



# The Role Of Aesthetic Procedures In Long-term Wound Management

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Dr. Samuel Hetz.

## Aesthetic Procedures As A Key To Enhanced Wound Healing

Wound care is undergoing significant advancements as aesthetic procedures are increasingly integrated into the long-term management of various injury types. Traditionally, wound management has focused on ensuring functional recovery and infection prevention, but recent trends have shifted towards enhancing patients' aesthetic outcomes as well. Aesthetic procedures, such as micro-needling, platelet-rich plasma (PRP) injections and laser therapy, play a pivotal role in reducing scarring and promoting tissue regeneration, particularly during the proliferation and maturation stages of wound healing. Burns, in particular, often present complexities in healing due to the depth and extent of tissue damage, which makes their long-term management challenging. Aesthetic procedures like laser therapy and micro-needling have shown promise in reducing scarring and improving skin texture in burn injuries, especially in the later stages of healing when scar refinement is a key focus.

Aesthetic interventions play a significant role

in wound healing, particularly during the later stages when collagen production and scar refinement are critical. As wounds progress from the inflammatory phase, aesthetic procedures can help accelerate healing, prevent excessive scarring and improve overall skin quality. While these treatments are not universally applicable to all wounds—particularly those stuck in the inflammatory stage—they offer considerable benefits when applied appropriately and are, therefore, worth exploring.

## Understanding The Stages Of Wound Healing: Proliferation And Maturation

The wound healing process can be divided into several stages, each critical to recovery. After the initial inflammatory phase, the body enters the proliferation stage, where tissue regeneration occurs. During this phase, fibroblasts produce collagen, a crucial protein that forms the structural basis of the new tissue. Other processes, such as angiogenesis (formation of new blood vessels), also play an essential role in delivering nutrients

to the healing wound.

The proliferation stage sets the foundation for scar formation, which is further refined during the maturation stage. During this phase, collagen remodelling occurs, strengthening the new tissue and enhancing its functionality. Wound contraction, led by specialized cells called myofibroblasts, reduces the wound size, while collagen undergoes structural changes to become more organized and aligned with the skin's natural fibres.<sup>1,2</sup>

Aesthetic procedures can intervene at these stages to optimize the healing process. For example, micro-needling and PRP injections stimulate additional collagen production, while laser therapy helps refine the scar tissue, reducing its appearance and improving skin texture. It is important to specify that the effectiveness of these procedures on wounds in the inflammatory phase, or that are complicated by chronic conditions, such as diabetes, is reduced as these conditions hinder the healing process.<sup>3</sup>

### **The Role Of Micro-Wounds And Collagen Production In Healing**

Micro-needling, a popular aesthetic procedure, involves creating controlled micro-wounds in the skin to stimulate collagen production. This technique is particularly useful during the proliferation and maturation stages of wound healing, as it promotes the regeneration of healthy skin tissue while minimizing scar formation. The controlled injuries caused by micro-needling activate the body's natural healing mechanisms, prompting fibroblasts to produce more collagen and elastin.<sup>4</sup>

Collagen, the most abundant protein in the human body, is vital for wound healing. It provides the structural framework for new tissue, strengthening the wound site and helping it resist future damage. During the proliferation and maturation stages, increasing collagen synthesis is critical for scar prevention and overall wound recovery. Micro-wounds created by micro-needling trigger a localized healing response, which accelerates the maturation process and results in smoother, more functional skin.<sup>1</sup>

Clinical studies support the efficacy of

micro-needling in reducing scar visibility and improving skin texture in patients with both acute and chronic wounds. This procedure is especially effective when used in conjunction with other aesthetic treatments, such as PRP injections, which further enhance collagen production and tissue regeneration over the long term.<sup>4</sup>

### **Reshaping Scar Tissue And Improving Skin Surface Through Laser Therapy**

Laser therapy is another aesthetic procedure commonly used in long-term wound management. Non-ablative and fractional laser treatments target scar tissue and encourage the production of new, healthy skin cells. By delivering controlled energy to the wound site, lasers can stimulate collagen production and promote the remodelling of scar tissue. This makes laser therapy particularly effective during the maturation phase of wound healing, when the goal is to refine the scar and improve skin texture.<sup>3</sup>

Fractional lasers, in particular, work by creating microthermal zones in the skin, which trigger a healing response and encourage the formation of new tissue. This can significantly reduce the appearance of hypertrophic and atrophic scars, making the skin smoother and more uniform. Non-ablative lasers, which do not remove layers of the skin, are gentler and have a shorter recovery time, making them suitable for patients with more sensitive skin or less severe scarring.<sup>2</sup>

While laser therapy is generally safe, it does carry some risks, including hyperpigmentation, infection and incomplete wound closure. These side effects are more likely in patients with darker skin tones or underlying health conditions, such as diabetes. Therefore, a thorough evaluation of the patient's skin type, wound characteristics and overall health is necessary before initiating laser treatment.<sup>3</sup>

### **Platelet-rich Plasma (PRP) Injections For Tissue Regeneration**

Platelet-rich Plasma (PRP) injections are another cutting-edge aesthetic procedure used to

enhance wound healing. PRP is derived from a patient's own blood, which is processed to concentrate the platelets. These platelets contain growth factors that play a crucial role in tissue repair and regeneration. When injected into a wound site, PRP can accelerate collagen production, improve skin texture and reduce the risk of scarring.<sup>1</sup>

PRP injections are particularly effective during the proliferation and maturation stages of wound healing, as they help speed up the formation of new tissue and promote scar refinement. By enhancing the body's natural healing mechanisms, PRP can lead to faster recovery times and better aesthetic outcomes for patients with surgical wounds, traumatic injuries, or chronic ulcers.<sup>4</sup>

Although PRP is generally safe, it is important to note that its effectiveness can vary depending on the type of wound and the patient's overall health. Some studies have shown that PRP may be less effective in treating chronic wounds, particularly those that remain stuck in the inflammatory phase. However, when used in combination with other aesthetic procedures, such as micro-needling or laser therapy, PRP can significantly enhance long-term wound healing outcomes.<sup>2</sup>

### Considerations And Cautions For Aesthetic Procedures In Wound Management

When incorporating aesthetic procedures into long-term wound management, it is essential to tailor treatments to the specific needs of the wound and the patient's overall health. Factors such as the type of wound (e.g., surgical, traumatic, chronic), the patient's skin type, age and any underlying conditions, such as diabetes or vascular disease, must be carefully considered.<sup>1</sup>

Potential risks associated with aesthetic procedures in wound management include infection, hyperpigmentation and improper wound closure. These risks are particularly prevalent in patients with compromised immune systems or poor circulation. Therefore, a multi-disciplinary approach involving dermatologists, wound care special-

ists and other health-care providers is crucial to ensure the best possible outcomes.<sup>4</sup>

Integrating aesthetic procedures into wound care offers a unique opportunity to improve both the physical and aesthetic outcomes of wound healing.

As advancements in wound care continue, the collaboration between wound care teams and aesthetic specialists will be essential in optimizing treatment plans. By combining therapeutic and aesthetic interventions, health-care providers can offer comprehensive care that addresses both the functional and cosmetic aspects of wound recovery.<sup>3</sup>

As aesthetic procedures become more refined and widely accepted, they are likely to play an increasingly important role in wound management. Future innovations in this field will continue to enhance patient outcomes, improving both the physical appearance and quality of life for individuals recovering from traumatic or surgical wounds.<sup>4</sup>

### A Future Where Healing Meets Aesthetics

Traditionally, aesthetic procedures, such as micro-needling, laser therapy and PRP injections, are solidifying themselves as techniques for long-term wound management. These treatments not only improve the visual outcomes of healing wounds but also contribute to overall skin health and patient satisfaction. By bridging the gap between therapeutic and aesthetic practices, health-care providers can ensure comprehensive care that addresses both the functional and cosmetic needs of patients.<sup>1</sup>

As the field continues to evolve, wound care professionals are encouraged to explore the potential benefits of integrating aesthetic procedures into their practice to enhance patient outcomes and quality of life. Consulting with practitioners in the field of aesthetics is an important step in bridging these two disciplines to work in unison toward more desirable patient outcomes.

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