic, with foot disease who struggle to access appropriate healthcare services.
3. Complex diabetic foot pathologies can be managed surgically in day-case community settings under local anaesthesia in systemically well patients.
4. Podiatric surgery on the high-risk foot can achieve good outcomes with high patient satisfaction rates.

Authors

Robert Morley is Consultant Podiatric Surgeon, Derbyshire Community Health Services NHS Foundation Trust & Independent Health Group, UK; Frank Webb is Consultant Podiatric Surgeon, Derbyshire Community Health Services NHS, UK; Aaron Barber is Specialist Registrar in Podiatric Surgery, Derbyshire Community Health Services NHS, UK

Diabetic foot disease exerts significant human cost, with substantially reduced health-related quality of life. The financial burden to healthcare systems worldwide is also significant and unlikely to improve anytime soon. Previously, the authors reported outcomes following conservative management of people with diabetes attending a high-risk foot podiatric surgery community clinic. This demonstrated a significant proportion of patients requiring surgical intervention where conservative measures had failed or were deemed inappropriate. The purpose of this study was to determine clinical outcomes and costs of those patients who proceeded to surgery. A retrospective cohort study was designed involving 106 consecutive podiatric surgery operations undertaken in those with or without diabetes with foot disease who are high-risk over a period of 62 months. Data analysed included demographic and surgical outcomes, including whether specific aims were met, complications, the patient-reported outcome measure, PSQ-10, qualitative data in the form of patient expectations to gain an understanding of individual aims and cost using national tariffs assigned to Health Resource Group codes. A total of 31.6% of patients required surgery to address their foot disease. A significant proportion had concomitant comorbidities, including diabetes (88.7%), cardiovascular disease (40.2%), peripheral neuropathy (96.9%) and peripheral arterial disease (18.6%). Surgical aims were met in 93.4% of patients, with a 15.1% complication rate. The PSQ-10 score was 92.1 (SD=9.29, range 55–100), with patient expectations met in 97.8% in completed questionnaires. The mean average price of our foot surgery per operation was £1,889. Podiatric surgery on the high-risk foot can achieve good outcomes with high patient satisfaction rates.

In November 2015, a podiatric surgery-led high-risk foot clinic was set up in Derbyshire, UK, with the aim of raising the level of diabetic foot care across the locality. This initially incorporated a podiatric surgeon, diabetes specialist podiatrist and healthcare assistant, but went on to expand and incorporate a diabetes specialist nurse and orthotist, with additional diabetes specialist podiatrists as the caseload increased, with onsite access to X-ray, ultrasound and blood-taking and linking in with the local secondary care hospital diabetes multidisciplinary team (MDT) to provide access to diabetology, microbiology and vascular surgery. The authors previously reported outcomes following conservative treatment from this community clinic (Morley and Webb, 2019), which found that over a 20-month period, 58% of ulcers healed in a mean 9.04 weeks through various treatment strategies including total contact casting, many of which were complicated by ischaemia or infection. However, 27% required surgical intervention to address their foot disease.

In this follow-up study, the authors reported specifically on those who required surgical intervention from the initial inception of the clinic in November 2015 through to January 2019, with the aims of determining whether specific surgical aims were met, complication rate, patient satisfaction levels, patient expectations and the cost of operations for patients proceeding to foot surgery from a high-risk community podiatric-led clinic. Data analysed included referral source, demographic data, procedures undertaken, complications and outcomes, including the patient-reported outcome measure (PROM) PSQ-10 (Rudge and Tollafield,

2003). Qualitative data in the form of patient expectations were retrieved to gain an understanding of the patient's mindset and individual expectations. Finally, the cost of performing podiatric surgery in a community clinic was determined.

The caseload incorporated both people with or without diabetes as it became clear that there were a proportion of people without diabetes with acute and chronic foot problems, who were often not eligible for multidisciplinary specialist care, but nevertheless still required specialist input. The authors decided that in order to meet the needs of all people and ensure equality across the locality, the service should accept all referrals with an acute or chronic high-risk foot problem, regardless of diabetic status.

Patients and methods

A single-centre, retrospective observational cohort study was performed to assess data collected between November 2015 and January 2019 (38 months) to determine outcomes from a podiatric surgery high-risk community clinic with permission to analyse, interpret and present data granted by the local National Health Service (NHS) clinical effectiveness team.

Referrals were accepted for the clinic from primary and secondary care settings, including diabetology, urgent treatment centres (UTCs), nursing specialities, allied healthcare professionals and GPs, and for a range of pathologies such as foot infection, including those not responding to antibiotics, deteriorating ulceration, suspected or confirmed osteomyelitis, unexplained pain or swelling, and in diagnostic uncertainty in patients with and without diabetes. Where cellulitis was rapidly extending or where there were signs of sepsis or critical limb ischaemia, patients were triaged and referred directly to an acute unit.

Conservative management was initiated when appropriate, including wound management, provision of orthotics and bespoke footwear and specialist casting techniques. However, when conservative measures were inappropriate or where they failed, surgery was considered. Comorbidities were optimised where appropriate, ensuring stable cardiovascular disease (CVD), glycaemic control, lipid levels and vascularity, by liaising with appropriate specialities and referring on when required. All operations were performed as day cases under regional anaesthesia, namely ankle blockade performed by the podiatric surgeon or staff podiatrist. The authors recognised that in this cohort of patients local anaesthesia was preferable due to multiple comorbidities encountered.

three-hundred-and-seven patients were referred to the high-risk clinic, with 97 proceeding to surgery and totalling 106 operations and a conversion to surgery rate of 31.6%. All 106 consecutive operations carried out by the authors (FW, RM, AB) within the 38-month timeframe were retrospectively reviewed by RM through interrogation of PASCOM-10 (Podiatric and Surgical Clinical Outcome Measurement), an anonymised, web-based national auditing system used by the authors to collect data and supported by the College of Podiatry (Maher, 2016). The curtailment of the study was January 22, 2019.

Of the 97 referrals, 41 were received from community podiatry (42.3%), 37 from the diabetologist via the secondary care hospital MDT (38.1%) with the remaining 19 (19.6%) from other healthcare professionals or a new episode commencing from an old referral. One-hundred-and-six consecutive cases (97 patients) were involved in the study, 76 (78.4%) males and 21 (22.6%) females; 86 (88.7%) had a diagnosis of diabetes; 94 (96.9%) had peripheral neuropathy; 39 (40.2%) had cardiovascular disease; 18 (18.6%) had a diagnosis of PAD; 81 (83.5%) had foot ulceration and 60 (61.9%) had active foot infection. Of the infected group, 8 (13.3%) had soft tissue infection and 52 (86.7%) had osteomyelitis, three (6%) of whom had midfoot or hindfoot osteomyelitis and 49 (94%), metatarsal or phalanx involvement. All cases of surgical intervention from the clinic were included; no patients were excluded (*Table 1*).

Patients were categorised into urgent, curative, prophylactic and elective, with an associated aim attributed to the category to help identify whether or not the surgery was successful and the aim met (*Table 2*). These categories were based on Armstrong and Frykberg's (2003) non-vascular foot surgery classification with urgent adapted to mean acute or chronic infection, as opposed to acute infection alone. In these infected cases, the aim of the treatment was to eradicate infection, while those with active ulceration without infection were classified as curative, with the surgical aim of healing an ulcer. Prophylactic patients had a history of ulceration or neuropathy, which predisposed them to increased risk of ulceration and had generally developed deformity requiring

Table 1. Baseline characteristics.

Parameter	Frequency	Percentage
Patients	97	
Operations	106	
Mean age M/F	68.5/69	
Gender M/F	76/21	78.4/21.6
Diabetes	86	88.7
Peripheral neuropathy	94	96.9
PAD	18	18.6
CVD (stroke, ischaemic heart disease or other forms of heart disease)	39	40.2
Management for hypertension	55	56.7
Active ulceration	81	83.5
Active infection	60	61.9

Table 2. Foot surgery stage, associated aim and outcome.

Foot surgery stage	Aim of surgery	106 admissions	Aims met		
			Y	N	Lost to follow-up
Elective	Correct deformity	1 (0.9%)	1	0	0
Prophylactic	Prevent re-ulceration	14 (13.2%)	14	0	0
Curative	Heal ulceration	21 (19.8%)	19	0	2
Urgent	Eradicate infection	70 (66.0%)	65	5	0

correction. Finally, elective patients had no active infection, no history of ulceration and no underlying neuropathy, but presented with deformity requiring correction. Classifying patients in this manner helped to manage patient expectations, as we would not necessarily expect to heal a long-standing ischaemic ulcer in a patient with osteomyelitis; the mere aim would be to resolve the infection. It also helped to identify risk when determining rationale and type of surgery required. A successful outcome was then determined by whether the aim was met.

Patient satisfaction had been assessed using the audit tool PSQ-10, a non-validated but reliable PROM (Taylor et al 2008) with a score range between 0-100 with a higher score deemed a more successful outcome. As part of the PSQ-10 patients were asked what their expectations were from surgery. These were subsequently broken down into six categories relating to eradication of infection, healing of ulceration, correction of deformity, mobility, pain and other to capture the remaining expectations and in no particular order of importance. This was conducted to gain an understanding of what mattered to the patient and what they hoped to gain from the surgery. It was then determined from PSQ-10 whether their expectation was met.

Financial costings data were obtained from the local NHS financial team on all patients undergoing surgery from the clinic. The cost of surgery was sought by retrospectively finding out how each case was coded using HRG codes and then linked to the national tariff cost. The national tariff is a set of prices and rules used by providers of NHS care and commissioners to deliver care to patients (NHS England, 2020). This is known as 'payment by results', a system of paying NHS healthcare providers a standard national price or tariff for each patient seen or treated, and should not be confused with the cost of overall care for the treatment episode. The tariff is unique to each provider and takes on board the complexity and health needs of the individual patient (NHS Digital, 2020). Based on local agreements,

surgery within our department is performed at 47% national tariff and the cost is presented in the results.

Results

Mean follow-up time was 22 weeks (SD=24.13, Range=1–113). Surgical aims were met in all patients with regard to elective, prophylactic and curative surgery, although two patients were lost to follow-up (*Table 2*). Urgent patients accounted for 66% of the caseload where the surgical aim was to eradicate infection. This group underwent surgical debridement of devitalised tissue, lavage and, in 68 out of 70, administration of antibiotic-loaded calcium sulphate (Stimulan®, Biocomposites Ltd) to ensure a high antibiotic dose at the site of infection. Sixty-five out 70 of these urgent cases were deemed successful, with eradication of infection. Of these five cases that failed, three were conducted in a single patient despite multiple long courses of intravenous and oral antibiotics in addition to surgery. Bone biopsy results in this case confirmed resistant strains of *Staphylococcus aureus*, *Staphylococcus capitis, Serratia marcescens* and *Enterococcus faecalis*.

Procedure type demonstrated that digital correction accounted for 72/217 (33.2%) procedures, conservative debridement with administration of antibiotic-loaded calcium sulphate accounted for 68/217 (31.3%) procedures and minor amputation attributed to 33/217 (15.2%) (*Table 3*).

Complications occurred in 16 out of 106 (15.1%) admissions. These included three cases of wound dehiscence and breakdown, four episodes of postoperative infection, one transfer lesion and five cases of surgery failing to eradicate infection, which were discussed previously. In addition, of 97 patients, three (3.1%) died within 12 weeks of surgery; one of these was unrelated, with cause of death due to CVD, and a second case as a consequence of pulmonary embolism, which may have been due to post-operative cast immobilisation, despite anticoagulant therapy. The third patient attended our centre for postoperative care displaying signs and symptoms of sepsis, and was urgently referred to an acute unit, but unfortunately died a few days later.

The PSQ-10 satisfaction questionnaire demonstrated a score of 92.1 (SD=9.29 range 55–100) out of 100, following 46 day-case admissions with a return rate of 43.4%. Patient expectations were divided into six categories (*Table 4*) previously described with 45 out of 46 (97.8%) of patients describing their own expectations as being met.

The cost, using HRG codes linked to the national tariff cost and based on conducting 106 operations at 47% of national tariff, amounted to £200,653. This provided a cost saving of £226,268 at mean average £1,889 per case. The cost at 100% national tariff would otherwise have been £4,027.

Discussion

Historically, corrective or reconstructive surgery to address ulceration and deformity in the high-risk foot was considered ill-advised (Frykberg et al, 2010) but in carefully selected and evaluated patients it has been shown to be an important treatment strategy in the armamentarium to ultimately reduce lower-limb amputation (Setacci et al, 2013). For patients attending our high-risk clinic, we noted a conversion rate to surgery of 31.6% to address deformity, ulceration, infection, Charcot neuroarthropathy or a combination of these, where conservative measures had failed or had been deemed inappropriate. The authors could find no like-for-like comparisons in the literature; however, Zeun et al (2015) noted that 36.5% of a caseload presenting at a tertiary centre with diabetic foot osteomyelitis were managed surgically, with the remaining managed conservatively in 85 patients over 4 years with 12 months follow-up. There is no agreed protocol as to the appropriate treatment strategy in the high-risk foot and so current management should be tailored to each patient's needs (Jeffcote and Lipski, 2004).

Referrals came primarily from two sources: namely, community podiatrists and the local diabetes MDT based in secondary care. The former was a consequence of marketing our service to local community podiatry teams, performing presentations as to how we could help manage their complex patients and offering support and advice in difficult cases, and this accounted for 42.3% of referrals. The high number of MDT referrals (38.1%) meanwhile demonstrated the close links developed with diabetology as a result of a podiatric surgeon attending the diabetes MDT clinic on a bi-weekly basis. This enabled trust between clinicians to be developed, with pathways put in place to enable the bilateral flow of patients between the two respective departments. However, low referrals from other healthcare professionals suggests increasing

Table 3. Procedure type.

Parameter	Frequency	Percentage
Patients	97	
Operations	106	
Mean age M/F	68.5/69	
Gender M/F	76/21	78.4/21.6
Diabetes	86	88.7
Peripheral neuropathy	94	96.9
PAD	18	18.6
CVD (stroke, ischaemic heart disease or other forms of heart disease)	39	40.2
Management for hypertension	55	56.7
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Active infection	60	61.9

Figure 1. Preoperative image of a diabetic foot infection with exposed distal and proximal phalanges of the right hallux.

Figure 2. Preoperative image of with significant medial tissue loss.

engagement with UTCs, GP practices, practice nurses and diabetes specialist nurses is required to ensure patients are referred on, as and when necessary, for appropriate care.

From the demographic data (*Table 1*), it was clear that males had a greater predilection for foot disease. This is not specific to our data but is frequently noted in other studies (Setacci et al, 2013; Jesus-Silva, 2017; Zhang et al, 2017). Reasons to explain this gender imbalance may include males having a much greater chance of developing peripheral neuropathy, being more likely to smoke and having increased rates of PAD. Females meanwhile have demonstrated reduced risk, attributable to increased joint mobility, lower-foot pressures and hormonal differences that are believed to enhance neural protection (Dinh and Veves, 2008; Peek, 2011).

Diabetes was shown to be a common comorbidity, accounting for 86 out of 97 patients (88.7%), all of whom had peripheral neuropathy to some degree. However, there were 11 patients (11.3%) who did not have diabetes, and all but three of these had peripheral neuropathy due to other causes including spina bifida, alcoholic neuropathy or neuropathy of unknown cause. Although it is likely there were various factors contributing to their foot disease — including PAD, foot deformity and social factors — it is peripheral neuropathy that confers the attendant risk (Armstrong and Frykberg, 2003). It is also known to increase the incidence of foot ulceration (Prompers et al, 2008) and is an independent risk

Table 3. Categorised patient expectations.

Category of patient expectation	Patient expectation (verbatim)
Infection resolution	Removal of toe and infection Loose infection of foot To get rid of the infection No more infections Infection removed from left foot
Ulcer healing	To stop ulcers on the end of my big toe No more ulcers Comfort and get rid of ulcerations Removal of bone spur causing ulcer To heal ulcer Healed the ulcer on my middle toe Wound to heal Amputation of toe to heal To resolve the big toe ulcer problem Reduction of foot ulcers No breakdown of toes
Deformity correction for prophylaxis/elective	Four toes straightening straight toes Straightening the toes in my left foot To have a bony spur removed from my foot Amputation of toe to prevent future complications
Mobility	To gain more mobility Doing the things I used to do, dancing etc. Walk better, do some gardening To get back to normality
Pain	Less pain To stop pain Less pain To be pain free Pain free mobility
Other	To make me feel well again Able to wear my normal shoes No problems with the toe Better treatment To save my foot

factor for foot infection (Jia et al, 2017). The authors have recognised that this group of high-risk patients without diabetes are usually unable to access MDT services with no recognised medical Consultant to manage their complex foot disease purely due to their non-diabetes status.

A significant proportion of our patients had been previously diagnosed with stroke, ischaemic heart disease (IHD) or other forms of heart disease (40.2%), and a total of 56.7% of patients were being treated for hypertension, a major risk factor for CVD. The correlation between CVD and diabetes is well documented and recognised as the most prevalent cause of morbidity and mortality in people with diabetes (Leon and Maddox, 2015). Chammas et al (2016) demonstrated a link and found IHD was the cause of death in 62.5% of patients with diabetic foot ulceration in a retrospective study of 243 patients. As 88.7% of our patients had diabetes and 83.5% had active ulceration, our elevated figures for CVD are not remarkable. However, this also reiterates the importance of aggressive cardiovascular risk

management in outpatient clinics, through regular blood pressure-taking, reinforcing the importance of smoking cessation and signposting for help and support, preventing, identifying and managing obesity, and ensuring optimal glycaemic control and lipid management.

PAD accounted for 18.6%, which were determined as those patients who had a non-palpable dorsalis pedis or posterior tibial artery. Although we recognise this is a crude measure for circulatory impairment, this was a retrospective study where no other parameter was available for every patient. The aim of surgery in the majority of these cases was to eradicate infection rather than heal wounds and was, therefore, categorised as urgent intervention as opposed to curative, prophylactic or elective. Being part of the MDT, however, enabled much closer discussions with the vascular surgeon to determine the appropriateness for foot surgery in these cases or whether to await endovascular or bypass surgery.

In terms of podiatric diagnoses, 81 patients (83.5%) who underwent surgery had active ulceration at the time of surgery. Meanwhile, 60 (61.9%) patients had active infection, with eight (13.3%) of this group diagnosed with soft tissue involvement and 52 (86.7%) cases of osteomyelitis. The low levels of soft tissue infection would suggest that many of this group are being managed in primary care by the GP or local podiatrist and are perhaps only referred on to our centre when infection progresses to deep tissue involvement.

Operations were categorised not only in terms of staging urgency but also specific procedures (*Table 3*). These procedures are not confined to the categories defined in *Table 2* but conducted throughout the different stages. An excisional arthroplasty, for example, to correct a digital deformity could be performed to address an elective, prophylactic, curative or osteomyelitic or urgent problem.

One of the most frequent procedures performed was a flexor tenotomy, and this accounted for 50 procedures (23.0%). This is a minimally invasive procedure, which can be conducted in theatre or in clinic to correct a flexible or semi-flexible hammer toe deformity, and has previously been shown to be safe and effective (Bonnano et al, 2017). This is a procedure well suited to the neuropathic patient where motor neuropathy has been attributed to intrinsic muscle atrophy and imbalance, particularly of the lumbricals and interossei with overpowering of the extrinsic muscles and subsequent claw toe (Sanz-Corbalan et al, 2019). Releasing the extrinsic long flexor can resolve the problem, reducing the associated pressure points. In more rigid hammer toe deformities, however, arthroplasty and arthrodesis procedures were required to enable realignment and reduce bony prominences.

Minor amputation accounted for 33 of the 217 procedures (15.2 %) and involved mostly lesser digital amputation. This procedure was performed mainly where infection had rendered the digit non-viable or where severe deformity would prevent successful realignment. Where possible, however, partial amputation of a toe was performed, with the aim of preserving muscle attachments to maintain the plantarflexory mechanism and stability of the toe. In addition, the remaining stump could act as a spacer, preventing adjacent digits filling the void and further subsequent deformity.

The most commonly performed surgery, mainly used as an adjunct to other procedures, was conservative debridement and administration of antibiotic-loaded calcium sulphate, which was performed in infected cases and accounted for 68 of 217 procedures (31.3%). The authors defined conservative surgery as excising only devitalised tissue to maintain length and preserve as much tissue as possible. This was followed in each case with thorough suction irrigation using a 50/50 mix of Iodinated Povidone (Videne®) and sodium chloride solution 0.9% (Normasol®) and application of antibiotic-loaded calcium sulphate. This is a bone substitute impregnated with gentamicin and vancomycin by mixing into a paste and placing into a mould to produce multiple beads. This results in a synthetic biocompatible material, which acts as a drug delivery system (Morley et al, 2016) and is then packed into the wound and absorbed to provide a high antibiotic dose at the site of infection.

Figures 1–7 demonstrate a series of images and X-rays of a typical patient attending the clinic who initially presented with an infected foot following failed oral and intravenous antibiotics, who went on to a partial ray amputation with administration of antibiotic-loaded calcium sulphate.

Complications are an unfortunate consequence of surgery in any patient population and our mortality rate of 3.1% within 12 weeks would be considered

Figure 3 (above). A preoperative x-ray demonstrating osteomyelitis of the hallux and first metatarsal head.

Figure 4 (right). Three days postoperative image following partial first Ray amputation administration of antibiotic loaded calcium sulphate beads.

Figure 5 (left). Three days postoperative view from the medial aspect with only partial closure due to extensive tissue loss.

Figure 6 (above). An X-ray three days following surgery demonstrating partial first Ray amputation with antibiotic loaded calcium sulphate still in situ.

significantly elevated, but in this high-risk cohort, where 40.2% have CVD, 88.7% have diabetes, 83.5% have foot ulceration and 61.9% present with active infection, it is of no surprise and well documented in the literature (Zhou and Wukich, 2015). In comparison, Vassallo et al (2019) noted 7.4% mortality rate in 81 patients with diabetes at 12 months follow-up after toe amputation, while Lenselink et al (2017) demonstrated mortality in 18% at 12 months in 121 patients in diabetes who underwent foot surgery with concurrent active ulceration.

Figure 7. At 6 weeks following surgery demonstrating wound healing.

When managing this cohort, it is difficult to determine what constitutes a successful outcome and the aims of the clinician may not be in line with patient expectations. PSQ-10 results would suggest overall high satisfaction rates of 92.1 (SD=9.29 range 55–100) comparing favourably with 2018 national podiatric surgical data, with a score of 87.4 in 2,848 patients over 114 treatment centres throughout the UK (College of Podiatry, 2018). However, the overwhelming majority of these were elective surgical patients and we recognise that due to our very high prevalence of peripheral neuropathy in our cohort, the pain element is diminished and, hence, satisfaction is likely to be higher in our group. Our data, however, are not dissimilar to data published by Maher and Bond (2017) who demonstrated a score of 91.8 (SD=8.14, range = 65–100) in a similar cohort.

Overall methodological quality of PROMs specific to the diabetic foot is poor (Ortega-Avila et al, 2019) and insufficient in accurately quantifying outcomes with no recognised gold standard (Wukich and Raspovic, 2018). As part of the PSQ-10 audit tool, patients were asked what their expectations were and we were able to break these down into broad categories (*Table 4*), which were not too dissimilar from the aims set out in *Table 2*. The authors were, however, unable to link individual patient aims with the type of surgery undertaken, but 45 out of 46 reported that their own original expectations had been met. Further work is needed to determine a successful, reliable and valid tool to measure success of surgery in this patient group. However, based on our patients' expectations, these should include parameters such as infection resolution, healing of ulceration, correction of deformity, pain reduction (despite the high prevalence of peripheral neuropathy in our group), and mobility, as well as evaluating psychological status and quality of life measures, bearing in mind the negative effects of foot disease on mental health (Ahmed et al, 2018).

Diabetic foot ulceration and amputation exerts a considerable financial burden, estimated at between £837m and £962m; 0.8% to 0.9% of the National Health Service (NHS) budget for England (Kerr et al, 2019). Thus ensuring that a high-risk foot service is not only effective but cost-efficient is paramount. The authors demonstrate a cost saving of £226,268 for surgery performed at 47% national tariff through local agreements with an average £1,889 per case.

There are also further cost savings associated with surgery performed by the authors in the community hospital setting, including regional anaesthesia performed by the podiatrist without the need of an anaesthetist, and all surgery being performed as day case with no overnight admission. Indirect cost savings included early surgical intervention to expedite ulcer healing resulting in reduced clinic attendances and early discontinuation of systemic antibiotics through locally administered drug delivery systems commonly used in our practice. This has a knock-on effect on cost savings on dressings, offloading and patient transport costs, which would otherwise have accumulated if early invasive intervention was not carried out.

Meanwhile, Kerr et al (2019) sought to determine inpatient costs of diabetic amputations also using national tariffs assigned to HRG codes. It was found that £19.03m involved 4,391 patients who were admitted for minor amputations or operations on stumps in 2014–2015 in the NHS in England, averaging £4,333 per case. In addition, it was found that a patient with diabetes with ulceration spent 8.04 days longer in hospital than a patient with diabetes without ulceration, with a daily unit cost of £376

for an inpatient with diabetic foot disease. It could, therefore, be argued that managing this cohort in the community and as day cases is significantly more cost-effective in appropriately risk-stratified patients.

Limitations

The authors recognise that the PSQ-10 return rate of 43.4% was poor, which was due to multiple factors. Firstly, busy high-risk clinics often resulted in clinicians failing to provide questionnaires, and in many other cases patients were unable to complete them due to awaiting busy ambulances to transport them home, which incorporated a significant proportion of the caseload. In addition, a small minority of our patients declined to complete the audit, possibly due to illiteracy. It is recognised that greater effort should have been attributed to increasing return rate, including postal responses.

Follow-up in many cases was short and not standardised, with patients discharged back to their local podiatry department at the point of aims being met. This was also a retrospective audit with increased likelihood of bias and confounding in comparison to a more favoured prospective study. Additionally, it is very difficult to determine the relative success of outcomes, as there is very little like-for-like comparative data in the literature. We also believe that collecting glycaemic control data in patients with diabetes would have been a useful parameter to correlate with the categories of urgency alluded to in *Table 2*, the operation type and complications. The collection of healing times would have been beneficial in comparing with other studies.

Conclusion

Podiatric surgery on the high-risk foot can achieve good outcomes, with high patient satisfaction rates. Currently, only a handful of podiatric surgery units are involved in non-elective work throughout the UK and we would advocate other units linking in with their local acute MDT to forge links and develop services. As a member of the MDT, the podiatric surgeon can add an extra dimension to the team through their advanced understanding and training of foot structure and function, providing an alternative avenue for the patient to access foot surgery. The authors have also demonstrated the cost of day case community podiatric surgery performed under regional anaesthesia based on HRG codes linked to national tariff costs, with potential significant cost savings to help reduce the financial burden of diabetic foot disease. ■

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