

Early Excision of Burn Wound and Cover – A Clinical Study in a Multispeciality Centre

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ABSTRACT

One of the most effective therapies in major thermal injuries has been the early excision of the burn wound its coverage. We have attendance of about 50 patients per year who undergo early excision grafting. A good number of patients among them have major burns as it is a tertiary referral centre. Early wound excision grafting is done in very few in India with the majority of centres following a more conservative approach where by allowing the dead skin to form an eschar split skin grafting done later. The current state of knowledge experience with early burn wound closure leads to some conclusions that are proved others that are suggested. Early excision of burns wound has been extensively researched in the western literature, but the Indian perspective has been lacking. Here, an attempt is made to evaluate the effects of early excision of burn wound and cover. A Prospective Descriptive study including all patients with a history of thermal or chemical burn undergoing early tangential excision graft admitted to department of plastic reconstructive surgery at an urban multispeciality hospital was undertaken over the period of August 2005 - July 2007 the results were evaluated. Descriptive statistical analysis was carried 90% confidence Interval was used to find the significance of study characteristics outcomes. The overall mean duration of hospital stay for the patients in the study is 29.58 days. 60.5% of the patients required no more than single surgical procedure (tangential excision cover). 25.6 % had to undergo two surgical procedure. The predominant wound cultures were pseudomonas aeruginosa, staphylococcus aureus. The mean duration between injuries to surgery was 5.3 days. The mean duration between admissions to surgery was 4.05 days. We have had one mortality caused due to inhalational injury. Early tangential excision is a feasible effective method for the routine management of all minor major burns in multispeciality hospital with well equipped burn centre.

KEY WORDS : Early excision, Autograft, Allograft, Tangential Excision

Introduction

The arrival of the victim of a burn accident at the emergency department is one of the most dramatic events in surgical practice. The

suddenness of the accident, the visibility of the damage, the pain, fear the reactions of on lookers all combine to create an atmosphere of tension. A severe thermal injury is one of the most devastating physical psychological injuries a person can suffer. The interactive multidisciplinary team has proved to be the least expensive most efficient method of treating major burn injury, a long- term disease of which the initial acute care is only a small part of the total treatment. One of the most effective therapies in major thermal injuries has been the early excision of the burn wound its coverage.

A healthy young patient with almost any size burn might be expected to live using modern treatment techniques. Advances in treatment

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are based on improved understanding of resuscitation, enhanced wound coverage, better support of the hypermetabolic response to injury, more appropriate infection control, and improved treatment of inhalation injuries.

Subjects and Methods

The number of articles studies on early excision of burn wound are numerous but most of these studies are specialty-hospital based studies. Few studies have taken a broad spectrum of patients. This study included all patients with a history of thermal or chemical burn undergoing early tangential excision graft admitted to department of plastic reconstructive surgery at an urban multispecialty hospital. To evaluate the effects of early tangential excision of burn wound cover. The study also intends to measures the Hospital stay, the reasons for number of operative procedures, the common burn wound cultures

Study design

This is a Prospective Descriptive study. Study Population Patient's admitted to the burns ward during the period of July 2005 – July 2007.

Inclusion criteria All patient's with history of thermal & chemical burns. All patients who underwent early tangential excision. All patients presenting to us within 20 days of injury. All patients with 2nd degree or more burns.

Exclusion criteria All patient's with history off electrical burns. All patients operated at outside hospitals.

Patients presenting to us after 20 days of injury. Patients who did not under go early excision of burns.

Methodology Over the period starting from July 2005 to July 2007 all the patients who were admitted to burns ward with thermal or chemical burns within twenty days of injury underwent early tangential excision grafting were included in this study.

TBSA (Total Body Surface Area) burn was reevaluated at the time of surgery on the operative table. The percentage of excision was based on clinical judgement by the operating surgeon by tangential excision (TE) upto the level of bleeding capillaries. Stard procedure for TE and cover was carried. All Patients with burns of less than 20% TBSA underwent complete tangential excision at a single sitting grafted. Two or more TE procedure was carried with burns more than 20% TBSA burn on subsequent days based upon patient's general condition, availability of blood, homograft donor, availability of operation theatre etc. The details of percentage of tangential excision were taken from patients operative procedure notes.

The time interval between admission excisions was in most of the cases within 10 days of burn injury based on everyday clinical assessment during burns ward rounds. One unit of blood for every 5% TBSA second degree deep burn. Written consent was obtained form all the homograft donors whenever applicable. Routine blood investigations were sent on the day of admission preoperatively for all the patients. Bronchoscopy was performed in patients with suspicious inhalational injury. Wound cultures were sent on the day of admission on clinical assessment on the subsequent day's antibiotics given accordingly. Split skin grafting was done for the patients based on the postoperative clinical assessment of the raw areas. The duration of hospital stay was recorded for all the patients.

Results

A total of 43 patients underwent early tangential excision of burn wound over a period of 24 months in the burns ward under the department of plastic reconstructive surgery. Patient Data was recorded in a Proforma, the results were tabulated analyzed at the end of the study period.

Age distribution 46.5% of the patients in our study were young adults aged between 21-30yrs, followed by 23.3% children below 10yrs. The youngest was 1yr, the oldest being 81yrs old female. And 28 out of the 43 studied patients were male which formed 65% the rest were females. The most common site of burns was home which formed 63% of the patients. Work place industrial injuries comprised around 30%. And the cause of burns 42 patients gave an alleged history of accidental burn one patient gives a history of an attempted homicide (acid attack), 23 of the patients were referred to our hospital after undergoing initial resuscitation at a private hospital/ nursing home which formed around 53.5%. And the overall mean duration of hospital stay for the patients in the study is 29.58 days. Patients staying for longer duration were mostly due to rehabilitative reasons, physiotherapy on patient or family member's personal reasons. The mean duration of hospital stay for patients undergoing less than 20% TBSA tangential excision was 26.20 days. The mode of Injury 49% of the burns was caused due to flame burns ,23.3% of them were allegedly due to gas leak.37.2% were due to scald injuries 50% of scald burns were less than 10yrs of age.

The Percentage of burns 55.8% of the patients had less than 20% TBSA burns. We had one patient each with 46 and 52% TBSA burns. 3 patients had less than 5%TBSA burns. 81.4% of the patients underwent less than 20%TBSA tangential excision cover. One patient each underwent upto 38 and 46% TBSA tangential excision cover.

Grafts used

Grafts used	Number (n=43)	Percentage	90% CI
Autograft	33	76.7%	64.76-85.56
Homograft	7	16.3%	9.1-27.48
Auto+homograft	3	7.0%	2.82-16.22

76.7% of the patients in the study underwent autografting after tangential excision of their burn wound; homograft was used in 16.3% of the patients. While in 7% of the patients homograft was used followed by autograft for the raw surface.

Topical agents betadine was the preferred topical agent in almost all our patients except for the patients in the initial 5months of our study. This was due to our experience of leucocytopenia especially with large TBSA burns staining seen with silver sulphadiazine. Acetic acid dressings were done to the patients whose wound culture grew Pseudomonas had raw surfaces. Mupirocin was used in patients whose culture grew MRSA.

Inhalation Injuries were seen in five (11.6%) patients had singed nostril hair on initial assessment; one patient had mucosal congestion edema of vocal cords on bronchoscopy, one patient had features suggestive of ARDS on x-ray.

Twenty three percent patients required no blood transfusions during their course in hospital; however most of them required less than 5% TBSA excision cover, 4.7percentage of the patients required 9 units of blood. In general, 1unit of blood was transfused for every 5%TBSA excised.

In 60.5% of the patients grew Pseudomonas, 46.5% grew Staph.aureus 37.2% grew Enterococci. 16.3% showed no growth on cultures, however these were the patients with less than 10% burns under went excision within

48 hours, had less number of hospital stay had less than two culture reports. Antibiotic used were 74.4% of the patients received Amikacin which was significant. 39.5% received augmentin 37.2 received Cefaperazone + Salbactam. Two patients (4.7%) did not receive any antibiotics. Antibiotics were started based on culture and sensitive in most of the patients. 5 patients (11.62%) received antibiotics on prophylactic basis.

Number of surgical procedures 60.5% of the patients required no more than single surgical procedure (tangential excision cover). 25.6 % (11 Patients) had to undergo two surgical procedure. 20.9 % (9 Patients) among them underwent the second procedure for raw surface at a later dates. In all only 3 patients (6.9%) underwent TE + cover in two sittings.

Days between injury to surgery admission to surgery average to 5.3 days. Three patients (6.9%) underwent surgery within 24hrs of injury. One patient underwent surgery on 12th day of injury. In common patients were taken up for surgery once they were hemodynamically stable, blood /homograft donor was available OT was available. The mean duration between admissions to surgery was 4.05 days. 83.7 % (36 Patients) underwent surgery within 5 days of admission.

Discussion

Most common cause of burn injury is alleged accidental injury due to flames occurring at home. The most common age group is between 20-30yrs. Males formed a larger percentage in the study group. The overall mean duration of hospital stay for the patients in the study is 29.58 days. 55.8% of the patients had less than 20% TBSA burns. 29.9% of the patients in the study had more than 30% TBSA burns[1]. 76.7 % (33 patients) of the patients in the study underwent autografting after tangential excision of their burn wound[2].

homograft (allograft) was used in 16.3% of the patients. In 7% of the patients homograft was used followed by autograft for the raw surface[3]. The nonavailability of homograft and synthetic graft is a matter of concern in a developing country like ours.

One unit of blood was transfused for every 5%TBSA excised except in children[4,5]. Availability of adequate blood products was difficult in most of our cases[6,7]. 60.5% of the patients grew Pseudomonas, 46.5% grew Staph.aureus 37.2% grew Enterococci 60.5% of the patients required no more than single surgical procedure. 25.6 % had to undergo two surgical procedure. The mean duration between injuries to surgery was 5.3 days. The mean duration between admissions to surgery was 4.05 days.

Conclusion

Accidental burn due to flames is the most common cause of burns in our set up. Predominant age group being young adults, commonest site being home. Early aggressive fluid management adequate nutritional support are very critical. Inhalational injury requires special attention should be looked for managed accordingly. Early excision of burns decreases the rate of infection also reduces the hospital stay there by reducing the overall cost to the patient. The predominant wound infection is due to Gram Negative organisms in our setup unlike in the west where it is Gram Positive sepsis. Adequate blood availability, homograft/allograft availability non availability of synthetic grafts are a matter of concern in case of large TBSA burns in case of developing countries like ours. The post operative wound appearance is very acceptable.

Early tangential excision is a feasible effective method for the routine management of all minor, major burns in multispeciality hospital with well equipped burn centre.

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