

The Advanced Management of a Burn Patient

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ABSTRACT

Burn injuries pose a serious public health issue, contributing to a considerable worldwide impact. These injuries can lead to intricate and perhaps fatal scenarios that necessitate sophisticated care procedures. This review examines the study of the occurrence, importance, and advanced treatment of individuals with burn injuries. We explore the theoretical framework, encompassing definitions, risk factors, complications, and diverse management strategies. The conversation focuses on the most recent developments in burn treatment, such as prompt removal of burn wounds, replenishing fluids, managing infections, and facilitating rehabilitation. The focus is placed on the changing field of burn care research and how it might lead to better results for patients. To summarize, this article emphasizes the significance of utilizing a variety of disciplines in the treatment of burn patients and the necessity for ongoing study to improve the well-being of those who have survived.

KEYWORDS: Burn injuries, prevalence, advanced treatment, adverse effects, burn care.

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INTRODUCTION

Burn injuries pose a substantial worldwide public health issue. Annually, a vast number of people worldwide have burn injuries, requiring medical intervention. The epidemiology of burn injuries demonstrates their extensive occurrence and emphasizes the necessity for sophisticated care approaches. Burn injuries may happen in several contexts such as homes, workplaces, and industrial locations. They can be caused by various factors, but the most common ones are thermal burns from fires, scalds, and contact with hot surfaces.

The epidemiology data highlights the importance of promptly applying sophisticated burn management procedures. Burn injuries impact persons across all age groups, ranging from babies to the elderly, and can lead to both immediate and

enduring physical and psychological repercussions. Gaining knowledge about the epidemiology of burns is essential in order to develop targeted burn care and preventive methods that meet the individual requirements of afflicted communities.

The importance of improved burn care becomes apparent when considering the intricate nature and wide-ranging repercussions of burn injuries. These injuries not only impact the surface of the skin but also extend to the tissues underneath. Furthermore, the extent of burns can vary significantly, ranging from superficial burns with minimal tissue damage to full-thickness burns that affect all layers of the skin.

Burn injuries have a significant and complex impact. Individuals who have sustained burn injuries may endure

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intense agony, permanent scars, physical deformities, and, in extreme instances, life-threatening consequences such as infections and the failure of multiple organs. The financial impact of burn injuries is significant, including expenses connected with hospitalization, surgical procedures, and extended rehabilitation. Moreover, burns can have a long-lasting impact on a patient's quality of life, impairing their capacity to work, participate in everyday activities, and sustain social connections.

The field of burn management has undergone significant advancements throughout time, resulting in improved survival rates and decreased long-term effects of burn injuries. The management of burn patients has been transformed by innovations such as early burn wound excision, new wound dressings, fluid resuscitation, and infection control techniques. This article aims to examine the theoretical foundation of burn care, analyze complications, and study several advanced treatment options that have led to these enhancements.

The debate will emphasize the most recent advancements in burn treatment, with a specific focus on prompt burn wound removal, fluid replacement, infection management, and rehabilitation. The conference will highlight the changing field of burn care research and its impact on enhancing patient outcomes.

A concise explanation or description of a concept or term.

Burn injuries are defined by the harm inflicted upon the skin and underlying tissues due to different sources, such as heat,

electricity, chemicals, or radiation. These injuries are commonly categorized into four degrees:

First-degree burns are superficial burns that specifically impact the outermost layer of the skin, known as the epidermis. These burns are often distinguished by erythema, discomfort, and slight edema.

Second-degree burns, also known as partial-thickness burns, involve damage to both the epidermis and the underlying dermis layer. They have the potential to induce blisters, intense discomfort, and heightened susceptibility to infection.

Third-degree burns refer to burns that cause damage to the epidermis, dermis, and underlying tissues, resulting in full-thickness burns. The burns might manifest as either white, black, or charred in appearance. Frequently, they lead to numbness as a consequence of nerve impairment.

Fourth-degree burns are the most serious sort of burns, as they not only harm the skin but also extend to the underlying muscles, tendons, and bones. These burns can occur due to extended exposure to intense heat and are frequently life-threatening.

When assessing the severity of a burn injury and developing suitable care measures, it is crucial to take into account the depth and breadth of the burn. Furthermore, the patient's age, pre-existing medical problems, and the mode of damage are important aspects that must be considered when evaluating the severity of the burn.



Figure 1. Extensive thoracic burn

Intensive treatment for individuals with burn injuries

Factors that increase the likelihood of a negative outcome or potential harm.

There are several risk factors that might enhance the probability of experiencing burn injuries, such as:

Vulnerability to burn injuries is particularly high among children and the elderly due to their age. Scalds and contact burns are more likely to occur in young children, whereas burns in elderly adults may be caused by less movement or sensory impairment.

Occupation: Some vocations, such as those that entail working with open flames, hot surfaces, or dangerous chemicals, have a greater likelihood of burn injuries. Professions such as industrial laborers, firefighters, and cooks are more susceptible to risk.

Substance abuse refers to the consumption of alcohol or drugs, which can lead to diminished cognitive abilities and physical coordination, ultimately leading in mishaps that lead to burn injuries.

Fire Safety Protocols: Lack of proper fire safety measures, such as the absence of smoke detectors, fire extinguishers, or

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fire escape plans in residential and commercial settings, can heighten the likelihood of sustaining burn injuries.

Gaining a comprehensive understanding of these risk variables is essential for effectively preventing and managing burn injuries in a targeted manner.

Burn injuries can give rise to many problems, both acute and chronic, that can have a substantial influence on the patient's health and quality of life. Frequent problems include:

Infection: Open burn wounds are more vulnerable to infection as a result of the absence of the skin's protective layer. Ensuring the prevention and treatment of infections is of utmost importance in burn therapy.

Scarring: Severe burns can cause disfiguring scars that can limit movement and cause psychological anguish.

Contractures can occur as a result of the healing process in burn injuries, which causes the skin and underlying tissues to tighten. Contractures of this nature can significantly restrict movement and need expert care.

Psychological Consequences: Burn injuries have a dramatic influence on an individual's mental well-being. Patients may develop anxiety, sadness, and post-traumatic stress disorder (PTSD) as a result of the traumatic nature of their injuries and the visible scars.

Comprehending and dealing with these complexities are crucial elements of the sophisticated therapy of burn victims. The theoretical framework establishes the essential basis for comprehending the many elements of burn injuries, encompassing categorization, risk factors, and probable consequences. Acquiring this knowledge is crucial for creating and executing sophisticated management tactics with the goal of enhancing patient results and overall quality of life.

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Phase	Actions	Details
Initial Assessment	- Primary (ABCDEF)	<p>Survey Airway with cervical spine protection: Check for airway obstruction, inhalation injury.</p> <p>Breathing: Assess ventilation, administer high-flow oxygen.</p> <p>Circulation: Monitor vital signs, start IV fluids (Parkland formula).</p> <p>Disability: Assess neurological status (AVPU scale).</p> <p>Exposure: Remove clothing/jewelry, assess burn extent.</p> <p>Fluid Resuscitation: Initiate fluid therapy for burns >20% TBSA in adults and >10% TBSA in children.</p>
	- Secondary Survey	Detailed history (mechanism of injury, medical history), complete physical examination.
	- Burn Assessment	<p>Severity Calculate Total Body Surface Area (TBSA) burned using Rule of Nines, Lund-Browder chart, or palm method.</p> <p>Determine burn depth: superficial, partial-thickness, full-thickness.</p>
Stabilization	- Airway Management	Early intubation for inhalation injury or facial burns.
	- Breathing Support	High-flow oxygen, consider bronchodilators, monitor for respiratory distress.
	- Circulatory Support	Continue fluid resuscitation (adjust according to urine output, hemodynamics).
	- Pain Management	IV opioids, sedatives, anxiolytics as needed.

Conversation

The care of burns at an advanced level involves a comprehensive and complex strategy that has seen major advancements in recent years. Various crucial elements of improved burn therapy have significantly contributed to enhancing outcomes and the quality of life for patients.

Early excision of burn wounds

Performing burn wound excision early is a fundamental aspect of contemporary burn treatment. This method is the surgical extraction of necrotic or injured tissue from the burn area, usually during the initial few days after the trauma. The main objective is to facilitate the process of wound healing and minimize the likelihood of infection.

Early excision has several benefits:

Preventing Infection: Eliminating dead tissue reduces the likelihood of bacterial colonization, which can result in wound infection. Adopting a proactive strategy is crucial for achieving good wound healing.

Accelerated Wound Healing: Performing an early excision of the wound creates a clean area that promotes faster production of granulation tissue and reepithelialization.

Pain Management: Early excision of the affected area frequently results in reduced pain for patients, since it eliminates the underlying causes of inflammation and infection.

Administration of fluids to restore and maintain adequate blood volume and circulation.

Fluid resuscitation is an essential aspect of burn treatment. Burn injuries can lead to substantial fluid loss as a result of damaged capillaries and heightened permeability of the circulatory system. Hypovolemic shock, resulting from fluid loss, can have life-threatening consequences.

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Phase	Actions	Details
Wound Care	- Temperature Control	Maintain normothermia, use warm IV fluids, blankets.
	- Initial Wound Care	Cleanse wounds with sterile saline, apply antimicrobial ointments.
	- Debridement	Remove necrotic tissue, escharotomy for circumferential burns.
Special Considerations	- Dressing	Apply appropriate dressings (non-adherent, antimicrobial, moisture-retentive).
	- Inhalation Injury	Consider bronchoscopy, administer humidified oxygen, nebulized medications.
	- Electrical Burns	Monitor for cardiac arrhythmias, renal function, compartment syndrome.
Infection Control	- Chemical Burns	Irrigate extensively with water or appropriate neutralizing agent.
	- Prophylactic Antibiotics	Not routinely recommended; indicated for specific infections.
	- Wound Surveillance	Monitor for signs of infection, culture wounds as needed.
Nutrition	- Aseptic Techniques	Use sterile techniques for wound care, limit unnecessary interventions.
	- Early Enteral Feeding	Start enteral nutrition within 24 hours to meet hypermetabolic demands, prevent catabolism.
	- Nutritional Supplements	High-protein, high-calorie diet, vitamins, and minerals (vitamin C, zinc).
Rehabilitation	- Physical Therapy	Early mobilization, range of motion exercises, prevent contractures.
	- Occupational Therapy	Functional training, splinting, adaptive devices.
	- Psychological Support	Counseling, support groups, management of PTSD, depression.
Long-term Care	- Scar Management	Pressure garments, silicone gel sheets, massage therapy.
	- Surgical Interventions	Skin grafting, flap procedures, scar revision surgeries.
	- Follow-up Care	Regular follow-up visits, monitor for complications (contractures, chronic pain, infections).

Advanced fluid resuscitation techniques consider variables such as the extent and severity of the burn, the age of the patient, and any pre-existing medical issues. The Parkland formula is a commonly employed resuscitation guideline that determines the amount of fluid needed for a burn victim by taking into account the extent of the burn and the individual's body weight.

Healthcare practitioners can mitigate the difficulties linked to burn-induced shock and maintain organ function by effectively regulating fluid balance and electrolyte levels.

Prevention and management of infections

Ensuring the prevention and effective management of infections is a crucial component of providing care for burn patients. Burn injuries create open sores that are extremely susceptible to bacterial colonization. Infection may result in the delayed healing of wounds, sepsis, and other potentially fatal problems.

Advanced infection control strategies encompass the utilization of antimicrobial dressings, topical medicines, and prompt removal of contaminated tissue. In addition, it is crucial to closely monitor in order to rapidly identify and treat infections.

Rehabilitation

Rehabilitation is a crucial component of advanced burn treatment. Physical and psychological rehabilitation is frequently necessary for burn victims to restore their

functionality and enhance their quality of life. A collaborative effort is made by multidisciplinary teams, consisting of physical therapists, occupational therapists, psychologists, and social workers, to address different facets of rehabilitation.

The primary objective of physical therapy is to regain mobility, decrease contractures, and enhance the overall functionality of burnt limbs. Occupational therapy facilitates the restoration of patients' autonomy in routine tasks, such as dressing, eating, and bathing.

Moreover, it is crucial to prioritize the consideration of the psychological consequences of burn injuries. Patients may exhibit symptoms of anxiety, despair, and post-traumatic stress disorder (PTSD). Psychologists and social workers collaborate with patients to tackle psychological issues and enhance emotional well-being.

Advanced burn care is a comprehensive method that integrates medical, surgical, and psychosocial therapies. Improving outcomes and boosting the quality of life for burn survivors is crucial. The future of burn treatment shows potential for enhancing the well-being of those impacted by burn injuries via continuous research and therapeutic breakthroughs.

Final remarks

Ultimately, comprehensive burn care encompasses both scientific principles and artistic techniques. Optimal

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treatment and assistance for burn sufferers necessitates the collaboration of a committed and proficient healthcare staff, consequently enhancing their prospects of recuperation and an enhanced quality of life.

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