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Arterial Reinforcement Following Pancreatoduodenectomy: The Solution To Prevent Delayed Hemorrhage Caused By Postoperative Pancreatic Fistula

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Background : Delayed hemorrhage (DH) is a rare and yet well-known fatal complication associated with postoperative pancreatic fistula (POPF) in pancreatoduodenectomy (PD). The study aimed to investigate whether arterial reinforcement (AR) using polyglycolic acid sheets (PAS) followed by fibrin sealant (FS) to the hepatic artery could prevent DH in the setting of POPF after PD.

Methods : A total of 345 patients underwent open PD for periampullary tumors from March 2011 to March 2022 in The Catholic University of Korea Incheon St. Mary's Hospital. From March 2011 to March 2018, 225 patients underwent PD, and AR was not performed (non-AR group). From April 2018 to May 2022, 120 patients underwent PD, and AR was performed (AR group). AR was achieved by wrapping the proper hepatic artery all the way down to the celiac artery with PAS, followed by coating with FS. The demographic profiles and various outcomes, including DH of these two groups, were compared and analyzed retrospectively.

Results : In the non-AR group, 48 (21.3%) and 12 (5.3%) patients had grade B and C POPF, respectively. In the AR group, 26 (21.7%) and 4 (3.3%) patients had grade B and C POPF, respectively. The incidence of POPF was not statistically significant ($p = 0.702$) between the groups. Among the patients with grade B or C POPF, DH occurred in 14 (23.3%) patients in the non-AR group and only one patient in the AR group ($p = 0.016$). Of the 15 patients with DH, four (26.7%) patients died.

Conclusions : AR using PAS and FS is effective in preventing DH in the setting of POPF.

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