

# The decongestive lymphatic therapy in the massive primary lower limb lymphedema treatment

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## Abstract

*The decongestive lymphatic therapy is recommended by the International Society of Lymphology, the International Union of Phlebology and the International Lymphoedema Framework as the conservative treatment of choice in the lymphedema patients. This method enables effective treatment even in patients with difficult and complicated lymphedema.*

*We present a case of a young man with a massive, primary right lower limb lymphedema, effectively treated with the DLT.*

**Key words:** decongestive lymphatic therapy, lymphedema, bandaging, garments, manual lymphatic drainage

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## Introduction

The decongestive lymphatic therapy (DLT) is recommended by the International Society of Lymphology (ISL), the International Union of Phlebology (UIP) and the International Lymphoedema Framework (ILF) as a first step in the primary lymphedema treatment. The DLT consists of manual lymphatic drainage (MLD), compression multilayer short-stretch bandaging, garments, meticulous skin care and decongestive exercises. Additionally, unceasing patient education is also very important. At least 6 months of the DLT should precede all surgical treatment of a chronic lymphedema. Furthermore, postoperative DLT is always necessary to maintain the surgical achievements [1]. Patient's education is critical to sustained expected outcomes.

We present a case of a young man with a massive, primary right lower limb lymphedema, effectively treated with the DLT.

## Case study

44-year old man with massive primary right lower extremity lymphedema, obesity and hypertension was admitted to the Department of the Internal Medicine of the 4<sup>th</sup> Military Hospital in Wrocław, Poland. The lymphedema appeared in a patient 30 years of age and gradually increased. The patient has been repeatedly hospitalized in the different medical centers due to edema and recurrent skin infections with no significant clinical improvement.

At the time of the current admission to the hospital the patient was unable to walk by himself. The physical examination revealed: obesity [body mass index (BMI) — 78], the maximum circumference of the right thigh and calf were respectively 132 cm and 125 cm, the skin in the area of edema was thickened, with numerous deep folds of thick and hard skin, the right heel deep ulcer was present (Figs. 1–4). The blood pressure was elevated (170/100 mm Hg).

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**Figure 1.** The right lower limb lymphedema before the treatment (front view)



**Figure 2.** The right lower limb lymphedema before the treatment (rear view)



**Figure 3.** The right lower limb lymphedema before the treatment (side view)



**Figure 4.** The right heel deep ulcer before the treatment

The patient underwent routine diagnostics. The blood tests showed anemia and increased inflammatory markers. The Doppler ultrasound excluded lower limbs

deep venous thrombosis. The abdominal and pelvis MRI scans have shown no significant pathology. The lymphoscintigraphy confirmed the primary right lower limb lymphedema. The ABPM (ambulatory blood pressure monitoring) showed poor control of blood pressure. A moderate sleep apnea syndrome was confirmed with polysomnography.



**Figure 5.** The right lower limb lymphedema after twelve weeks of the treatment (front view)



**Figure 6.** The right lower limb lymphedema after twelve weeks of the treatment (rear view)



**Figure 7.** The right lower limb lymphedema after twelve weeks of the treatment (side view)



**Figure 8.** The right heel deep ulcer after twelve weeks of the treatment

The DLT five times a week, including: MLD, SIPC (sequential intermittent pneumatic compression), multilayer short-stretch compression bandaging and decongestive exercises was applied. Additionally, antibiotic

therapy and a heel ulcer dressing was started. After two cycles of the DLT (lasting eight weeks, respectively, and 4 weeks) significant edema reduction was achieved. The maximum thigh circumference was reduced from 132 cm to 83 cm, the maximum circumference of the calf was reduced from 125 cm to 79 cm and weight fallen from 213 kg to 156 kg. The volume of the right lower extremity was reduced by 39 liters and the sores of the heel were healed completely (Figs. 5–8). The patient was able to walk independently.

## Discussion

The successful management of lymphedema requires multi-faceted approach. The DLT consists of two phases. The first is to reduce swelling, and the second is to maintain the effect of the first phase.

The first phase of intensive management for the 1–4 weeks in our center involves skin care, remedial exercise, MLD, SIPC and short-stretch multilayer lymphedema bandaging.

The greatest reduction of the limb volume is achieved usually within the first week of therapy. The therapy is applied daily, 7 days per week, and continue until complete edema reduction or a volumetric plateau is established [1, 2].

The second phase consists of long-term management strategies to gain control of the condition involving skin care, regular exercise, the use of compression garments (tailored flat knitted garments), self management (e.g. compression bandage or velcro-devices and/or self massage). This phase requires life-long commitment and the interruption of compression therapy causes usually rapid recurrence of edema [1–3].

The most important component of the DLT is multilayer bandaging with or without SIPC [1, 2, 4, 5]. The type and level of bandaging is still under evaluation [3]. Traditional approaches to multi-layer lymphedema bandaging use inelastic bandages over padding or foam layers [2]. Bandages changed daily should not be applied with the same high pressure compared to bandages changed once or twice weekly. The optimal pressure range for reducing edema, corresponding to a pressure range around 30 mm Hg for the upper and 50–60 mm Hg for the lower extremity [1, 2, 6]. Higher pressures may be counterproductive. In some patients lower compression is appropriate and may help to improve compliance. The long term compression hosiery may be commenced after the pitting oedema is removed. The main contraindication for compression bandaging is critical ischemia and decompensated cardiac failure.

The useful treatment option for patients who have poor dexterity or limited strength and are unable to apply compression bandages are the compression wraps [7]. Those self-adjustable velcro-band devices, applied by lymphedema patients themselves may reduce edema more effectively than inelastic lymph bandages [8].

Both MLD and SIPC are used at each step in lymphedema treatment, especially in patients with low bandages or garments tolerance. However, there is no consensus on the frequency or treatment parameters for SIPC devices [9].

The skin infections are frequent problem lymphedema patients. Penicillin and cephalosporins are rec-

ommended for dermatolymphangitiis prophylaxis in patients with lymphedema [1]. Our patients receive Benzetacil (*Benzathini benzylpenicillinum*) 1.200.000 U, once every three weeks.

Various stages of lymphedema have different indications for surgical treatment. Regardless of the surgical method treatment (reconstructive surgery with micro-surgical lympho-venous anastomoses, circumferential suction-assisted lipectomy), the DLT must precede them for at least 6 months. Furthermore, the DLT must be continued after this procedure [1, 10–12].

For patients with secondary lymphedema the DLT is also the primary method of treatment [13, 14].

## Conclusions

The DLT in the majority of patients is the primary and the most effective method of lymphedema treatment, even in patients with difficult and complicated lymphedema.

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