Recent Advances in the Management of Burn

Essay

Submitted for Partial Fulfillment of Master Degree of General Surgery

By

Adel Micheal Kerolous
M.B.B.CH.
El Minya University

Under Supervision of

Professor Dr. Mohamed Said Kamel
Professor of General Surgery
Faculty of Medicine - Ain Shams University

Doctor.Mohamed Ahmed Mahmoud Aamer
Assistant Professor of General Surgery
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2012

الأساليب الحديثة فى تشخيص و علاج الحروق

توطئة

للحصول على درجة

ماجستير الجراحة العامة

مقدمة من

طبيب/ عادل ميخائيل كيرلس

بكالوريوس الطب والجراحة

كلية الطب – جامعة المنيا

تحت إشراف

أ.د/ محمد سعيد كامل

أستاذ الجراحة العامة

كلية الطب – جامعة عين شمس

أ.د / محمد أحمد محمود عامر

أستاذ مساعد الجراحة العامة

كلية الطب جامعة عين شمس

كلية الطب

جامعة عين شمس

2012

Contents

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 parentral nutrition

List of Tables

List of Figures

Acknowledgement

First of all, thanks to **ALLAH** whose magnificent help was the main factor in completing this work.

I would like to express my special thanks to **Prof. Mohamed Said Kamel, Professor of General Surgery, Faculty of Medicine, Ain Shams University,** who had expressed so much sincere care and devoted much of his time. I'm deeply obligated for his kind supervision, constructive criticism, unlimited help, keen interest and great encouragement during the progress of this work.

My deepest appreciation and profound gratitude to **Dr. Mohamed Aamer, Assistant Professor of General Surgery, Faculty of Medicine, Ain Shams University.** I appreciated his valuable advice, generous cooperation and great support. His valuable continuous guidance and kind attitude during this study has made its completion possible.

.

Adel Micheal

2012

الأساليب الحديثة فى تشخيص و علاج الحروق

توطئة

للحصول على درجة

ماجستير الجراحة العامة

مقدمة من

طبيب/ عادل ميخائيل كيرلس

بكالوريوس الطب والجراحة

كلية الطب – جامعة المنيا

تحت إشراف

أ.د/ محمد سعيد كامل

أستاذ الجراحة العامة

كلية الطب - جامعة عين شمس

أ.د / محمد أحمد محمود عامر

أستاذ مساعد الجراحة العامة

كلية الطب جامعة عين شمس

كلية الطب جامعة عين شمس

2012

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:

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. Physiolocally 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).***