
Recent Advances in the Management of Burn

Essay

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General Surgery**

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الأساليب الحديثة فى تشخيص و علاج الحروق

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للحصول على درجة

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List of Abbreviations

ACS	Abdominal compartment syndrome
ADLs	Activity of daily livings
ALS	Advanced Life Support
CEA	Cultured epidermal autografts
DPT	Deep partial thickness
FAHC	Fletcher Allen Health Care
FT	Flow time
IADLs	Independence activity of daily livings
IAH	Intra abdominal hypertension
IP	Inter-phalangeal
ITBV	Intra thorathic blood volume
ITPV	Intra thoracic pulmonary volume
MCP	Metacarpo-phalangeal
MODS	Multiple organ dysfunction syndrome
NIRS	Near infra red spectroscopy
PAOP	Pulmonary artery occlusion pressure

PT	Physiotherapy
ROM	Range of movement
SGS	Silicon gel sheets
SIRS	Systemic inflammatory response syndrome
SVV	Stroke volume variation
TBSA	Total body surface area
TENS	Transcutaneous electrical nerve stimulation
TPN	Total parenteral nutrition

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Adel Micheal

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Introduction

Many advances were related to episodes of conflict, with significant progress in the quality of burn care seen during the Second World War. The introduction of appropriate first aid ensured that burn injuries involving more than one-third of the body surface area were not uniformly fatal. In the 1950s and 1960s major advances were made in fluid resuscitation, medical treatment, and infection control for burn injury. Further improvement in skin grafting techniques also reduced mortality (*Thomas et al., 2002*).

In the 1970s and 1980s, advances were made in the treatment of massive burn injuries. These were associated with early burn excision and were combined with techniques to reduce blood loss and improved facilities for patient isolation and infection control (*Herndon et al., 2002*).

Improvement in mortality rates continued with the development of intensive care techniques, the management of inhalation injury, and the manipulation of the hyper metabolic response (*Sheridan et al., 1999*).

Dedicated well-equipped burn facilities provide the best outcomes for burn patients, with the focus not just limited to survival (*Herndon et al., 2002*).

Outcome after burn injury is no longer simply measured by mortality rates. Burn survivor outcomes are now debated in the literature in terms of rehabilitation of function and restoration of quality of life. The unique nature and long-term sequelae of burn injury are made more complex by the fact that, while in hospital, 84% of major burn patients suffer 'severe or excruciating pain', 100% suffer daily pain, and 92% are woken at night with pain, in nondisaster circumstances (*Montgomery, 2004*).

On burn treatment, although skin transplantation can only close the wound and the patient will heal with disability, there are no other ways other than achieving excelsior skin transplantation skill. In the 1970's, Professor Rongxiang Xu broke the constrain of the traditional thought and scientifically established a fire new burn physiological theory and method that has remarkable therapeutic effect, which is Burn Regenerative Therapy (BRT). (*Xu, 1989*).

“Regenerative Medicine” is an innovative concept and it describes a distinct way of functional tissue and organ regeneration. Professor Rongxiang Xu introduces the procedures of Moist Exposed Burn Therapy (MEPT) and also the examples when supplying effective nutrient to common cells, tissues and organs that are regenerated he proved that the common cells can proliferate into all kinds of organ tissues. On the basis, he promoted the burn research and treatment to cell and molecular level and established new field for stem cell, burn treatment, immunology and cytobiology research (*Xu, 1989*).

In ‘Burns Regenerative Medicine and Therapy’ ,the process of how to change the residual viable tissue cells on burn wound to initial stem cells and then these stem cells proliferate and differentiate to skin organs in situ is described in detail. And also the effect of skin organ regeneration in situ in treating deep burn wounds is revealed (*Xu et al., 2000*).

Eight technical procedures are included in the process of regeneration and duplication of human skin tissue and organs in vivo and in situ by adult stem cells after burns:

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1. Activate the potential regenerative cells in the deep layer of the damaged skin tissues to form stem cells;
 2. Cultivate stem cells in situ;
 3. Liquefy and drain the necrotic tissues without damage;
 4. Supply nutritional matter;
 5. Physiologically control bacterium toxicity to reduce the infectious damage caused by the bacterium and toxicity;
 6. Keep the tissues in a physiologically moist environment;
 7. Micro-isolation and endogenous supporting technique;
 8. Tissue constitution to organs (*Xu et al.,2000*).