Sutureless small bowel anastomoses: experimental study in pigs.

Authors: Zilling TL, Jansson O, Walther BS, Ottosson A

Publication Date: 1999

Abstract:

OBJECTIVE: To evaluate a new technique for experimental anastomosis with fibrin glue, and to compare the results with those of stapled and one-layer sutured anastomosis.

DESIGN: Open laboratory study.

SETTING: Teaching hospital, Sweden.

ANIMALS: Ten Swedish domestic pigs.

INTERVENTIONS: Each pig had three anastomoses made in the small bowel, one by each technique. The pigs were killed on the 4th postoperative day.

MAIN OUTCOME MEASURES: Blood flow, collagen concentration, anastomotic index, breaking strength, thickness of bowel wall, and histological appearance.

RESULTS: Two pigs died postoperatively, leaving 8 for analysis. The blood flow at each anastomotic site studied by the microsphere technique was similar irrespective of the type of anastomosis ($p = 0.3$), as was anastomotic collagen concentration ($p = 0.09$). The anastomotic index, however, was significantly higher in the stapled than in the glued or sutured ones ($p = 0.03$). The glued anastomosis was the weakest, being only one fifth the strength of the stapled and one

third the strength of the sutured anastomosis. There was no sign of rejection of the glue (of human origin) on histological examination. Glued and stapled anastomoses showed signs of mild inflammation, which did not reach the intensity of that around the sutured anastomoses.

CONCLUSION: It is possible to make a sutureless anastomosis that does not leak with a modified stapler using fibrin glue instead of staples, but the anastomosis has considerably lower breaking strength than either stapled or sutured anastomoses.