Comparison of tensile strength of fibrin glue and suture in microflap closure.

Authors: Myer CM 4th, Johnson CM, Postma GN, Weinberger PM

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Abstract:

OBJECTIVES/HYPOTHESIS: Suture closure and fibrin glue placement have been advocated as alternatives to healing by secondary intention. The aim of this study was to examine the tensile strength of these microflap closure techniques.

STUDY DESIGN: Basic research.

METHODS: Three pairs of excised bovine true vocal folds underwent microflap creation and closure by either single 6-0 polyglactin suture or fibrin glue. Vocal folds were distracted to failure on a universal testing system. Excised porcine true vocal folds underwent microflap creation and were closed with either single 6-0 polyglactin suture or fibrin glue, or were left without closure. Tensile strength testing was performed with a universal testing system measuring load at 1 mm, 5 mm, and 10 mm of distraction.

RESULTS: The bovine vocal fold model failed after an average extension of 22.6 mm (range, 21.4-23.9 mm) corresponding to 11.61 N (range, 8.04-13.47 N), with no failure of the suture prior to model failure. Fibrin glue did not demonstrate any measureable resistance to tension application. In the porcine vocal fold model, there was a significant difference between the median tensile load of suture closure (2.91 N) and no closure (1.16 N) at 10 mm of distraction (P = .01). There was no significant difference in median load of vocal folds undergoing fibrin glue closure or no closure.

CONCLUSIONS: There is no significant difference in tensile strength of a microflap closed with fibrin glue or not closed. Suture closure of a microflap provides a significantly stronger mechanical closure than no closure. This suggests that use of fibrin glue is of little benefit on the vocal folds.

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