



Dramatic Recovery! Vacuum Assisted Seal Therapy in a Patient with Severe Diabetic Foot Developing Secondary to Peripheral Artery Disease

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Abstract

Diabetic Foot Ulcer Is a Macrovascular Complication that Increases The Risk of Morbidity and Mortality. Vacuum Assisted Closure Therapy Reduces Morbidity and Mortality by Providing Dramatic Improvement in Diabetic Foot Ulceration.

Keywords: Diabetic foot ulcer; Vacuum assisted closure therapy; Morbidity; Mortality

Introduction

Microvascular and macrovascular complications can occur in Diabetes Mellitus. High glycemia levels due to diabetes reduce nitric oxide levels by causing endothelial damage [1]. In addition, these high glycemia levels cause diffuse narrowing of the vascular lumen. Both this diffuse narrowing and endothelial damage cause macrovascular and microvascular complications [1]. Diabetic foot ulcer, which occurs with the addition of excessive pressure and infection to ischemia resulting from neuropathy and peripheral vascular disease due to this physiopathology, is a serious macrovascular complication that develops in 15% of diabetic patients throughout life and requires amputation in 7-20% of patients [1]. The main treatment for chronic wound is surgery. It is not possible to close the wound without proper debridement, removal of foreign bodies, revascularization in ischemic wounds and appropriate surgical methods. In addition to these, there are wound care products that have important effects today, the leading of which is vacuum assisted closure treatment [2,3]. In this system, after the wounds are closed in a sterile way, the wound is treated with negative pressure intermittently or continuously. Since the number of

patients with diabetic feet who recover with this treatment method increases day by day, it has recently become a popular treatment method. We wanted to bring to the literature a case that deals with the dramatic recovery of a patient with severe diabetic foot due to peripheral artery disease with vacuum closure therapy.

Case Report

A 70-year-old diabetic male patient was admitted to our clinic with the complaint of severe leg pain that occurred while doing his daily work for 2 months. On physical examination, the left leg femoral pulse was on, but the popliteal and pedal pulse could not be obtained. There were neurological symptoms such as numbness and tingling in the left leg. The patient had mild renal dysfunction, after consultation with the Nephrology clinic, and their recommendations were obtained. The patient was hydrated. However, the patient, who did not improve despite hydration and whose clinic was clear, was consulted with the Nephrology clinic again. Nephrology clinic stated that lower extremity tomographic angiography can be performed with plenty of hydration and acetylcysteine. In the lower extremity tomographic angiography,

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the segment from the distal of the left superficial femoral artery to the proximal popliteal artery was totally occluded (Figure 1).

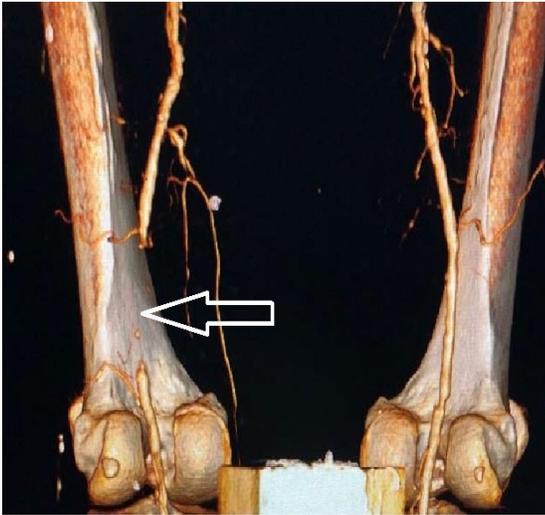


Figure 1: In the lower extremity tomographic angiography, the segment from the distal of the left superficial femoral artery to the proximal popliteal artery was totally occluded.

After the procedure, the general condition of the patient deteriorated. Nausea, vomiting, and impaired consciousness developed. Based on clinical and examinations, a diagnosis of metabolic acidosis and chronic kidney failure acute attack was made. The patient was taken on emergency hemodialysis. The patient who developed noncardiogenic pulmonary edema during dialysis was intubated. The intubated patient was hemodialyzed at decreasing frequency. During the follow-up, bronchial plugs of the patient developed three times and these plugs were cleaned by the thoracic surgery clinic. The clinic of the patient, who was intubated for three weeks, started to improve with the available treatments and the patient was extubated. During the period when the patient was intubated, a pressure wound on the left leg lateral from the knee to the lateral malleolus developed. The patient was taken to the ward from the intensive care unit. The relatives of the patients said that they wanted to be treated in an external center and the patient was discharged with medical recommendations. However, 10 days later, the patient was hospitalized again. The necrosis was observed in the wound on the leg of the patient (Figure 2). There was a course to a septic picture based on the examinations and symptoms. The patient was taken to the operating room and the necrotic skin-subcutaneous and muscle tissues were debrided. The debridement was deepened to the level of the fibula. Subsequently, vacuum assisted wound care products were used (Figure 3). Balloon angioplasty was performed to the total occlusion of the superficial femoral artery while wound care was in progress. With the current treatments, blood supply and granulation of the tissue was achieved. Subsequently, a skin graft was made on the tissue (Figure 4) and the patient was discharged

with full recovery. The leg view is shown 1 month after the wound is closed with graft (Figure 5).



Figure 2. The necrosis was observed in the wound on the leg of the patient.



Figure 3: Use of vacuum assisted wound care product.



Figure 4: Closing the wound on the leg with skin grafts showing.



Figure 5: The Leg view is shown 1 month after the wound is closed with graft.

Discussion

Diabetic foot ulcer due to peripheral artery disease is one of the major macrovascular complications that increase the risk of both morbidity and mortality. The fact that it requires close attention and a multidisciplinary approach in terms of chronic wound care is one of the major challenges. It is generally followed up by clinics on an outpatient basis, especially due to the long-term treatment process and the difficulty of wound care. This situation further prolongs the wound healing process. Chronic wound; Wounds that are delayed to heal due to some underlying problems, do not show normal recovery phases, often take more than three months to heal, and do not respond well to treatment. In addition to patients, it poses a major problem for healthcare professionals and the healthcare system. In particular, chronic wounds due to diabetes can become inextricable. In our case, severe diabetic foot ulcer due to peripheral artery disease is a chronic wound type that is difficult to care and requires a multidisciplinary approach. A clean and moist environment is very important in healing chronic wounds. In addition, it is of great importance to create conditions that are protected against infectious agents and where necrotic materials can be continuously removed. One of the main treatments for such wounds is revascularization and in our case, we opened the totally occluded superficial femoral artery distal. This revascularization facilitates the blood supply of the ischemic area, acceleration of wound healing and the development of granulation tissue. In

addition to the revascularization procedure, good wound debridement, antibiotherapy and ancillary supplements should be used. Vacuum assisted wound care therapy, which is frequently used recently, is the leading supplementary product. With this treatment method, local blood flow increase, decrease in edema and removal of exudate, decrease in bacterial load, increase in angiogenesis and granulation tissue formation, increase in wound contraction and epithelization. Vacuum assisted closure treatment should not be used in malign wounds, untreated osteomyelitis, non-enteric and unrecognized fistulas, necrotic tissues covered with eschar, or directly on a vessel, organ, nerve or tendon [4,5]. In our case, there is a diabetic foot ulcer, and vacuum-assisted wound closure is frequently used in this macrovascular complication. Bleeding is an important side effect. In addition, since there is silver in the sponge used in vacuum-assisted treatment, it should be used carefully in patients with silver allergy [6]. In our case, no side effects developed and over time it responded dramatically to the treatment. As a result, vacuum-assisted closure therapy, postoperative debridement of tendon, fascia and /or is an important option in the treatment of diabetic foot ulcers where bone tissues are exposed.

References

1. Kayaş Y, Ertam I, Uysal S, Şimşir İY, Oztürk AM, Taşbakan MI. Evaluation of dermatological findings in diabetic foot syndrome. *FLORA*. 2018; 23: 8-14.
2. Ilonzo N, Patel M, Lantis JC. Managing the diabetic foot ulcer: how best practices fit the real 2018 united states. *Surg Technol Int*. 2018; 32: 49-59.
3. Jeffcoate WJ, Vileikyte L, Boyko EJ, Armstrong DG, Boulton AJM. Current challenges and opportunities in the prevention and management of diabetic foot ulcers. *diabetes care*. 2018; 41: 645-652.
4. Kumar S, Kaleem MB, Mehraj M, Dhingra M, Muzaffar J, Gupta P, Kaleem MB. Effectiveness of vacuum assisted negative pressure wound therapy in grossly contaminated wounds. *Int J Orthopaedics Sci*. 2018; 4: 401-405.
5. Baccarani A, Aramini B, Morandi U, De Santis G. Vacuum assisted closure in the management of exposed hardware for skeletal fixation: A Challenging Case. *Biomed J Sci Tech Res*. 2018; 3.
6. Andleeb Gul I, Kirmani TT, Bhat MS, Gull ZA. Vacuum assisted closure in chronic wound management- A Study of 20 Cases. *JMSCR*. 2018; 6.