Objectives

1. Establish a rodent model for skin grafting with fibrin sealant.
2. Examine the effects of fibrin sealant on the adhesive strength of split thickness grafts without bolsters.

Methods

Three skin grafts were created using a pneumatic microtome on the dorsum of twelve rats. The rats were evenly divided into experimental (n=6) and control (n=6) groups. The experimental group received a thin layer of fibrin sealant 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 post-operative days (POD) 1, 2 and 3.

Results

Skin grafts applied with fibrin sealant required an average force of 719g on POD1, 895g on POD2 and 679g on POD3. The average force to remove the grafts in the control group was 162g on POD1, 257g on POD2 and 267g on POD3 (Figure 1). On each of the three post-operative days there was a significant difference in adherence strength between the experimental and control groups (p=0.036, p=0.029, p=0.024).

Conclusion

There is a significant difference in the adhesion strength of skin grafts to the wound bed in the early post-operative period of graft healing between the two groups. Skin grafting technique utilizing fibrin sealant produces greater tissue adherence compared to the traditional bolstering technique.

References