

Healing of colon anastomoses covered with fibrin glue after immediate postoperative intraperitoneal administration of 5-fluorouracil.

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Abstract:

PURPOSE: The aim of this experimental study was to investigate whether covering the colonic anastomoses with fibrin glue can protect the colonic healing from the adverse effects of 5-fluorouracil (5-FU), when it is injected intraperitoneally immediately after colon resection.

METHODS: Sixty-four rats were randomized to one of four groups. After resection of a 1-cm segment of the transverse colon, an end-to-end sutured anastomosis was performed. Rats of the control group and the fibrin glue group were injected with 6 ml of solution 0.9 percent NaCl intraperitoneally. Rats in the 5-FU and the 5-FU + fibrin glue groups received 5-FU intraperitoneally. The colonic anastomoses of the rats in the fibrin glue group and in the 5-FU + fibrin glue group were covered with fibrin glue. All rats were killed on the 8th postoperative day and the anastomoses were examined macroscopically. The bursting pressure measurements were recorded and the anastomoses were graded histologically.

RESULTS: The leakage rate of the anastomoses was significantly higher in the rats of the 5-FU group than in those of the fibrin glue group and those of the 5-FU + fibrin glue group (37.5 percent vs. 0 percent, $P = 0.020$). The adhesion formation score was significantly higher in rats of the 5-FU group than in the other groups. Bursting pressures were also significantly lower in the 5-FU group than in the other groups ($P < 0.001$). Rats in the 5-FU + fibrin glue group developed significantly

more marked neoangiogenesis than rats in the other groups. Rats in the 5-FU + fibrin glue group also presented significantly more fibroblast activity than those in the 5-FU group. ($P = 0.004$)

CONCLUSIONS: The immediate postoperative, intraperitoneal administration of 5-FU inhibited wound healing. However, when the colonic anastomoses were covered with fibrin glue, the injection of 5-FU had no adverse effects on the healing of the anastomoses.