



MEBO-Cultured Micro-skin Regenerative Therapy

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- Chinese Burn Association:
- Integration of Traditional Chinese and Western Medicine



Preface

- MEBT/MEBO is a scientific treatment option with proven clinical outcomes
- Extensive clinical experience in China, Europe and Middle East, in Phase 2 Clinical Trials with FDA in USA
- Extensive III degree burns: surgical skin grafting therapy change to MEBT/MEBO, integrate the topical treatment and the systemic treatment, and how



MEBO-Cultured Micro-skin Regenerative Therapy in Treating Deep III degree Burns

- Present therapies: escharotomy, debridement, amputation, skin grafting, no way to improve the aesthetics of scarring outcomes
- Technique of using MEBO integrating the regenerative granulation tissues and auto-micro-skin planting to effect closure of III degree deep wounds.
- Since 2005, excellent therapeutic outcomes observed.
- MEBO-cultured micro-skin regenerative therapy, used as adjunct to surgery



Procedures

- Debridement of 2/3 necrotic tissue from the outside to the inside; MEBT/EMBO liquefaction → in situ culture of new hypodermis → micro-skin planting after the hypodermis growing to the normal skin level → in situ culture and plant the micro-skin into skin tissue → the wound healing
- The management procedures before the micro-skin planting are the same as the procedures of MEBT/MEBO



Objective: fast wound healing by the regeneration of auto-skin

Merits

1. Shorten the wound healing time
2. Reduces pain during treatment
3. Regenerative restoration of hypodermis
4. Regenerative wound healing
5. Fast better than escharotomy and skin grafting



Indications

- ✦ Extensive III degree deep burns
- ✦ Open surface ulcers and wounds
- ✦ Electric burns/wounds



Surgical Procedures

1. Preparation of wound bed before the micro-implantation
2. Management of the implanted wound
3. Management of the donor site
4. Preparation of the autologous micro-skin
5. The micro-implantation
6. Wound management after the micro-implantation



1. Wound management

1. Disinfect the wound with Iodine
2. Tension relieving, remove necrotic tissues with no further injury (at the 2nd day)
3. MEBO application externally
4. Topical MEBO gauze
5. Semi-exposed or bandage method
6. Change dressing with MEBO until granulation tissues grows well and blood circulation flows well



- At admission



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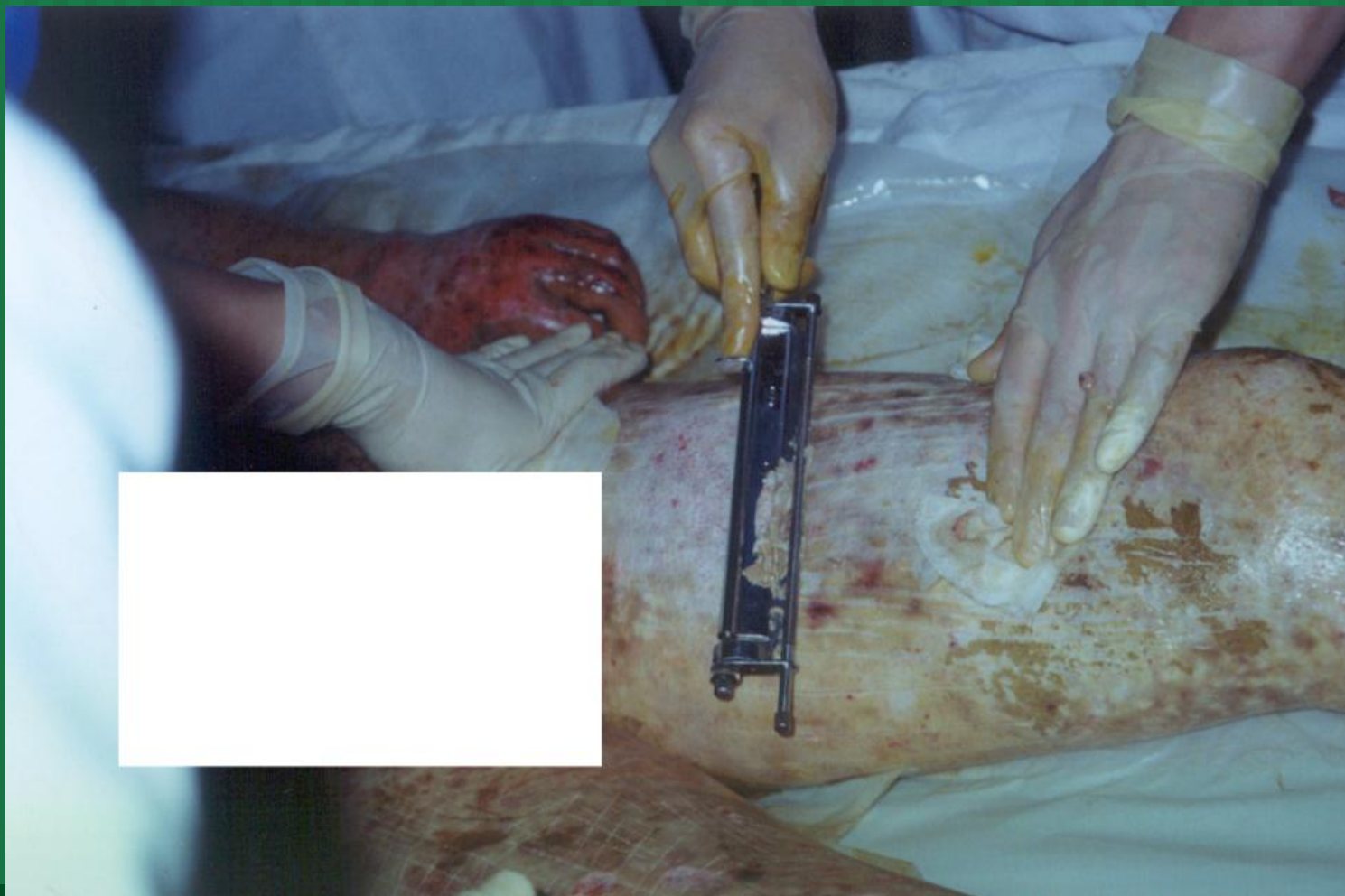
Tension relieving



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Debriding necrotic skin





MEBO application after debridement



MEBO液化坏 死组织

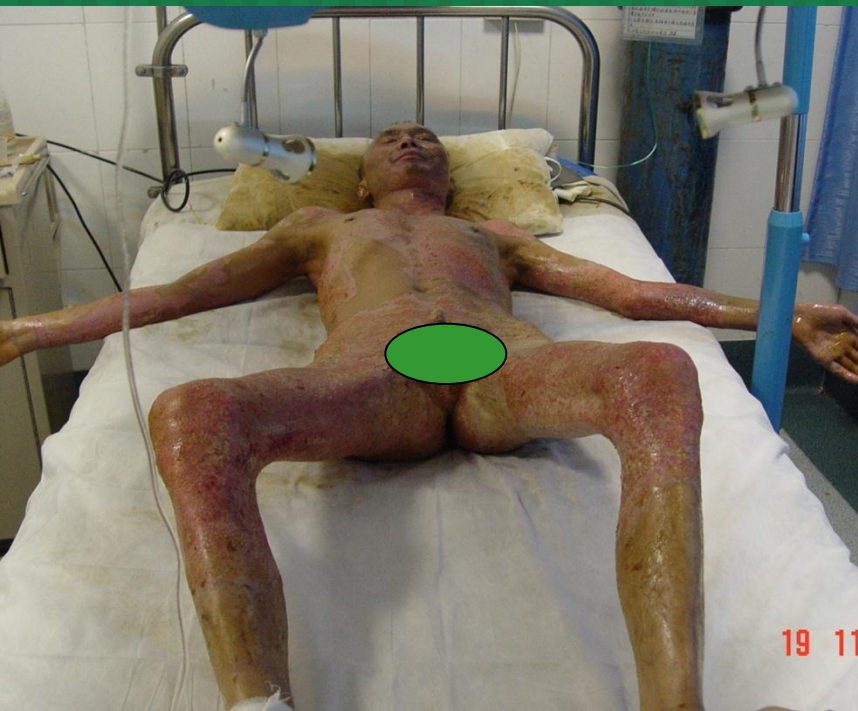
liquefaction of
necrotic tissues by
MEBO





Choice of MEBT therapy based on wound depth

After the liquefaction of necrotic tissues, superficial III degree wound receive the in situ regenerative therapy, deep III degree wound receive the MEBO-induced micro-skin planting therapy



After and during the healing of deep II degree and superficial III degree, deep III degree see granulation growth

- Granulation culture



**III degree deep wound
healed and granulation
grew well**

- **Granulation before
micro-skin planting**



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2. Wound preparation

2.1 Dressing change before the surgery





2.2 Anesthesia



2.3 management of the planted wound

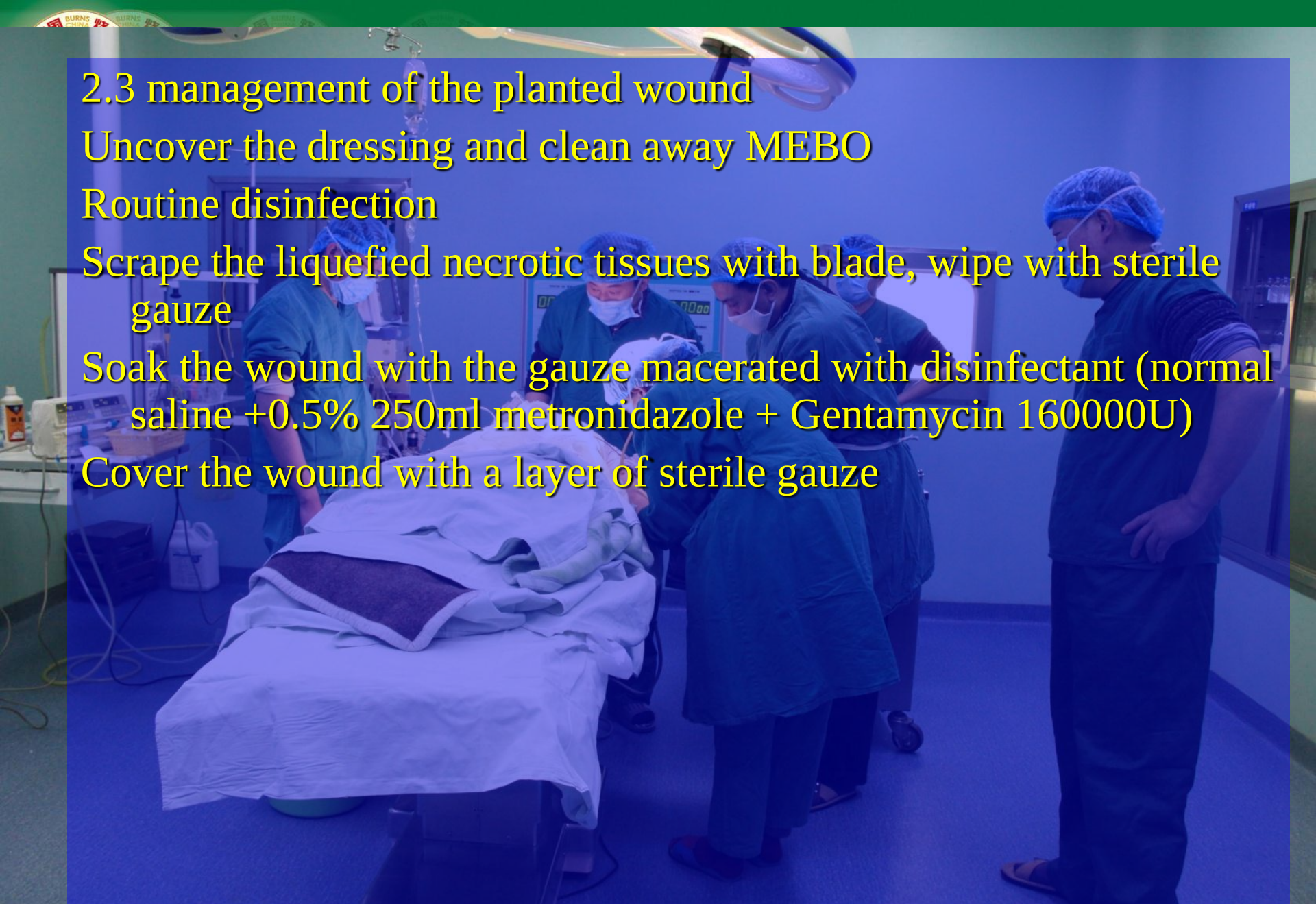
Uncover the dressing and clean away MEBO

Routine disinfection

Scrape the liquefied necrotic tissues with blade, wipe with sterile gauze

Soak the wound with the gauze macerated with disinfectant (normal saline +0.5% 250ml metronidazole + Gentamycin 160000U)

Cover the wound with a layer of sterile gauze





2.3 Management of the planted wound





2.4 Preparation of MEBO gauze, thick dressing, and etc.





Preparation of suspension liquid

Formula of preset liquid

- (1) normal saline: proper amount
- (2) Gentamicin: 80000U
- (3) **Compound salvia miltiorrhiza injection: 20ml**



3. Management of the donor site

3.1



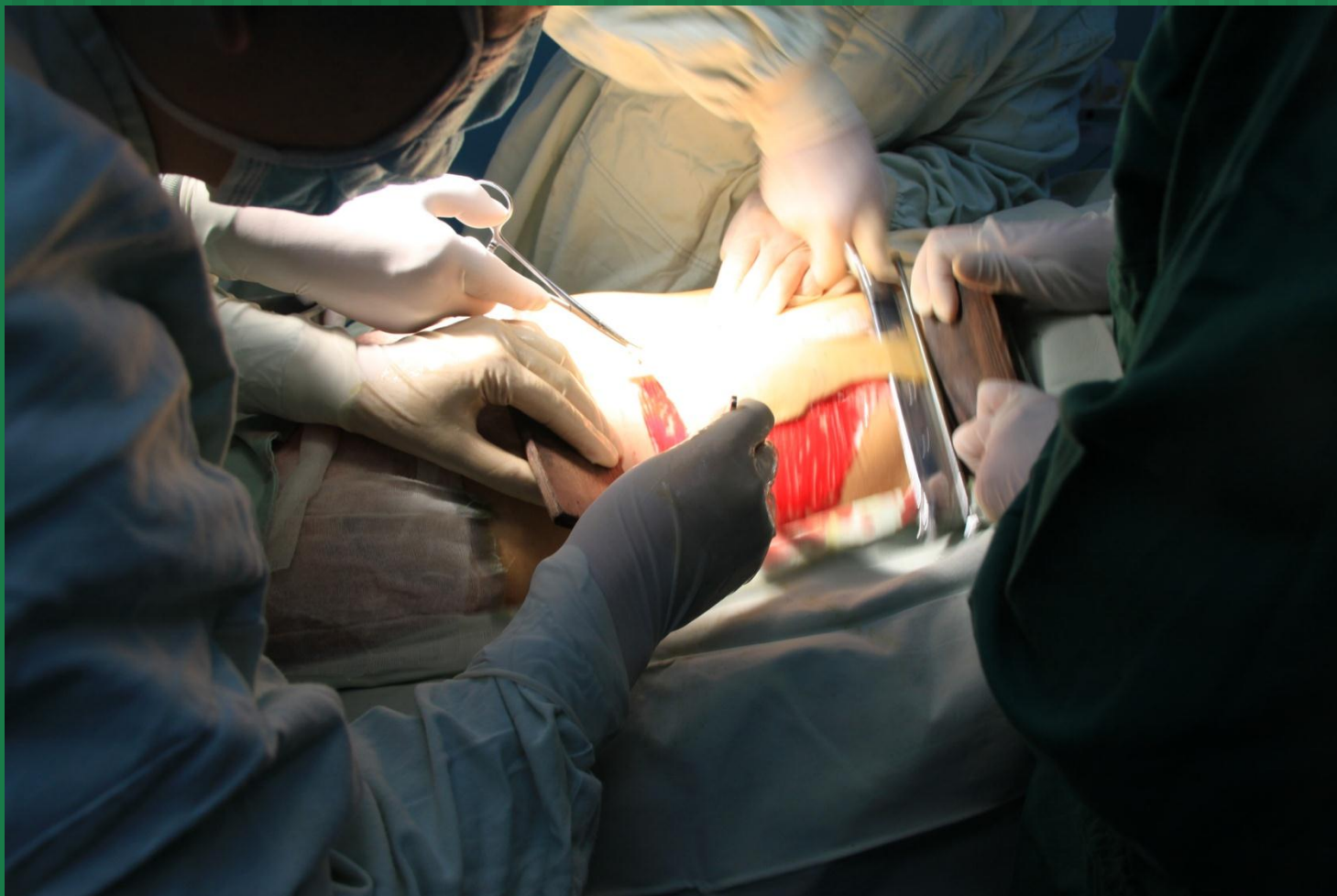


3.2 Harvesting donor skin





Split-thickness skin taken





Donor skin in suspension liquid





MEBO on the donor site





Cover with MEBO gauze and bandage





Cutting the split-thickness skin into micro-skin grafts







Prep of graft about 10 mins





Autologous micro-skin planting

Uncover the gauze filled with disinfectant



Put the micro-skin pieces into the wound, size 6 pinhead to fix, size 9 pinhead to plant the pieces into the granulation at the depth of 0.5cm (the depth of the pinhead hole planting at a slant)





- ✧ The planting interval 2cm (the dense the better)
Wipe out the wound liquid with sterile gauze
- ✧ Smear MEBO and cover MEBO gauze, semi-exposed or bandage method
- ✧ 一
One week later, skin islands of autologous micro-skin grow out from granulation. Continue MEBT until wound healing





Implanting micro-skin into granulation





Depth 0.5cm, interval 2cm





After the implanting, smearing MEBO





Cover the wound with MEBO gauze





Bandage with sterile dressing





Planting the other side of the wound





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After the complete planting



The first day after the planting



Micro-skin in the
granulation tissue surface

19 9:08 AM



Five days after the planting:
scattered skin pieces

24 9:14 AM



Micro-skin growing in to
converge, the wound size
reduced

- 12 days later, the
donor site healed



- 25 days later, the wound healing, the patient mobilising







Standard application of regenerative medicines,
continue nurture the healed skin with MEBO Scar
Ointment and the pressure bandage method to prevent
scarring for half a year



预防疤痕生成 平复疤痕皮肤
适用于各种原因引起的疤痕



MEBO scar ointment and the pressure bandage method
to prevent scar formation

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Regenerative healing of the donor site

- -
- Skin damage of the donor site is a typical broken defect injury of skin tissue, of which the pathological changes and reparation process are similar to that of burns
- MEBT/MEBO application after the operation at the donor site, promote and accelerate the epithelialization and healing



Donor site after taking split-thickness graft



Cover the donor site with MEB0 gauze



Day 3



Day 6



Day 8: Wound healed completely with regeneration



Systemic interventions

1. Preventive tracheotomy
2. Prevent and correct hypovolaemic shock
3. Maintenance and protection of major organ function
4. Prevent and treat stress ulceration of digestive tract
5. Respiratory support
6. Management of the infection
7. Nutritional support



Cases

- Patient: male, 31 yrs old, extensive avulsion injury of left limb caused by car accident and complicated with traumatic hypovolaemic shock for one hr, admitted on 21 August 2010.
- Mx:
- Resuscitation with IV fluids, actively manage shock
- Perform debridement and suture the wound.
- Complicated by extensive skin necrosis.
- 22 October 2010, perform micro-skin implantation after MEBO dressing change and regenerative in situ granulation culture.
- 3 December 2010, the patient discharged with normal limb function.



Debridement before the operation



22.10.2010



- Extensive skin necrosis after the debridement, treated with MEBT/MEBO to stimulate regeneration followed by micro-skin implantation graft



- 19 Days after surgery



03.12.2010

- 41 days later, the wound fully healed



03.12.2010



Case 2

Male, 6 yrs old

Electric burns 12%, superficial III degree 2%, deep III degree 10%, at four limbs and right body trunk



Eschar incision and
tension relieving incisions,
MEBO topically



29 days after the injury,
micro-skin planting and
MEBO dressing change



MEBO Scar Ointment to
prevent scar formation



Follow-up 2 months later,
skin tissue and pigment
regenerating



Follow-up four
months later





Case 3

- Female, 81 yrs old, admitted on 18 Jan 2012 due to pain for 3 days after right limb burns.
- Physical examination: Four palm-sized wounds at the outside of right thigh.
- Eschar and blisters on the wound, red, swollen, tenderness, higher skin temperature
- Diagnosis: III degree burns of right limb (4%), and inflammation

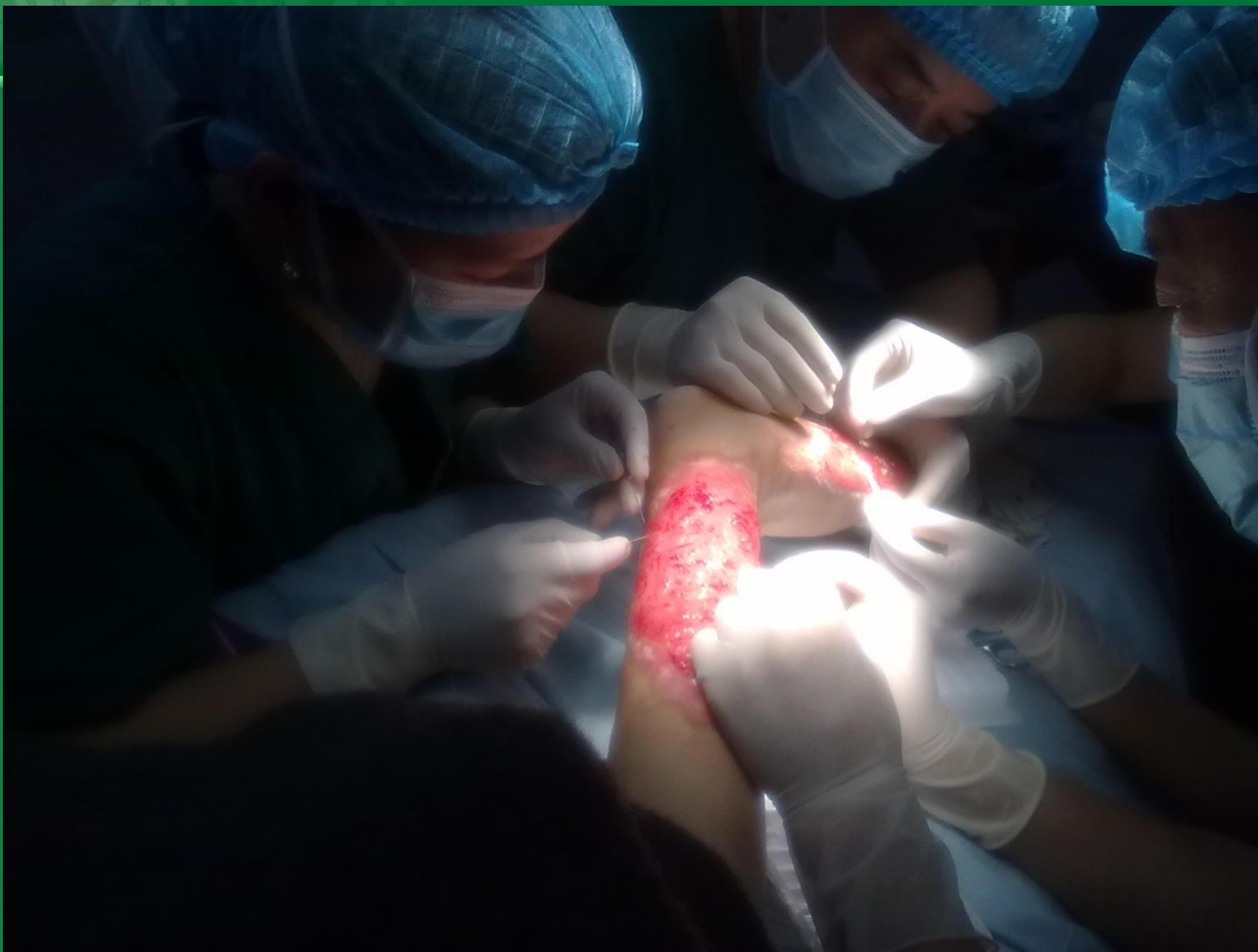


- Day 2 after admission



Prepared wound bed after
MEBO/MEBT

Before surgery



- **During the micro-skin implantation**

The wound and micro-skin cultured by MEBO





Conclusion

- This approach of MEBT/MEBO combined with micro-skin implantation does not achieve the same end-points as that of MEBO burns regenerative therapy, it can help speed up the skin regenerative restoration process in situ; by culturing and regenerating skin, subcutaneous tissues and reducing disability and suffering of patients.



Thank you