6 Cases of Traumatic Skin Necrosis and Muscle Tendon and Bone Exposure Treated with MEBO

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Abstract: This paper reported two cases of skin contusive necrosis complicated with exposure of tendon and two each cases of exposure of bone and facial contusion treated by MEBO. After treated with MEBO, the function of injured hand reestablished in the natural cure process. Less suffered from the wound and the recovery of function was satisfied. The curative effect is superior to skin graft or skin petal transfer. The Wounds of the two cases of bone exposure were healed without infection. Deep II degree contusions of two side faces were healed without scar.

Skin contusion is common trauma in traumatic surgery. Exposure of deep tissue, tendon and bone after skin necrosis at contusion area can lead to functional disturbances, treatment is very difficult. In the past, to eliminate the wound is mainly by clearing up of necrotic tissue, free skin grafting or skin flap transferring, but it always failed due to infection or necrosis of skin flap. Furthermore, it requires relatively motionless for certain period after surgery to facilitate the wound healing. Finally, the motility of functional parts will be limited in various degrees because of tendon adhesion and scar contracture, even completely loss their function. Since the moist exposure medical technique was introduced in our department, totally 6 cases of skin necrosis, tendon exposure, bone exposure, bone defect and deep II degree contusion of face had been treated with MEBO, fairly well curative effects had been achieved.

Clinical materials:

Case 1: Beng, female, 23 years old, skin contusion and laceration of back of right hand from the traffic accident. Three days after first stage debridement and suture, the skin of contusion area became black and necrosis, the area is 5cm x 3cm, flexion and extension of index finger and middle finger were limited. Skin graft was planned after two weeks. The patient did not agree with surgery but MEBO treatment. The wound was applied with MEBO 3-6 times every day. On the third day, the necrotic skin became soften and gradually cleared up. At 6th day, the necrotic skin was almost cleared, the tendon of index finger and middle finger under the sheath can be seen. Thereafter, MEBO application was changed to 6-8 times per day. The liquefied material on the wound was cleared moderately before dressing. The liquefied material decreased at 15th day, the wound was fresh and then changed to bind up the wound. The wound was wrapped by moderate pressure by two layers of MEBO gauze, two layers of sterilized gauze and elastic bandage. Changed Dresses 3-4 times a day, the thickness of drug was 2-3mm, the wound was healed at thirty first day. Active and passive functional exercises were performed when MEBO treatment started, so the flexion and extension
function of fingers resumed to normal. MEBO was used continuously and wrapped with moderate pressure for 3 more months. At the 4th month follow up check, the scar was slightly higher than skin, the function of hand was not restricted. The patient was satisfied.
Case 2:  Liu, female, 19 years old. Left hand was twisted injured by bread machine. The skin of back of hand and the part between thumb and index finger were sleeve likely injured. First stage debridement and suture were carried out. After 3 days, the skin at edge of trauma became black and necrotic, the area was 6cm x 3cm. There was secretion on the wound. The wound partially disrupted after taking out stitches. Flexion and extension of index finger and thumb was difficult, the extension tendon of index finger was partially exposed. MEBO treatment was accepted at 13th days after trauma. The method was same as case 1. The necrotic tissue was almost cleared up at 5th day. At 18th day, liquefied material of the wound was reduced and the wound was fresh. At 21st day, bandaging treatment with moderate pressure was begun, the method was same as case 1. At 35th day, the wound was plane healed, the function of index finger and thumb had arrived 95% of the normal.

Case 3:  Wu, male, 32 years old. 6cm x 4cm deep II degree rub wound of skin at right cheek bow area due to the traffic accident. Third day after trauma, he was treated by MEBO. The wound healed at the 16th day, and went back to work. The initial skin pigment after cure was deep, but decreased gradually after two months. No scar on the skin after 4 months.
Case 4: Fan, female, 23 years old. Open injury at right elbow due to break of machine belt. The laceration at forearm was 6cm x 20cm, deep II degree and shallow III degree compounded. 3cm x 2cm deep II degree contusion was on his right face. The elbow joint was treated with stage one debridement and suture, and MEBO treatment after 24 hours. The wound of face was healed at 15th day with no scar. Large part of forearm wound was healed at 25th day, and the rest portions were healed with scar at 31st day. At 80th day, two scattered small scar blisters can be seen at forearm scar area, the skin of face was nearly normal.
Case 5: Zhu, male, 34 years old. Bone defect of right tibia, the area of bone exposure was 7cm x 8cm, complicated with paralysis of general fibular nerve. Amputation was ready to carry out in district hospital. He left the district hospital and came to our hospital. Complete debridement of the wound was operated. Nonvitalized tissue and hardening bone were removed until fresh blood spilled out. Filled with sterilized gauze and the fibula bone was internal fixed with two holed orthopedic steel plate. After 24 hours, the gauze was removed and treated with MEBO. MEBO was applied 5-6 times every day, moderately cleared the wound before dressing. After continuous treated for 80 days, the bone was all covered by soft tissue with no bone infection. It provided good tissue condition for second stage operation.

Case 6: Zhang, male, 29 years old. Trauma on right leg caused craked fracture of tibia, and III degree skin contusion of antero-internal part of leg, partial exposure of fibular. MEBO therapy was begun after two weeks. The necrotic tissues were sharply debrided day by day after 48 hours, and continuous for 5 days until the wound almost cleared up. Thereafter, applied MEBO 6-8 times every day, the thickness of drug was 1-2mm, moderately cleared the wound before dressing. At 58th day, the wound was healed with scar. Scattered small scar blisters were appeared at 75th day. They were healed after proper pressure dressing for one week. He went to work after 5 months; the function of the tibia was good.

Discussion
Although there are many wound treatment methods after skin trauma, but all possess certain limitations. Especially for functional parts, the good or bad treatment will directly influence the function in future; so it is seriously considered by the doctors at all levels. The traditional method is by using dermal graft and flap transfer to achieve the purpose of closing the wound. But no matter what method is used in therapeutic process, every joint of the hand is not benefit on the recover of the function due to the needs of treatment or pain. Especially the wound of tendon exposure can cause joint rigidity and tendon adhesion in various degrees. So it has to re-operate to loose the tendon after the wound healed, and the recovery of the function is still not satisfied. In order to arriving the aim of no adhesion of tendon and no stiffness of the joint in wound healing process, it must actively and passively exercise their functions at early stage. But this aim is always contradicted with the condition needed by traditional therapy -- that is the early movement will cause the drop of the skin pieces and then failure of surgery, and the patients refuse active movements because of the pain of the injured area. Using MEBO to treat this kind of injury can keep the wound moist in treatment period, the tissue is relaxed, so the patient can functional exercise their hands with no wound pain; then the functional reconstruction can be arrived in wound healing course. The scar remained after healing of wound on the face directly influences the aesthetics and patient’s psychological health. Early treatment with MEBO can reach the aim of no scar formation for deep II degree contusion, the effect is positive.
The treatment of bone exposure is always a problem of orthopedics, especially the severe cases with bone infection. Although the bone cannot regenerated after MEBO treatment, but there is the effect to get rid of putrid tissue and promote formation of muscles. The wound is covered by vitalized tissue from circumference to inside, to build the condition for the future functional rehabilitation.

MEBO can relieve pain, inhibit infection, achieve no scar healing for traumatic necrosis of skin and completely recovery of the function. From burn trauma and wound medical theoretical point of view, skin contusion has not only the characteristics of trauma, but also the pathological process of wound, which is similar to the pathological characteristics of burn. In the treatment of skin contusion and necrosis at functional parts, the value manifested by MEBO is much better than other methods. The problems about itch after scar healed and pigment sedimentation need further investigated.

MEBO therapy should begin just after trauma, but it is difficult for the patients and doctors because they are not fully recognized the good therapeutic efficacy of MEBO. It needs to devote major efforts to propagate and popularize this technique, and then bring the benefit to human.

References:
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