A Case Report: Calcanectomy with Talectomy for Management of Gas Gangrene with Necrotizing Fasciitis as an Alternative to a Proximal Leg Amputation

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Abstract

Chronic nonhealing pressure injury of the heel, especially in the nonambulatory diabetics are at a high-risk factor for limb loss. We are presenting calcanectomies at various levels of the foot as a viable alternative to proximal limb amputations. This condition at skilled nursing facilities has been known as highly litigious, and the facilities are subject to rigorous federal regulations (Federal Tag 314). Prevention is of paramount importance; once these heel pressure injuries develop, limb preservation is very difficult and requires the skills of highly specialized podiatric surgeons to successfully save the limbs. [1]

Introduction

The incidence of pressure injuries in nursing home residents has been reported to be as high as 28%, with the heel being one of the most common sites. [2-4] Furthermore, in the United States, the prevalence of contractures in nonambulatory nursing home residents is 24% to 75%. [5, 6] The greatest risk factor for heel ulceration is immobility of the patient coupled with some level of lower-extremity contracture. This inability of patients to reposition by themselves in bed leads to extensive focal pressure points under bony prominences of the heel with subsequent tissue ischemia. Intrinsic factors, such as diabetes mellitus, neuropathy, peripheral vascular disease, and incontinence, further complicate the healing potential of these wounds with conservative treatment alone. Partial or total calcanectomy has been successfully used to treat these recalcitrant pressure injury of the heel with osteomyelitis since 1931, when Gaenslen [7] first published his results.[8-11] The relative simplicity and low morbidity of calcanectomy make it a viable alternative to proximal amputation. However, one must be aware of the possibility of failure if offloading of the extremity and contracture management are not performed immediately after surgery and continued indefinitely, especially in the nonambulatory patient population. Pressure ulcers of the heel in nonambulatory nursing home residents are common causal pathways to lower-extremity amputation. Conservative attempts with local wound care are time consuming, expensive, and most important, are often ineffective especially when dealing with underlying bone infection, arterial insufficiency, and poorly managed diabetes.

Methods

The surgical incision is made semi-elliptical, circumventing the ulceration to excise the infected tissue and allow full exposure of the calcaneus. The approach to the osteotomy was dictated by the site of the ulceration. Enough bone has to be resected to ensure that skin closure could be achieved without tension and to allow for a suction drain to be placed. Because most patients are nonambulatory, reattachment of the Achilles tendon is not a consideration in the bedridden patients. Intraoperative cultures and bone cultures from the resected bone should be obtained in all cases. When a deep abscess or extensive wound infection is present, the wounds should be left open with or without retention sutures and were allowed to heal by secondary intention. The procedure was performed without the use of a tourniquet.

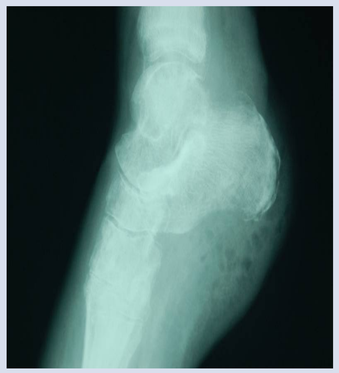
Case Report - total Calcanectomy and Talectomy

A 78-year-old nonambulatory woman from a nursing home was admitted to the hospital with gas gangrene and necrotizing fasciitis of the left foot secondary to a chronic nonhealing pressure ulcer of the heel (Fig. 1). This is a life-threatening condition requiring immediate surgical attention. Radiographs demonstrated extensive soft-tissue gas with cortical bone destruction of the calcaneus (Fig.2). Magnetic resonance imaging confirmed the presence of osteomyelitis of the talus and calcaneus. The podiatric medical procedures for this patient included fasciotomy with drainage of deep abscess and excision of the calcaneus and the talus (Fig. 3).The wound was left open for a week to ensure complete resolution of infection (Fig. 4). The pressure ulcer completely resolved in 2 months, and a major leg amputation was avoided (Fig. 5 and 6).

Figure. 1

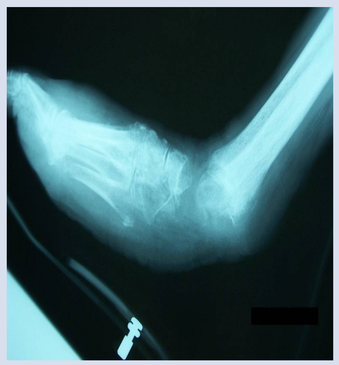
Preoperative clinical image of left heel pressure injury.

Figure. 2



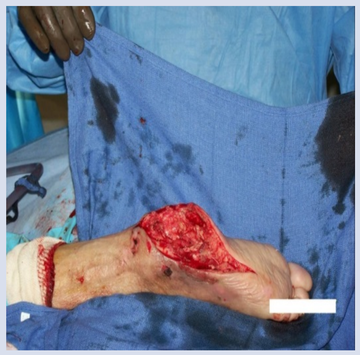
Preoperative radiographic view illustrating extensive soft tissue gas as well as the condition of the calcaneus.

Figure. 3



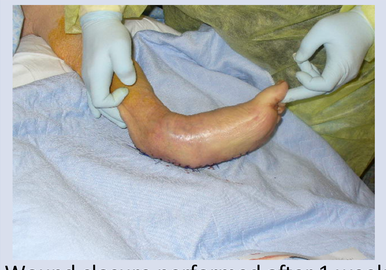
Postoperative radiographic view after total calcanectomy and talectomy.

Figure. 4



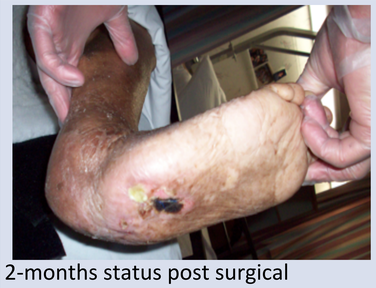
Fasciotomy and resection of both the calcaneus and the talus with delayed primary wound closure.

Figure. 5



Wound closure performed after 1 week once infection was cleared.

Figure. 6



2-months status post surgical procedure.

Discussion

In the non-ambulatory contracted diabetic patient with chronic ulceration of the heel with or without osteomyelitis, calcanectomy as well as talectomy offers a viable alternative not only for resolution of infection but also for prevention of total limb loss. The importance of limb salvage is that cultural considerations also play an integral role of the decision making in an amputation. Aside from the fear of public discrimination, the decision to amputate a limb is always difficult and cultural implications may steer a patient's desire to avoid an amputation. For example, in Asian cultures such as the Chinese, amputation may be seen as a taboo; and the Hmong people view amputation as a misfortune in their reincarnation. Under the Islamic law, amputation may also be forbidden as the human body is considered as belonging to Allah, and body integrity must be preserved. Similarly, Native Americans believe one's body is sacred and body parts must be intact. Such cultural and religious sensitivities may be a contraindication to amputation and therefore poses a dilemma in patients requiring an amputation. When dealing with a large size heel ulcer, not only total calcanectomy but also a talectomy would allow wound closure without tension. In this case, by performing this procedure we were able to offer a culturally sensitive patient an alternative to a below-the-knee amputation with satisfactory results.

References

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