

# INPLASY

## Comparative Efficacy of Surgical Approaches for Reducing Delayed Gastric Emptying Post-Pancreaticoduodenectomy: A Bayesian Network Meta-analysis

INPLASY202510078

doi: 10.37766/inplasy2025.1.0078

Received: 20 January 2025

Published: 20 January 2025

### Corresponding author:

Simeng Li

erica6886@gmail.com

### Author Affiliation:

School of Medicine, The University of Notre Dame Australia, NSW, Australia, 2010.

Li, S; Shahrestani, S; Bhimani, N; Boue, A; Rykina-Tameeva, N; Samra, J; Mittal, A.

### ADMINISTRATIVE INFORMATION

**Support** - No external fundings.

**Review Stage at time of this submission** - Preliminary searches.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202510078

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 January 2025 and was last updated on 20 January 2025.

### INTRODUCTION

**Review question / Objective** Compare the efficacy of Classic Whipple, Classic Whipple with Braun enteroenterostomy, Pylorus-preserving Pancreaticoduodenectomy, Pylorus-preserving pancreaticoduodenectomy with Braun enteroenterostomy to reduce the incidence of delayed gastric emptying in patients who are greater than 18 years of age and underwent Pancreaticoduodenectomy due to pancreatic cancers.

**Rationale** Delayed gastric emptying remains the most frequent complication after Pancreaticoduodenectomy with incidence up to more than 25%. It can lead to delayed resumption of oral intake after the surgery, resulting in poor recovery and lowering quality of life. The present systematic review and a Bayesian meta-analysis aims to compare the most superior surgical techniques to reduce delayed gastric emptying in patients after Pancreaticoduodenectomy. There are four surgical techniques we are interested: Classic Whipple, Classic Whipple with Braun

enteroenterostomy, pylorus-preserving pancreaticoduodenectomy, and its addition with Braun enteroenterostomy. A Bayesian network meta-analysis allows for both direct and indirect comparisons of these techniques. It also allows for the generation of cumulative ranking probability, which ranks the best intervention. By selecting the potentially most superior surgical intervention, it improve patient survival and quality of life.

**Condition being studied** Delayed gastric emptying remains the most frequent complication after Pancreaticoduodenectomy with incidence up to more than 25%. It can lead to delayed resumption of oral intake after the surgery, resulting in poor recovery and lowering quality of life.

### METHODS

**Search strategy** PubMed (Search date, 200125, language; English); Embase (Search date 200125, language: English), MEDLINE (Search date 200125, language: English). Key search terms will include

pancreaticoduodenectomy, gastroparesis/ delayed gastric emptying.

**Participant or population** Studies that reported the incidence of delayed gastric emptying in patients after Pancreaticoduodenectomy were included. Involved participants needs to be adults greater than 18 years of age.

**Intervention** Patients received Classic Whipple, Classic Whipple with Braun enteroenterostomy, Pylorus-preserving pancreaticoduodenectomy, Pylorus-preserving pancreaticoduodenectomy with the addition of Braun enteroenterostomy.

**Comparator** N/A.

**Study designs to be included** Randomised controlled trials and observational studies.

**Eligibility criteria** English language, full-text articles available.

**Information sources** PubMed, Embase, MEDLINE.

**Main outcome(s)** Incidence of delayed emptying.

**Additional outcome(s)** Not applicable.

**Data management** After searching, articles will be retrieved separately by databases. Duplicated items will be removed using EndNote software from the list of retrieved studies. Then titles and abstracts will be reviewed in terms of relevance to the main purpose of the study and based on inclusion and exclusion criteria. Finally, the full-texts of the selected studies will be reviewed for inclusion and exclusion criteria.

After screening, selection and evaluation of quality of the selected studies, data will be extracted and recorded. The following information will be collected from each study: Name of first author, year of publication, study design, participants in study, basic demographic characteristics, data collection on delayed gastric emptying. Selection of studies, quality evaluation and data extraction will be done by two independent authors, in case of any discrepancies, the problem will be discussed and solved by the third author.

**Quality assessment / Risk of bias analysis** Cochrane Collaboration Risk of Bias Tool will be used to assess the quality of randomised controlled studies. Joanna Briggs Institute of Critical Appraisal Checklist will be used to assess the quality of cohort studies.

**Strategy of data synthesis** Incidence of delayed gastric emptying by using four surgical techniques will be extracted along with the total participants in each group. A Bayesian network analysis will be performed. Risk ratio with 95% credibility intervals were calculated. Cumulative ranking probability will be generated by STATA software to compare each surgical intervention.

**Subgroup analysis** Because our study will include both randomised controlled studies and observational studies. Separate analyses will be run by using randomised controlled studies only, and cohort studies only. These results will be compared with the pool results. Pairwise meta analyses will also be run for any groups with direct comparisons.

**Sensitivity analysis** Sensitivity analysis was used to determine the effect of individual studies on overall pooled estimated by sequentially excluding each study.

**Language restriction** English.

**Country(ies) involved** Australia.

**Other relevant information** Our study includes both network meta-analysis and direct pairwise analyses.

**Keywords** pancreaticoduodenectomy, pancreatic cancer, delayed gastric emptying, Roux-en-Y, Braun procedure, Classic Whipple.

**Dissemination plans** We would like to submit this as a journal article once completed.

#### **Contributions of each author**

Author 1 - Simeng Li - Author 1 did the search, screening, data analysis and wrote the manuscript. Email: erica6886@gmail.com

Author 2 - Sara Shahrestani - Author 2 did the search and screening and involve in study design.

Email: sara.shahrestani@sydney.edu.au

Author 3 - Nazim Bhimani - Author 3 did data analysis and edited the manuscript.

Email: nazim.bhimani@health.nsw.gov.au

Author 4 - Alex Boue - Author 4 wrote and edited part of the manuscript.

Email: alex@boue.com.au

Author 5 - Nadya Rykina-Tameeva - Author 5 did title and abstract screenings.

Email: nadyarykina@outlook.com

Author 6 - Jaswinder Samra - Author 6 designed this project, performed analysis and edited the manuscript.

Email: jas.samra@bigpond.com

---

Author 7 - Anubhav Mittal - Author 7 designed this project, performed the analysis, designed the project.  
Email: anubhav@mittal.com.au