

Sliding, absorbable, reinforced ring and an axially driven stent placement device for sutureless fibrin glue gastrointestinal anastomosis.

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Publication Date: 1996

Abstract:

Reduced blood flow of from 43 to 71% has been reported in sutured and stapled anastomoses. The sutureless sliding, absorbable, intraluminal, nontoxic stent (SAINT)-fibrin glue anastomotic method, which clamps the stump margins between 2 dissolving surfaces, includes only two stages of temporary compression (about 6 min total using 4 IU/mL thrombin) during the glue application in order to promote vascularization. A SAINT placement device (SAINT-PD) was introduced to facilitate low rectal anastomoses. Morphohistologic results from limited trials using fibrin glue with an untied sutureless stapler technique and a prototype non-gear-driven SAINT-PD, neither having the two dissolvable clamping surfaces of the SAINT, showed a 29 and 25% incidence of intraluminal tissue ridges, respectively. Since these tissue ridges could result in subclinical dilatation or frank stenosis, and the more extensive SAINT trials had an 8% incidence of tissue ridges, redesign of the SAINT-PD was undertaken. Consequently, to improve the anastomotic quality of the SAINT-PD, the sliding absorbable reinforced ring (sucrose base) acting as the second dissolvable surface for the SAINT-PD and a new axially controlled geared SAINT-PD design are described.