

EFFICACY OF POWERED VS MANUAL SURGICAL STAPLERS IN PREVENTING CLINICALLY RELEVANT PANCREATIC FISTULA AFTER DISTAL PANCREATECTOMY

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Background : Minimally invasive surgery, including laparoscopy and robot-assisted approaches, is increasingly used in distal pancreatectomy, along with staplers for pancreas stump closure. Various staplers with different closed heights, lengths, and angles are now available. Powered staplers, one of these staplers, provide secure closure by operating at consistent speed and force. This study is aimed to evaluate the efficacy of powered staplers in preventing clinically relevant pancreatic fistula (CR-POPF) after distal pancreatectomy.

Methods : Patients who underwent distal pancreatectomy with endo-triple staplers at Samsung Medical Center between 2007 and 2022 were included. Cases were categorized into manual and powered stapler groups and further analyzed based on stapler cartridge closed heights (CH).

Results : Among 554 patients (43.9% males, 56.1% females), the most common diagnosis were pancreatic ductal adenocarcinoma (22.7%), PNET (18.4%), and SPN/IPMN (15.2% each). CR-POPF was higher with manual staplers in Group B (CH 1.5 mm and 1.8 mm) but showed no difference in Groups A (CH 1.0 mm) and C (CH 2.0 mm and 2.3 mm). Risk factors for CR-POPF included high BMI, not use of Neoveil, and pancreas thickness (cut-off: 1.6 cm). In high-risk patients (n=447), who has one or more risk factor, powered staplers significantly reduced CR-POPF in Group B compared to manual staplers.

Conclusions : Pancreas thickness is the strongest predictor of CR-POPF. Powered staplers with closed heights of 1.5 mm and 1.8 mm reduce CR-POPF risk, particularly in high-risk cases.

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