

Limb Preservation In Advanced Primary Lower-Limb Lymphedema: A Case Report Highlighting Conservative Physical Therapy–Led Management

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Abstract: Advanced chronic lower-limb lymphedema can lead to significant physical morbidity, skin complications, recurrent wounds and profound psychological distress. Conservative limb preservation strategies remain underrepresented in the literature, particularly from the perspective of physical therapy-led interventions. This case report describes a patient with long-standing primary lower-limb lymphedema who presented with advanced limb enlargement, chronic skin changes and functional limitation. A structured conservative limb preservation approach was implemented and limb preservation was achieved. This case highlights the critical role of conservative physical therapy-based interventions in limb preservation for advanced chronic lymphedema.

Key words: *lower-limb lymphedema, limb preservation, physical therapy, lymph drainage, shared decision-making*

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Chronic lower-limb lymphedema is a progressive condition associated with significant physical morbidity, skin complications, recurrent wounds and functional impairment.^{1,2} In advanced stages, long-standing lymphatic dysfunction may result in severe limb enlargement, tissue fibrosis and compromised skin integrity, increasing the risk of infection and limb loss, and negatively affecting quality of life.^{3,4}

While surgical interventions may be considered in selected cases, conservative management remains the cornerstone of lymphedema care. Complete decongestive therapy (CDT), incorporating manual lymph drainage, compression therapy, skin care and exercise, has demonstrated effectiveness in reducing limb volume and preventing disease progression.³ However, in cases with advanced chronic disease, repeated treatment failure and prolonged symptom

burden may lead to therapeutic exhaustion and significant psychological distress.

In extreme circumstances, patients may consider limb amputation as a perceived solution to ongoing suffering, despite the absence of acute life-threatening indications. Reports focusing on conservative limb preservation strategies at this critical decision point remain limited in the literature, particularly those highlighting the role of physical therapy–led interventions.

This case report describes the successful limb preservation of a patient with advanced primary lower-limb lymphedema who was considering amputation prior to referral. The report emphasizes clinical decision-making, structured conservative intervention and long-term management planning aimed at restoring function, stabilizing tissue condition and re-engaging the patient in care.

Case Presentation

A patient with long-standing primary lower-limb lymphedema was referred for evaluation and management following years of progressive disease. The condition was characterized by marked limb enlargement, chronic skin changes and areas of recurrent skin breakdown. Functional mobility was significantly limited, and the physical burden of the condition was compounded by persistent discomfort and reduced independence in daily activities (Figure 1).

Over time, the cumulative impact of prolonged disease progression and prior unsuccessful management attempts resulted in significant psychological distress. At the time of presentation, the patient expressed a desire to pursue lower-limb amputation as a means of alleviating ongoing symptoms and improving overall quality of life.

Clinical examination revealed advanced tissue congestion, altered skin texture consistent with chronic lymphatic insufficiency, and compromised skin integrity in the distal portion of the limb. No acute infection or immediate surgical indication was identified at the time of assessment. Given the absence of urgent surgical necessity, a conservative limb preservation approach was proposed and discussed in detail with the patient.

Following informed consent, a structured conservative treatment plan was initiated with the goal of limb preservation, symptom reduction and establishment of a sustainable long-term management strategy.

Intervention

A conservative limb preservation strategy was initiated, based on the principles of complete decongestive therapy (CDT) and tailored to the advanced stage of the patient's condition. Treatment planning focused on gradual tissue decongestion, protection of skin integrity and restoration of functional tolerance, while addressing the patient's physical and psychological fatigue from previous unsuccessful interventions (Figure 2).

The initial phase of treatment emphasized gentle manual lymph drainage techniques adapted for chronic tissue changes, aiming to stimulate proximal

lymphatic pathways and reduce distal congestion. Compression therapy was introduced progressively, with careful consideration of tissue tolerance, limb contour and skin condition. Short-stretch compression systems were utilized to support volume reduction while minimizing discomfort and risk of further skin compromise.

Targeted skin care protocols were implemented to address chronic dryness, hyperkeratosis and areas of skin breakdown. Education on daily skin inspection and hygiene was incorporated early in the treatment process to reduce the risk of infection and enhance patient engagement. Therapeutic exercises were prescribed to promote muscle pump activity and improve functional mobility within the patient's tolerance limits.

Treatment frequency and intensity were adjusted based on ongoing clinical assessment, tissue response and patient feedback. As initial improvements were observed, the intervention plan evolved to include transition strategies toward long-term self-management. A structured maintenance program was developed, incorporating ongoing compression use, periodic reassessment and reinforcement of self-care strategies to support continued improvement and limb stabilization.



Figure 1: Pre-intervention presentation of advanced primary lower-limb lymphedema demonstrating severe limb enlargement, chronic skin changes and distal tissue congestion.



Figure 2: Early post-intervention appearance following initiation of conservative physical therapy-led treatment, showing improved limb contour, reduced congestion and enhanced skin condition.

Throughout the intervention period, shared decision-making played a central role. The patient was actively involved in treatment planning, with regular discussions focused on realistic goals, expected outcomes and the importance of long-term adherence. This approach aimed to shift the patient's perspective from considering amputation as a solution to engaging in a sustainable limb preservation pathway.

Outcomes

Following the implementation of the conservative treatment program, clinically meaningful improvements were observed. A reduction in limb congestion and improved tissue pliability were noted during follow-up assessments. Skin condition demonstrated visible improvement, with enhanced integrity and a decrease in areas of active inflammation and breakdown.

Functionally, the patient reported reduced limb heaviness and improved tolerance for daily activities. These physical changes were accompanied by a notable improvement in psychological outlook, as the patient transitioned from therapeutic exhaustion to active participation in ongoing care.

Most importantly, limb preservation was achieved. The consideration of lower-limb amputation was deferred, and no surgical intervention was required during the observed treatment period. The patient successfully transitioned into a structured long-term management program focused on maintenance compression, continued skin surveillance and periodic clinical follow-up.

The outcomes of this case underscore the potential of individualized, conservative physical therapy-based interventions to alter the clinical trajectory of advanced chronic lymphedema, even at a stage where amputation is being considered.

In addition to the physical improvements observed, a notable change in the patient's psychological status was evident. At initial presentation, the patient demonstrated signs of therapeutic exhaustion and a loss of confidence in conservative management, which contributed to the consideration of amputation.

Following the intervention, the patient showed increased engagement, improved motivation and a renewed sense of control over the condition. This shift was supported by continuous patient education regarding disease understanding, self-management strategies and realistic expectations of treatment outcomes.

Discussion

Advanced chronic lymphedema represents a complex clinical challenge, particularly when prolonged disease progression leads to physical deterioration, recurrent skin complications and psychological distress. In such cases, patients may perceive amputation as a viable solution to alleviate suffering, despite the absence of acute surgical indications. This case highlights the importance of reassessing treatment pathways at critical decision points and reinforces the role of conservative management in limb preservation.

Complete decongestive therapy (CDT) remains the cornerstone of lymphedema management;⁵ however, its application in advanced stages requires careful modification and clinical judgment. Chronic tissue changes, reduced skin tolerance³ and patient fatigue from prior interventions necessitate an individualized and progressive approach. In this case, gradual decongestion, adaptive compression strategies and continuous reassessment were essential in achieving meaningful clinical improvement without exacerbating tissue compromise.

A notable aspect of this case is the psychological dimension of advanced lymphedema. Therapeutic exhaustion and loss of hope significantly influenced the patient's consideration of amputation. Addressing psychological burden through shared decision-making, realistic goal setting and early demonstration of clinical response played a critical role in re-engaging the patient in care. This emphasizes that limb preservation is not solely a physical outcome, but also a process that requires restoration of patient confidence and participation.⁶

The role of physical therapy in limb preservation pathways is often underrepresented in the literature, particularly in cases approaching surgical crossroads.

Key Clinical Lessons

- Advanced chronic lymphedema may lead patients to consider amputation due to prolonged physical and psychological burden.
- Conservative limb preservation strategies should be fully explored before irreversible surgical decisions are made.
- Physical therapy–led complete decongestive therapy can meaningfully alter disease trajectory, even in advanced cases.
- Addressing psychological distress and therapeutic exhaustion is essential to successful long-term management.
- Limb preservation is a dynamic process that requires individualized treatment planning and patient engagement.

This case demonstrates how physical therapy–led conservative interventions can alter the disease trajectory, stabilize tissue condition and defer or prevent unnecessary amputation. While surgical options remain important for selected patients, conservative management should be fully explored and optimized before irreversible decisions are made.

Limitations of this report include its single-case design and the absence of long-term quantitative volume measurements. Nevertheless, the clinical relevance of limb preservation, improved tissue condition and patient-centered outcomes provides meaningful insight for clinicians managing similar complex presentations. Further research is warranted to explore standardized conservative limb preservation protocols for advanced lymphedema and to better define multidisciplinary decision-making frameworks.

Conclusion

This case report illustrates that even in advanced chronic primary lower-limb lymphedema, where amputation is being considered, conservative physical therapy–based interventions can play a decisive role in limb preservation. Structured complete decongestive therapy, progressive compression strategies and long-term management planning contributed to meaningful clinical improvement and restoration of patient engagement in care.

Early recognition of psychological burden, combined with individualized conservative treatment, may prevent unnecessary amputations and support sustainable functional outcomes. This case reinforces the importance of integrating physical therapy as a central component of limb preservation pathways in complex lymphedema management.

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