Early Excision and Grafting versus Delayed Skin GraftinginExtensive Burns Patients: ARetrospectiveStudy in The National Burn Center of Morocco

Abstract:
Severe burns pose significant challenges to patients and healthcare providers due to their high mortality rate and prolonged hospital stay. This article aims to investigate the effects of early excision and skin grafting compared to conservative management with delayed skin grafting on reducing mortality and hospitalization duration.
We conducted a retrospective study to evaluate the outcomes of acute burn patients with extensive burn admitted to the National Burn Center in Moroccofrom January 2017 to December 2022 withtotal body surface area (TBSA) of a burn between 10 to 60 %.
The findings suggest that early excision and skin grafting significantly decrease the mortality rate and hospital stay in extensive burn patients. However, careful patient selection, meticulous surgical techniques, and appropriate postoperative care remain crucial for achieving optimal outcomes.

Keywords:burn management, early excision, severe burns, skin grafting.

I. Introduction

Severe burns continue to be a major cause of morbidity and mortality worldwide [1]. Extensive burns, characterized by a large total body surface area (TBSA) involvement, present significant challenges in terms of wound management and patient care. Early excision and skin grafting have emerged as potential strategies to improve outcomes in these patients[2], [3].

This article aims to assess the impact of early excision and skin grafting on reducing the mortality rate and hospital stay in extensive burn patients.

The primary outcome was mortality rate, and the secondary outcome was hospital stay.

II. MATERIALS ET METHODS

We conducted a retrospective study to evaluate the outcomes of acute burn patients admitted to the National Burn Center in Morocco from January 2017 to December 2022 withtotal body surface area (TBSA) of a burn between 10 to 60 %. We excluded patients withchemical burns, electrical burns, polytrauma,aTBSA of a burnless than 10% or more than 60%and patients with respiratory burns.

Patients were divided into two groups: those who underwent early excision and skin grafting group 1 (n = 396) and those who were treated with conservative burn management group2 (n = 633).

III. RESULTS

The mean age of the patients was 29.1 in group 1 (4 month – 94 years old) and 31.1 yearsin group 2 (5 month – 98 years old), and 67.8% were male in group 1 and 69.2 in group 2. The average of total body surface area (TBSA) of a burnwas 37.4% (10- 60%) in group 1 and 39.7 % in group 2 (10- 60%). The mortality rate was 25.6% in the early excision and skin grafting group and 30.8% in the conservative burn management group.

The median hospital stay was 10.2 (1- 54) days in the early excision and skin grafting group and 16.4 (1- 74) days in the conservative burn management group.

The comparison between the two groups is statistically significant. the P value for the difference in mortality rate between the two groups was 0.03, The P value for the difference in hospital stay between the two groups was 0.002.

This difference is statistically significant, both less than 0.05. In other words, the results of our study suggest that early excision and skin grafting is associated with a lower mortality rate and shorter

hospital stay than conservative burn management in patients with extensive burns.

DISCUSSION

These findings support the use of early excision and skin grafting as the standard of care for extensive burns.

The difference in mortality rate between the two groups was relatively small, but it was statistically significant. This suggests that early excision and skin grafting may have a small but important impact on mortality rates in patients with extensive burns.

The difference in hospital stay between the two groups was more pronounced. Patients who underwent early excision and skin grafting were discharged from the hospital an average of 6.2 days earlier than patients who were treated with conservative burn management. This suggests that early excision and skin grafting can lead to significant reductions in hospital stay.

There are several possible explanations for the better outcomes seen with early excision and skin grafting. First, early excision and skin grafting removes the burned tissue, which can lead to infection and sepsis. Second, early excision and skin grafting provides a barrier to infection and helps to maintain the body's temperature [4].
Third, early excision and skin grafting allows for early mobilization and rehabilitation, which can improve outcomes.

Our study was limited by its retrospective design. This means that we were not able to randomize patients to the two treatment groups. As a result, it is possible that the observed differences between the two groups were due to other factors, such as differences in the severity of the burns or the patients underlying health status.

Despite these limitations, our study provides strong evidence that early excision and skin grafting is an effective treatment for extensive burns. This approach is associated with lower mortality rates, shorter hospital stays, and improved outcomes.

Patient selection is important because not all patients with extensive burns are good candidates for early excision and skin grafting. Factors that may affect the decision to offer early excision and skin grafting include the severity of the burns, the patient's overall health, and the

availability of resources [2], [3].

In conclusion, our study found that early excision and skin grafting was associated with a lower mortality rate and shorter hospital stay than conservative burn management in patients with extensive burns. These findings support the use of early excision and skin grafting as the standard of care for extensive burns.

After Janzekovic et al. reported successful tangential burn wound excision with immediate grafting in 1970 [5],Several guidelines recommend early excision and grafting for the treatment of limited full-thickness burns[6-8]. However, this approach is associated with some risks, such as deterioration of the general condition and complications from over-invasiveness [9,10]. Therefore, early excision of burn injuries greater than 30% TBSA in adults is not universally accepted[4].

Others studies comfort our findingthat early excision and skin grafting was associated with a lower mortality rate and shorter hospital stay than conservative burn management[11-14].

Early excision and skin grafting was also associated with a lower risk of infection and sepsis than conservative burn management by removing the burned tissue, which can lead to infection and sepsis and by providing skin barrier to infection it helps to maintain the body's temperature.

Other studies supportthat early excision and skin grafting was associated with a better results andquality of life [11,15-20].

The results of all these studies suggest that early excision and skin grafting is the preferred treatment for extensive burns. This approach is associated with:

- Lower mortality rates, which decreases the risk of wound infection, sepsis, and multi-organ dysfunction syndrome [11-14].The removal of necrotic tissue and application of autografts promote wound healing, reduce fluid and electrolyte losses, and prevent systemic complications[4].
- Shorter hospital stays, the removal of necrotic tissue and closure

of the wound enable early initiation of rehabilitation and functional recovery. The reduced risk of wound infection and subsequent complications contribute to shorter hospitalization periods [1, 2, 9]. Furthermore, early excision and skin grafting can facilitate the availability of burn unit beds for other patients in need [11,15-20].

IV. Conclusion

Our study found that early excision and skin grafting was associated with a lower mortality rate and shorter hospital stay than conservative burn management in patients with extensive burns.

These findings support the use of early excision and skin grafting as the standard of care for extensive burns.

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