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Healing Pathology: Keloid Scar

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ABSTRACT

Skin conditions known as keloid scars can afflict people of all ages and ethnicities. The description, features, and potential risk factors for this ailment are covered in the introduction.
I provide a thorough analysis of the etiology, administration, mitigation, and therapy of keloid scars. The distinctions between keloid scars and hypertrophic scars, the causes of keloid scar development, and the surgical and non-surgical therapies that are available are all discussed.
The discussion focuses on the main issues and factors in the management of keloid scars. The necessity of prevention and the need for a customized and interdisciplinary approach are explored, along with the current therapy techniques and their individual limitations.
The conclusion reviews the material covered in the earlier parts and highlights the value of prevention, selecting a therapy that is tailored to the patient's particular needs, and the necessity for more study into the pathophysiology of keloid scars.

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INTRODUCTION

Many people worldwide are affected by the common medical ailment known as keloid scarring. They are characterized by an excessive formation of scar tissue following an accident or surgery, and because of their ugly look and accompanying symptoms like itching and discomfort, they can significantly lower a patient's quality of life. (1)

Although excessive collagen synthesis is known to create keloid scars, the precise underlying etiology of this disorder is yet unclear. Keloid scars can develop following any kind of surgery or injury, but some people appear to have a hereditary propensity to do so. (2)

Treating keloid scars can be problematic due to the absence of generally effective therapies. Treatment options include methods to lessen the size and look of existing scars as well as preventative efforts to stop the development of new keloid scars. These therapies might range from corticosteroids and radiation therapy to surgical techniques and lasers. (3)

The pathogenesis, management, prevention, and treatment of keloid scars will be covered in this paper. The various therapy options for this illness will be described, along with the most recent findings in the area. Best practices for managing keloid scars will also be reviewed, and suggestions for patients and medical professionals will be given.

THEORY

Pathophysiology of keloid scars (4)

Keloid scars are a type of hypertrophic scar in which scar tissue builds up excessively. Hemostasis, inflammation, proliferation, and remodeling are only a few of the many steps that make up the intricate healing process. During the proliferation phase, fibroblast cells make collagen to repair injured tissue. This process intensifies in keloid scars, causing an excessive buildup of collagen and scar tissue.

Increased expression of various growth factors, including as transforming growth factor beta (TGF-), epidermal growth factor (EGF), and platelet-derived growth factor, is a contributing component to the excessive collagen formation in keloid scars (PDGF). These growth factors increase the activity of fibroblast cells, which increases the creation of collagen.

Inflammatory elements, such as the pro-inflammatory cytokines interleukin 1 (IL-1) and interleukin 6, also affect collagen formation in keloid scars (IL-6). These cytokines encourage fibroblasts to produce collagen and can also prevent collagen breakdown, which contributes to the excessive buildup of scar tissue in keloid scars.

Risk factors for keloid scar formation (5)

Keloid scarring after an injury or surgery can happen to anybody, but there are several risk factors that make it more likely. These dangers include:

Age: Younger persons have a higher risk of developing keloid scars than older people do.
Genetics: Keloid scars are more likely to form in those who have a family history of them.
Dark-skinned individuals are more prone to keloid scarring.
Keloid scars are more prone to develop after deeper-penetrating wounds like burns and surgical incisions.
Injury site: Skin that is overextended, such as the chest, shoulders, and back, is more likely to develop keloid scars.

Managing Keloid Scars (6)

The best method for managing keloid scars is prevention. Individuals who are more likely to get keloid scarring should be advised to take preventative steps such keeping the wound clean and covered, avoiding sun exposure, avoiding excessive wound manipulation, and avoiding putting too much stress on the healing region. For the care of keloid scars, there are other medicinal and surgical options.

Prevention of keloid scars (7)

During the healing process, keloid scar prevention begins. In order to protect the wound from the sun, it is crucial to keep it clean and covered. In addition, it is vital to minimize excessive strain in the healing region and avoid excessive manipulation of the wound. It is crucial for patients to abide by their doctor's instructions about suture removal and wound healing.

Keloid scar treatment (6, 8)

Although prevention is the best method for managing keloid scars, there are medicinal and surgical procedures to lessen or even eliminate them.

Medical interventions include:

Injections of corticosteroids are given into the scar to lessen swelling and excessive collagen formation.
In order to kill the collagen-producing cells, cryotherapy freezes the scar using liquid nitrogen.
Laser therapy: This treatment employs lasers to lessen the scar's visual impact.
Treatment with imiquimod: Imiquimod is a topical lotion that strengthens the immune system to prevent scarring.

Surgical procedures include:

Excision surgery: This method entails scraping off the scar and suturing the incision shut.
Radiation therapy: This procedure employs radiation to lower collagen synthesis and is used after scar excision.
Cryosurgery: This method entails freezing the scar with liquid nitrogen and then surgically removing it.

DISCUSSION AND CONCLUSION

Preventive measures should be taken into account in patients who have risk factors, such as those with dark skin, a family history of keloid scarring, recurrent infections, or patients having surgery. It is crucial to remember that prevention is the best strategy to treat keloid scars. (7)

It's critical that the patient's specific demands are taken into consideration while treating a keloid scar. The choice of therapy should be dependent on the size and position of the scar, the patient's medical history, and personal preferences. Both surgical and non-surgical procedures offer advantages and disadvantages. The likelihood of treatment adverse effects and the frequency of scar recurrence should also be taken into account. (6-8)

Due to its efficiency in lowering inflammation and excessive collagen formation, corticosteroid injections are a common option for medical therapies. Skin shrinkage and hypopigmentation, for example, might be concerning side effects. The treatment of keloid scars also includes cryotherapy. The freezing and thawing procedure causes pain and suffering, thus this therapy is only effective on minor scars. (6-8)

Laser treatment is another option for healing keloid scars. Scarring can be minimized and skin texture can be improved using lasers. Unfortunately, the cost of this treatment method might be high, and it can take multiple sessions to see effects. (9)

Treatment with imiquimod is a relatively new option in the treatment of keloid scars. It is a topical cream that stimulates the immune system to fight the scar. Although this treatment option is less invasive than surgery, long-term results have not yet been fully established. (6-8)

Radiation therapy and surgical excision are two frequent surgical therapies. The scar is removed during surgery, and the incision is then closed with stitches. This course of therapy, however, carries a significant risk of recurrence and may leave a bigger or ugly scar. Another surgical alternative is radiation treatment, which employs radiation to lower collagen synthesis following scar excision. Nevertheless, this therapy is linked to a higher risk of long-term side effects, such skin cancer. (6-8)

In conclusion, controlling keloid scars remains a problem for clinicians and patients. The best method to treat this illness is to avoid it, thus individuals who have risk factors should think about taking preventative steps. If a keloid scar forms, the patient's specific needs should guide the course of therapy.

The size and position of the scar, the patient's medical history, and personal preferences should all be taken into consideration while choosing among the various surgical and non-surgical treatment methods that are available. The likelihood of adverse effects and the incidence of scar recurrence should also be known to the patient.

The discovery of novel treatments and a deeper comprehension of the pathophysiology of keloid scars are the main goals of current research. To assess the efficacy of various treatment approaches and to figure out the best strategy to avoid and cure keloid scars, larger, well-designed trials are required.

In general, treating keloid scars calls for a specialized, interdisciplinary strategy. In order to find the most effective course of therapy for their ailment and guarantee they receive

thorough, high-quality care, patients should consult with their doctors frequently.

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