A comparison of the application of fibrin glue and adhesive film for repair of anastomotic leaks in the rat.

Authors: Ayhan B., Erikoglu M., Tavli S.S., Toy H.

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Abstract:

Background: Anastomotic leaks constitute one of the most serious intraoperative complications and although many studies have been devoted to finding a solution for this problem, none of them has yet been able offer a decisive, successful method. In this study, the ability of fibrin glue and adhesive film to repair anastomotic leaks in an experimental model was compared. Materials and methods: The sample comprised four groups of seven rats: Group 1 (Control): the distal colon was transected and anastomosis was performed. Group 2 (Primary repair): incomplete anastomosis produced a leak that was closed by primary repair on day 3. Group 3 (Fibrin glue): incomplete anastomosis produced a leak that was closed by primary repair and fibrin glue applied on day 3. Group 4 (Adhesive film): incomplete anastomosis produced a leak that was closed by primary repair and adhesive film was applied on day 3. The rats were sacrificed on day 6 following anastomosis. Anastomotic blast compressions were measured and fibroblast activation, inflammation, neovascularization and levels of collagen were evaluated. Results: The results from Group 4 showed that blast compression values were high and statistically significantly increased over control values ($p < 0.05$). Inflammation in Group 2 was significantly higher than the other groups ($p < 0.05$). No significant differences were detected in the comparison of the groups regarding the other scoring criteria ($p > 0.05$). Conclusion: Adhesive film is more effective in reducing anastomotic leakage than fibrin glue.