

A Case of Malum Perforans Pedis Complicated with Chronic Osteomyelitis

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Introduction

Malum perforans pedis (MPP), also known as neuropathic ulcer, is a debilitating diabetic foot complication characterized by chronic, non-healing ulcers. These ulcers typically develop over pressure points on the sole of the foot, posing a significant challenge to both patients and healthcare providers due to their prolonged course and susceptibility to complications. One such formidable complication is the occurrence of chronic osteomyelitis, which adds a layer of complexity to the clinical management of MPP.

This case report sheds light on a particularly intricate presentation of MPP, involving a patient who not only experienced the typical manifestations of this condition but also suffered from chronic osteomyelitis. Diabetic foot ulcers are a well-recognized consequence of long-term diabetes mellitus, and their management demands a multidisciplinary approach. Chronic osteomyelitis further complicates this already intricate clinical scenario, demanding a nuanced understanding of the disease and its underlying pathophysiology.

Case Presentation:

A 40-year-old woman presented with a deep ulcerated wound of the left heel with recurrent purulent discharge for over 18 years. Two years prior to the development of the ulcerated lesion, she sustained a lower lumbar vertebral fracture following an accidental fall on

her feet from the roof of her house. She developed bilateral paresthesia in S-1 and S-2 distribution but her motor functions were not impaired. She remained hospitalized for over two weeks. An asymptomatic punched-out ulcer developed on the undersurface of the left heel two years after the fall. An occasional serosanguineous exudate was reported (see figure).



Figure: 1 Deep perforated ulcer of the heel

About 10 years ago, she started developing deep abscesses, draining sinuses, and subsequent tumefaction of the sides of the affected heel.

Physical examination revealed a large triangular-shaped punched-out deep ulcer on the undersurface of the left heel. The ulcer had a yellowish hyperkeratotic margin and a flesh-coloured moist base. Distortion and tumefaction of the sides of the heel were also present. The skin was tender and fluctuant over some points and a few sinuses draining a purulent discharge were also noted on the sides of the heel. The

culture of the exudate from the ulcerated lesion and the draining sinuses grew *Pseudomonas aeruginosa*. There was radiographic evidence of erosion of the undersurface of the calcaneum. The rest of the physical examination and routine blood and urinalyses were unremarkable.

Based on the history, physical examination, and radiologic findings, a diagnosis of *malum perforans pedis* complicated with chronic osteomyelitis was made. The patient was referred to an orthopaedic surgeon for treatment.

Discussion:

Malum perforans pedis (MPP) is chronic trophic ulceration of the sole resulting from chronic denervating disease processes such as *tabes dorsalis*, arteriosclerosis, leprosy, and diabetes mellitus. Constant trauma particularly at the pressure-bearing areas of feet in the presence of loss of the pain sensation causes the development of the perforating ulcers. The loss of pain sensation may be due to diseases affecting the peripheral nerves such as diabetes mellitus and leprosy. *Tabes dorsalis* and arteriosclerosis affect the posterolateral tracts of the spinal cord resulting in loss of pain sensation in the acral areas. *Syringomyelia*¹ disrupts the nerve pathways of the lateral tracts causing a similar effect.

MPP typically begins as an area of well-demarcated hyperkeratosis usually at the ball of the foot or the undersurface of the heel². The lesion softens and turns into a malodorous, moist area exuding a thin purulent discharge. Finally, the affected area sloughs off leaving an indolent, necrotic painless deep ulcer. The resultant ulcer is typically non-healing with conventional therapies for the treatment of chronic wounds. It is often complicated by secondary bacterial infection. Osteomyelitis of the tarsal and metatarsal bones is a dreadful complication of MPP³.

Differential diagnosis of MPP includes diabetic foot and ulcers caused by the suppurating corns or calluses.

- Other diseases that can trigger a polyneuropathy:
- Neuropathic polyneuropathy in peripheral nerve lesions.
- Traumatic nerve injuries (sciatic nerve, tibial nerve)
- Diabetes mellitus
- Leprosy
- Syphilis (*Tabes dorsalis*)
- Alcoholism (*Bureau-Barrière syndrome*)
- Amyloid neuropathy
- *Syringomyelia*
- *Spinalis-anterior syndrome*
- Congenital insensitivity to pain
- Trophic neurotic nasal ulcer

Treatment

A multidisciplinary approach is important to treat the chronic deep ulcers of MPP. To relieve the pressure on the ulcer, padding and keeping the patient off his or her feet as much as possible is required. Local and systemic antibiotics are needed to treat the superadded bacterial infection. In cases complicated with osteomyelitis, extensive debridement is advised.

Prophylactic surgery on the diabetic foot is generally performed with the goal of preventing more advanced and debilitating conditions from developing. The specific aim, however, is to reduce the risk of foot ulceration and amputation by correcting structural deformities leading to cutaneous compromise. Patients with lesions who have a history of minor infection and have reconstructible deformity often do well with elective surgery.

References:

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