Evaluation of fibrin sealants in cutaneous wound closure.

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Abstract:

Human fibrin sealant (HFS) and bovine fibrin sealant were delivered as preformulated fibrinogen-thrombin mixtures that are light activated. These formulations were evaluated in the healing of incised cutaneous wounds in beagle dogs. Four groups were differentiated by sealant type and study duration with group: BFS for 10 days, HFS for 10 days, BFS for 30 days, and HFS for 30 days. Healing was evaluated by noting incidences of open wounds, laser Doppler perfusion imaging (LDPI), planimetry, breaking strength, and histopathology. In the absence of tension, both sealants tended to hold wound edged together; however, HFS tended to be better than its controls and BFS. Both sealants augmented suture closure, necessitating fewer sutures for wound closure. At 5 and 30 days BFS wounds had larger scar areas than their controls, while scar areas of HFS wounds were smaller than either BFS wounds or controls. Breaking strengths indicated that HFS wounds were stronger than their controls and BFS wounds. Histologically, mild to moderate chronic-active inflammation was observed in wounds receiving either sealants, and this persisted longer in BFS wounds. Overall, HFS had positive qualities, thus showing potential for functional and cosmetic wound closure.