

The use of adipose tissue-derived stem cells within a dermal substitute improves skin regeneration by increasing neoangiogenesis and collagen synthesis

Meruane, Manuel A.

Rojas, Mariana

Marcelain, Katherine

BACKGROUND: Surgical treatment of injuries with loss of skin tissue has improved significantly with the advent of regenerative medicine and tissue bioengineering, and the use of stem cells and dermal substitutes. The success of tissue regeneration depends on optimal local vascularization and the successful integration of the artificial skin. The present study combines the use of autologous adipose-derived stem cells with a commercially available dermal substitute (Integra) for skin regeneration. **METHODS:** Adipose-derived stem cells were isolated from the inguinal region of eight Sprague-Dawley adult rats, seeded onto a piece of dermal substitute for 48 hours, and then implanted into the same rat, followed by comparison of the evolution with a contralateral implant without adipose-derived stem cells. After 1, 2, and 3 weeks of regeneration *in vivo*, implants were removed for histologic evaluation. **RESULTS:** Adipose-derived stem cells adhere properly to the dermal matrix, and autologous tis