Sutured or fibrin-glued laparoscopic choledochojejunostomy.

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Abstract:

Minimally invasive techniques for choledochojejunostomy offer theoretical advantages for palliating unresectable periampullary neoplasms. Fibrin glue, a biologic adhesive containing concentrated fibrinogen, may obviate suturing and promote healing without stricture formation. We examined the technical ability to perform laparoscopic choledochojejunostomy (LCJ) and the applicability of thrombin-activated fibrin glue in an animal model of biliary obstruction. Domestic pigs underwent laparoscopic cholecystectomy and ligation of the distal bile duct. Three days later, a side-to-side LCJ was performed by intracorporeal sutured anastomosis (n = 7) or using four stay sutures and homologous fibrin glue (n = 7). Control animals underwent a similar bypass via open laparotomy (n = 7). The postoperative interval to ambulation and oral intake was recorded, and serial serum liver enzymes were measured. The animals were sacrificed at 6 weeks, and tensile strength of the anastomoses was assessed by tensometry. Liver function tests returned to normal values within 7 days following all methods of choledochojejunostomy. In the fibrin glue group, three anastomotic leaks (43%) occurred in the 1st postoperative week. At 6 weeks, all other anastomoses were intact and patent by cholangiogram, but there was moderate stenosis of two open and one fibrin-glue anastomosis. The sutured LCJ, while taking approximately 1 h longer to perform ($P < 0.05$), resulted in similar efficacy and more rapid recovery ($P < 0.05$) than open biliary-enteric bypass. Fibrin-glued LCJ was performed rapidly, but had less tensile strength ($P < 0.05$) and often leaked in the early post-operative interval. We conclude that while there may be a role for laser-activated solders for primary anastomosis, thrombin-activated fibrinogen cannot be advocated as the primary means of creating biliary anastomoses. Using intracorporeal suturing techniques, laparoscopic

choledochojejunostomy may be performed safely.