

Gastrointestinal sutureless anastomosis in pigs using absorbable intraluminal stents, stent placement devices, and fibrin glue - A summary.

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Abstract:

Introduction and methodology: To develop a practical gastrointestinal sutureless anastomosis technique, 164 end-to-end and end-to-side anastomoses were performed on the small intestine (SI), large intestine (LI), rectum, esophagus and gallbladder in 109 female Landrace pigs weighing 25 kg and 35 kg. There were 116 fibrin glue (FG) and 48 sutured anastomoses. The end-to-end SI and LI anastomoses were divided into five groups: sliding absorbable intraluminal nontoxic stent (SAINT); SAINT placement device (SAINT-PD); nonsliding SAINT (nST); sutureless stapler (SS); and sutured controls. The SAINT had a sucrose base, with some having reinforcing fibers. Results: No deaths from dehiscence occurred in any group except one FG-cylinder attempt in the colon (technique abandoned). Statistical analysis of gross pathology indices showed no significant group differences. However, trends favored the SAINT in many indices, including grade-0 intraluminal tissue ridge formation (70.8% SI, 84.4% LI) and grade-0 adhesion rates (45.8% SI, 73.1% LI). Histologic examination showed fewer giant cells, less inflammation, less scar tissue formation and faster healing in the SAINT and nST anastomoses than controls. Follow-up of 300-540 days demonstrated no signs of necrosis or stenosis in the SAINT anastomoses. The nST had excellent results; however, it seems impractical in SI anastomoses and unsuitable for LI. Conclusions: The SAINT-PD has potential for all gastrointestinal sites, but needs larger experimental trials. The SS technique is impractical and had high tissue ridge formation and adhesion rates. These preliminary trials suggest the simplicity, versatility and safety of the SAINT technique; however, the small groups limit result

interpretation. The results present a starting point for sutureless FG gastrointestinal anastomosis, and future experimental evaluation with more extensive statistical analyses in larger studies are needed.