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Role of Jaloka (Leech therapy) in the management of non-healing venous ulcers

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Abstract

Non-healing venous ulcers, often associated with chronic venous insufficiency, are among the most challenging wounds to manage due to their resistance to standard treatments like compression bandaging, topical agents, and medications. These ulcers significantly affect the quality of life and impose a substantial burden on healthcare systems. With the growing need for more effective therapies, *Jaloka* (leech therapy), a treatment described extensively in *Ayurveda*, has re-emerged as a viable therapeutic option. This paper delves into the mechanisms by which *leech therapy* accelerates wound healing, reduces inflammation, improves venous flow, and overcomes the limitations of traditional methods. We also explore the scientific basis of *Jaloka* therapy and its efficacy through various clinical studies, highlighting its advantages over conventional treatment options.

Keywords: Non-healing venous ulcers, chronic venous insufficiency, wound management

Introduction

Venous ulcers, or *venous stasis ulcers*, are chronic wounds that commonly occur in patients with *chronic venous insufficiency (CVI)*. These ulcers result from the malfunctioning of valves in the leg veins, leading to impaired blood return, increased venous pressure, and subsequent tissue damage. Over time, this pressure causes fluid leakage into surrounding tissues, which results in inflammation, poor nutrient delivery, and slow healing. Symptoms such as pain, swelling, and open sores are common, often accompanied by recurrent infections. For many patients, venous ulcers become chronic and do not respond to conventional therapies, such as compression bandages, topical agents, and wound dressings. This has driven a search for alternative treatments, one of which is *Jaloka*, or *leech therapy*, a therapeutic method used in *Ayurveda* for centuries to treat a wide variety of conditions, including chronic wounds.

According to Ayurvedic principles, non-healing venous ulcers can be attributed to an imbalance of *doshas*, particularly *Kapha* and *Pitta*, leading to poor blood flow, stagnation, and inflammation. The objective of *Jaloka* therapy is to restore balance by using medicinal leeches to remove impure blood, stimulate blood flow, and promote healing. This ancient practice aligns with modern scientific understanding, where medicinal leeches have been shown to secrete biologically active substances that improve circulation, prevent blood clotting, and reduce inflammation. The use of *leech therapy* in managing chronic venous ulcers is of particular interest due to its non-invasive nature and potential to accelerate healing in cases that are unresponsive to conventional treatment.

The main objectives of the paper are

1. To explore the effectiveness of *Jaloka* (leech therapy) in enhancing the healing of non-healing venous ulcers by improving blood circulation, reducing inflammation, and promoting tissue regeneration, based on Ayurvedic principles and scientific studies.
2. To evaluate the potential advantages of *Jaloka* therapy over conventional treatments for venous ulcers, highlighting its ability to provide sustained pain relief, faster wound closure, and minimal side effects.

Pathophysiology of Venous Ulcers: Venous ulcers develop when the valves in the leg veins fail to function properly, a condition known as *chronic venous insufficiency (CVI)*. These

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valves normally ensure that blood flows back to the heart, but when they are damaged, blood pools in the lower extremities, causing increased venous pressure. The resulting pressure leads to fluid leakage from the blood vessels into the surrounding tissue, causing chronic inflammation and damage to the skin and underlying structures. As the skin breaks down, an ulcer forms. Venous ulcers are characterized by a cycle of poor healing, where inflammation and inadequate blood supply impede the delivery of oxygen and nutrients to the wound, preventing tissue regeneration.

Non-healing venous ulcers often exhibit signs of *ischemia*, *hypoxia*, and chronic inflammation. The lack of sufficient blood flow leads to tissue hypoxia, which delays healing by impairing fibroblast proliferation and collagen synthesis—two key processes in wound repair. Chronic inflammation further exacerbates the issue by creating an environment rich in pro-inflammatory cytokines that disrupt normal wound healing pathways. As a result, venous ulcers often become chronic, resist standard therapies, and recur frequently. Traditional approaches, such as compression therapy, aim to improve venous return and reduce pressure, but these methods may not always address the underlying circulatory deficits that contribute to the chronicity of the ulcers.

Jaloka Therapy

Jaloka therapy works through a combination of mechanical, biochemical, and neurogenic effects that promote healing and reduce inflammation. Medicinal leeches, *Hirudo medicinalis*, secrete a variety of bioactive substances through their saliva that enhance the healing process. One of the most well-known substances is *hirudin*, an anticoagulant that prevents blood clotting by inhibiting thrombin. This anticoagulant effect is essential for improving venous circulation in patients with venous insufficiency, where stagnant blood flow and clot formation are common. By preventing clotting, *hirudin* promotes continuous blood flow, which ensures that oxygen and nutrients are delivered to the ulcer, accelerating healing.

In addition to *hirudin*, leeches secrete *hyaluronidase*, an enzyme that increases the permeability of connective tissues and allows better diffusion of fluids. This action helps reduce edema around the wound, another common complication in venous ulcers, and improves local tissue perfusion. Moreover, the leech's saliva contains anti-inflammatory agents that block the activity of pro-inflammatory cytokines, reducing swelling, pain, and local inflammation. The combined vasodilatory and anti-inflammatory effects help create a more favorable environment for wound healing.

One of the unique aspects of *Jaloka* therapy is its neurogenic effect. The mechanical action of the leech bite, along with the secretion of pain-relieving peptides, helps to modulate pain perception. This is particularly beneficial for patients with venous ulcers who often suffer from chronic pain that is difficult to manage. Additionally, the mechanical sucking of blood removes metabolic wastes and toxins that accumulate in stagnant venous blood, further contributing to the ulcer's healing process.

Clinical Evidence Supporting Jaloka Therapy in Venous Ulcers

Several clinical studies have demonstrated the efficacy of *Jaloka* therapy in the management of non-healing venous ulcers. One such study, conducted by Singh *et al.* (2018),

involved 30 patients with chronic venous ulcers that had not responded to conventional treatments. After undergoing *leech therapy*, 80% of patients experienced significant improvement, with complete healing observed in most cases within six weeks. The researchers attributed this success to the enhanced blood circulation, reduction in inflammation, and stimulation of granulation tissue formation induced by *Jaloka* therapy. The study concluded that *leech therapy* offered a promising alternative to surgical interventions, which carry greater risks and costs ^[1].

Another study by Mishra *et al.* (2019) evaluated the use of *Jaloka* therapy in 25 patients with venous ulcers who had previously undergone compression therapy without significant results. The study found that patients treated with leech therapy experienced a faster rate of wound closure, reduced pain levels, and overall better healing outcomes compared to those receiving standard care alone. This study highlights the potential of *Jaloka* therapy to be used as an adjunct to conventional treatment, enhancing the effects of therapies like compression bandaging by addressing underlying issues such as poor venous return and chronic inflammation ^[2].

A more recent clinical trial by Sharma *et al.* (2020) compared the outcomes of patients with non-healing venous ulcers treated with a combination of *Jaloka* therapy and compression bandaging to those receiving only compression bandaging. The results indicated that patients in the *Jaloka* group experienced a 50% faster rate of ulcer closure, improved wound granulation, and better long-term outcomes. The trial also reported significant pain relief in the *leech therapy* group, suggesting that *Jaloka* therapy not only promotes healing but also addresses the chronic pain that often accompanies venous ulcers. Based on these findings, the authors recommended *leech therapy* as a valuable adjunct to conventional treatments for venous ulcers, particularly in cases where healing has stalled or where patients have experienced recurrent ulcers ^[3].

Advantages of Jaloka Therapy Over Conventional Treatments

Jaloka therapy offers several advantages over traditional treatments for venous ulcers. One of the main benefits is its ability to promote healing in ulcers that have not responded to conventional treatments, such as compression therapy and topical wound care. While these treatments aim to reduce venous pressure and support wound healing, they may not fully address the circulatory and inflammatory components that contribute to the chronicity of venous ulcers. *Jaloka* therapy, by improving blood flow and reducing inflammation, targets these underlying factors and offers a more comprehensive approach to wound management.

Another significant advantage of *leech therapy* is its minimal invasiveness and low risk of complications. Unlike surgical interventions or aggressive wound debridement, *Jaloka* therapy is a non-surgical procedure that can be performed on an outpatient basis, making it accessible to a wider range of patients. Additionally, the side effects of *leech therapy* are minimal, with the most common being mild skin irritation or itching at the site of the leech bite. Compared to the potential side effects of long-term medication use, such as NSAIDs or corticosteroids, *Jaloka* therapy is a safer option for managing chronic conditions like venous ulcers.

Furthermore, *Jaloka* therapy offers a cost-effective solution for patients and healthcare systems. Chronic venous ulcers require long-term management, often involving repeated hospital visits, wound dressings, and medications. By promoting faster healing, *leech therapy* can reduce the need for ongoing wound care, decreasing healthcare costs and improving patient outcomes. The analgesic effects of *leech therapy* also provide an additional benefit, reducing the need for pain medications and enhancing the patient's quality of life.

Challenges and Future Directions

Despite the growing evidence supporting the use of *Jaloka* therapy in the management of non-healing venous ulcers, several challenges remain. One of the primary challenges is the need for larger, well-designed clinical trials that can further validate the efficacy and safety of *leech therapy*. While small-scale studies have shown promising results, larger randomized controlled trials are necessary to establish standardized protocols and to better understand the long-term benefits and potential risks of *Jaloka* therapy.

There is also a need for increased awareness and education among healthcare professionals regarding the potential benefits of *leech therapy*. Many clinicians may be hesitant to adopt this ancient practice due to unfamiliarity with its mechanisms or concerns about patient acceptance. Educational programs, research dissemination, and collaboration between Ayurvedic practitioners and modern healthcare providers can help bridge this gap, making *Jaloka* therapy more widely accepted as part of an integrative approach to wound care.

Conclusion

Jaloka therapy is an effective, minimally invasive treatment option for managing non-healing venous ulcers. The bioactive substances secreted by medicinal leeches, including *hirudin*, *hyaluronidase*, and anti-inflammatory agents, promote wound healing by improving venous circulation, reducing inflammation, and alleviating pain. Clinical studies have demonstrated that *leech therapy* can accelerate wound healing, enhance the effects of conventional treatments, and provide significant pain relief for patients with chronic venous ulcers. As more research emerges, *Jaloka* therapy has the potential to become a valuable adjunct to conventional wound care, offering a holistic approach to treating this challenging condition. Increased awareness and further clinical validation will be key to integrating this ancient therapy into modern healthcare practices.

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