

# Case report. Squamous cell carcinoma or diabetic foot ulcer?

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## Article points

1. Squamous cell carcinoma (SCC) is the second most common skin tumour in humans; however, it rarely affects the foot.
3. Any wound that does not heal or breaks down recurrently despite adequate pressure relief, appropriate wound care and in the absence of neuropathic and vascular complications should be biopsied.

## Key words

- Squamous cell carcinoma
- Diabetic foot ulcer
- Misdiagnosis

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**Squamous cell carcinoma (SCC) is a common skin tumour that rarely affects the foot. A case of an elderly lady with type 2 diabetes who was initially diagnosed with a diabetic foot ulcer is presented and the implications of this case are discussed.**

A 77-year-old woman with type 2 diabetes of 12 years duration presented with a non-healing ulcer on her left posterior heel (see *Box 1* for baseline characteristics). The lesion had been present for 8 months prior to the referral, it measured 10mm by 10mm and was covered in an overlying hyperkeratosis. The lesion had been managed by the patient and her family; however, she started experiencing pain and sought advice, and was subsequently referred to the diabetes specialist podiatrists at Monklands Hospital.

A full neurovascular assessment revealed that the patient had neither vascular nor neurological deficits. A 10g monofilament was applied to five areas on each foot with no negative results. The lady could distinguish between the sharp and blunt end of a neurotip on the apices of her first digits, the dorsalis pedis and posterior tibial pulses on each foot were readily palpable. She did not recall any trauma to her foot prior to the development of the ulcer. An X-ray of the foot revealed an asymptomatic plantar calcaneal spur, however, this was not at the wound site and was not treated.

Initially, the case was managed by pressure relief as it was thought that the counter of her shoe was irritating the lesion and delaying its resolution. Trauma shoes were issued along with defective padding and dressings which immediately

afforded some relief. The woman was also issued with a heel-lift suspension boot to reduce pressure on the heel at night. She was relatively inactive and therefore any irritation to the wound from walking around was minimal and she was advised not to wear the court shoes she had previously worn.

At her follow up appointment, despite offloading the lesion, there was no improvement in the wound despite its superficial appearance. A swab and bloods were taken to rule out the possibility of deeper infection. The swab results showed a heavy growth of *Staphylococcus aureus* and therefore flucloxacillin (500mg) was prescribed. The antibiotics were considered appropriate despite there being no signs of clinical infection because the wound was non-healing and was now of 9 months duration (O'Meara et al, 2006).

The woman became unwell 3–4 days into the antibiotics and was vomiting, febrile and had high blood glucose levels (17.8 mmol/l). Her GP switched her antibiotics to erythromycin (500mg qds).

At week 10, despite the antibiotics, the ulcer had enlarged slightly and still showed no signs of improvement. A heel relief boot was issued to improve the pressure relief and the foot was X-rayed again but showed no change.

**Box 1. Baseline characteristics and medications.**

HbA<sub>1c</sub> 8–10%  
 BMI = 23.6 kg/m<sup>2</sup>  
 Smoker  
 Married

**Medication**

Metformin 500mg od  
 Atorvastatin 20mg od  
 Insulin glargine  
 Insulin aspart  
 Co-dydramol 500mg qid  
 Omeprazole 20mg od  
 Digoxin 125mg od  
 Levothyroxine 100 mg od  
 Furosemide 40mg bd  
 Warfarin 3mg od  
 Prochlorperazine 5mg tid

Levene M (1958) Distribution of skin tumors of the sole of the foot. *British Medical Journal* **28**: 1519–20

Kong MF, Jogia R, Jackson S et al (2005) Malignant melanoma presenting as a foot ulcer. *Lancet* **366**: 1750

O'Meara S, Nelson EA, Golder S et al (2006) Systematic review of methods to diagnose infection in foot ulcers in diabetes. *Diabetes Care* **23**: 341–7

Ozcelik D, Tatlidede S, Hacikerim S et al (2004) The use of sentinel lymph node biopsy in squamous cell carcinoma of the foot: a case report. *The Journal of Foot and Ankle Surgery* **43**: 60–3

Schroven I, Hulse G, Seligson D (1996) Squamous cell carcinoma of the foot: two case reports. *Clinical Orthopedics and Related Research* **328**: 227–230

Following discussions with podiatric colleagues at a case conference, the woman was referred to the dermatology department and a biopsy of the lesion was requested (*Figure 1*). This was carried out 12 weeks following the initial presentation and the results confirmed a squamous cell carcinoma (SCC) in situ (*Figure 2*). The woman was subsequently seen by the plastic surgery team and underwent an excision of the lesion with 1cm margins (*Figure 3*). Following the surgery the wound healed completely.

**Discussion**

Squamous cell carcinoma is a malignant neoplasm arising from the keratinocytes of the epidermis and contiguous mucous membranes. Although SCC is the second most common skin tumour in humans, there is a very low rate of occurrence in the foot (Ozcelik et al, 2004). Typically, SCCs are seen in elderly populations aged over 50–60 years and its aetiology is thought to be due to chronic UVA/UVB exposure – hence they are rarely found on the foot. However, in these non-exposed sites a history of chronic inflammation can often be identified (Levene, 1958). In this individual, chronic rubbing from footwear could have played a part.

A definitive diagnosis of SCC can only be confirmed through a biopsy. It is normally treated without the need for lymphadenectomy if the lymph nodes are found to be spared at the time of diagnosis. Metastatic disease develops in less than 2% of cases of SCC; however, tumours arising on skin not damaged by the sun tend to be more aggressive (Schroven et al, 1996).

There were a number of similarities between

this case and that reported by Kong et al (2005). Both Kong's study and this one showed that the individual with the suspected diabetic foot ulcer had no significant vascular or neuropathic deficits, no history of particular trauma to the area, no foreign body and no overt infection to explain the delayed healing. We would agree with Kong et al's findings that in these circumstances another possible cause should always be considered and the wound should be biopsied.

**Conclusion**

Foot ulceration is a common problem in people with diabetes, however, the squamous cell carcinoma is not. Despite its rarity, it is important to be vigilant and make an early diagnosis for any non-healing foot lesion. Careful assessment can often reveal the clues: in this case the fact that the patient had no vascular or neurological deficits should have alerted the clinician to consider other possible causes of ulceration. Furthermore, by assessing the response to treatment, further clues may arise to suggest a misdiagnosis. Referring the patient on or seeking a second opinion should always be considered if the diagnosis is in doubt, which, in this case, was paramount to establishing the correct diagnosis.

This case study highlights the need for any non-healing wound to be viewed with suspicion. In the authors' opinion, any wound that does not heal or breaks down recurrently despite adequate pressure relief, appropriate wound care and in the absence of neuropathic and vascular complications should be biopsied. Early diagnosis can reduce the need for extensive reconstructive surgery, amputation or prevent loss of life. ■



Figure 1. Wound at referral for biopsy.



Figure 2. Wound immediately post-biopsy.



Figure 3. Wound at 10 weeks post-biopsy.