

# Prophylactic Pancreatic Stent Placement to Prevent Post-ERCP Pancreatitis: A Systematic Review and Meta-analysis

Wasef Sayeh; MD<sup>1</sup>, Sudheer Dhoop; MD<sup>1</sup>, Sahithi Chinnam; DO<sup>1</sup>, Rayna Patel; MD<sup>1</sup>, Azizullah Beran; MD<sup>2</sup>, Sami Ghazaleh; MD<sup>3</sup>, Sara Stanley; DO<sup>3</sup>, Yaseen Alastal; MD<sup>3</sup>

<sup>1</sup>Division of Internal Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

<sup>2</sup>Division of Gastroenterology, Indiana University, Indiana, United States

<sup>3</sup>Division of Gastroenterology, Department of Medicine, The University of Toledo, Toledo, OH 43614

\*Corresponding author: [wasef.sayeh@utoledo.edu](mailto:wasef.sayeh@utoledo.edu)

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**Introduction:** Post-ERCP pancreatitis (PEP) is considered a common complication that can sometimes be fatal. Studies showed that the incidence of PEP averages around 9.7% with a 0.7% mortality rate. Many strategies were presumed to prevent PEP including periprocedural aggressive hydration with Intravenous fluids, the periprocedural administration of non-steroidal anti-inflammatory medications (NSAIDs), or pancreatic duct stent placement. We conducted a meta-analysis to study the effectiveness of the prophylactic placement of a stent in the pancreatic duct in the prevention of PEP.

**Methods:** We performed a comprehensive search of the databases: PubMed/MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials from inception through May 15th, 2023. We considered randomized controlled trials. The primary outcome was the occurrence of PEP. Also, we did a subgroup analysis based on the severity of PEP. The random-effects model was used to calculate the risk ratios (RR) and 95% confidence intervals (CI). A p value <0.05 was considered statistically significant. Heterogeneity was assessed using the Higgins I<sup>2</sup> index.

**Results:** Fifteen randomized controlled trials involving 1,850 patients were included in the meta-analysis. All studies compared the occurrence of PEP which was significantly lower in the pancreatic stent placement group (5.9% vs 16.8%, RR 0.40, 95% CI 0.30-0.54, p<0.001, I<sup>2</sup> = 0%). Subgroup analysis based on the severity of PEP showed that prophylactic pancreatic stent placement was associated with lower occurrence of mild-moderate PEP (5.6% vs 13.9%, RR 0.46, 95% CI 0.34-.064, p <0.001, I<sup>2</sup> = 0%). Also, prophylactic pancreatic stent placement significantly lowered the occurrence of severe PEP (0% vs 1.6%, RR 0.26, 95% CI 0.09-0.76, p =0.01, I<sup>2</sup> =0%).

**Discussion:** Our meta-analysis demonstrated that the prophylactic placement of a stent in the pancreatic duct decreases the occurrence of PEP. It was especially helpful in significantly lowering the occurrence of severe PEP.