

## ORIGINAL RESEARCH

# Tenotomy for diabetic foot ulcers: a scoping survey of current practice

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**Plain English Summary**

**Why we undertook the work:** Diabetes is very common and one of the major problems is foot ulcers. Many foot ulcers fail to heal. Tenotomy describes cutting tight foot tendons to redistribute pressure in the foot. This may help ulcers heal faster and stop them coming back. This study aims to see who uses tenotomy and how it is performed.

**What we did:** The study was an online survey of doctors, nurses, podiatrists and any other person involved in treating patients with diabetic foot ulcers. The study collected information on how they treat patients and if they were interested in taking part in further research.

**What we found:** One hundred and sixty-eight healthcare professionals completed the survey: 111 were surgeons, 48 were podiatrists and 9 were diabetes specialist doctors.

There were three scenarios in which tenotomy was offered: to reverse toe deformity, to aid ulcer healing and to prevent recurrence. Tenotomy was often performed by orthopaedic surgeons (76%). The frequency with which tenotomy was performed varied from monthly (48%) to yearly (21%). The method of undertaking tenotomy varied. Some centres perform tenotomy under local anaesthetic (51%) whereas others perform it under a general anaesthetic (6%). Surgical tenotomy was the most preferred method (68%). Prior to tenotomy there was variable assessment of blood supply to the foot and 7% of centres did not assess blood supply at all.

Eighty-three responders would like to take part in further research to further investigate tenotomy and other pressure relieving treatments in the diabetic foot.

**What this means:** There is variation in the reason that tenotomy is performed, pre-procedure assessment prior to tenotomy and the way tenotomy is performed. Clinicians responding to this survey are willing to take part in more research in tenotomy. The Vascular Society Specialist Interest Group in the Diabetic Foot will lead further research in this area.

**Abstract**

**Background:** Diabetes mellitus is one of the fastest growing health crises of our time. One of the major complications is diabetic foot ulcers, many of which fail to heal. Tenotomy – transection of tendon fibres – may help to redistribute pressure in the foot and therefore help ulcer healing and prevent recurrence. The aim of this survey was to explore the availability of pressure relieving adjuncts, including tenotomy, in diabetic foot services and interest in collaborating in further research studies.

**Methods:** An online survey was performed of healthcare professionals involved in the management of diabetic foot ulcers to explore the multidisciplinary composition of diabetic foot services, offloading therapies available and interest in collaborating in further research.

**Results:** The survey gained 168 responses from 10 countries. Most responders were orthopaedic surgeons (61.3%, 103/168). Of those who responded, 70.8% (119/168) had a dedicated diabetic foot clinic and 99 (58.9%) reported having an active tenotomy service. 73.8% (124/168) of responders wished to further collaborate and 82.1% (138/168) were willing to help involve their patients in a future trial.

**Conclusions:** The results of this survey showed the variation in tenotomy practice and an appetite for collaborative research in this area. The Vascular Society of Great Britain and Ireland Diabetic Foot Specialist Interest Group will address these uncertainties through targeted collaborative research to investigate tenotomy as a potential clinical and cost-effective treatment in diabetic foot care.

**Key words:** diabetic foot, tenotomy, wound healing

## Introduction

Diabetes mellitus is one of the fastest growing health crises of our time. The disease is endemic in the UK, currently affecting more than 4.9 million people.<sup>1</sup> Diabetic foot ulcers (DFU) are a common and difficult-to-treat complication of the disease. Over a quarter of patients with diabetes will develop a DFU. Even with current best ulcer care implemented by a multidisciplinary team (MDT) following evidence-based guidelines, less than 50% of patients heal within the expected time frame.<sup>2</sup> Delayed healing leads to hospitalisations, life threatening infections, limb loss and mortality. This has a huge impact on patient quality of life and healthcare resources.

To tackle this health crisis, the Vascular Society of Great Britain and Ireland set up the Diabetic Foot Specialist Interest Group (DF-SIG), consisting of expert healthcare professions in DFU, vascular trainees and – importantly – patients, to address specific challenges facing patients, clinicians and healthcare systems through focused research. Foot complications of diabetes including infections, ulceration and amputation were identified in five of the top 10 clinician research priorities,<sup>3</sup> and a collaboration with the James Lind Alliance exercise has identified joint patient-reported research priorities.<sup>4</sup> The DF-SIG analysed key themes identified by patients and found new treatments to help DFU healing and prevent ulceration were the most frequently recurring themes.

DFUs occur due to a combination of factors, including peripheral neuropathy. Peripheral neuropathy is particularly problematic as it results in typical cavoid foot deformities such as claw and hammer toes. When combined with the loss of protective sensory feedback, this malposition causes increasing pressure on weight-bearing areas, predisposing patients to ulcer formation. Conservative measures to treat these ulcers include offloading casts and below knee walker boots. However, these do not correct the biomechanical deformity in the long term, predisposing to ulcer recurrence, and are poorly tolerated by patients. Tenotomy describes the transection of the tendon fibres and, in this context, relates to the flexor or extensor tendons of the toes. It is a minimally invasive procedure that can correct toe deformities to improve DFU healing and prevent recurrence.<sup>5</sup>

The aim of this survey was to explore the availability of toe pressure-relieving adjuncts, including tenotomy, in diabetic foot services.

## Methods

The survey focus was on tenotomy of toe tendons and pressure-relieving adjuncts to standard care to inform a prospective research study.

An online survey using Google Forms was developed, reviewed and piloted by the DF-SIG in line with designing and reporting survey guidelines.<sup>6</sup> The questions explored the composition of the diabetic foot MDT at each centre, defined offloading therapies offered for DFU by the MDT and determined interest in collaborating in DFU research led by the DF-SIG (see Appendix 1 online at [www.jvsgbi.com](http://www.jvsgbi.com)).

The survey was aimed at healthcare professionals involved in diabetic foot care. It was promoted through advertisement on social media platforms such as Twitter, distributed to mailing lists by the British Orthopaedic Foot and Ankle Society, College of Podiatry members and targeted invitation to lead clinicians in diabetic foot units.

Formal ethical approval was not sought as this is a survey of healthcare professionals and therefore formal informed consent was not required.

The survey ran between 13 January 2021 and 1 March 2021.

## Data analysis

Raw survey data were extracted onto Microsoft Excel, cleaned and duplicate responses removed. Counts and percentages were reported for each survey item.

## Results

### Reach

The scoping survey had 168 responses from 10 countries. The majority of respondents were from the United Kingdom (94.6%, 159/168).

Orthopaedic specialists made up the majority of responses (61.3%, 103/168) with other specialties including podiatry (28.6%, 48/168), diabetology (5.4%, 9/168) and vascular surgery (4.8%, 8/168).

Surgeons were the most frequent responders (56%, 94/168), followed by podiatrists (19.6%, 33/168) and physicians (12.5%, 21/168). Other healthcare professionals included nurse specialists, nurses, interventional radiologists, orthotists, physiotherapists and dieticians.

### Diabetic foot services

One hundred and nineteen of the 168 responders (70.8%) had a dedicated diabetic foot clinic at their centre. The clinic commonly consisted of a podiatrist (93.2%), diabetologist (81.4%), orthopaedic surgeon (62.7%) and diabetes specialist nurse (55.1%). 42.4% of clinics had an orthotist. Other specialties in attendance are shown in Figure 1.

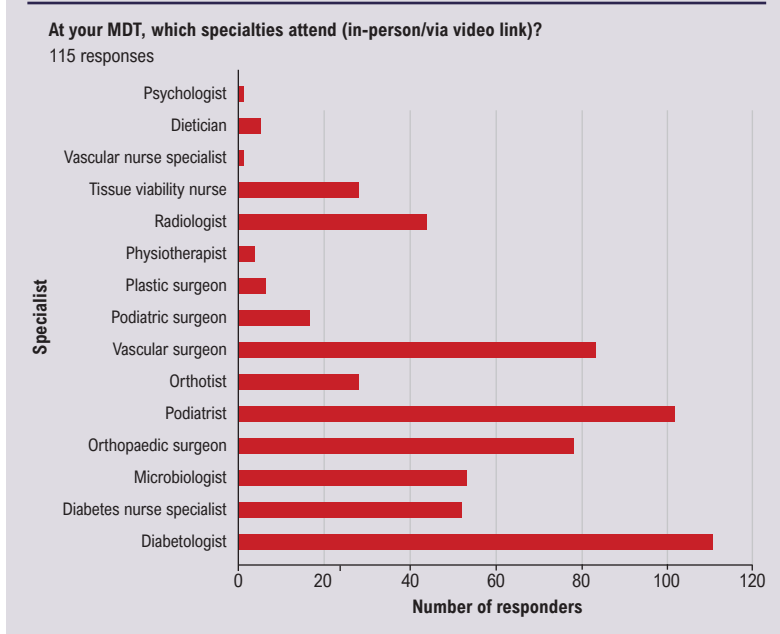
Of those who responded, 64.1% (107/167) reported having a diabetic foot MDT either at their hospital or the regional centre and 30% (50/167) did not. Other responders stated the MDT was integrated during diabetic foot clinics or they had irregular and *ad hoc* MDTs.

### Tenotomy practice

Ninety-nine (58.9%) responders reported having an active tenotomy service. Indications for tenotomy included: as an ulcer prevention strategy but with appropriate reversible toe deformity (66%, 68/103), following onset of ulceration (52.4%, 54/103) and following healed ulceration to prevent recurrence (55.3%, 57/103).

Orthopaedic surgeons most commonly perform tenotomy

**Figure 1** Specialities attending diabetic foot clinics



(75.7%, 78/103), followed by podiatric surgeons (24.3%, 25/103), vascular surgeons (5.8%, 6/103), podiatrists (3.9%, 4/103) and diabetologists (2.9%, 3/103). Other operators included vascular nurses and surgical care practitioners.

Of the centres offering tenotomy, 47.6% (49/103) perform tenotomy monthly and 21.4% (22/103) of centres perform tenotomies yearly. Only 4.9% (5/103) perform tenotomies weekly. Other respondents reported only doing them as part of another procedure or frequency depending on patient suitability.

Most tenotomies are undertaken in theatres in full asepsis (60.8%, 62/102). Other settings included outpatient clinic clean rooms and ward-based clean treatment rooms.

Tenotomy is performed under local anaesthetic (50.5%, 52/103), regional anaesthetic (15.5%, 16/103) or with no anaesthetic (13.6%, 14/103); 5.8% (6/103) routinely performed

tenotomy under general anaesthetic. Other responders tailor the anaesthetic to the degree of neuropathy.

Surgical tenotomy was the preferred method (68%, 70/103). Needle tenotomy was used by 20.4% (21/103) of responders, and 11.7% of responders did not know the details of the technique as it was performed by a colleague.

Over half of centres perform tenotomy in isolation (52.9%, 54/102). Others perform it with osteotomy/joint fusion (36.3%, 37/102), with Achilles tendon lengthening (29.4%, 30/102) or with casting (20.6%, 21/102). The frequency of use by each centre is shown in Figure 2.

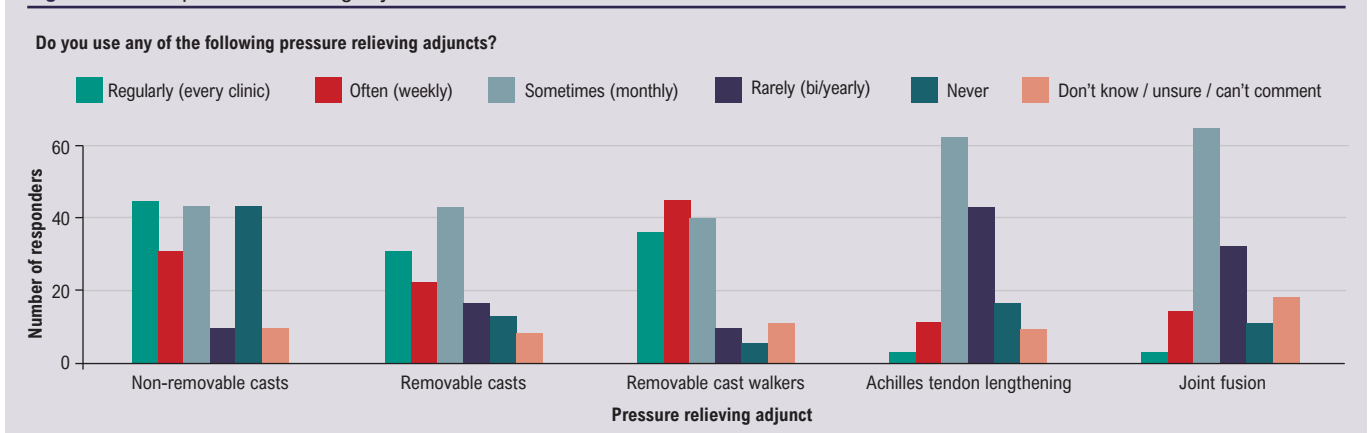
Prior to tenotomy, most centres require patients to undergo an arterial assessment; 61.8% (63/102) of centres require patients to have palpable foot pulses, 42.2% (43/102) require multiphasic signals on hand-held Doppler, 21.6% (22/103) performed ankle-brachial pressure index and 8.8% (9/103) centres require a formal arterial duplex. 6.9% (7/103)

of responders reported no arterial assessment was required prior to tenotomy. Other assessments included foot radiographs; 51% (52/102) of centres request a weight-bearing radiograph and 32.4% (33/103) require an anterior/posterior and lateral view foot radiographs. 57.8% (59/102) of centres assess patients for clinical evidence of a reducible foot deformity prior to tenotomy.

**Future research**

Of the responders, 49.4% (83/168) would be willing to take part in a trial to evaluate pressure-relieving adjuncts. 37.5% (63/168) would not want to take part as they felt tenotomy was an established treatment, they lacked research capacity or were not in equipoise. Other responders reported they would need to consult the local department or required more information about the proposed research before agreeing to engage further.

**Figure 2** Use of pressure relieving adjuncts.



One hundred and twenty-four of the 168 responders (73.8%) wished to be further contacted about the project and 82.1% (138/168) of responders were willing to help involve their patients in designing a future trial.

### Discussion

This predominantly UK-based tenotomy scoping survey had a good response rate, with an appropriate spread of specialists from the key relevant stakeholders. The results have demonstrated that there is clear variation in tenotomy practice. Tenotomy was not available in a third of centres who responded, and in those who did, there was little consensus on indications, preoperative assessment or how the procedure should be undertaken, with half of centres (54/102) offering it as a stand-alone procedure. In addition, despite the high prevalence of DFU, tenotomy was infrequently performed. The reason for this is unclear from this survey.

Another finding from this survey was the apparent lack of compliance with UK National Institute for Health and Care Excellence (NICE) guidance on the structure of diabetic foot services.<sup>7</sup> Thirty percent of responders reported no dedicated diabetic foot clinic at their centre. In centres that operated a diabetic foot clinic there was a lack of representation in certain specialities advised to be part of diabetic foot services, in particular vascular surgery, microbiology and interventional radiology. A dedicated orthotist was available in less than 50% of diabetic foot clinics.

There is some evidence that tenotomy may reduce DFU healing times and prevent ulcer recurrence. To date, two systematic reviews have reported positive outcomes associated with tenotomy and low complication and recurrence rates; however, the absolute numbers are small with heterogeneous case mixes.<sup>5,8</sup> The review by Bonanno and Gillies of retrospective case series reported 97% of ulcers healed postoperatively, with the postoperative ulcer healing time ranging from 21 to 40 days. The estimated ulcer recurrence rate was 6–17%.<sup>5</sup> The literature reports DFU healing time to range from 1 month to over 1 year and is dependent on a number of factors.<sup>9–11</sup> Armstrong *et al* estimates ulcer recurrence to be around 40% at 1 year.<sup>12</sup>

There is less evidence for tenotomy as a primary prevention intervention. A retrospective case series by Rasmussen *et al* reported no ulceration in 22 patients over 4 years.<sup>13</sup> A further two small retrospective case series support this finding.<sup>14,15</sup>

The International Working Group on the Diabetic Foot (IWGDF) published guidance on DFU offloading methods in 2020. The guidance found weak evidence to support tenotomy to promote healing if non-surgical offloading options fail in patients with neuropathic plantar or apex digital ulceration, due to non-statistically significant findings of combined randomised trials.<sup>8,16,17</sup> However, despite limited randomised controlled trial evidence, the IWGDF still supports offering tenotomy for non-healing digital ulcers associated with deformity as their expert opinion is that the benefit of tenotomy outweighs the harm. The cost effectiveness and patient-reported outcomes of this position are unknown.<sup>16</sup> This

### KEY MESSAGES

- There is a wide variation in tenotomy practice, with no clear indications.
- There is a wide variation in tenotomy technique.
- There is need for more research into the role of tenotomy in diabetic foot care.

therefore supports the rationale that a properly protocolled and delivered trial is required.

Most centres in this survey require patients to undergo arterial assessment to ensure adequate perfusion for healing and biomechanical assessment to screen for reducible foot deformity amenable to tenotomy. This approach was echoed in the literature where ankle pressure brachial index (ABPI) and clinical assessment of deformities amenable to tenotomy were commonly undertaken.<sup>18</sup>

Surgical tenotomies were preferred in this cohort of responders, with most procedures undertaken with full asepsis in an operating theatre setting. This is at odds with the literature where percutaneous tenotomy is in vogue, and is likely to be due to the high number of orthopaedic surgeons who responded to this survey. Small case series and cohort studies report percutaneous tenotomy to be safe and effective.<sup>18–20</sup> There is limited high quality evidence to suggest whether surgical versus percutaneous tenotomy differ in healing rates, ulcer recurrence or adverse event profiles. Supporters of the percutaneous approach argue that it can be undertaken in the outpatient setting, therefore reducing healthcare costs, and is potentially more cost effective without compromising safety. One caveat to the survey responses reported is that foot and ankle surgeons made up the majority of respondents (61%). This is without doubt a potential bias to the survey responses as approaches, settings and the use of adjuncts might differ across specialities.

This scoping survey found that nearly three-quarters of responders were willing to engage in further research on this topic and over 80% would be willing to involve their patients. However, some responders felt there was an established tenotomy practice and therefore lacked equipoise. While the step-by-step technique of tenotomy may be established, there is no high-quality level 1 evidence to support the indication for tenotomy, timing of the procedure or benefits of the procedure in patients with diabetes. These questions need to be addressed in the form of a randomised controlled trial. The first step will be to undertake a feasibility trial to ensure the proposed trial is deliverable.<sup>21</sup>

The potential weaknesses of this study include not capturing all tenotomy practice and reporting bias by responders. Another weakness is the high number of orthopaedic responses and relatively low number of responses from endocrinologists and vascular surgeons, who typically manage patients with DFU. This may have skewed some results.

## Conclusion

The results of this survey showed the variation in tenotomy practice and an appetite for collaborative research in this area. The Vascular Society of Great Britain and Ireland Diabetic Foot Specialist Interest Group will address these uncertainties through further collaborative research to investigate the role tenotomy may have in the treatment and prevention of DFU.

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## References

1. Diabetes UK. Diabetes Statistics. 2021. <https://www.diabetes.org.uk/professionals/position-statements-reports/statistics>
2. Wounds UK. Best practice recommendations for the implementation of a DFU treatment pathway. 2018. <https://www.wounds-uk.com/resources/details/best-practice-recommendations-for-the-implementation-of-a-dfu-treatment-pathway>
3. Smith GE, Long J, Wallace T, Carradice D, Chetter IC, Vascular Research Collaborative. Identifying the research priorities of healthcare professionals in UK vascular surgery: modified Delphi approach. *BJS Open* 2021;**5**(2): zraa025. <https://doi.org/10.1093/bjsopen/zraa025>
4. Long J, Chetter I, Gronlund T. The Vascular Priority Setting Partnership: Setting the Agenda for UK Vascular Research. *J Vasc Soc GB Irel* 2021; S1–S31. <http://doi.org/10.54522/jvsgebi.2021.005>
5. Bonanno DR, Gillies EJ. Flexor tenotomy improves healing and prevention of diabetes-related toe ulcers: a systematic review. *J Foot Ankle Surg* 2017; **56**(3):600–04. <https://doi.org/10.1053/j.jfas.2017.02.011>
6. Kelley K, Clark B, Brown V, Sitzia J. Good practice in the conduct and reporting of survey research. *Int J Qual Health Care* 2003;**15**(3):261–6. <https://doi.org/10.1093/intqhc/mzg031>
7. National Institute for Health and Care Excellence (NICE). Diabetic foot problems: prevention and management. NICE guideline [NG19]. 2015. <https://www.nice.org.uk/guidance/ng19>
8. Lazzarini PA, Jarl G, Gooday C, *et al*. Effectiveness of offloading interventions to heal foot ulcers in persons with diabetes: a systematic review. *Diabetes Metab Res Rev* 2020;**36**(Suppl 1):e3275. <https://doi.org/10.1002/dmrr.3275>
9. Ha Van G, Amouyal C, Bourron O, *et al*. Diabetic foot ulcer management in a multidisciplinary foot centre: one-year healing, amputation and mortality rate. *J Wound Care* 2020;**29**(8):464–71. <https://doi.org/10.12968/jowc.2020.29.8.464>
10. Fournier C, Singbo N, Morissette N, Thibeault MM. Outcomes of diabetic foot ulcers in a tertiary referral interdisciplinary clinic: a retrospective Canadian study. *Can J Diabetes* 2021;**45**(3):255–60. <https://doi.org/10.1016/j.jcjd.2020.09.004>
11. Pena G, Kuang B, Edwards S, Cowled P, Dawson J, Fitridge R. Factors associated with key outcomes in diabetes related foot disease: a prospective observational study. *Eur J Vasc Endovasc Surg* 2021;**62**(2):233–40. <https://doi.org/10.1016/j.ejvs.2021.04.002>
12. Armstrong DG, Boulton AJM, Bus SA. Diabetic foot ulcers and their recurrence. *N Engl J Med* 2017;**376**(24):2367–75. <https://doi.org/10.1056/NEJMra1615439>
13. Rasmussen A, Bjerre-Christensen U, Almdal TP, Holstein P. Percutaneous flexor tenotomy for preventing and treating toe ulcers in people with diabetes mellitus. *J Tissue Viability* 2013;**22**(3):68–73. <https://doi.org/10.1016/j.jtv.2013.04.001>
14. Tamir E, McLaren AM, Gadgil A, Daniels TR. Outpatient percutaneous flexor tenotomies for management of diabetic claw toe deformities with ulcers: a preliminary report. *Can J Surg* 2008;**51**(1):41–4.
15. van Netten JJ, Bril A, van Baal JG. The effect of flexor tenotomy on healing and prevention of neuropathic diabetic foot ulcers on the distal end of the toe. *J Foot Ankle Res* 2013;**6**(1):3. <https://doi.org/10.1186/1757-1146-6-3>
16. Bus SA, Armstrong DG, Gooday C, *et al*. Guidelines on offloading foot ulcers in persons with diabetes (IWGDF 2019 update). *Diabetes Metab Res Rev* 2020;**36** (Suppl 1):e3274. <https://doi.org/10.1002/dmrr.3274>
17. Mueller MJ, Sinacore DR, Hastings MK, Strube MJ, Johnson JE. Effect of Achilles tendon lengthening on neuropathic plantar ulcers. A randomized clinical trial. *J Bone Joint Surg Am* 2003;**85**(8):1436–45.
18. Hedegaard Andersen J, Rasmussen A, Frimodt-Møller M, Rossing P, Kirketerp-Møller K, Engberg S. The effect of needle tenotomy on hammer, mallet and claw toe deformities in patients with diabetes, a retrospective study. *J Clin Transl Endocrinol* 2019;**18**:100208. <https://doi.org/10.1016/j.jcte.2019.100208>
19. Smith SE, Miller J. The safety and effectiveness of the percutaneous flexor tenotomy in healing neuropathic apical toe ulcers in the outpatient setting. *Foot Ankle Spec* 2020;**13**(2):123–31. <https://doi.org/10.1177/1938640019843314>
20. Schmitz P, Scheffer R, De Gier S, Krol RM, Van der Veen D, Smeets L. The effect of percutaneous flexor tenotomy on healing and prevention of foot ulcers in patients with claw deformity of the toe. *J Foot Ankle Surg* 2019;**58**(6): 1134–7. <https://doi.org/10.1053/j.jfas.2019.03.004>
21. Lancaster GA. Pilot and feasibility studies come of age! *Pilot Feasibility Stud* 2015;**1**(1):1. <https://doi.org/10.1186/2055-5784-1-1>

**Appendix 1** DFU survey**You and your hospital**

*Tell us about you and your hospital or service*

Please provide your hospital name or regional service name

In which city or town are you based?

In which country do you work?

What is your speciality?

What is your job title/role?

Dietician

Doctor/Medic

Interventionalist/interventional radiologist

Nurse

Podiatrist

Podiatric surgeon

Specialist nurse

Surgeon

Radiologist/MSK radiologist

Orthotist

Physiotherapist

Other:

**Diabetic Foot Service Clinic**

*Please tell us a bit about the Diabetic Foot Service that you offer*

Do you have a dedicated diabetic foot clinic?

Yes

No

Other:

Which of the specialities attend?

Orthopaedic surgeon

Diabetologist

Infectious diseases/microbiologist

Orthotist

Psychologist

Vascular surgeon

Plastic surgeon

Podiatric surgeon

Tissue viability nurse/vascular nurse specialist

Podiatrist

Do not have a dedicated Diabetic foot clinic at present

Research nurse/podiatrist

Physiotherapist

Diabetes Specialist nurse

Dietician

Radiologist/interventional radiologist

Other:

**Diabetic Foot MDT**

Do you have a dedicated diabetic foot ulcer Multidisciplinary team meeting (MDT) (either at your hospital or in hub/regional centre)

Yes

No

Other:

**MDT attendees**

At your MDT, which specialties attend (in-person/via video link)?

Diabetologist

Diabetes Specialist Nurse

Dietician

Microbiologist

Orthopaedic surgeon

Orthotist

Podiatrist

Podiatric surgeon

Physiotherapist

Plastic surgeon

Psychologist

Research nurse/podiatrist

Tissue viability nurse/vascular nurse specialist

Radiologist/interventional radiologist

Vascular surgeon

Musculo-skeletal radiologist

Do not have a dedicated diabetic foot MDT at present

Other:

**Tenotomy**

*Please tell us about your practice with respect to tenotomy, if this is something available at your hospital/practice*

Is digital tenotomy part of the care offered at your centre? \*

Yes

No

Other:

**Tenotomy related questions**

When do you typically consider performing a tenotomy? - please tick all that apply

Pre-ulceration but with appropriate reversible toe deformity

Following the onset of ulceration

Following healed ulceration

Unsure/don't know/performed by colleague

Other:

Who typically performs digital tenotomy?

Podiatrist

Podiatric surgeon

Vascular surgeon

Orthopaedic surgeon

Diabetologist

Other:

On average, how frequently do you/does the team perform digital tenotomy?

Regularly (every clinic)

Often (weekly)

Occasionally (monthly)

Rarely (yearly)

Never

Unsure/don't know/performed by colleague

Other:

In what clinical setting do you perform digital tenotomy?

Theatre (full asepsis)

Treatment room (ward based clean room)

Outpatient clinic room (clean room)

Unsure/don't know/performed by colleague

Other:

What analgesic or anaesthetic input do you most commonly use?

General anaesthetic

Local anaesthetic

Regional anaesthetic

None specifically (rely on neuropathy)

Unsure/don't know/performed by colleague

Other:

What 'technique' do you most often use when performing digital tenotomy?

Needle

Surgical

Unsure/don't know/performed by colleague

Other:

On average, do you perform a digital tenotomy alone or in combination with an adjunctive therapy? (please tick all that apply)

Perform tenotomy alone

With casting (all types)

With Achilles tendon lengthening  
 With osteotomy/joint fusion  
 Unsure/don't know/performed by  
 colleague  
 Other:

- Joint fusion  
 Regularly (every clinic) Often (weekly)  
 Sometimes (monthly) Rarely (bi/yearly)  
 Never  
 Don't know/unsure/can't comment

When considering a digital tenotomy do you  
 mandate any of the following assessments?  
 (tick all that apply)

Palpable foot pulses  
 Hand-held Doppler  
 Tissue Oxygen Saturations (tcpO2)  
 ABPI/toe pressure  
 Formal arterial Duplex/ultrasound  
 Foot radiograph (AP/Lateral)  
 Foot radiograph (weight bearing)  
 Clinical evidence of reducible deformity  
 Do not mandate any arterial assessment  
 Unsure/don't know/performed by  
 colleague  
 Other:

**Adjuncts to DFU management**

Do you use any of the following pressure  
 relieving adjuncts?

- Non-removable casts  
 Regularly (every clinic) Often (weekly)  
 Sometimes (monthly) Rarely (bi/yearly)  
 Never  
 Don't know/unsure/can't comment  
 - Removable casts  
 Regularly (every clinic) Often (weekly)  
 Sometimes (monthly) Rarely (bi/yearly)  
 Never  
 Don't know/unsure/can't comment  
 - Removable cast walkers  
 Regularly (every clinic) Often (weekly)  
 Sometimes (monthly) Rarely (bi/yearly)  
 Never  
 Don't know/unsure/can't comment  
 - Achilles tendon lengthening  
 Regularly (every clinic) Often (weekly)  
 Sometimes (monthly) Rarely (bi/yearly)  
 Never  
 Don't know/unsure/can't comment

**Future Research**

*Please tell us about how you feel  
 participating with research in digital  
 tenotomy for diabetic foot care*

Would you be willing to participate in a  
 randomised control trial comparing  
 pressure relieving adjunctive therapies  
 (such as tenotomy) to standard care?  
 No, tenotomy is already an established  
 part of our care pathway, I would be  
 uncomfortable with randomisation  
 No, at present I/we do not have the  
 research capability or infrastructure  
 No, I do not have equipoise (favour/bias  
 towards one or other of the options)  
 Yes, happy to participate  
 Other:

Would you be willing to participate in a trial  
 plenary or discussion forum?

Yes  
 No  
 Maybe

Do you agree to be added to our mailing list  
 regarding this project?

Yes  
 No  
 If yes, please tell us your email address

Are you aware of patients who would be  
 happy to participate in a virtual discussion  
 or focus group on this subject?

Yes  
 No