607 Use of Autologous Skin Cell Suspension (ASCS) for Full-thickness Burn Injuries Reduces Autograft Procedures

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Introduction: Pediatric burn patients and patients with large TBSA injuries are vulnerable to morbidity and mortality, requiring multiple autograft (AG) procedures to obtain definitive closure due to limited donor site availability. The primary objective of this study was to understand the impact of ASCS, as an AG-sparing technology, on the number of AG procedures required to achieve definitive closure of full-thickness (FT) acute thermal burns.

Methods: Retrospective analyses of real-world data were conducted, evaluating clinical outcomes of ASCS-treated patients in prospective, uncontrolled observational studies compared to control data from patients in the National Burn Repository version 8.0 (NBR) who had conventional AG (SOC). The pediatric population consisted of patients < 18 years of age, inclusive of any size TBSA, and the adult cohort included patients ≥ 18 years of age with >50% TBSA injury. Propensity score stratification was used to reduce bias attributable to potential differences in age, sex, %TBSA, and Baux scores between nonrandomized cohorts. Clinical outcomes evaluated included number of AG treatments, length of stay (LOS), healing, and mortality. Additional adverse events were evaluated and compared to historical SOC data sets.

Results: The median number of AG procedures for pediatric patients treated with ASCS and control NBR cohorts was 1.0 (1.0-5.0) and 2.0 (1.0-20.0), respectively. For adult patients, the ASCS-treated and NBR cohorts had medians of 2.0 (1.0-6.0) and 5.0 (1.0-32.0) treatments, respectively. Overall, ASCS lead to approximately 60% fewer mean AG procedures for both populations. By week 8, re-epithelialization was observed in 91.8% and 90.6% of wounds in the pediatric and adult ASCS-treated cohorts. Median LOS for both cohorts were not different between the treatment groups. No significant differences were observed for mortality between cohorts and no adverse events attributed to ASCS were reported.

Conclusions: ASCS treatment reduced the number of AG procedures needed to achieve closure, benefiting patients and offering burn centers reduced complexity and cost in the patient care pathway. While LOS was not significantly reduced in this study as seen in other reports, this finding may be confounded due to potential differences in the patient cohorts relative comorbidities and polytrauma, as well as variability in clinical site inpatient/outpatient management strategies for OT/PT.

608 Utilization of Phase-Based Guidelines For Patient Care After Application of Cultured Epithelial Autograft

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Introduction: Cultured epithelial autografts (CEA) have been clinically utilized since 1981 & can be a lifesaving procedure in patients with extensive full thickness burns. CEA is more susceptible to bacterial contamination & complete graft loss than traditional split-thickness autografts, yet no standard of practice exists for the postoperative care of these grafts to minimize infection & maximize graft take.

Prior to 2019, care of CEA patients at our institution was not standardized & instead varied upon the attending surgeon's practice. With the input of interdisciplinary team members, CEA patient care was standardized via phase-based guidelines (PBGs), leading to improved team communication & improved patient outcomes.

Methods: PBGs were created via interdisciplinary collaboration among surgeons, APCs, nursing staff, PT/OT, & psychosocial providers. Team members agreed upon 3 facets of patient care: Wound Care/Airing Out, Restrictions/Visitors, & Burn Therapy (Figure 1). As wounds progressed postoperatively, patient phases were advanced, liberalizing them from rigorous infection-prevention techniques to strict unit standards for non-CEA burn patients.

In 2019, the utilization of patient-specific CEA care plans ceased in favor of standardized PBGs. A retrospective chart review was conducted on all patients from 2018-2021 who received CEA & survived their injuries. Some patients underwent a single CEA application while others underwent multiple operations. CEA graft take was assessed on all wounds from each surgery.

Results: CEA was rarely used at our institution. Beginning in 2018, seven patients received CEA & survived their injuries, ranging in age from 4-59 yrs (mean 24) & %TBSA from 38-80 (mean 53) (Table 1). Implementation of PBGs correlated with subjective improvement in team communication & increased mean percentages of CEA graft take from < 35% to >75%.

Conclusions: PBGs have standardized care for our CEA patients, eliminated communication errors among team members, & increased CEA graft take. Further research is needed to determine efficacy in decreasing infection, antibiotic use, hospital stay length, & mortality in these patients.