

CASE REPORT

The Management of Second-Degree Burn Wound without any musculoskeletal complications: A Case series

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ABSTRACT

Second-degree burns are the most common type injury in clinical scenario and not easy to manage. Evaluation of burn wounds is not an easy task, as depth of the burn wound is not remaining same, it differs from one individual patient to another. Depth of burn wound depends upon infections, geography, socioeconomic factors, pharmacological agents, personal hygiene, nutritional factors etc. A Quick start of the treatment can avoid all complications of burn wounds effectively. Proper antiseptic techniques should be used during dressing of burn wounds. With proper advanced antibiotics could inhibit infection chances.

Paraffin and chlorhexidine gauge is required for dressing of burn wound. These mentioned precautions and use of proper antibiotics and anti-inflammatory medication for 7-10 days could treat the second-degree burn wounds within a short. On physical examination, we found our all burn patients recovered well without any infection or Musculoskeletal complications.

In case of burn injuries, paraffin and chlorhexidine gauge and antiseptic dressing of wound is able to protect the burn wound from friction and change the micro environment of the wound to keep the recovery fast and also protect it from infection and insects.

KEYWORDS

• Burn Wounds • Paraffin and Chlorhexidine Gauge • Second Degree Burn Wound

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INTRODUCTION

Management of burn wound is a quite challenging task of all the time. Even severe burns are life threatening and may cause considerable amount of disability, air way injury, asphyxia and a lot more in the patients.

Burns are the leading cause of injury worldwide, following road traffic accident, falls and violence or fights.¹

Evidence: based medicine predicts a comprehensive consideration of the operative feasibility of the clinical practice, and economic level of different geographical areas and cultural factors, a set of clinical guidelines of second degree burn was set up.

Early Debridement and cleaning of burn wound and regular use of silver based antibiotics are the key factors to treat second degree burn wounds without any complication.

Delayed treatment may enhance the chances of contracture formation, wound infection, pus formation, discolouration of skin etc.

Case Report 1: A 56 years old lady presented to the emergency department with a second degree burn on right Dorsum of hand at radio carpal joint. The injury occurred approximately 8 hours before arrival when accidentally spilled a pot of boiling oil while preparing dinner. She defined the pain with burning sensation, and reports that blisters have formed on affected area. She also mentioned that the pain exacerbated by movements and direct touch on affected area. All vital signs are normal with slight hyperglycaemia.

She had no history of hypertension, type II diabetes mellitus and even no history of previous burns. She had no known drug allergies.

We suggested her antibiotics, Silver nitrate gel, anti-inflammatory drugs along with Diclofenac for 7 days.

She came for follow up after 4 days and told us that all symptom were relieved remarkably, and burn wound recovered well. All bullae were recovered and pain was relieved totally. No contracture were reported even after total recovery and patient is ultimately back to normal with in 7 Days.

We assess the range of motion, which was totally normal. During 7 days treatment, we

suggested the patient to keep the hand totally dry and ask her change the bandage everyday. We also anti-fungal creams in the burn wound during these 7 days, and last but not the least we use clear aeration technique in the wound that is, kept the bandage loose to keep the burn wound directly in contact with fresh air. Re-epithelialisation of the wound seen in 10 days. There was normal skin pigmentation with 2 weeks.

One year follow up shows no joint contracture, Heterotopic ossification (HO), or any muscle wasting (sarcopenia) sign.

Case Report 2: A 65 years old male presents with secondary burn of his left shoulder with axillary folds skin involvement. The burn injury happened when he accidentally spilled hot water on himself during morning bath. The patient reported that burn happened approximately 6 hours prior to presentation. He described the pain as severe, redness, and blistering on his left shoulder skin. There is evidence of blistering and a significant area of redness.

The patient is alert and oriented, in moderate distress due to severe pain. His vital signs are temperature: 37 degree C, pulse: 88 beats per minute, Blood pressure: 138/85 mmHg.

Respiratory Rate: 16 breaths per min. On skin examination, we found no evidence of full thickness burns or underlying tissue damage. No other burn injuries noted.

Lab test shows normal complete blood count and Basic Metabolic Panel (BMP), with slight hyperglycaemia noted (HbA1c: 7.2%).

He was not able to move the left shoulder joint.

Paracetamol, ketorolac or ibuprofen analgesics are used to relieve the pain. Anti inflammatory pharmacological agents are used to relieve swelling. Antibiotics are suggested for 7-10 days. Antiseptic techniques used for wound dressings.

Re-epithelialisation seen in 10 days and the skin Color back to normal after 14 days.

After 8 days, all burn wounds disappear with proper healing. No scar formation. No contracture formed. Patient able to move shoulder Joint with full ROM (Range of motion). No musculoskeletal deformity was found on musculoskeletal examination.

Patient had reduced pain and burning sensation from severe to no symptoms in 7 days and experienced full comfort during dressing. we have not encountered any sign Heterotopic Ossification following one year follow-up.

Case Report 3: A 85 year old lady visited our clinic for treatment of Second degree burn on her left leg. She got burns, while she was taking the physiotherapy. She got the second degree burns with three bullae from over heated pads on her leg skin. We applied silver-based antibiotic cream the affected area and cover the wound with chlorhexidine and paraffin gauge. Patient suffered with hypercholesterolemia, high blood sugar, hypertension, received a spine surgery just before a month. we avoid oral antibiotics as the patient was not willing to take more medicine. After 7 days all bullae were resolved. No infections or pain reported after 7 days. We have not encountered any associated adverse events, so far. follow up after one year shows no sign of Heterotopic Ossification (HO).

DISCUSSION

Every treatment has its own pros and cons. For developing a better understanding about a treatment, we need to implement and change the procedures according to need of the individual patient. No single treatment can be announced perfect and applicable for all types of patients. Apart from that, socioeconomic factors also play pivotal role in the treatment and outcome of patient. Poor socioeconomic conditions attract poor hygiene, and poor hygiene delays recovery of burn wound.²⁻⁵

Severe burn injuries need a multidisciplinary approach that combines pharmacologic agents, surgical approach, application of collagen based ointments directly on burn wound to optimise the positive outcomes. Findings of several studies conclude that stem cell therapy is an effective option and even without complications. That is why, Stem cell therapy is becoming popular in current clinical settings.^{6,7}

Interestingly, Artificial Intelligence able to influence the decision of clinicians.⁸

Patients with severe burns have to extend hospitalisation duration as treat and wound care are often extensive and time-taking process. Artificial intelligence

is used to predict the LOS (length of stay) in severe burn cases. and it can also predict the depth of the wound. Both of these factors quite important in the prognosis of burn wounds.⁹

Moreover, Thermal injuries may lead to loss regenerative capacity and significant scarring complications in some victims.¹⁰

Hypertrophic scars may lead to formation of contracture, which ultimately reduce ROM (Range of Motion). For avoiding these many complications, stem cell therapy can stimulate the cellular machinery to favour more optimal wound healing.^{11,12,13}

Here all the cases were getting Debridement with savlon, normal saline and dettol to detoxify the wound and optimise the microenvironment for quick healing.

CONCLUSION

We strongly recommend use of paraffin gauge to protect the microenvironment and making the wound healing faster. Additionally, silver based antibiotic ointment and oral broad spectrum antibiotics and anti-inflammatory pharmacological agents are mainstay of burn wound treatment.

In contrast, socioeconomic factors also play a key role in recovery of the burn wounds as better care could be availed only with higher socioeconomic status.

In addition, wound should be covered with proper and antiseptic dressing gauge, at the same time, dressing should be loose keeping the wound directly in contact with fresh air and to avoid anaerobic microenvironment for quick recovery.

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