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Role of Hybrid Reconstruction Ladder in Adult Thermal Burns

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Abstract

The role of hybrid reconstruction ladder in the treatment of burn wounds has been widely used owing to its role in improving the outcome in terms of wound bed preparation and post trauma scarring. Here, in our study, we are evaluating the efficacy of use of hybrid reconstruction ladder in the adult thermal burns.

Keyword: Hybrid reconstruction ladder; Adult thermal burns.

INTRODUCTION

Burns are among the most devastating of all injuries, with the spectrum of outcomes spanning from physical impairments and disabilities to emotional and mental consequences.[1] Majority of burns are caused by thermal energy including scalding and fires, and minority being caused by exposure to chemicals, electricity, ultraviolet radiation, and ionising radiation. Globally, fire related burns are responsible for about 265,000 deaths annually.[1] Over 90% of fatal fire related burns occur in developing or low and middle income countries (LMICs) with South-East Asia alone accounting for over half of these fire related deaths.[1]

Thermal burns are skin injuries caused by excessive heat, typically from contact with hot surfaces, hot liquids, steam or flame. Thermal burns are the most common type of burn injuries, making up about 86% of the burned patients requiring burn center admission.

Risk factor

Evidence for hybrid reconstruction ladder in adult thermal burns in terms of its effectiveness and the process by which it helps in faster healing of the wound is inadequate.

MATERIALS AND METHODS

This study was conducted in tertiary care centre in department of Plastic Surgery after getting the department ethical committee approval. Informed

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consent was obtained for examination and clinical photography. The subject was 16 years old female with history of thermal burns due to contact with kerosene. Patient had 2nd degree and 3rd degree burns involving both the lower limbs from ankle to thigh right side, involving the anterior, medial and lateral surface with no evidence of compartment syndrome (Fig. 1). She was taken to near by hospital and treated with analgesics and antibiotics. Then she was brought and was treated here. Patient underwent regular dressing along with APRP (autologous platelet rich plasma) application (Fig. 2), with hydrojet debridement (Fig. 3), with prolotherapy (Fig. 4), with serial dressings with vitamin D3 and (Fig. 5) and serial NPWT (negative pressure wound therapy) was also applied (Fig. 6). The wound site healed eventually (Fig. 7). We have also done a similar study on role of hybrid

Fig. 1: At presentation

Fig. 2: APRP application

Fig. 3: Hydrojet debridement

Fig. 4: Prolotherapy

Fig. 5: Vitamin D3 application

Fig. 6: Cyclic NPWT application

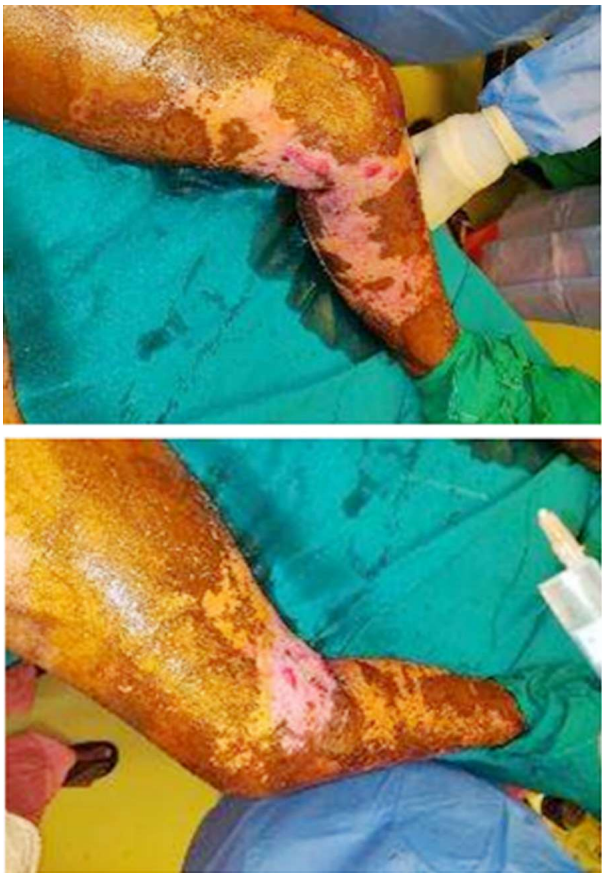

Fig. 7: At the time of discharge

reconstruction ladder in electric burns of scalp also.

RESULTS

After application of serial dressings with serial application of vitamin D3 and sucralfate therapy to the scalp, in our study, we were able to reduce time taken for healing of burns area and good take of graft. Use of hybrid reconstruction ladder helped in the wound bed preparation and aided early skin grafting and wound healing.

DISCUSSION

Burn injuries are very common and afflict approximately 1% of the population yearly. They are a source of heavy medical burden to medical systems worldwide. Morbidity and mortality are decided by factors like: total body surface area (TBSA) involved, the anatomical location, depth of burn, the age of the subject, prior medical history involvement of other systems (especially airway injury).[2]

Serious burn injuries occur most commonly in males. The highest incidence of serious burn injuries occur in young adults (20-29 yrs), followed by children younger than 9 years. Individuals older than 50 years sustain the fewest number of serious burn injuries. Major causes of severe burn injury are flame burns (37%), and liquid scalds (24%). For children younger than 2 years, liquid scalds and hot surface burns account for nearly all serious burn injuries. After age 2 years, flame burn is the most common cause of serious burn injuries, accounting for nearly one third of all serious burns.[3]

A thermal burn is a type of burn resulting from making contact with heated objects, such as boiling water, steam, hot cooking oil, fire and hot objects. In adults, thermal burns are most commonly caused by fire. Thermal burns cause both local injuries and, if severe (>20% of body surface area), a systemic response. Large burns (>20% body surface area) also cause a systemic response from the release of inflammatory and vasoactive mediators. Fluid loss locally at the burn site, fluid shifts systemically, plus decreased cardiac output and increased vascular resistance, can all lead to marked hypovolemia and hypoperfusion called burn shock. This condition can be managed with aggressive fluid resuscitation.

CONCLUSION

We have found that hybrid reconstruction ladder has been very useful in management of burn wounds, but requires large scale randomised trials for large scale application to explore the potential of the same in adult thermal burns.

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