91 Comparison of a Polylactic Acid Skin Substitute to Porcine Xenograft for Pediatric Partial Thickness Burns

Kaylyn B. Pogson, MA, Lori Chrisco, RN, MSN, Rabia Nizamani, MD, Felicia Williams, MD, Booker King, MD

University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, North Carolina; North Carolina Jaycee Burn Center, Chapel Hill, North Carolina; UNC Jaycee Burn Center, Chapel Hill, North Carolina; UNC Jaycee Burn Center, Chapel Hill, North Carolina; UNC Jaycee Burn Center, Chapel Hill, North Carolina

Introduction: In August of 2020, our institution transitioned from porcine xenograft to a polylactic acid skin substitute for the management of pediatric partial thickness burns. This change in treatment was due to the discontinuation of porcine xenograft by the primary supplier to the United States. We sought to make a length of stay (LOS), postoperative pain score, postoperative dressing change, and cost analysis of the polylactic acid skin substitute as compared to porcine xenograft for the treatment of pediatric burns.

Methods: Patients were identified using an institutional Burn Center registry and linked to clinical and administrative data. All pediatric patients admitted between January 1st, 2019 and March 31st, 2021 who sustained partial thickness burns were eligible for inclusion. LOS, burn etiology, total burn surface area (TBSA), postoperative pain scores, postoperative dressing changes, complications, infections, and hospital cost were evaluated.

Results: A total of 259 patients were identified, 47 of whom received the polylactic acid skin substitute and 212 of whom received xenograft. Average age for polylactic acid skin substitute patients was 5.4 years with 51.1% male, average age for xenograft patients was 4.6 years with 58.5% male. Average LOS for polylactic acid skin substitute patients was 3.4 days and 3.2 days for xenograft patients ($p = 0.45$). Etiology of burns was 83.0% scald and 10.6% flame for polylactic acid skin substitute patients and 80.2% scald and 9.40% flame for xenograft patients ($p = 0.66$ and $p = 0.71$, respectively). Polylactic acid skin substitute patients had an average TBSA of 5.3% and xenograft patients an average TBSA of 4.3% ($p = 0.11$). Postoperative pain scores on postoperative day (POD) 1 were 1.1 for polylactic acid skin substitute and 1.2 for xenograft ($p = 0.13$). Average number of inpatient postoperative dressing changes was equivalent between the polylactic acid skin substitute and xenograft ($p = 0.62$), while average day of first postoperative dressing change was POD 10.9 for the polylactic acid skin substitute and POD 9.9 for xenograft ($p = 0.15$). Neither group had postoperative infections, though xenograft had a complication rate of 1% with 2 patients while the polylactic acid skin substitute had 0%. Polylactic acid skin substitute patients had an average hospital cost of $28,415 and xenograft patients an average of $27,935 ($p = 0.80$).

Conclusions: A polylactic acid skin substitute is equivalent to porcine xenograft in LOS, postoperative pain, postoperative dressing changes, and cost in the setting of similar age, burn etiology, and %TBSA. More analysis with wound healing indices and safety profiles could determine the clinically superior choice.

92 ASCS Treatment Impact on Length of Stay Data and Costs for Patients with Small Burns

Jeffrey E. Carter, MD, Joshua S. Carson, MD, FACS, Lisa Rae, MD, Syed F. Saquib, Burn Medical Director, Lucy Wibbenmeyer, MD, FACS, William L. Hickerson, MD

University Medical Center- New Orleans, New Orleans, Louisiana; Loyola University Medical Center, Oak Park, Illinois; Temple University, Philadelphia, Pennsylvania; Kirk Kerkorian School of Medicine at UNLV, Las Vegas, Nevada; University of Iowa MD, FACS, Iowa City, Iowa; Spectral MD, Avita Medical, AccessPro Med, Memphis, Tennessee

Introduction: Introduction: Small burns with a total body surface area (TBSA) of < 20% account for the large majority (92%) of burn injury hospital admissions. Autologous skin cell suspension (ASCS) is a novel treatment for acute thermal burn injuries – including small burns -- that is associated with significantly lower donor skin requirements than split-thickness skin grafts, the traditional standard of care (SOC). The ASCS treatment indication was recently expanded from adult patients to include pediatric patients. Previously modeled analyses suggested that ASCS use is associated with a lower hospital length of stay (LOS) and costs savings versus SOC. This study evaluated whether real-world data (RWD) corroborate these findings in small burns and in both adult and pediatric populations.

Methods: Methods: Data were collected from January 2019 through August 2020 from 500 facilities in the United States. Adult patients (age ≥ 21) and pediatric patients (< age 21) receiving inpatient burn treatment with ASCS were identified and matched to patients receiving SOC based on sex, age, TBSA < 20%, and comorbidities. Based on typical BEACON model outcomes, LOS was assumed to account for 70% of total costs and was used as a proxy to assess the data. LOS was assumed to cost $7,554 per day. Mean LOS and costs were calculated for the ASCS and SOC adult and pediatric cohorts. The incremental revenue associated with changes in inpatient capacity was also analyzed.

Results: Results: A total of 151 ASCS and 2,243 SOC adult cases and 19 ASCS and 341 SOC pediatric cases were identified. In adults, the SOC cohort had a higher percentage of patients with TBSA < 20% than the ASCS cohort (82.9% vs. 55.0%). For small burns, sixty-three matches were made for each adult cohort, and seven matches were made for each pediatric cohort. For adults, LOS was 18.5 days with ASCS use and 20.6 days with SOC use (difference: 2.1 days [10.2%]). For pediatrics, the ASCS LOS was 18.6 days, and the SOC LOS was 21.4 days (difference: 2.9 days [15.4%]). This difference led to cost savings of $15,587.62 per adult ASCS patient. Total cost savings with ASCS adult patients were $22,268.03 per patient. The reduced LOS with ASCS adult patients resulted in an increased capacity of 2.0 inpatients per bed per year, which was estimated to increase hospital revenue by $83,894 per burn unit bed annually. Pediatric cost results and savings were similar.

Conclusions: Conclusion: This RWD analysis shows that small burn treatment with ASCS is associated with reduced LOS and substantial cost savings compared with SOC in both adult and pediatric populations, supporting the validity of previous model projections. ASCS use may also significantly increase hospital revenue related to increased inpatient capacity.