

# Safety Evaluation Of Early Drain Removal Following Pancreatic Resections: Meta-analysis And Single-center Retrospective Cohort Study

Kai CHEN<sup>1</sup>, Xiaodong TIAN\*<sup>1</sup>, Yinmo YANG<sup>1</sup>

<sup>1</sup>General Surgery, Peking University First Hospital, CHINA

**Background :** No consensus was reached with regard to whether to place prophylactic intraperitoneal drainage, when to remove drainages after pancreatic resections. The meta-analysis and single-center retrospective cohort study were designed to explore the safety of early drain removal (EDR).

**Methods :** For meta-analysis, the stratified analyses of pancreaticoduodenectomy (PD) and distal pancreatectomy (DP), and subgroup analyses of RCTs and NO RCTs were conducted to investigate the effect of EDR on postoperative outcomes. We also conducted the meta-analyses for the studies with the same inclusion criteria and drain removal criteria separately. For single-center study, a total of 112 patients undergoing PD with drain fluid amylase (DFA) on POD 1 and 3 ( $\leq 5000$ ) were divided into EDR and late drain removal (LDR). Propensity Score Matching (PSM) was used. We compared postoperative outcomes between two groups and explore the risk factors of total complications using univariate and multiple logistic regression analyses.

**Results :** The meta-analysis of RCTs showed that there was no statistical difference in Grade B/C POPF (postoperative pancreatic fistula) rate (RR = 0.47, 95% CI: 0.06 – 3.46; P = 0.46). However, the meta-analysis of No RCTs and all studies indicated EDR group had lower Grade B/C POPF rate (RR = 0.21, 95% CI: 0.15 – 0.29; P < 0.00001; and RR = 0.23, 95% CI: 0.15 – 0.37; P < 0.00001). In the single-center study, no statistical differences were found in primary outcomes, including Grade B/C POPF (Original cohort: 5.71% vs. 3.90%; P = 1.000; PSM cohort: 3.33% vs. 6.67%; P = 1.000), and total complications (Original cohort: 17.14% vs. 32.47%; P = 0.093; PSM cohort: 13.33% vs. 33.33%; P = 0.067). For both meta-analysis and single-center study, EDR was associated with shorter in-hospital stay.

**Conclusions :** The meta-analysis demonstrates EDR is safe for patients following pancreatic resections, and single-center study demonstrates EDR on POD 3 is safe for patients following PD with low risk of POPF.

Corresponding Author : Xiaodong TIAN (tianxiaodong@pkufh.com)