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Meta-Analysis: Extended vs Standard Lymphadenectomy in Pancreatoduodenectomy for Pancreatic Adenocarcinoma

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ADMINISTRATIVE INFORMATION

Support - Project Number: SJCX22_1509 Topic: The Role of has-circ-0000069/has-miR-1305/ZNF263 Axis in Regulating Cell Ferroptosis and Its Impact on Gemcitabine Resistance Mechanism in Pancreatic Cancer.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202380009

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2023 and was last updated on 01 August 2023.

INTRODUCTION

Review question / Objective Extended vs Standard Lymphadenectomy in Pancreatoduodenectomy for Pancreatic Adenocarcinoma.

Condition being studied Patients diagnosed with pancreatic head cancer or periampullary cancer undergo pancreaticoduodenectomy with lymph node dissection. The standard lymph node dissection range defined by the NCCN Pancreatic Cancer Guidelines includes lymph nodes around the pancreaticoduodenal region, the right side of the hepatoduodenal ligament, and the right side of the superior mesenteric artery. Additionally, lymphadenectomy is performed to expand the lymph node dissection. However, there may be clinical variations in the extent of lymph node removal in practice.

METHODS

Search strategy Using the three databases of PubMed, Embase, and Cochrane, a systematic literature search was conducted in June 2023. The language without limitation.

Participant or population The literature comparing the outcomes of standard lymph node dissection and extended lymph node dissection in the treatment of pancreatic head cancer or periampullary cancer was included. Patients diagnosed with pancreatic head cancer or periampullary cancer underwent pancreaticoduodenectomy. The results encompassed perioperative, postoperative, functional, and survival outcomes. Exclusion criteria included: (1) non-human studies; (2) non-randomized controlled studies; (3) studies not involving pancreatic head cancer or periampullary cancer; (4) studies from which no usable data

could be extracted; (5) non-original studies (letters, comments, editorials).

Intervention Pancreatic head cancer or periampullary cancer undergoes combined extended lymph node dissection during pancreaticoduodenectomy.

Comparator Pancreatic head cancer or periampullary cancer undergoes combined standard lymph node dissection during pancreaticoduodenectomy.

Study designs to be included RCT.

Eligibility criteria The literature comparing the outcomes of standard lymph node dissection and extended lymph node dissection in the treatment of pancreatic head cancer or periampullary cancer was included. Patients diagnosed with pancreatic head cancer or periampullary cancer underwent pancreaticoduodenectomy. The results encompassed perioperative, postoperative, functional, and survival outcomes. Exclusion criteria included: (1) non-human studies; (2) non-randomized controlled studies; (3) studies not involving pancreatic head cancer or periampullary cancer; (4) studies from which no usable data could be extra.

Information sources Three databases of PubMed, Embase, and Cochrane.Contacting the authors for data, if necessary.The reference lists of the retrieved literature was cross-searched for additional publications.

Main outcome(s) Overall survival rate, disease-free survival rate, and number of retrieved lymph nodes.

Additional outcome(s) Perioperative outcomes included: operative duration, estimated blood loss, length of hospital stay, reoperation rate, incidence of complications, transfusion rate, positive surgical margins, postoperative bleeding, postoperative pancreatic fistula, postoperative bile leakage, postoperative mortality rate, delayed gastric emptying, postoperative diarrhea, postoperative cholangitis, postoperative lymphocele, postoperative quality of life, and so on.

Quality assessment / Risk of bias analysis We applied the “risk of bias” assessment tool recommended by the Cochrane Handbook to assess the risk of bias in the included studies. Any discrepancies were resolved by consensus.

Strategy of data synthesis Statistical analyses were performed with Review Manager 5.4 (Cochrane Collaboration, Oxford, UK). Odds ratio (OR) with 95% confidence interval (CI) were used to compare binary variables. The weighted mean difference (WMD) and 95% CI were calculated for continuous outcomes. Based on the method described by Wan et al, the medians and interquartile ranges of continuous data were converted to means and standard deviations. For all meta-analyses, the Cochrane Qp value and 2 statistic were applied to check heterogeneity. When p value < 0.05 or $I2 > 50\%$, there was a significant heterogeneity, a random-effect model was used to merge the results. Otherwise, a fixed-effect model was used. A p-value less than 0.05 was considered statistically significant. We performed Egger's test to assess publication bias (only for outcomes including ten or more studies).

Subgroup analysis Comparison of survival rates at 1, 2, 3, and 5 years in lymph node-positive patients. Comparison of survival rates at 1, 2, 3, and 5 years in lymph node-negative patients. Comparison of survival in patients who underwent postoperative radiotherapy and chemotherapy.

Sensitivity analysis The robustness of the analyses was assessed by conducting sensitivity analyses for outcomes reported in a minimum of four comparative studies. The first set of analyses involved calculating separate risk ratios (RR), odds ratios (OR), and risk differences (RD) for dichotomous outcomes. The second set of analyses aimed to evaluate the impact of each individual study on the overall effect size and heterogeneity. This was done by systematically removing one study at a time and repeating the analyses. The third set of analyses focused on conducting separate analyses for randomized controlled trials (RCTs) with low potential for bias related to randomization and allocation concealment.

Country(ies) involved China.

Keywords Pancreatic cancer . Pancreatoduodenectomy . Extended lymphadenectomy . Randomised controlled trial.

Contributions of each author
Author 1 - qian wang.
Author 2 - zhen yu ye.