Effect of Fibrin Sealant on Duration of Hospitalization after Multi-level Anterior Cervical Fusion: A Retrospective Matched Pair Analysis

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INTRODUCTION: Post-op hematoma following long anterior cervical procedures can be life-threatening. In order to minimize post-operative bleeding, we recently started using a fibrin sealant in the wound for all long anterior fusions, prior to closing. The purpose of this study was to determine if fibrin sealants can decrease postoperative drain output and hospitalization following multilevel anterior cervical procedures.

METHODS: Inclusion Criteria: Consecutive patients who underwent ≥3-level anterior cervical fusion by 1 surgeon from 5-12/06 with fibrin sealant used in the wound pre–closure, whose discharge timing was only dependent upon their drain output (d/c’d when <20cc/8hrs). Exclusion Criteria: non-degenerative disorders, additional surgery during the same admission, and bleeding diathesis or recent history of anticoagulation therapy. The controls: patients operated without fibrin sealant between 1/04-5/06 by the same surgeon fulfilling the above criteria. We matched 1:1 for age (within 5 years), gender, and number of fusion levels. Independent, experienced spine surgeons uninvolved in the care of the patients assessed: the number of hours it took for the drainage to decrease to <20cc/8 hour shift, the criteria for drain removal, and the duration of hospitalization (nights). The patients were discharged if the drain was removed and there were no medical contraindications for discharge. Those whose hospital stay was prolonged due to reasons unrelated to drain output were excluded. The numbers of patients readmitted within 1 month post-op were compared.

RESULTS: 18 pairs of patients met the criteria. In the study group, the time it took for the drain to have <20cc/8hr shift was an average of 16 hours (range, 8 to 26) vs 27 hours (range, 7 to 43) in the control group (p = 0.0015, paired t-test). 17 stayed for 1 night and only 1 patient for 2 nights (average, 1.1 nights; total, 19 nights) in the study group, while 7 patients stayed for 1 night and 11 patients for 2 nights (average, 1.6 nights; total, 29 nights) in the control group (p = 0.0009, Fisher’s exact test; Fig. 1). The fibrin sealant costs $192/2cc and $440/5cc, while 1 hospital day costs approximately $1,000. Even if the 5cc were used for all 18 patients, this represents a savings of over $2000. Multiplied by the number of long anterior cervical cases done in 1 year, this might represent a significant savings. One patient in the study group and two in the control group were readmitted within 4 days because of swallowing difficulty, dyspnea, or pneumonia (p=1.000, Fisher’s exact test). There were no adverse reactions to the fibrin sealant.
CONCLUSIONS: Application of fibrin sealant at the end of multilevel anterior cervical fusion appears to significantly decrease postoperative drain output and duration of hospital stay, resulting in cost savings.

Fig. 1. The duration of hospitalization (p =0.0009)