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Case Report

A Case Report of Bilateral Heels Necrotizing Fasciitis in Diabetic Type II Patient: Surgical Management

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Abstract

Objective: **The heel ulcer itself usually requires special care for healing. Multidisciplinary treatment approach is needed to heal the chronic diabetic heel ulcer patient. While most of the cases ended up with primary limb amputation, we reported a successful case management of the bilateral chronic diabetic heel ulcer.**

Method: **A case report by history taking and patient's chart review**

Result and Conclusion: **Amputation of heel significantly ended up with limb amputation, because of the inadequate blood circulation and infection. Superimposition on diabetes contribute to more serious complication of heel ulceration. A good assessment of affected limb vascular supply and a good blood sugar control are critical success factors in heel ulcer healing. Multidisciplinary team approach is necessary in caring for this group of patients. Simple surgical techniques such as debridement, partial bone excision, and primary wound closure are enough to heal heel wound in a good vascular supply and good blood sugar control patient.**

Keywords: **Necrotizing fasciitis, diabetic type II, heel wound**

Introduction

Even a minor trauma, which causes a break in the dermal barrier in heel area in diabetic patients, may lead to chronic heel ulcer[1,2]. Diabetic foot ulceration, including heel ulceration, is a major complication of diabetes mellitus[2]. The lifetime incidence of heel ulcer in diabetic patient is about 15 percent[2]. Heel ulcer is also the second common site of pressure ulcers after the sacrum in bed ridden patients[3]. The severity of heel ulcer may be a small ulcer up to the large defect of muscle and bone. Chronic heel ulcer usually leads to morbidity and mortality in patients[4,5]. Hospital-acquired heel pressure ulcers represent a significant morbidity and often result in limb loss[5].

The heel ulcer itself usually needs special care for healing such as off- loading, wound debridement, and flap coverage[6]. When complicated with diabetic disease, the heel ulcer will be more severe. Chronic diabetic heel ulcers are complicated by three factors; vascular compromise, neuropathy, and immunocompromise by uncontrolled blood sugar[7,8]. Multidisciplinary treatment approach is needed to heal the chronic diabetic heel ulcer patients; such as, off-loading, a good nursing care, tight blood sugar control by internist,

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debridement by surgeon, rehabilitation by physiotherapist[9,10].

The purpose of this report is to demonstrate a clinical history of one chronic diabetic bilateral heel ulcer with successful healing of chronic diabetic heel ulcer by undergoing partial calcanectomy at Theptarin Hospital. Partial calcanectomy provides an adequate debridement allowing enough flaps to cover the heel with primary closure.

Material and Method

Chart and operative records of a patient with infected heel wound on both legs with diabetic type IIA who was transferred to Theptarin Hospital were reviewed. The eight-month hospital history was reported. Informed consent from the patient was obtained for this paper.

A Case Report

A Thai paraplegia 52-year-old man referred to Theptarin Hospital with infected bilateral heels wounds (Figure 1).

He went to hospital with chronic wounds on his bilateral heels and low grade fever. He has underlying diabetic type II and he is paraplegia for more than 10 years which resulted from spondylolithiasis and spinal surgery. After a period of bed ridden, he developed wound on his bilateral heels and superimposed with infection. The Wagner classification of his wounds was Wagner 2 (exposed tendon and bone without osteomyelitis) on bilateral heels.

During his course at Theptarin Hospital, he had undergone many investigations and controlled his underlying diseases. His laboratory studies were as follows: CBC: Hct 31.7 % Hgb 11.2 mg% WBC 11,540 cumm (N 83%, Lym 15%); Bun 42 mg/dl, Cr 1.70 mg/dl Na^+ 136 mmol/l, K^+ 3.6 mmol/l, Cl- 97 mmol/l, CO_2 26 mmol/l; Urine exam: no cells, WNL; EKG: HR 100/min, Normal sinus rhythm; CXR: WNL; Hemoculture: Negative; Wound swab culture: Multi-drug resistant Staphylococcus aureus (MRSA)

The diagnosis included: Necrotizing fasciitis of bilateral heels; Diabetic mellitus type II; Spondylolithiasis with paraplegia. He had been treated for infection with supportive measures such as compressive dressing, and passive exercise. The surgery was planned after the infection and blood sugar were well controlled. The patient had a good blood supply to both limbs.

Stages surgery and debridement were done for several times. Figure 2A, B showed patient's heels immediately after calcanectomy.

Surgical technique for heels wounds debridement, partial calcanectomy with primary skin closure procedure

Preoperative planning, patient's physical status check up and medical consultation were done. Patient is fit for operation. Physiotherapist designed to do rehabilitation before and after surgery. The tight blood sugar control and local wound control was about one week before surgery.

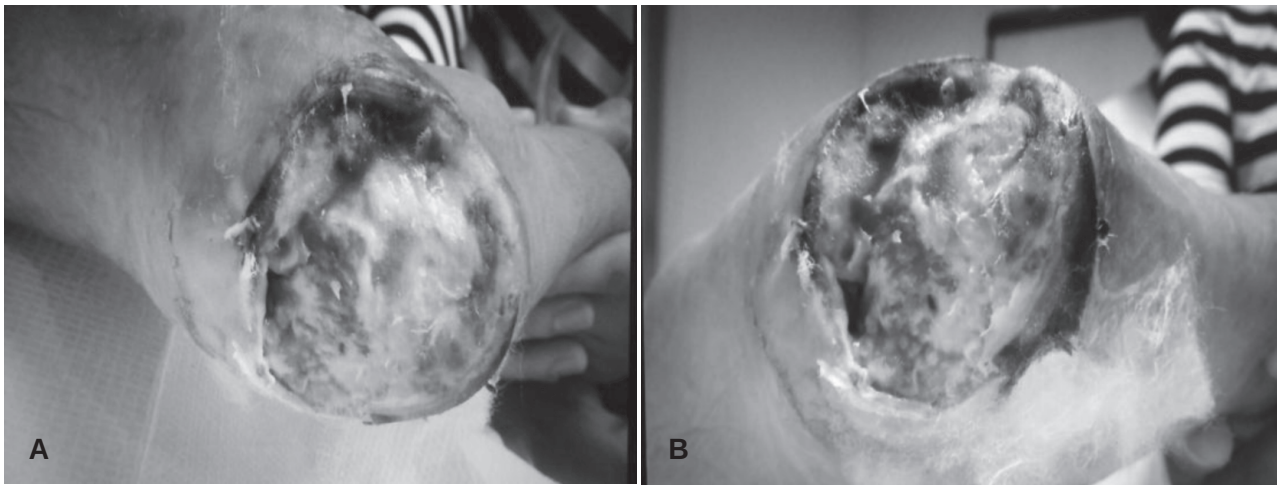

Figure 1 A, B Infected heels wounds on 1a right leg and 1b left leg

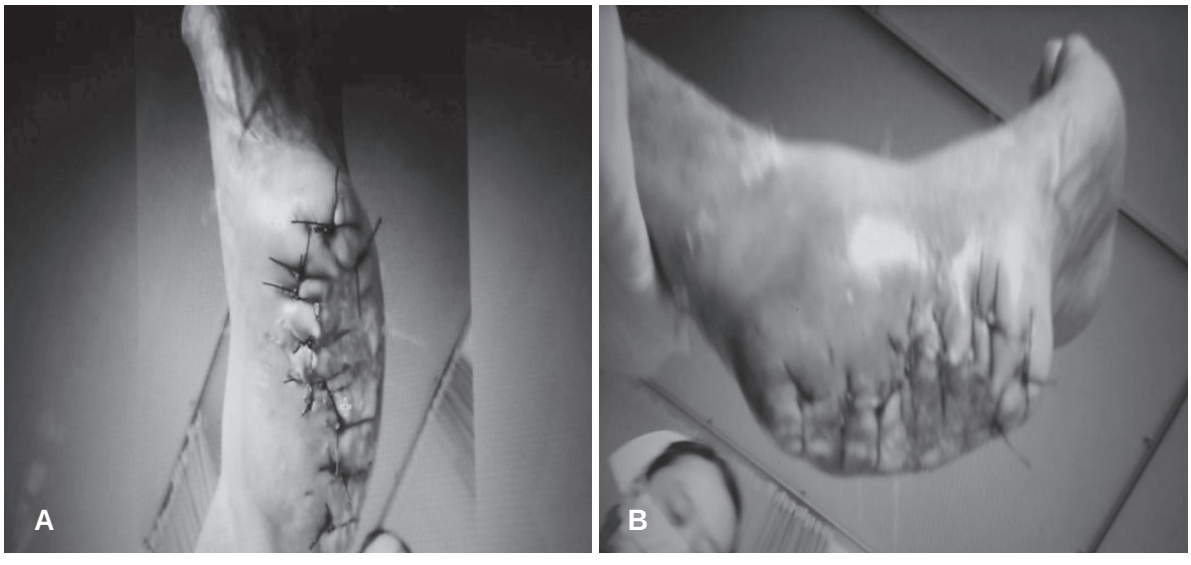

Figure 2 A, B Patient's heel after calcanectomy surgery; 2a left heel, 2b right heel

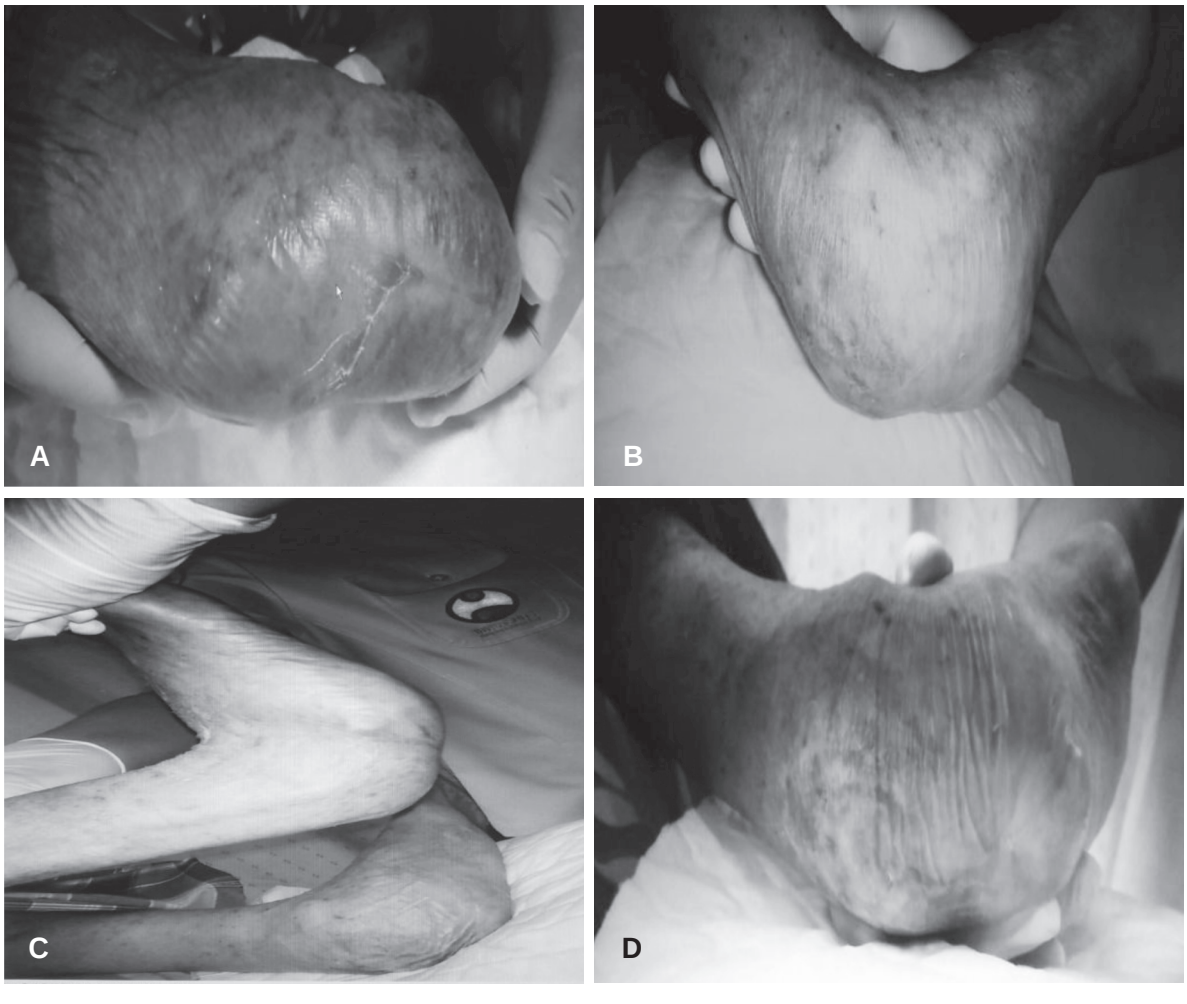

Figure 3 A Patient heel 2 weeks after surgery
B Patient heel 1 month after surgery
C Patient heel 3 months after surgery
D Patient heel 6 months after surgery

The operation was planned after evaluation of the lower limb circulation to avoid vascular compromised problems. Heel wound debridement, partial calcanectomy with primary skin closure procedure were done at once during the surgery.

The patient was in supine position under bilateral ankle block. Aseptic and antiseptic technique was prepared to the affected lower extremity. After resection of the necrotic tissue, partial calcanectomy was performed, the tissue flap was mobilized around the resection area. Primary closure was done by simple reapproximating the wound flap with insertion of vacuum drain number 12. The operation was done on both heels during the same surgery. The calcanectomy was done below the endoarchillis tendon insertion area.

The wounds and drainage system were checked everyday. After two weeks of each surgery, stitch off was done. The vacuum drainage system was taken off after minimal fluid was detected.

There was no immediate complication after surgery. Patient was safe after surgery and the result was good. Patient's heel wounds were healed two weeks after surgery. Figure 3A-D demonstrate the patient's heels at 0.5, 1, 3, and 6 months after surgery.

Discussion

Amputation of heel significantly ends up with limb amputation, because of the inadequate blood circulation and infection. Superimposing diabetes contribute to more serious complication of heel ulceration. A good assessment of affected limb vascular supply and a good blood sugar control are critical success factors in heel ulcer healing. Multidisciplinary team approach is necessary in caring for this group of patients[9]. Even for a successful heal of the ulcer, the long term care is still important, because of the recurrence rates may be as high as 70 percent at three years[4]. The supportive measures after the ulcer healing include mechanical reduction of pressures, blood sugar control, and rehabilitation. In a vascular compromised patient, vascular reconstruction may be applicable in fitted patients which reported a success rate of about 13%[7,11]. Three main problems of the heel ulcer; neuropathy, uncontrolled blood sugar, and ischemia, result in most of the chronic diabetic heel ulcer ending up with limb amputation[4].

Due to serious morbidity and mortality of the foot ulcer[4,5,12], prevention of foot ulcer is the most effective tool to reduce the chance of limb amputation[13,14]. The prevention measures include 1) podiatric care, which allows for early detection and aggressive treatment of new lesions; 2) off-loading, which may include cushion insoles, padded hosiery; 3) protective shoes; 4) control of the underlying diseases such as diabetes; and 5) regularly check up and preventative education, which includes daily inspection of feet[14, 15].

Conclusion

This report involved a successful case management of bilateral chronic diabetic heels ulcer; the patient had a good vascular supply to his limbs. After a good supportive care such a good nursing and wound care, good blood sugar control, rehabilitation, and antibiotics, only simple surgical technique could heal the chronic diabetic heel ulcer. The serious morbidity and mortality of foot ulcer may cause limb loss. The prevention measures are still the most effective tool to prevent the patient from limb amputation.

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บทคัดย่อ **รายงานการรักษาแผลติดเชื้อบริเวณส้นเท้าทั้งสองข้างในผู้ป่วยเบาหวานโดยการตัดกระดูกส้นเท้า**

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แผลติดเชื้อบริเวณส้นเท้าโดยเฉพาะหากผู้ป่วยเป็นโรคเบาหวานร่วมด้วยเป็นแผลที่หายได้ยาก ต้องอาศัยการดูแลแบบสหสาขา บทความนี้รายงานความสำเร็จของการรักษาผู้ป่วยแผลเบาหวานติดเชื้อที่บริเวณส้นเท้าทั้งสองข้างในผู้ป่วยเบาหวานโดยการทำการผ่าตัดกระดูกส้นเท้า พบว่าสามารถช่วยในการหายของแผลและสามารถหลีกเลี่ยงการถูกตัดขาจากการติดเชื้อได้ในผู้ป่วยรายนี้ และบาดแผลหายเป็นปกติ
