

Chronic Ulcer in Traumatic Lymphedema with Difficult Resolution: Treatment and Review

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Abstract: The aim of the present study was to report the resolution of a chronic ulcer in a patient with traumatic lymphedema by Godoy Method®. Male, 30 years old, reports that he suffered a car accident 12 years ago with trauma to the middle third of the right leg and skin necrosis where he underwent a graft and subsequent partial loss of the graft resulting in ulcer and lymphedema. He underwent treatment for a period of ten years, including 120 sessions in a hyperbaric chamber with no improvement. The patient underwent intensive treatment for lymphedema by Godoy Method® for 10 days. Stimulation of ulcer granulation was observed, with approximately 40% reduction in area and reduction in limb volume. He was discharged to continue treatment at home, wearing a grosgrain stocking and RAGodoy® device, which led to complete healing of the ulcer. Godoy Method® is effective for healing ulcer that are difficult to resolve.

Keywords: Chronic Ulcer; Lymphedema; Treatment.

Citation: Godoy JMF, Godoy LM, Godoy HJP. Chronic Ulcer in Traumatic Lymphedema with Difficult Resolution: Treatment and Review. Brazilian Journal of Case Reports. 2026 Jan-Dec;06(1):bjcr118.

<https://doi.org/10.52600/2163-583X.bjcr.2026.6.1.bjcr118>

Received: 21 August 2025

Accepted: 24 September 2025

Published: 1 October 2025



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1. Introduction

Lymphedema is a clinical condition associated with a deficiency in the production or drainage of lymph resulting in the accumulation of macromolecules in the interstitial space. The origin is either congenital or acquired. In congenital cases, the individual is born with an abnormal lymphatic system, which may or may not lead to the development of lymphedema [1-3]. One of the classifications is based on age: congenital primary lymphedema emerges prior to two years of age; early primary lymphedema emerges between two and 35 years of age; and late primary lymphedema emerges after 35 years of age [2]. In acquired cases, the individual is born with an intact lymphatic system that is compromised throughout the course of life, the most common causes are filariasis in developing countries and cancer in developed countries [1-3]. Other causes include infection (especially erysipelas), phlebolympedema and trauma. The formation of ulcers is common and most often associated with trauma or infection.

Regarding the diagnosis, the patient history and a physical examination are normally sufficient. However, volume measurement exams, such as water-displacement volumetry, circumference measurements and bioelectrical impedance analysis, are necessary for the confirmation of the diagnosis as well as the evaluation of the effects of treatment. Lymphoscintigraphy and magnetic resonance lymphography are exams that furnish important anatomic and functional data [4, 5].

For treatment, complex physical therapy has been employed for decades. In recent years, novel concepts and techniques have led to the creation of the Godoy Method®, which proposes the normalization or near normalization of lymphedema in all clinical stages, including elephantiasis [6, 7]. Some cases are particularly challenging, and the occurrence of an ulcer normally implies the need for greater care. The aim of the present study was to report the resolution of a chronic ulcer in a patient with traumatic lymphedema using the Godoy Method.

2. Case Report

A 30-year-old male suffered an automobile accident 12 years earlier involving open trauma of the middle third of the right leg and skin necrosis and was submitted to a graft. The subsequent partial loss of the graft resulted in an ulcer and the development of lymphedema. The patient sought treatment for a period of ten years, including 60 sessions in a hyperbaric chamber two years ago, followed by another 60 sessions the following year, but with no improvement. The physical examination revealed that the patient was obese (body mass index (BMI): 59.1 kg/m²) and had clinical stage II lymphedema with intense fibrosis below the knee. The lymphedema was more intense in the middle and distal portions of the limb, characterized by the absence of the pitting edema sign.

An ulcer was located in the middle third of the leg. Important hyperkeratosis and darker skin were found in the affected region. Multi-segment bioimpedance was performed, which detected 18.9 liters in the right leg and 12.1 liters in the left limb. Intracellular and extracellular liquids were above the limits of normality in all extremities. Figures 1 and 2 show the leg and ulcer prior to treatment. The patient was submitted to intensive treatment for lymphedema using the Godoy Method® for 10 days.

Figure 1. Ulcer with granulation tissue, edges with intense fibrosis and hyperkeratosis.

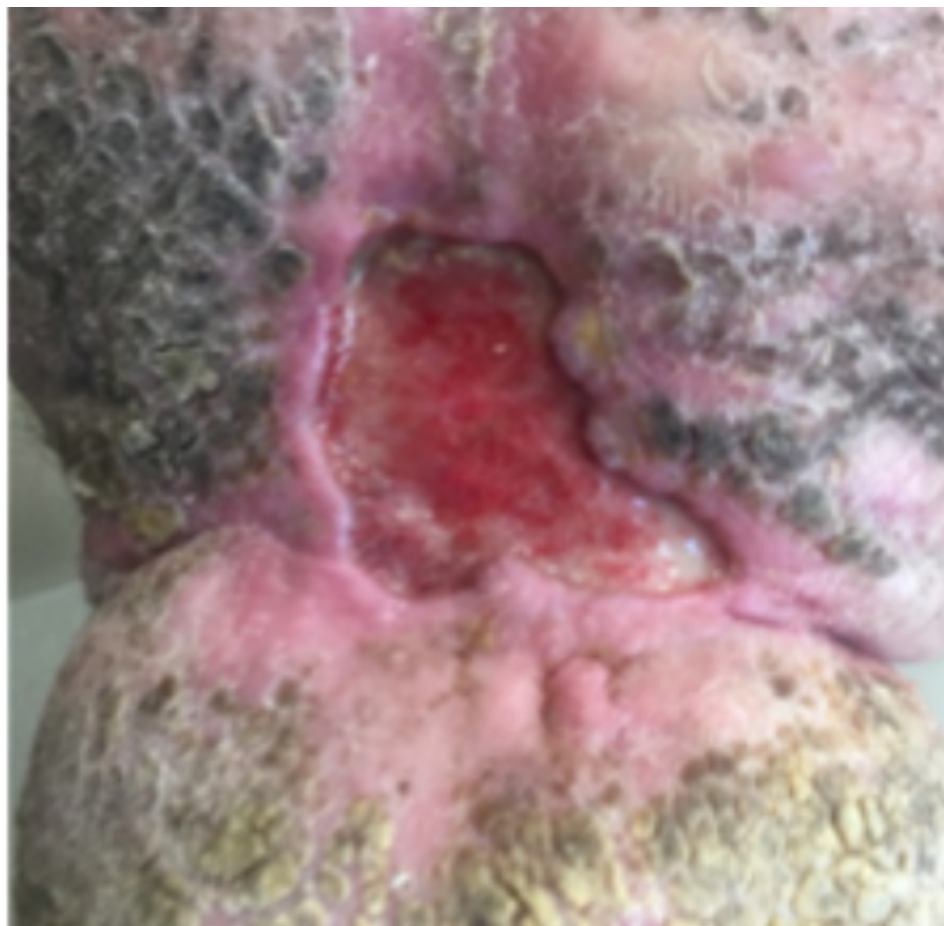


Figure 2. Ulcer and surrounding skin, intense fibrosis and hyperkeratosis.



Treatment consisted of eight hours per day of mechanical lymphatic therapy using an electromechanical RAGodoy® device, which performs passive plantar flexion and extension movements 28 times per minute; 15 minutes/day of cervical lymphatic therapy, which consists of 30 gentle stretching movements of the skin of approximately 0.5 cm in the cervical region; approximately one hour/day of manual lymphatic therapy (Godoy Method); and a compression mechanism (hand-crafted laced stocking made of grosgrain [non-elastic] fabric adapted and adjusted to the size of the limb). These therapies were performed simultaneously for ten days, after which a new bioimpedance analysis of the affected limb was performed, revealing a reduction to 15.07 L (51.48% of the volume).

Stimulation of the granulation of the wound was observed, with an approximate 40% reduction in its area, along with a reduction in hyperkeratosis, lightning of the skin and a reduction in the volume of the limb, figure 3. The patient was discharged to continue treatment at home, involving the use of the grosgrain stocking and RAGodoy® device, which led to the complete healing of the wound in three months and important reductions in both hyperkeratosis and fibrosis of the skin. The calf circumference of the affected limb was the same as that of the contralateral limb, with edema in the distal third of the leg. Figure 4 shows the leg after three months of treatment. The patient reported working 12 to 14 hours per day, with a routine of using the compression stocking and electromechanical device in the evening, but not frequently. He was instructed to continue treatment until reaching the complete normalization of the edema and the clinical reduction in fibrosis, at which point the goal will be the maintenance of the results.

3. Discussion

This paper reports a case of traumatic ulcer in the middle third of the leg associated with traumatic lymphedema that posed a challenge to conventional treatments. The patient sought several forms of treatment over a 12-year period. The final attempt was 120 sessions in a hyperbaric chamber but was not successful.

Figure 3. Ulcer and leg after 10 days of treatment, showing reductions in size of ulcer, lymphedema and hyperkeratosis as well as lightening of skin.



Figure 4. Leg after three months of treatment, reduction in hyperkeratosis, but fibrotic aspect remaining.



Finally, intensive treatment was performed using the Godoy Method®, which resulted in a 51.48% reduction in the volume of the affected limb in ten days, accompanied by a reduction in the size of the ulcer. This loss of volume in a short period of time can be explained by the elimination of fluids through the urine and the mobilization of macromolecules, which are redistributed throughout the body, as suggested by multi-segment

bioimpedance analysis [8]. However, these are not the only effects of the method employed [8].

Recent studies described the analysis of biopsies performed before and after the clinical normalization of the fibrosis, using Godoy Method®, revealing an important influence on the synthesis and lysis of macromolecules of the skin as well as a more than 200% increase in elastic fibers, a more than 200% reduction in type I collagen fibers, significant reductions in the basement membrane and other changes, which are being analyzed [9-12]. Therefore, it is more complex to achieve normality or near normality of the skin in such cases. In the present study, the patient had intense fibrosis of the skin, hyperkeratosis and darkened skin color, with unsuccessful healing of the ulcer using conventional techniques and even a hyperbolic chamber.

The intensive Godoy Method® leads to the mobilization of liquids and macromolecules as well as changes in the cellular pattern of extracellular matrix proteins, leading not only to the healing of the ulcer, but also improvements in the characteristics of the skin. The authors normally treat patients with lymphedema and ulcers, for whom additional care is needed regarding bandages and the prevention of infection. The maintenance of the results is another challenge. Several studies have been conducted involving the short-, medium and long-term (more than two years) follow-up of these patients [13-16]. Another aspect is the improvement in joint mobility [15], which is an important factor for the improvement of the calf muscle pump. Therefore, lymphovenous rehabilitation is fundamental to the maintenance of the results.

4. Conclusion

Godoy Method® is effective for healing ulcer that are difficult to resolve. The improvement in dermatofibrosis in patients with lymphedema and ulcer is an important factor in the healing of wounds. Lymphovenous rehabilitation, with an improvement in the calf muscle pump, and maintenance with a compression mechanism adapted to each patient are fundamental.

Funding: None.

Research Ethics Committee Approval: This study was approved Ethical Research Committee Faculdade de Medicina de Sao Jose do Rio Preto-FAMERP number# 4.903.449. The patient signed term consent form.

Acknowledgments: None.

Conflicts of Interest: The authors declare no conflicts of interest.

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