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Case Study



Treatment of venous ulcers with an Unna boot: a case study

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ABSTRACT

Objective: To assess the healing process of a patient with a venous ulcer in a lower limb subject to treatment with an Unna boot.

Method: This case study was conducted in the Outpatient Wound Care service of a public hospital in Niterói, RJ, Brazil between July and September, 2011. A protocol addressing clinical data was used to assess the wound's healing process, together with measurement of the lesion area and photographic recording. The study was approved by the hospital's Institutional Review Board (Protocol No. 327\10).

Results: the wound healed after 12 weeks of follow-up and the patient reported reduced pain and edema in his legs.

Conclusion: The treatment with an Unna boot was effective in healing the venous ulcer when associated with systematized outpatient follow-up.

Keywords: Nursing; Varicose Ulcer; Bandage.

INTRODUCTION

Chronic wounds of a vasculogenic etiology constitute a severe problem worldwide. In Brazil, this condition is a severe public health problem, accounting for significant indexes of morbidity and mortality, in addition to having a great economic impact⁽¹⁾.

Chronic Venous Insufficiency (CVI) is a set of changes that occurs on skin and subcutaneous tissue, especially in the lower limbs, that results from long-term venous hypertension caused by valvular insufficiency and/or venous obstruction⁽²⁾. The main factors that predispose one to venous insufficiency and the consequent emergence of venous ulcers include: advanced age, obesity, pregnancy, genetic factors and/or a family history of varicose veins, and deep vein thrombosis⁽³⁾.

Knowledge concerning these diseases is extremely important in order for health professionals to establish the correct diagnosis and implement specific therapeutic measures⁽⁴⁾. Incorrect diagnoses hinder the wound's healing and harm the patient's health⁽⁵⁾.

An 2010 epidemiologic study developed in the Outpatient Wound Care service at the Antônio Pedro University Hospital in Niterói, RJ, Brazil, addressed different types of wounds among 186 patients in outpatient follow-up, revealing that: 51% of the patients had venous ulcers; 24% had diabetic ulcers; 6% had pressure ulcers; 2% had arterial ulcers; and 17% presented lesions of other etiologies⁽⁶⁾. Therefore, most patients seeking care in this outpatient clinic experience conditions caused by chronic venous insufficiency.

Venous ulcers represent the most advanced stage of Chronic Venous Disease (CVD)⁽⁷⁾, which is associated with a dysfunction of the calf muscle pump, leading to venous hypertension. This muscle pump is the primary mechanism in the return of blood from the lower limbs to the heart and is composed of the calf muscles, deep venous system, superficial venous system and perforating/communicating veins⁽⁵⁾.

It is common for the region around a venous ulcer to present eczema, known as stasis eczema, characterized by erythema, flaking, and itching⁽⁸⁾.

Another change these patients experience, and which usually precedes venous ulcers, is lipodermatosclerosis, a chronic fibrosis of the dermis and subcutaneous tissue that causes the skin to become firm and hard. In later stages, the leg presents edema in the proximal region and distal constriction due to fibrosis and the loss of subcutaneous fat, leaving the leg with the shape of an inverted bottle^(9,10).

The most important factor in the prevention and treatment of venous ulcers is controlling edema and venous hypertension through compressive measures. Patients who undergo compressive therapy present a significant increase in healing rates and a decreased recurrence of ulcers⁽¹¹⁾.

When applying compression on the affected limb, compressive therapy increases tissue pressure, favoring reabsorption of edema and improving lymphatic drainage. Outer pressure exerted by compressive therapy on patients' ankles should be from 35 to 40 mmHg and gradually decrease in the region below the knee⁽⁴⁾.

Compressive therapies can be elastic or inelastic. The most traditional therapy among the inelastic ones is the Unna boot, which is a bandage impregnated with zinc oxide, gum acacia, glycerol, castor oil, and deionized water, creating a semisolid mold that efficiently holds outer compression. It is considered a curative product that helps compressive therapy, enabling venous return. This product can be directly applied on the venous ulcer's bed as long as it contains granulation tissue, possibly with devitalized areas, no signs of infection, such as a foul odor, exudate with greenish coloration, or lymph node infarction, including the inguinal region. Replacement time may vary from five to seven days and is counter-indicated for the treatment of neuropathic, arterial or mixed ulcers⁽¹²⁾.

An Unna boot is only indicated for venous ulcers and the patient cannot be bedridden or in a wheelchair, since walking is essential to the product's effectiveness⁽³⁾.

These inelastic bandages create high pressure with muscle contraction (during deambulation) and low pressure when the patient is at rest. For this reason, it is

essential that patients continue to perform daily activities at work or take short walks when wearing the Unna boot for the product to be effective⁽¹²⁾.

It worth noting that inelastic compressive bandages can be harmful or useless if not correctly used and their effectiveness may be influenced by the application technique used by doctors, nurses, or the patients themselves⁽³⁾.

Other compression systems include elastic stockings or bandages. Compression stockings and elastic bandages are a useful and convenient method to apply outer compression on legs with a normal shape, seeking to prevent the development or recurrence of venous ulcers. They should be used all day long, removed at night and reapplied in the morning^(3,13).

In this context, the objective of this study was to evaluate the healing process of a patient with venous ulcers on a lower limb treated with an Unna boot.

METHOD

This case study was conducted in the Outpatient Wound Care service at the Antônio Pedro University Hospital in Niterói, RJ, from July 13th to September 28th, 2011. It addressed a male elderly patient with a venous ulcer of medium length, located on the side of his right leg, treated with an Unna boot for 12 weeks.

This study was initiated only after the patient signed a free and informed consent form and authorized photographic recording. The researcher and a research assistant collected data using a protocol addressing the patient's socioeconomic and clinical information. This protocol was filled out on the first day of care provided to the patient at the outpatient clinic. Data concerning follow-up of the healing process were recorded weekly and addressed the following variables: degree of exudation, wound depth, characteristics of the lesional and prelesional tissue, presence of odor, itching, pain, and edema staging. Photographic recording and tracing were performed at four different points in time: at the 1st, 5th, 9th, and 12th consultations. The Unna boot bandages were replaced weekly during nursing consultations.

This case study is part of the project "Study of Unna boots compared to the use of Elastic Bandages in patients with venous ulcers," approved by the Institutional Review Board at the Medical School at HUAP (Process No. 327\10 on Dec 17, 2010, CAAE No. 0252.0.258-000-10).

RESULTS

The history and nursing development of a patient with venous ulcers using an Unna boot is presented.

Case study - History

African-Brazilian male patient, aged 64 years old, general services assistant, with incomplete primary school, living by himself in Niterói, RJ, Brazil. He reports hypertension for 1 year and 4 months, daily use of hypertensive medication and analgesics, reports not having Diabetes Mellitus. He experiences relapsing venous ulcer of average length on the right lower limb since May 2010.

1st APPOINTMENT July 13th, 2011 – Unna boot treatment was initiated

Elderly patient, hypertensive, mentally sound, cooperative and with intermittent claudication. Venous ulcer in the middle third of the side of his right leg. Reports pain and intense itching around the wound. Physical assessment indicates: blood pressure of 110/80 mmHg; fasting glucose of 89mg/dl; skin adjacent to the wound with lipodermatosclerosis, dry, with eczema; and varicose veins. Swollen lower limbs 4+/4+. Wound with 28cm² of length, partial depth, irregular and macerated edges; wound bed with granulation tissue, no foul odor, with an average amount of serosanguinous exudate. The wound's bed and edges were cleaned with jets of saline solution at 0.9%, dried with sterile gauze, only around the wound; adjacent skin was hydrated with urea cream at 10%. An Unna boot was applied and a secondary dressing was applied with sterile gauze and a simple crepe bandage was applied in an upward spiral. The patient was instructed concerning self-care to be provided at home: protect the bandage during

bathing to avoid wetting it; replace the secondary bandage daily to avoid potential infection and foul odor; rest and elevate legs above heart level, three to four times a day for 15 to 20 min; avoid scratching to prevent the emergence of new lesions. He was also informed of the importance of keeping his blood pressure within normal standards, established by the Brazilian Ministry of Health, through the correct use of the prescribed anti-hypertensive medication and hyposodic diet, as well as regular exercise, such as walking.

Last appointment September 28th, 2011 – after 12 weeks of treatment with an Unna boot

The venous ulcer healed after 12 weeks of treatment with an Unna boot and its weekly replacement. The patient reports a considerable reduction of pain and itching and reports no analgesics usage for more than a month. Improvement in his gait is observed and his edema was reduced to 1+/4+ (**Picture 2**).

The patient reports improved quality of life after the treatment with an Unna boot due to the reduced production of exudate and pain. This situation bothered him considerably because it hindered walking and required the patient to change the secondary bandage many times a day, also restricting his social life.

Table 1: Parameters concerning the characteristics of the patient's venous ulcer and lower limbs in the first and last nursing consultation. 2011, Niterói, RJ, Brazil.

Analised Parameter	First Consultation	Last Consultation
Size	28 cm ²	Healing
Exudate	Serosanguinous	No exudate
Volume of exudate	Average	-
Tissue bed	Granulation	Epithelialization
Tissue edge	Macerated	-
Depth	Partial	-
Adjacent skin	Lipodermatosclerosis, dry	Lipodermatosclerosis and hydrated
Pain	Yes	No
Itching	Yes	No
Eczema	Yes	No
Edema	Yes +4/+4	No +1/ +4

Picture 1 presents the patient's lesion at the first consultation, on July 13th 2011 – Antonio Pedro University Hospital, Niterói, RJ, Brazil.



Picture 2 presents the healed lesion on the last consultation, on September 28th 2011 - Antonio Pedro University Hospital, Niterói, RJ, Brazil.



DISCUSSION

Successful healing is a very complex process that depends on various factors. The response of each individual is directly associated with external factors, such as treatment with irritant agents applied on the wound bed, a long time of development, and internal factors, such as underlying diseases and advanced age, among others. The association of chronic diseases, such as Systolic Hypertension, Diabetes Mellitus, and Sickle Cell diseases with Chronic Venous Insufficiency considerably hinders tissue repair⁽¹⁴⁾.

Poor socioeconomic conditions and a low educational level can also contribute to delayed healing due to limited access to information concerning prevention and care provided to the treatment of venous ulcers⁽¹⁵⁾.

Chronic venous ulcers can directly interfere in these patients' quality of life, since they are associated with intense pain, loss of quality of sleep, limited functioning and altered self-image, coupled with the fact the treatments are long and sometimes ineffective⁽¹⁶⁾. Chronic pain can lead to depression, loss of self-esteem, social isolation and an inability to work⁽¹³⁾.

Inelastic compressive therapy is the main and more efficient way to control edema of venous or lymphatic cause⁽¹⁷⁾. Rest with elevation of lower limbs above heart level is also recommended^(17,18). The Unna boot treatment was effective in this case study because it reduced the edema, pain in the affected limb, and completely healed the chronic venous ulcer.

CONCLUSION

The use of an Unna boot in the treatment of non-infected venous ulcers, coupled with appropriate outpatient follow-up, clinically improved the patient's health condition, significantly reduced pain and edema observed in the lower limbs and the venous ulcer healed completely.

Because venous ulcers are chronic lesions, with frequent relapses and varied responses to therapy, it is the role of nurses to provide care focused both on the treatment of

wounds already present and to prevent new wounds, and then to instruct the patient about the relationship between the venous ulcer and any underlying disease in order to encourage self-care.

Given the result presented, we recommend the use of inelastic compressive therapy (the Unna boot) to treat venous ulcers associated with regular outpatient follow-up performed by health professionals, including nurse and angiologist. Another relevant factor is patient adherence to treatment, considering that the treatment is long and is related to underlying diseases. A lack of adherence may directly compromise the results of the process of tissue repair for venous ulcers.

The use of compressive therapy through elastic bandages or stockings should be indicated to prevent the emergence of new wounds.

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