Effects of fibrin glue on skin graft adhesion strength in a rodent model.

Authors: Balceniuk M., Wingate N., Curry J., Krein H., Heffelfinger R., Luginbuhl A.

Publication Date: 2015

Abstract:

Objectives: (1) Establish a rodent model for skin grafting with fibrin glue. (2) Examine the effects of fibrin glue on the adhesive strength of split-thickness skin grafts without bolsters. Methods: Three skin grafts were created using a pneumatic microtome on the dorsum of 12 rats. The rats were evenly divided into experimental (n = 6) and control (n = 6) groups. The experimental group received a thin layer of fibrin glue between the graft and wound bed, while the skin grafts in the control group were secured with standard bolstering technique. Adherence strength of the split-thickness skin graft was tested by measurement of force required to sheer the graft from the recipient wound bed. Adhesion strength measurements were taken on postoperative days (POD) 1, 2, and 3. Results: Skin grafts applied with fibrin glue required an average force of 719 g on POD1, 895 g on POD2, and 676 g on POD3. The average force to remove the grafts in the control group was 161 g on POD1, 257 g on POD2, and 267 g on POD3. On each of the 3 PODs, there was a significant difference in adherence strength between the experimental and control groups (P = .036, P = .029, and P = .024). Conclusions: There is a significant difference in the adhesion strength of skin grafts to the wound bed in the early postoperative period of graft healing between the 2 groups. The skin grafting technique using fibrin glue produces greater tissue adherence compared with the traditional bolstering technique.