Section: Burns and Plastic Surgery

Original Research Article

A STUDY ON OUTCOME OF CADAVERIC ALLOGRAFT APPLICATION IN THERMAL BURNS IN A TERTIARY BURN CARE CENTRE

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Abstract

Background: Allograft is used as a temporary dressing in major burns. The outcome of such dressing helps in preparation of wound bed, maintaining the haemodynamic balance and gives a better outcome. We have analyzed the efficacy of allograft in burn survival, preparation of wound bed, after allograft application, rejection, microbiological status of the wound, graft take and overall pain relief. **Materials and Methods:** All burn patients treated with cadaveric allograft in our centre from 2018 to 2023 were analysed. Retrospective analysis of record Age, Sex, TBSA, Day of allograft, Day of Rejection, Day of Autograft, Pain score (VAS), Graft take and Outcome. **Result:** Total burn patients analysed were 37; Adults 22; Paediatric 15; Male 18; Female 19. Maximum TBSA affected was >40 %. Allograft adhered to the burn wound surface for an average of 8 days before starting rejection. The length of hospital stay of the survivors were <30 days. The autograft take after wound bed preparation was 87%. As definitive dressings in partial thickness burns healing achieved without further surgical interventions. **Conclusion:** The selective use of cadaveric allograft in major burns with less donor area yields benefit of major burns management with morbidity and mortality reduction.

INTRODUCTION

The ultimate goal in management of burns is to promote rapid wound healing and increase survival rate with minimal scaring and with restored quality of life in burn survivors.[1-3] The burn wound management varies depend upon the TBSA, and the depth of the burns.[4,5] The superficial burns with minimal TBSA may heal with topical antimicrobial therapy or dressings with skin substitutes,[6-8] the full thickness burns with minimal TBSA needs early tangential excision and autograft application to promote wound healing. All over the world, the use of cadaveric allograft as skin substitute in major burns management is currently practised in many burn centres. Cadaveric allograft was used in World war 2. The benefits of Cadaveric skin allograft application in burns have been proven in many published literatures.[1] There are 2 main types of skin allografts one is cryo preserved allograft and another one is Glycerol preserved skin allograft which was first introduced by the Euro skin bank in 1984. It is preserved in 85% glycerol and stored at +4°C. Actually, Glycerol[4] preservation is simple, cost effective with antibacterial and antiviral properties and suppressed immunologic properties in allograft. Hence Glycerol preserved skin allograft is more commonly used in practice worldwide. The Glycerol preserved skin allograft was applied in our hospital for wound bed preparation in major burns before autograft application and used as temporary skin substitute dressing in major burns. We have analyzed the efficacy of cadaveric allograft application and its outcome in major[2] burns management.[9]

MATERIALS AND METHODS

It is a retrospective study conducted in our hospital Burns and Plastic Surgery Department. It includes all major burns patients treated with cadaveric allograft application from 2018 to 2023. The data were collected from patients records from our dept and medical records department. Retrospective analysis of record Age, Sex, TBSA, Day of allograft, Day of Rejection, Day of Autograft, Pain score (VAS), Graft take and Outcome was done.

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RESULTS

Major burns treated with cadaveric allograft application from 2018 - 2023 were 37. Among them, 18 were males, 19 Females, 22 Adults, 15 Paediatric patients. (Patients < 12yrs.)

Table 1: Allograft application in years. Total No of Burns patients allograft application done.

S.no	Year	No of cases
1.	2018	7
2.	2019	5
3.	2020	5
4.	2021	1
5.	2022	6
6.	2023	13

Sex Distribution

Male – 18;
Female - 19

Age Group

Less than 12 years – 15
13 to 40 years - 19
More than 41 years – 3

TBSA of the Patients – Used Cadaveric Grafts

Less than 40% - 8
41-60% - 26
More than 61% - 3

Allograft Application

Allograft
Day of application of allograft varies from Day 3 to Day 53
67.5% (25pts) applied in < 30 days
32.5% (12pts) applied in >30 days.
We have done early excision[7] and allograft application in 4 patients had early recovery.

Rejection

Cadaveric skin allograft rejection started from Day 8, >90% Rejection[5] occurred in 84% (31 pts) within 3 weeks.
16% (6 pts) were discharged without further autograft application.

Autograft Acceptance

After wound bed preparation with cadaveric allograft application as a temporary dressing, autograft acceptance was good without Microbial colonisation in 87% (32 pts), 13% (5 pts) needed further autograft application. Even though wound culture showed varying organisms before allograft application we have noticed no colonisation[6] after wound debridement and allograft application.

Hospital Stay

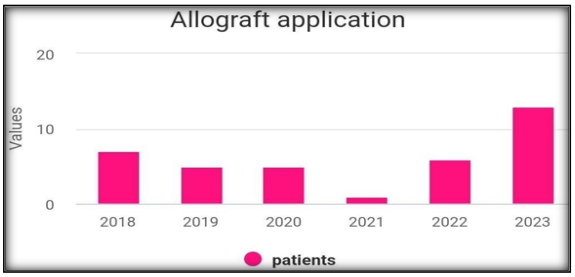
Major burns patients who underwent cadaveric allograft application were discharged in less than 30 days in 15 pts (54%) and 13 patients were discharged after 30days (46%).

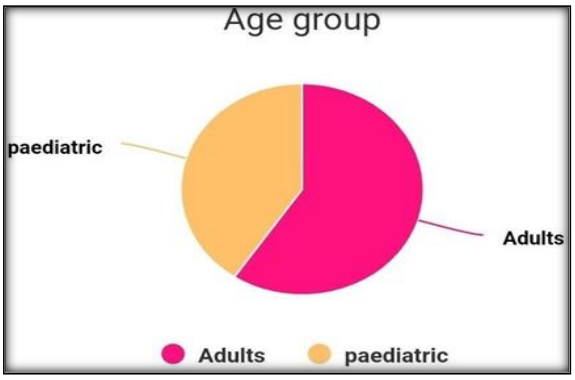
Pain Score

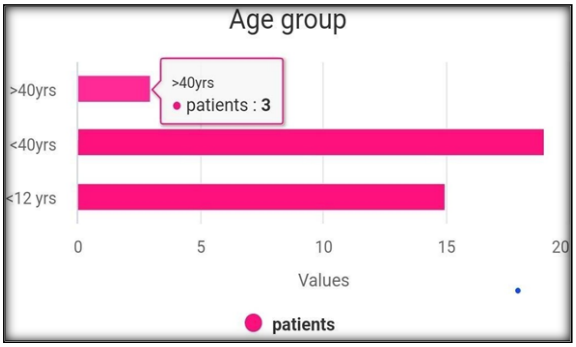
Pain assessment done post operatively by VAS after allograft and autograft application shows pain score of 2-3 after allograft application and 4-5 after autograft application indicates increased pain after auto graft application may be due to donor site pain.

Mortality

Out of 37 patients 28 patient were discharged (76%), Death in 9 patients (24%)







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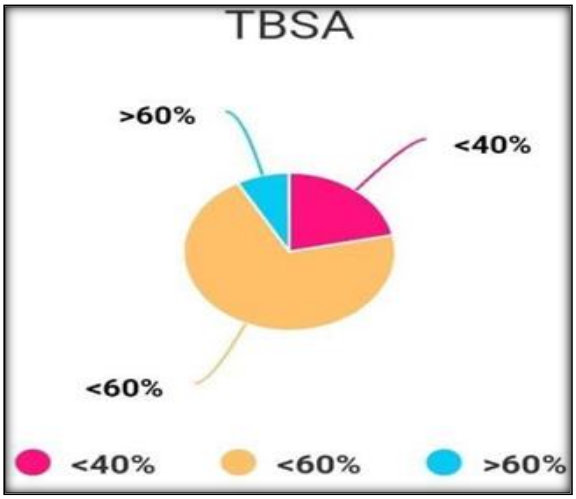

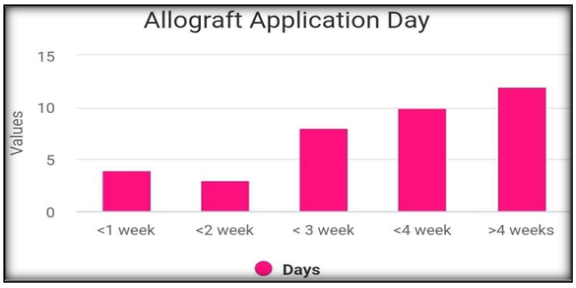

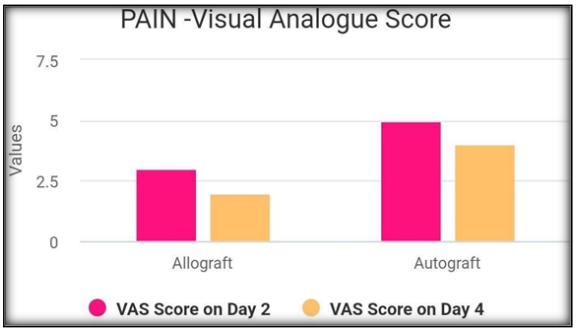

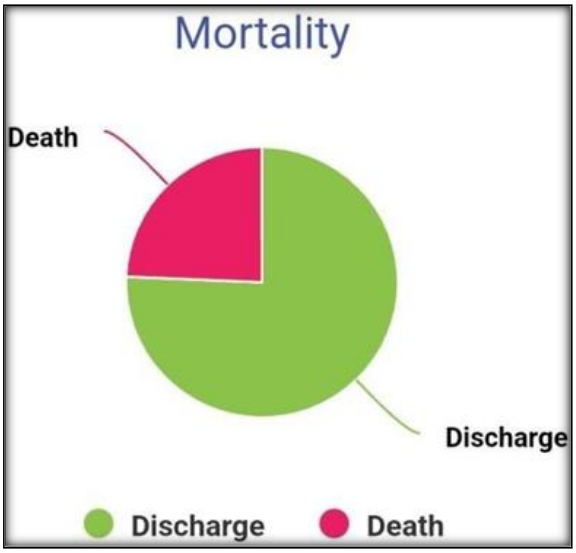

DISCUSSION

Skin is the largest organ of the body which acts as a protective barrier to the environment. Skin damage by thermal burns may cause systemic physiological derangement by loss of heat, body fluids, electrolytes and proteins can lead to hypovolemic shock and suppression of immune system.[6] This occurs in addition to pain, physical emotional and mental stress. Hence reestablishment of skin barrier at the earliest to normalize the patients physiological state. For this we need an ideal burn dressing which gives proper protection, pain relief, proteolytic effect, and healing promotion. Cadaveric skin allograft[1] application contains many ideal dressing characteristics as skin substitute[8] dressing, avoid water loss, good adherence to wound bed anti bacterial characteristics, easy application, low antigenicity, long shelf life and less pain.

CONCLUSION

With the availability of skin bank, cadaveric skin allograft application (glycerol preserved) can be used as a biological skin substitute[8] in major burns as a temporary[9] dressing and for wound bed preparation before auto graft application. The selective usage of cadaveric allograft in our burn Centre definitely beneficial in management of major burns in promoting the wound healing[3] and decreasing the hospital stay, morbidity and mortality. Although it

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has a potential disadvantage of rejection Cadaveric skin allograft remains the work horse in major[2] burn wound management.

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