Effect of fibrin sealant on the healing colonic anastomosis in the rat.

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Abstract:

Fibrin adhesives have been advocated as a protective seal in colonic anastomosis to prevent leakage. In order to assess the effect of fibrin glue sealing we compared the healing of sutured colonic anastomosis in the rat (group 1) with the addition of human-derived fibrin sealant (group 2). As a control for a possible reaction to foreign protein, in group 3 the sutured anastomosis was sealed with specially prepared rat fibrin adhesive. On days 2, 4 and 7, ten animals in each group were killed. Adhesion formation was scored and the in situ bursting pressure was measured. The collagen concentration and degradation were estimated by measuring hydroxyproline. Adhesion formation was significantly increased in groups 2 and 3 compared with the control group. On days 2 and 7 the bursting pressure was not different between the groups. On day 4 the bursting pressure in groups 2 and 3 was significantly lower than in group 1 ($P<0.001$). These findings correspond with the results of collagen measurements. On day 4 the concentration of hydroxyproline was significantly reduced in groups 2 and 3. Histological examination showed infiltration of neutrophilic granulocytes into the sealant on days 2 and 4; on day 7 the sealant had vanished. From these results it is concluded that fibrin sealing of the colonic anastomosis in the rat does not improve healing, as demonstrated by bursting pressure and hydroxyproline concentration. On the contrary, it seems to have a negative influence.