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

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Abstract:

Introduction: Anastomotic leaks constitute one of the most serious intraoperative complications and although many studies have been devoted to the solution of this problem, none of them has yet been able offer a decisive, successful method. Objectives: In this study, fibrin glue and adhesive film were used to repair anastomotic leaks in an experimental model. The strength of the repairs was tested by blast compression followed by a histopathological evaluation. Materiel/Patients and Methods: The sample comprised 4 groups of 7 rats. Group 1: Control group: In this group the distal colon was transected and anastomosis was performed. Group 2: Primary repair group: In this group incomplete anastomosis produced a leak which was closed by primary repair on day 3. Group 3: Fibrin glue group: In this group incomplete anastomosis produced a leak which was closed by primary repair and fibrin glue applied on day 3. Group 4: Adhesive film group: In this group incomplete anastomosis produced a leak which 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 significant ($p < 0.05$). 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: We concluded that the application of adhesive film in the repair of anastomotic leaks is more effective in reducing leakage than the use of fibrin glue.