

# Squamous cell carcinoma complicating chronic osteomyelitis

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## Abstract

The internal fixation of fractures is associated with a risk of infection. Open fractures in particular are susceptible to such infection. Treatment is difficult and patients can develop a chronic osteomyelitis. We present the case of a patient who developed chronic osteomyelitis with a persistent discharging sinus following internal fixation of an open fracture of tibia. At presentation, the sinus tract had undergone malignant transformation causing massive soft tissue and bony destruction. This patient died from carcinomatosis after metastasis of his cancer. This catastrophic complication of chronic osteomyelitis is now uncommon; however, this case reminds us that the long-term follow-up of all such patients is mandatory.

Abstract

Keywords

Case report

Discussion

References

Figure 1

Figure 2

Home Page

Title Page

◀◀ ▶▶

◀ ▶

Go Back

Full Screen

Close

Quit

GR

## Keywords

Chronic osteomyelitis; malignant transformation.

## Case report

A 45-year-old man presented with lower leg pain and progressive shortness of breath. Eighteen years earlier he had sustained an open fracture of his right tibia and fibula in a road traffic accident. This was debrided and the fracture treated with a plate and screw fixation of the tibia. He subsequently developed osteomyelitis with a small chronically discharging sinus tract. This required intermittent use of oral antibiotics for acute exacerbations but he was otherwise able to return to almost full activity. Six months prior to current admission the sinus had begun to enlarge and the leg became increasingly painful on weight bearing. The patient was eventually unable to walk. A week before admission the patient became systemically unwell with increasing difficulty in breathing. Examination revealed a large ulcer over the anterior aspect of the distal third of the leg with necrotic margins and a foul smell. The underlying plate was clearly visible. The ipsilateral groin contained two large non-tender hard lumps, consistent with secondary involvement of the inguinal lymph nodes. Chest examination revealed a large pleural effusion, which was bloodstained when aspirated.

Radiographs of the tibia and fibula demonstrated osteomyelitis with failure of the tibial fixation and marked bone destruction adjacent to the plate (Fig. 1). Histopathological examination of tissue from the ulcer and the groin nodes (Fig. 2) showed poorly differentiated squamous cell carcinoma.

The patient died from carcinomatosis soon after his admission.

## Discussion

Malignant transformation in chronic ulcers is a well-recognised phenomenon. Marjolin first described it as early as 1828. Malignant change is much rarer in the orthopaedic setting.

[Abstract](#)

[Keywords](#)

[Case report](#)

[Discussion](#)

[References](#)

[Figure 1](#)

[Figure 2](#)

[Home Page](#)

[Title Page](#)

◀ ▶

◀ ▶

[Go Back](#)

[Full Screen](#)

[Close](#)

[Quit](#)



Fig. 1. AP and lateral radiographs of the tibia and fibula showing fixation failure and massive bone loss.

However, the importance of such transformation in cases of chronic osteomyelitis has been reported in the literature for some time<sup>[1]</sup>. The biochemical and physiological basis for the transformation has also been discussed<sup>[2]</sup>. However, the incidence of malignant change is low and few orthopaedic surgeons ever see this in modern practice.

[Abstract](#)

[Keywords](#)

[Case report](#)

[Discussion](#)

[References](#)

[Figure 1](#)

[Figure 2](#)

[Home Page](#)

[Title Page](#)

[◀◀](#) [▶▶](#)

[◀](#) [▶](#)

[Go Back](#)

[Full Screen](#)

[Close](#)

[Quit](#)

[Abstract](#)

[Keywords](#)

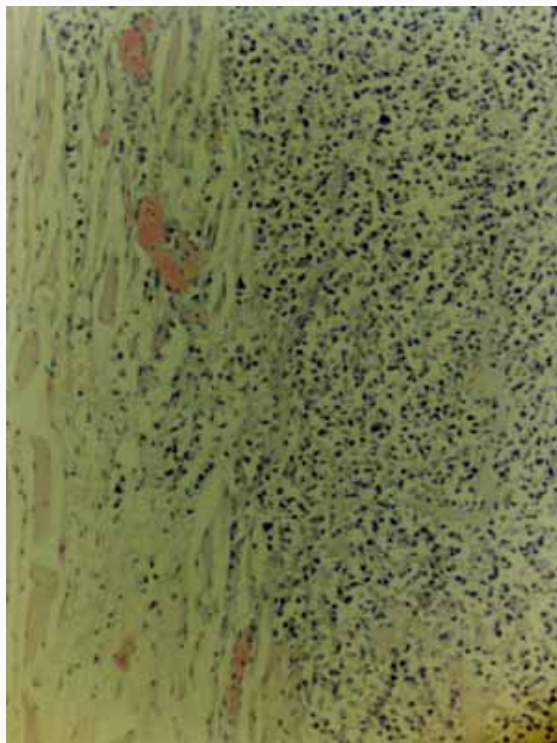
[Case report](#)

**[Discussion](#)**

[References](#)

[Figure 1](#)

[Figure 2](#)



**Fig. 2.** Poorly differentiated squamous cell tumour from the margins of the sinus tract.

In the presence of chronic osteomyelitis, one must be cautious in attributing the bone destruction demonstrated in a radiograph to the progress of the underlying infection. We present this case as a reminder to surgeons and physicians that one must be aware

[Home Page](#)

[Title Page](#)

◀ ▶

◀ ▶

[Go Back](#)

[Full Screen](#)

[Close](#)

[Quit](#)

of malignant transformation in longstanding discharging sinuses as a possible cause of clinical deterioration. A recent case series has suggested that early surgical intervention in this condition can save patients' lives<sup>[3]</sup>. Although high-grade lesions are relatively rare, amputation has been recommended for all such cases<sup>[4]</sup>. We would therefore advocate the long-term follow-up of all cases of chronic osteomyelitis. Regular biopsy of sinus tracts may be necessary. A high index of suspicion will facilitate the early detection of malignant transformation.

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[Abstract](#)

[Keywords](#)

[Case report](#)

[Discussion](#)

[References](#)

[Figure 1](#)

[Figure 2](#)

[Home Page](#)

[Title Page](#)

◀◀ ▶▶

◀ ▶

[Go Back](#)

[Full Screen](#)

[Close](#)

[Quit](#)