Prospective Study of Early Excision and Grafting in Children

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Abstract

Thermal injuries to the foot constitute not only one of the most common burns, but one of the most difficult for the burn surgeon to treat. Early wound closure is mandatory if maximum functional return is to be attained and scarring minimized. Fifty five patients with deep foot burns were treated in the Burn department of RSCUMA, Samarkand Uzbekistan. After early excision and placement of autograft, (on 31 patients), prevented the development of early infectious complications, and allowed the short period of time (10-15 days) to recover the skin cover. There was also economy of time of hospital patient treatment at an average for 16, 09 ± 3, 2 days in comparison with held necrectomy and delayed skin plastic.

INTRODUCTION

Although the feet involve only a small percentage of the total body surface area (3.5 %), they play an important role in daily life because of their motion and weight-bearing function and the short and long-term morbidity is incalculable in terms of pain, functional impairment and financial loss [1,2]. Thermal injuries to the foot constitute not only one of the most common burns, but one of the most difficult for the burn surgeon to treat. Early wound closure is mandatory if maximum functional return is to be attained and scarring minimized. Only isolated articles on the problem of foot burns can be found in available foreign and national scientific literature. It is necessary to mention that deep foot burns mostly occur in Central Asia since many indigenous people still use the ancient means of heating called ‘Sandal’ during the winter months [3,4]. Early excision reduces mortality in burn patients without inhalation injury and shortens hospital stay for all burn patients [5]. Summing up the above-mentioned reasons, the investigation of rational methods of treatment of deep foot burns is of great importance today.

MATERIAL AND METHODS

Fifty five patients with deep foot burns when the skin will not regenerate and tendons, muscles and bones were not injured (full thickness burn) or when subcutaneous fat, fasciae, muscles, and even bones were exposed (full thickness with deep tissue involvement) were treated in the Burn department of RSCUMA, Samarkand Uzbekistan. Most patients had deep foot burns caused by sandal heaters thirty three patients and others were twenty two patients. In these cases, the sandal burns caused especially deep and severe injuries of tissue because of the immediate contact with the burning agent. The patients were divided into two groups: The first group (main) included 31 patients, admitted in the first 3 days and nights from the moment trauma was received. For proper diagnosis of their condition and the choice of proper treatment method, all patients at admission were examined for acid–alkali balance of the blood, blood hemoglobin, glucose, potassium, and sodium and calcium levels. After resuscitation for 4-5 days early necroectomy was held on not more than 4-5% of body area. The depth of necrotic tissue excised depended upon the burn degree: at IIIB-within hypodermic-adipose tissue, at IV degree to fascia or by excision of more deep layers of soft tissue. After early excision, we immediately placed perforated or non-perforated autologous skin graft. The thickness of grafts ranged from 0.2 to 0.3 mm. Grafts from the external and internal surfaces of the hip were normally used. The first bandage was removed on the 2nd or 3rd day after surgery. If the skin engrafted well, we proceeded with physical therapy and remedial exercise after about the 6th day. After that, the patients were discharged from the hospital for outpatient treatment. It was recommended that they continue with physical therapy.

Second control group: this included 24 patients who were treated in the traditional manner. From the moment the patients were admitted to hospital, they underwent the following surgical methods of treatment: necrotomy, necrectomy, free skin grafting was normally performed on the granulated wound when the wound was completely ready for closure. The wounds were ready for autografting 18-22 days after the burn.

RESULTS

After early excision and placement of autograft, (on 31 patients), prevented the development of early infectious complications, and allowed the short period of time (10-15 days)
to recover the skin cover. The second operation was performed on three of the patients because the transplanted skin dissolved in some places. Complete rehabilitation of skin covering provided engraftment of transplants, donor injuries and epithelisation of superficial burns. As a rule, the term of skin covering rehabilitation coincided with the patients’ discharge from the hospital and our observation of 16.0 ± 3.2 days.

Control group: those who were treated in the traditional manner (on 24 patients) were allowed within the period of time (20-22 days) to recover the skin cover. The second operation was performed on 7 patients. Patients remained in hospital on average for 25-30 days.

The surgical methods, early excision and immediate skin graft helped to improve the general condition of the patients, contributed to the restoration of their foot functions, shortened their stay in hospital and also reduced their expenses.

DISCUSSION

Rehabilitation of patients with deep foot burns is done by means of complex medical treatment measures, both medical and surgical, which are directed at correction of the general state, addressing, osteoarthritis and, foot phlegmon, providing adequate wound healing in the burn zone, excising dead joint segments and preventing contractures. Treatment with early excision and grafting is reported to have improved burn wound patient outcomes significantly since its inception [6-9]. Patients with deep foot burns require immediate hospital admission and special treatment. The wide range of rational surgical tactics, medical physical training and physiotherapy create favorable conditions to reduce the development of foot scar deformations and contractures.

After recovery of the skin cover and discharge from the burn department, the patient must wear it during the next 3-4 months with periodic removal during the daytime to undergo medical exercise and massage. The main purpose of physical exercises is to rehabilitate the foot function, prevent contracture formation and lower the risk of complications. Physical training must be done carefully and individually by every patient. Movements must be slow and stretched. Physical training must be done 2 or 3 times a day for 30 or 40 min, as also after discharge from the hospital up to the period of full growth and formation of the return scar.

REFERENCES

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