



Introduction

Post-ERCP pancreatitis (PEP) – acute pancreatitis due to endoscopic cholangiopancreatography (ERCP) – is one of the most common and feared complications of ERCP.

PEP can range from self-limited pain to local complications to systemic inflammation with multiorgan failure and death. It is estimated to account for \$150 million annually in healthcare expenditure in the U.S.

Elucidating mechanisms, risk factors, and effective prophylactic measures continues to enhance the safety of ERCPs.

Table 1. Examples of Known PEP Factors in Current Literature.

Increases	Decreases
Prior PEP	Chronic pancreatitis
Suspected sphincter of Oddi dysfunction	PD stent
Female gender	PR indomethacin
Younger age	IV hydration
Difficult cannulation	?Wire-guided cannulation
PD cannulation	
PD contrast injection	
Needle knife	

Pancreatic duct (PD) cannulation is sometimes intentional for diagnostic or therapeutic purposes. Other times biliary cannulation is the primary goal and PD cannulation is inadvertent.

PD cannulation in general is a known risk factor for PEP but it is unknown if the intent of cannulation affects the risk.

Our study investigates the risk of PEP in unintended PD cannulation.

Methods

Study type: Retrospective Cohort

Inclusion criteria:

- Single endoscopist at tertiary referral center (UMMC)
- From Dec 2013 to Jan 2021
- Native papilla (no prior sphincterotomy)

Data acquisition:

- Chart review of ERCP report with results, hospitalizations, clinic visits, and phone calls from before/after, including via health information exchange

PEP definition: at least 2 of:

- Pain consistent with acute pancreatitis
- Amylase or lipase >3 times the normal limit
- Characteristic imaging findings

Statistical analysis:

- Multiple logistic regression
- Odds ratios calculated via Fisher's exact test

Results

823 ERCPs included with 31 (3.77%) complicated by PEP

- 8.4% PEP in unintended PD cannulation
- 3.2% PEP in intentional PD cannulation
- 1.5% PEP in no PD cannulation
- Fisher's exact p-value < 0.00005
- Using multiple logistic regression, PEP positively correlated with unintended PD cannulation (p-value < 0.005) but not intended PD cannulation.
- Needle knife sphincterotomy correlated with PEP (p-value = 0.017) when controlled for age and gender.
- Age negatively correlated with PEP in unintended PD cannulation (p-value = 0.027).
- PEP rates were not affected by contrast injection into the PD compared with just guidewire cannulation without contrast.
- Gender, trainee involvement, PD stent placement, and indomethacin were not risk factors.

Discussion

Patients who undergo unintentional PD cannulation are at higher risk for PEP development, while intentional are not.

- May indicate more difficult/traumatic biliary cannulation
- Intentional PD cannulation usually for acute or chronic pancreatic pathology
 - Lower enzyme output from fibrosed pancreas
 - Diagnostically indistinguishable from preexisting acute pancreatic pathology
 - Less likely to seek care for mild increases in familiar symptoms

Further studies are needed to determine whether patients with unintended PD cannulation could benefit from more aggressive PEP prophylaxis or monitoring after ERCP.

Patients who are younger or undergo needle knife sphincterotomy are at higher risk for PEP.

- Consistent with existing studies

Guidewire use or contrast injection did not affect PEP rate.

- Guidewire studies have mixed findings
- Not consistent with contrast studies

Gender, PD stent placement, indomethacin use, and trainee involvement were not significant risk factors.

- Underpowered to detect smaller effects

Conclusions

Patients who undergo unintentional PD cannulation are at higher risk for PEP development, while intentional are not.

Future PEP studies should stratify patients by unintentional versus intentional PD cannulation as they may respond differently to monitoring, prophylaxis, or treatment.

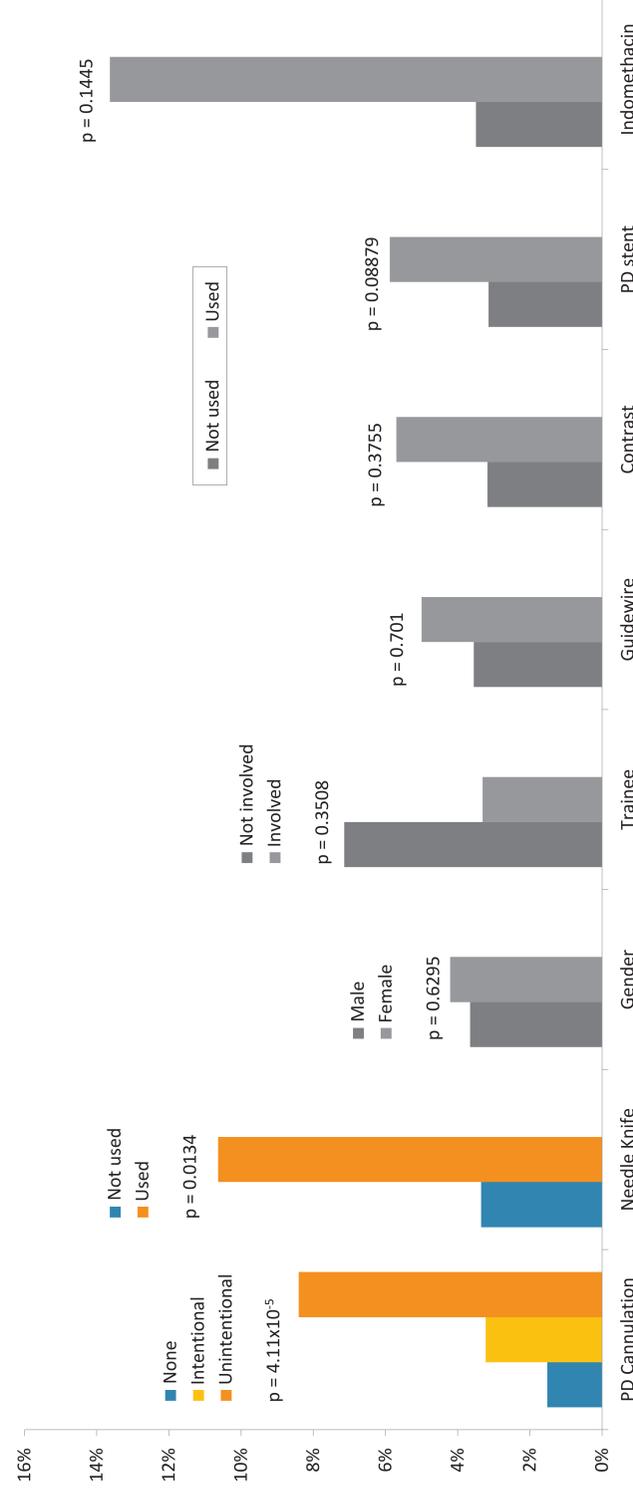


Figure 1. PEP rate among factors compared by Fisher's exact test. Colored factors are statistically significant.

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