Review Article

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A Management of Scald Burns in Pediatric Population: Our Experience

Sowmya[1], Neljo[2], Ravi Kumar Chittoria[3]

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Abstract

Injuries remain the leading cause of pediatric mortality, and burns are the fourth most common mechanism of injury, Younger children more commonly present with scald burns; whereas, flame burns are seen more often in adolescents.[1] We had a case of 25 percent pediatric scald injury for whom we had used various novel regenerative methods and we would like to share our experience of the same.

Keywords: Scald Burns; Pediatric Burns; Regenerative Methods.

INTRODUCTION

Treatment of burn wounds has always proved challenging in the pediatric population. When treating large surface area or complex burn wounds, pediatric patients frequently have limited area of graft donor sites. Infants often have skin too thin to be harvested for skin grafting and to provide adequate coverage for reconstruction. Burn scars repeatedly become hypertrophic and are hard to treat. This poses a unique challenge for the paediatric population which calls for unique and novel methods of burn management.

Author's Affiliation: [1]Junior Resident, [2]Senior Resident, Department of General Surgery, [3]Professor & Head of IT Wing and Telemedicine, Department of Plastic Surgery & Telemedicine, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

Coressponding Author: Ravi Kumar Chittoria, Professor & Head of IT Wing and Telemedicine, Department of Plastic Surgery & Telemedicine, [3]Senior Resident, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

E-mail: drchittoria@gmail.com

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MATERIALS AND METHODS

This novel method was studied on our patient– Miss Nivetha who had sustained 25 percent accidental scald burns to the chest abdomen and both upper limbs and left knee. On presentation she was managed with iv fluids, iv analgesics and iv antibiotics and regular dressing. Patient's wound bed preparation was done with 3 blood transfusion and also low level laser therapy (LLLT), autologous platelet rich plasma (APRP), Hydrojet debridement, wound debridement and split thickness skin grafting on 29.4.21. Wound was opened on post operative day 7 – which showed good take.

RESULTS

Through our experience we have observed that these novel eregenerative measures were very instrumental in reducing hypertrophic scars and

subsequent contracture. They helped in reducing the duration of hospital stay by allowing easier uptake of the skin graft.

However, it needs large scaled multicentric randomised trial before it can be used in clinical practice.

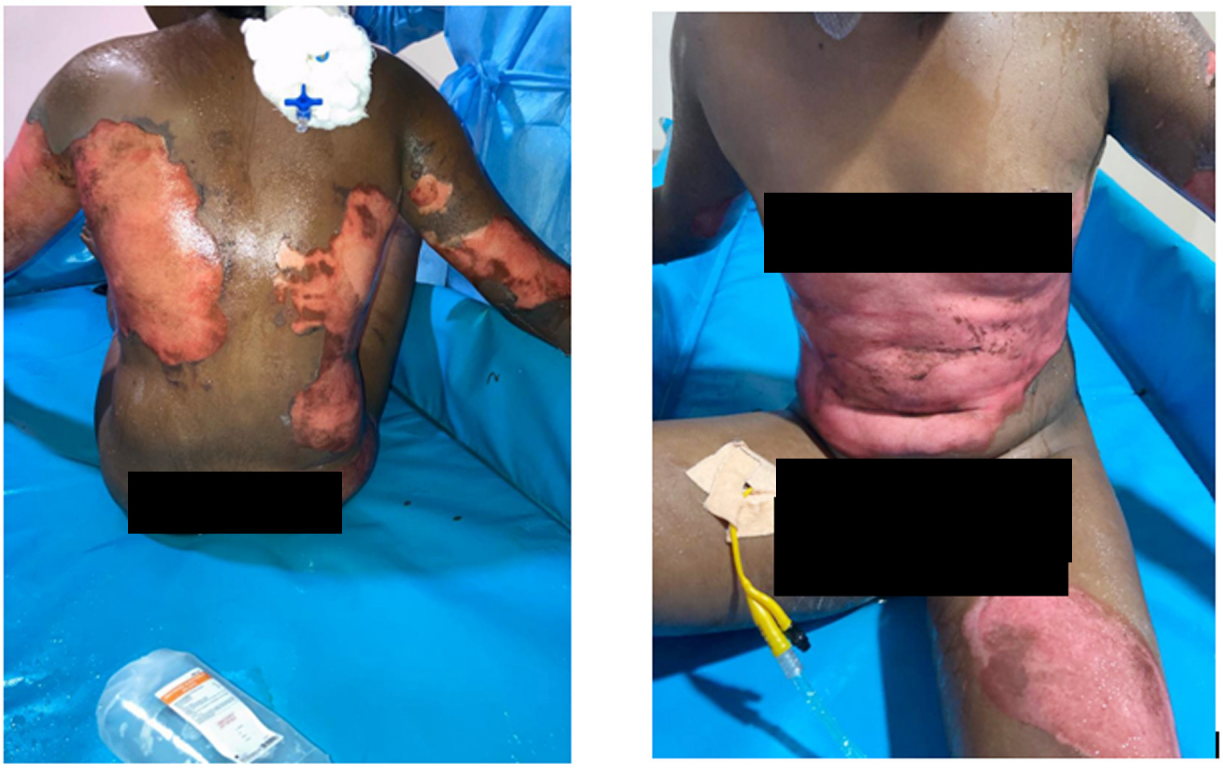

Fig. 1: Presentation of Patient

Fig. 2: Aprp therapy being given

Fig. 3: Lllt Therapy for Better Graft Uptake

Fig. 4: Healed Burn Injury

DISCUSSION

Low level laser therapy applications include: acceleration of wound healing, enhanced remodeling and repair of bone, restoration of normal neural function. following injury, pain attenuation, and modulation of the immune system.[2] Laser therapy increases both the rate and the quality of healing, and studies show that as the healing rate increases, bacterial cultures decrease, suggesting a bioinhibitory effect upon wound infection.[3] Nussbaum et al.[4] analyzed the interactions between wavelength and bacterial growth of Pseudomonas aeruginosa, Escherichia coli, and Staphylococcus aureus and reported that irradiation with 1–20 J/cm2 at a wavelength of 630 nm appeared to be commonly associated with bacterial growth inhibition, which is of considerable importance for wound healing. LLLT heps in preventing hypertrophic scar management and keloid by reducing IL-13 , IL -15, MMP's, IL-6 mRNA levels which are involved in abnormal wound healing.

Some added benefits of LLLT over other conventional methods of burn healing include:

- LLLT can be used in those patients for wound bed preparation to allow better graft take
- LLLT can be used as a prophylactic measure to alter the abnormal wound healing process by attenuating the tendency to form hypertrophic scars and keloid.

Hydrojet Debridement

Hydrotherapy is the use of water or saline under pressure to mechanically remove microscopic debris and bacteria. There are two types of hydrotherapy commonly practiced, whirlpool and pulsed lavage therapy. Whirlpool therapy supports wound healing by debriding the wound, warming the injured extremity and providing buoyancy and gentle limb resistance for physical therapy.[10] However, whirlpool treatments have fallen out of favour secondary to the risk of nosocomial contamination and transmission of virulent infections.[5,6]

Aprp Therapy in Burns

APRP gel has been used extensively to treat acute and chronic wounds, and is considered to be advanced therapy for healing. Studies have found decreased levels of growth factors in chronic wounds when compared to acute injuries.[7-9] It is thought that the application of aPRP gel directly to the wound site would increase the level of key growth factors, and thus speed the healing process.

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