Treatment of High-voltage Electrical Burn with Autologous Skin Cell Suspension: A Case Report

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10:45 – 11:00 am

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Objective:

Upon completion of the lecture, attendees should be better prepared to:
- Discuss autologous skin cell suspension in electrical injuries

Abstract:

Introduction: Autologous skin cell suspension in large burn injuries has demonstrated reduced length of stay and donor sites; however, prior studies have limited the mechanism of injury. Meanwhile, high-voltage electrical burn injuries which comprise less than 5% of all burn admissions remain challenging and frequently require extensive surgical treatment including fasciotomy, escharotomy, excision, autograft placement, reconstructive flap coverage, or amputation. We present the first case of autologous skin cell suspension application in a high-voltage electrical injury involving a 57-year-old male with a 41% TBSA burn.

Methods: Patient LD presented with trauma and burn injuries following an explosive, high-voltage electrical injury on the second story of a movie set. His primary injuries included a 41% TBSA burn and a small intraparenchymal hemorrhage which required neuromonitoring, subsequent imaging, and neurosurgical consultation. His burn distribution included the abdomen, back, chest, left upper extremity, and bilateral lower extremities.

Results: Patient LD underwent resuscitation per protocol without need for mechanical ventilation, escharotomy, fasciotomy, renal replacement therapy, or vasopressors/inotropes and no evidence of compartment syndrome or myoglobinuria. He was excised and placed in a dermal substitute on hospital day 4. He later underwent epidermal autograft placement and application of autologous skin cell suspension on hospital day 18 which did not include his right foot as there was evidence of conduction injury and bone necrosis. 14 days after surgery his wounds were 95% closed and he was discharged home on hospital 42. His right foot was later treated with split-thickness autografts as an outpatient procedure.

Discussion: While historical controls were unavailable as this was the first patient at a new burn center, National Burn Repository Data demonstrates an average length of stay of 3.13 days/% TBSA. Patient LD's hospital stay, including rehabilitation, was 1.02 days/%TBSA. High-voltage burn injuries remain challenging in burn care. The use of autologous skin cell suspension may serve as a valuable technique to reduce the need for donor sites and reduce length of stay.

Disclosure:	Christopher M. Braxton – No Relevant Financial Relationships to Disclose Shanna Lennard – No Relevant Financial Relationships to Disclose Jeannine O. Ascani – No Relevant Financial Relationships to Disclose Daniel J. Womac – No Relevant Financial Relationships to Disclose Mark W. Stalder – No Relevant Financial Relationships to Disclose Jeffrey E. Carter – Stock: PermeaDerm