




## MULTIDISCIPLINARY APPROACH IN THE SURGICAL TREATMENT AND REHABILITATION OF BURN PATIENTS: NEUROLOGICAL AND EMOTIONAL IMPLICATIONS

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### ABSTRACT

This article presents a review of the challenges of burn treatment, with emphasis on the neurological and emotional implications faced by patients undergoing plastic surgery. The research addresses the phases of recovery, the clinical aspects of neurological complications, and the psychological impact, highlighting the importance of a multidisciplinary approach to optimize recovery and improve quality of life. The article also discusses surgical treatment options, such as grafts and flaps, and their crucial role in functional and aesthetic restoration. The conclusion suggests the need for adaptive public health policies and integrated clinical practices for the management of burn patients.

**Keywords:** Burns. Multidisciplinary Approach. Neurological and Emotional Rehabilitation.

## INTRODUCTION

Burns represent a significant public health challenge, with consequences that impact both the physical and psychological health of patients. They can be caused by various agents, such as thermal, chemical, electrical, or radiation, and vary in terms of severity, depending on the depth and extent of the injuries. The treatment of these injuries requires complex surgical interventions, especially in severe cases, and continuous follow-up to prevent neurological and emotional complications. Healing burns not only involves closing wounds, but also functional and aesthetic recovery, requiring a multidisciplinary approach that includes doctors, psychologists, nurses, and therapists. This article aims to explore the neurological, emotional, and physical implications in the treatment of burn patients, highlighting the importance of reconstructive plastic surgery and psychological support during the recovery phases.

## METHODOLOGY

This study is characterized as a literature review, carried out from a search in the SciELO (Scientific Electronic Library Online) and PubMed databases, during the month of June 2024. Articles published between 2004 and 2024, in Portuguese, English, and Spanish, which address the effects of burns and surgical and psychological treatment, were considered. The selection of articles included full texts, master's dissertations, theses, book chapters and scientific journals. For the search, the health descriptors (DeCS) "Burns", "Impact" and "Surgery" were used. The literature analysis sought to identify the main neurological complications, emotional aspects, and surgical and psychological treatment protocols.

## RESULTS

Burns are injuries that can be caused by a number of agents, such as heat, chemicals, electricity, radiation, or friction, resulting in damage ranging from mild to severe, depending on the depth and extent of the injury. The evaluation of burns is essential to decide the most appropriate treatment, which can be either conservative or surgical, depending on the degree of the injury and the patient's conditions. The severity of the burn is determined by its depth and the area of the body affected, as well as factors such as the patient's age, comorbidities, and the type of agent causing the injury.

The classification of burns by degree is an important criterion for determining treatment options, which can involve everything from basic care to complex surgical interventions. This text discusses the neurological, physical, and psychological impacts of

burns and the importance of surgical treatment, such as skin grafts and flaps, in the patient's recovery, not only aesthetically, but also in the prevention of neurological complications. (1)

According to Almeida (1), severe burns cause a series of changes in the body, including metabolic, respiratory, cardiac and renal imbalances. These changes trigger a hypermetabolic and inflammatory state, which requires strict care in clinical management, especially in coagulation control. When the burn is extensive, early activation of coagulation can lead to hemoconcentration, increasing the risk of thrombosis, while disseminated intravascular coagulation can result in bleeding. This situation requires constant monitoring and a careful surgical approach to minimize risks.

Carlucci (2) describes the burn recovery process in three phases: the critical phase, the acute phase and the chronic rehabilitation phase. The critical phase is when the patient needs stabilization and intensive treatment. In the acute phase, painful procedures are performed and often the patient begins to perceive the long-term effects of the trauma, which can generate expectations, but also great psychological challenges. The chronic phase, which begins after hospital discharge, involves physical and emotional rehabilitation, and psychological monitoring is essential to prevent depression and anxiety, common among burn patients.

In addition to physical damage, burns can lead to the development of neurological complications, such as peripheral neuropathies and musculoskeletal disorders, such as heterotopic ossification and septic arthritis (Oliveira, 3). These conditions can appear weeks after the initial event and have a great impact on the patient's quality of life. Continuous monitoring by physiotherapists, neurologists and other specialists is essential to minimize the long-term effects.

Psychological changes are also an important part of the recovery process. Burn patients often face chronic pain and psychological sequelae, such as emotional lability, insomnia, and eating disorders. Studies show that many patients continue to suffer from pain for years after trauma, and physical scarring can contribute to this psychological distress, exacerbating feelings of shame and isolation (5).

It is widely recognized that the rehabilitation of burn patients should be multidisciplinary, involving psychologists, physiotherapists, plastic surgeons and other professionals. Psychological support is crucial, not only to deal with immediate suffering, but also to prevent long-term complications, such as post-traumatic stress disorder (PTSD) and depression. In addition, a published study on resilience in burn patients identifies the

phase known as "The Black Hole", characterized by loss of security and low self-esteem, during which intense emotional support is essential for the patient's recovery (6).

Pain, which is one of the main challenges of treating burns, can be controlled with medications, such as analgesics and opioids, as well as adjunctive therapies, such as antidepressants and anticonvulsants (Cruz-Nocelo et al., 2021). However, opioid administration should be carefully monitored, as abuse of these substances can lead to dependence, which should be avoided through strict pain management.

Surgical treatment of severe burns is crucial for the patient's recovery and should be performed as soon as possible, between the first and second week after the injury. The use of skin grafts is common, especially for third-degree burns, and should be considered in more critical areas, such as joints and areas with thin skin, such as the eyelids and back of the hands. The use of microsurgical flaps, such as free flaps, has shown significant advances in both aesthetic and functional correction of burns, especially in areas that are difficult to heal (7).

There are different types of grafts, being autologous (made with the patient's own skin), heterologous (from another species, such as pigs or frogs) and allograft (made with skin from another human being). The allograft is often used to cover large burn areas before performing the definitive graft, and is tested as a temporary solution to prevent infection and promote healing (8).

The dermal matrix technique, which involves the use of silicone layers for cell regeneration and collagen replacement, is effective in treating deep second- and third-degree burns. This type of graft promotes skin regeneration, creating a suitable structure for the definitive graft (8).

The initial treatment of burns should be done by a highly trained team, since the lack of proper care can lead to serious complications and even death. In many cases, patients with severe burns arrive at hospitals with psychological problems, such as suicide attempts, that require constant psychiatric attention. Emotional support and ongoing psychological intervention are necessary not only for physical recovery, but also to prevent the recurrence of self-destructive behaviors (6).

## DISCUSSION

Burns represent one of the most challenging traumas due to their multiple physiological and emotional consequences. The hypermetabolic state resulting from severe burns can increase the risk of serious complications such as thrombosis and infection (3). In addition, neurological complications, such as peripheral neuropathies and

heterotopic ossification, can appear weeks after the traumatic event, requiring a comprehensive approach to their prevention and treatment (3). The use of skin grafts and microsurgical flaps has been shown to be effective not only in aesthetic restoration, but also in the prevention of contractures and functional dysfunctions, particularly in areas such as the hands, neck, and joints (7).

Psychological support during the various phases of recovery – critical, acute and chronic – is essential for the success of the treatment, since many patients experience emotional and psychological distress due to chronic pain and changes in body appearance (2). The multidisciplinary approach, which involves surgeons, psychologists, and physiotherapists, is essential to promote a complete recovery, both physical and emotional, preventing additional complications and improving the quality of life of burn patients (4).

It is important to highlight that the treatment of burns should not be restricted to the physical care of the injuries, but should also include psychological support and functional rehabilitation, which are crucial for the patient's reintegration into social and professional life.

## CONCLUSION

The study reaffirms the importance of multidisciplinary treatment for burn patients, integrating medical, surgical and psychological care. Severe burns can lead to long-lasting neurological and emotional complications, which require specialized follow-up to optimize treatment results. Reconstructive plastic surgery, with the use of grafts and flaps, plays a fundamental role in the aesthetic and functional recovery of patients. However, for a complete recovery, it is essential that psychological support and multidisciplinary rehabilitation accompany the process, minimizing the emotional consequences and maximizing the quality of life of patients. Implementing adaptive public health strategies and continuously training health workers are essential to improving outcomes and recovery for burn patients.

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