

INPLASY PROTOCOL

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Minimally invasive versus open total Pancreatectomy: A Systematic Review and meta-analysis

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None declared.

Review question / Objective: 1.P (patients): Male or female patients over the age of 18 with a benign or malignant disease that requires elective total Pancreatectomy; 2.I (intervention): minimally invasive total pancreatectomy (MITP), includ Robot-assisted or laparoscopic total pancreatectomy; 3.C (control): Open total pancreatectomy (OTP); 4.O(outcome): At least 1 of the main outcomes.

Condition being studied: Total pancreatectomy (TP) is so complicated, the flexibility of robotic or laparoscopic provides a new minimally invasive method. At present, only scarcely evidence were report on robotic or laparoscopic total pancreatectomy. It's advantages over OTP are still uncertain.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 May 2022 and was last updated on 03 May 2022 (registration number INPLASY202250011).

INTRODUCTION

Review question / Objective: 1.P (patients): Male or female patients over the age of 18 with a benign or malignant disease that requires elective total Pancreatectomy; 2.I (intervention): minimally invasive total pancreatectomy (MITP), includ Robot-

assisted or laparoscopic total pancreatectomy; 3.C (control): Open total pancreatectomy (OTP); 4.O(outcome): At least 1 of the main outcomes.

Condition being studied: Total pancreatectomy (TP) is so complicated, the flexibility of robotic or laparoscopic

provides a new minimally invasive method. At present, only scarcely evidence were report on robotic or laparoscopic total pancreatectomy. It's advantages over OTP are still uncertain.

METHODS

Search strategy: The search strategy for PubMed, Embase, Science Citation Index Expanded and The Cochrane Library was the following: (“Total pancreatectomy” And “Robotic” OR “Robot-assisted” or “Mini-invasive” or “Minimally invasive” OR “laparoscopic” or “Laparoscopic-assisted” OR “open total pancreatectomy”).

Participant or population: Male or female patients over the age of 18 with a benign or malignant disease that requires elective total Pancreatectomy.

Intervention: minimally invasive total pancreatectomy (MITP), includ Robot-assisted or laparoscopic total pancreatectomy.

Comparator: Open total pancreatectomy.

Study designs to be included: Studies were included based on the following criteria: (1) human study; (2) primary outcome was reported; (3) if studies were reported by the same institution, either the study with the larger sample size or the study with the higher quality was included; And (4) meta-analysis only include studies with a study period after 2015.

Eligibility criteria: Studies were included based on the following criteria: (1) human study; (2) primary outcome was reported; (3) if studies were reported by the same institution, either the study with the larger sample size or the study with the higher quality was included; And (4) meta-analysis only include studies with a study period after 2015. excluded: abstracts, letters, editorials, expert opinions, case reports, reviews and studies without comparisons.

Information sources: The search strategy for PubMed, Embase, Science Citation

Index Expanded and The Cochrane Library was the following: (“Total pancreatectomy” And “Robotic” OR “Robot-assisted” or “Mini-invasive” or “Minimally invasive” OR “laparoscopic” or “Laparoscopic-assisted” OR “open total pancreatectomy”).

Main outcome(s): Mortality - Ninety-day mortality was reported in 5 studies (2950 patients). As the studies reported, there was no significant difference between MITP group and the OTP group regarding this outcome (OR: 0.87, 95%CI: 0.42, 1.79) with no heterogeneity ($I^2 = 0\%$). The certainty of evidence was evaluated as moderate. Major morbidity - Clavien-Dindo ≥ 3 complications were reported in 6 studies (399 patients). Significant differences were measured between the 2 groups (OR:0.50, 95%CI: 0.30-2.84), whereas there was no heterogeneity ($I^2 = 0\%$). The certainty of evidence was deemed to be moderate.

Quality assessment / Risk of bias analysis: The methodological quality of the studies was assessed by the Newcastle-Ottawa Scale (NOS). giving a point to each accomplished item, to classify the studies as high quality (score 7–9), moderate quality (score 4–6), or poor quality (score 0–3) . This was done independently by 2 reviewers using the Newcastle-Ottawa Scale (NOS). If the primary reviewers were not able to reach a consensus, a third party was included.

Strategy of data synthesis: The endpoints were quantitatively summarized and pooled using review manager software (Revman version 5.3, The Cochrane Collaboration, The Nordic Cochrane Centre, Copenhagen, Denmark). For dichotomous data (eg, mortality, complications), the odds ratio (OR) with 95% confidence interval (CI) was calculated using the Mantel-Haenszel model. Differences for continuous data (eg, length of stay, operative time) were presented by mean difference (MD) with 95% CI, and calculated with the inverse variance model. Data which were reported other than mean and standard deviation (eg, in case of median and range) was

transformed using the methods described by Hozo et al, and Higgins and Green . Random-effects model was used to account for clinical heterogeneity among the studies. Heterogeneity was investigated with the chisquare and I2 test and interpreted as follows: 0% to 40% low, 30% to 60% moderate, 50% to 90% high, and 75% to 100% considerable. Pooled analyses were visualized with Forest plots.

Subgroup analysis: Subgroup analysis: pooled analysis of outcomes from studies with a sample size greater than 50, and pooled outcomes of robotic-assisted total pancreatectomy vs open total pancreatectomy.

Sensitivity analysis: Pooled analyses were visualized with Forest plots.

Language: Chinese.

Country(ies) involved: China.

Keywords: Total pancreatectomy; Robotic; Robot-assisted; laparoscopic; open total pancreatectomy.

Contributions of each author:

Author 1 - Lang Chen - Author 1 drafted the manuscript.

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Author 2 - Ning Xia - The author provided statistical expertise.

Author 3 - Zihe Wang - The author provided statistical expertise. The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.

Author 4 - Junjie Xiong - The author is the cocorresponding author. The author read, provided feedback and approved the final manuscript.

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