Predicting Allograft Requirement in the Management of Patients with Major Burn Injuries

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Introduction

- Early debridement and coverage of burn wounds saves lives.
- Allograft is the ‘gold-standard’ for temporary coverage of acute burns.

The benefits of allograft include:

- Physiological closure of the debrided burn wound.
- Avoidance of creating additional wounds in the unwell patient.
- Added certainty that the burn wound is adequately debrided before using valuable autograft.

In New Zealand our allograft is stored by the New Zealand Blood service:

- Approximately 50,000cm² are available immediately.
- If need exceeds 25,000cm² an overseas order is placed to the USA.
- Orders can take up to 5 days to arrive.

Predicting allograft requirement is challenging. The only published predictive model1 is based principally on the ‘sandwich grafting’ technique.

Aim

To produce a guide for the calculation of allograft ordering in acute burn care suitable for the model of care at the National Burn Centre

Method

- Included all adults admitted to the National Burn Centre of New Zealand with burn injuries on whom allograft was used as a temporary wound coverage.
- Data sources included clinical records, electronic records, tissue bank records.

Demographics

- 46 patients… 14 (30%) female
- mean = 37 years… 16–76 years
- mean 44% TBSA… 0.5%–80% TBSA
- 15% mortality

Results

- TBSA of allograft recipients compared to all patients admitted with burn injuries
- 1017 patients admitted with burns 2006–2011:
  - 55% of patients with burn injuries over 30% TBSA used allograft.
  - 13% of patients with burn injuries under 30% TBSA used allograft.
- A logarithmic relationship exists between TBSA (%) burn and total allograft requirement (cm²).
  - Significant variations in the amount of allograft used exist. These most likely reflect rationale behind allograft use.
  - In our unit allograft is:
    - Used for deep and full-thickness burns.
    - Only used in a ‘sandwich-technique’ in 6% of operations.
    - The ‘dressing-of-choice’ for temporary wound cover in 74% of patients.
    - Usually meshed.

Rationale for using allograft

- 40% of all allograft used is used in the 1st week.
- Amount used decreases rapidly after this.

Conclusions

- Allograft is used in the care of the majority of patients with >30% TBSA burns.
- Variables in the amount of allograft needed include surgical technique and the rationale for allograft usage.

- In our unit and with our practice we need (on average)
  - in the first week… 0.62cm² / cm² of burn
  - or, 1,111 x TBSA (%) if height & weight unknown
  - 0.9cm² / cm² of burn for the duration

References

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