Making Assistive Technology and Rehabilitation Engineering a Sure Bet

A Deep Tissue Injury Rat Model for Pressure Ulcer Research

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Abstract:
Pressure ulcer (PU) can initiate in deep muscle closer to bony prominences. The recently emphasized deep tissue injury (DTI) mechanism has received increased attention and several studies reported newly developed DTI animal models. However, concerns exist for the clinical relevance and validity of these models. We propose a rat PU/DTI model which is more clinically relevant by implementing an implant on the bone-tissue interface to simulate the bony prominence as well as including chronic SCI condition. Histological analyses confirmed that the condition of chronic SCI had significant effect on pressure-induced tissue injury in this rat PU model and the including of a simulated bony prominence resulted in significantly greater injury in deep muscle tissue. Further integration of the SCI and the simulated bony prominence would result a rat PU/DTI model which can simulate even more accurately the clinical phenomenon and yield more clinically relevant findings.

Keywords:
Deep tissue injury; Animal model; Spinal cord injury; Histology; Implant;

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