INPLASY PROTOCOL

To cite: Hu et al. Efficacy and safety of traditional open surgery versus robotic surgery for hilar cholangiocarcinoma: a systematic review and meta-analysis. Inplasy protocol 202350002. doi: 10.37766/inplasy2023.5.0002

Received: 30 April 2023

Published: 01 May 2023

Corresponding author:
Manqin Hu

1877866245@qq.com

Author Affiliation:
The Second Afiliated Hospital of Kunming Medical University.

Support: **The Second Afiliated Hospital of Kunming Medical University.**

Review Stage at time of this submission: **The review has not yet started.**

Conflicts of interest:
None declared.

Efficacy and safety of traditional open surgery versus robotic surgery for hilar cholangiocarcinoma: a systematic review and meta-analysis

Hu, MQ[1]; Huang, J[2]; Xu, DW[3]; Zhang, Y[4]; Li, A[5]; Li, XC[6].

Review question / Objective: **Hilar cholangiocarcinoma is the most common subtype of bile duct carcinoma (50-60%). It is a destructive liver malignant tumor associated with high mortality and poor prognosis, possibly due to its invasiveness, late onset and difficulty of treatment. Late clinical diagnosis of Hilar cholangiocarcinoma and lack of effective non-surgical treatment means that most patients die within one year of diagnosis. Currently, surgery is still the best method to achieve possible long-term survival. The role of robotic surgery in hepatopancreatoduodenal carcinoma is under investigation, although open surgery is still one of the curative treatment options, but may carry extremely complex and high risk of incidence and mortality. The purpose of this study is to systematically evaluate the efficacy and safety of robotic surgery and open surgery in Hilar cholangiocarcinoma hepatopancreatoduodenal carcinoma within the scope of the comprehensive results of recent literature reports.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 May 2023 and was last updated on 01 May 2023 (registration number INPLASY202350002).

INTRODUCTION

Review question / Objective: **Hilar cholangiocarcinoma is the most common subtype of bile duct carcinoma (50-60%). It is a destructive liver malignant tumor associated with high mortality and poor prognosis, possibly due to its invasiveness, late onset and difficulty of treatment. Late clinical diagnosis of Hilar cholangiocarcinoma and lack of effective non-surgical treatment means that most patients die within one year of diagnosis. Currently, surgery is still the best method to achieve possible long-term survival. The role of robotic surgery in hepatopancreatoduodenal carcinoma is**

under investigation, although open surgery is still one of the curative treatment options, but may carry extremely complex and high risk of incidence and mortality. The purpose of this study is to systematically evaluate the efficacy and safety of robotic surgery and open surgery in Hilar cholangiocarcinoma hepatopancreatoduodenal carcinoma within the scope of the comprehensive results of recent literature reports.

Condition being studied: Hilar cholangiocarcinoma is a type of cancer that can arise in the liver. Currently, two common treatment methods for this cancer are open surgery and robot-assisted surgery.Open surgery is a traditional method that allows direct observation of the liver and bile ducts before performing operations such as resection or repair. However, this procedure can cause significant trauma, longer recovery time, and common postoperative pain and complications.Robot-assisted surgery is a more recent technology with advantages such as precision and minimal invasiveness. Although this approach still involves some abdominal invasion, it causes less damage and has a shorter postoperative recovery period compared to open surgery.Currently, both open and robot-assisted surgeries achieve similar outcomes in treating hepatocellular carcinoma. However, robot-assisted surgery has noticeable advantages that make it a promising approach for this type of cancer.Additionally, this technology is continuously improving and has the potential to become the first-choice option for treating hepatocellular carcinoma in the future.

METHODS

Search strategy: We will search articles in six electronic databases, including PubMed, Embase, Cochrane, Web of Science, Wanfang Database and China National Knowledge Infrastructure Database. All English-language publications as of November 30, 2022 will be searchable without restrictions by country or article type. A list of references for all selected articles will be screened independently to identify additional studies that were missed in the initial search.Retrieval strategies follow the Cochrane Handbook for Systematic Reviews of Interventions.Retrieval terms: (((Robotic Surgical Procedures) OR (Procedure, Robotic Surgical) OR (Procedures, Robotic Surgical) OR (Robotic Surgical Procedure) OR (Surgical Procedure, Robotic) OR (Robot Surgery) OR (Robot Surgeries) OR (Surgery, Robot)OR (Robot-Assisted Surgery) OR (Robot Assisted Surgery) OR (Robot-Assisted Surgeries) OR (Surgery, Robot-Assisted)OR (Robot-Enhanced Procedures) OR (Procedure, Robot-Enhanced) OR (Robot Enhanced Procedures) OR (Robot-Enhanced Procedure) OR (Surgical Procedures, Robotic) OR (Robotic-Assisted Surgery) OR (Robotic Assisted Surgery) OR (Robotic-Assisted Surgeries) OR (Surgery, Robotic-Assisted) OR (Robot-Enhanced Surgery) OR (Robot Enhanced Surgery) OR (Robot-Enhanced Surgeries) OR (Surgery, Robot-Enhanced)) OR ((open surgery) OR (open operation) OR (laparotomy))) AND ((Hilar cholangiocarcinoma) OR (Klatskin Tumor) OR (Tumor, Klatskin) OR (Klatskin's Tumor) OR (Klatskins Tumor)OR(Tumor, Klatskin's) OR (Cholangiocarcinoma, Hilar) OR (Cholangiocarcinomas, Hilar) OR (Hilar Cholangiocarcinomas) OR (4 Perihilar Cholangiocarcinoma 4) OR (Cholangiocarcinoma, Perihilar) OR (Cholangiocarcinomas, Perihilar) OR (Perihilar Cholangiocarcinomas))).

Participant or population: Hilar cholangiocarcinoma patients.

Intervention: Robotic surgery VS open surgery.

Comparator: Open surgery versus robotic surgery for hilar cholangiocarcinoma:(1) Operation time (min);(2) Estimated blood loss (ml);(3) Length of hospitalization (days);(4) Blood transfusion rate (%);(5) Total complication rate (%);(6) Incidence of postoperative minor complications (%);(7) health-related quality of life;(8) Number of

lymph nodes dissected;(9) Liver function; (10) 90-day mortality rate;(11) Readmission rate within 90 days;(12) Overall survival rate.

Study designs to be included: All available clinical, prospective randomized and non-randomized trials and retrospective comparative studies (cohort orcase control series) comparing RRP vs ORP, RPN vs OPN, RRN vs ORN and RRC vs ORC were included. Publishedbetween 2000 and 2022. No language restrictions.

Eligibility criteria: Inclusion criteria: (1) Clinical studies comparing the efficacy of open surgery and robot-assisted surgery in the treatment of hilar cholangiocarcinoma. Randomized and semi-randomized controlled trials are preferred, regardless of whether blinding or allocation concealment is used. If relevant randomized controlled trials are not available, non-randomized concurrent controlled trials, prospective cohort studies, and case-control studies will be included. (2) Study subjects: no limit on gender, age, race, or nationality. (3) Intervention: comparison of the clinical efficacy of open surgery and robot-assisted surgery in the treatment of hilar cholangiocarcinoma. (4) Complete and quantitative data after surgical treatment. (5) Outcome indicators include: operation time, intraoperative blood loss, number of lymph node dissections, R0 resection rate, postoperative time for oral intake, postoperative time for analgesic, incidence of postoperative complications, postoperative hospitalization time, and 1-year and 2-year postoperative survival rates.Exclusion criteria: (1) Unable to obtain the full text. (2) Insufficient trial data. (3) Case reports, reviews, letters, and conference abstracts. (4) Comparison without intervention measures. (5) Authors, institutions, or content of published literature overlap. (6) Retrospective case-control studies with too few cases or no clear definition of case and control groups.

Information sources: Six electronic databases, including PubMed, Embase, Cochrane, Web of Science, Wanfang Database and China National Knowledge Infrastructure Database.

Main outcome(s): In this systematic review and meta-analysis, we conducted a comparative study of robotic versus open surgery in the treatment of hilar cholangiocarcinoma.

Additional outcome(s): We conducted a systematic review and meta-analysis of all studies on open or robotic surgery in the treatment of hilar cholangiocarcinoma. Extraction station Information on available variables was available, including perioperative outcomes such as time to surgery, estimated blood loss, length of hospital stay, postoperative complications, health-related quality of life (HRQoL) outcomes, survival outcomes (surgical margin rate, mortality, recurrence rate, cancer-specific survival, and overall survival), and cost outcomes.

Data management: Where applicable, data were presented in the form of forest plots, funnel plots, and sensitive plots for open and robotic surgery for each specific different endpoint.

Quality assessment / Risk of bias analysis: We will use Egger's test and Begg's test to assess the risk of bias in the literature.

Strategy of data synthesis: Using stata MP17 software for statistical analysis. Theincluded data are continuous variables andthe measurement methods are the same,SO we choose WMD as the effect scale.Random-effects model was used for dataanalysis. Sensitivity analysis and subgroupanalysis were used to find the sources of heterogeneity.

Subgroup analysis: None planned.

Sensitivity analysis: The sensitivity analysiswas performed by Stata software, whichreflected the sensitivity of the study by thechange in the effect size after the deletion of one of the papers.

Language restriction: English.

Country(ies) involved: China.

Keywords: traditional open surgery; robotic surgery; hilar cholangiocarcinoma; meta-analysis.

Contributions of each author:

Author 1 - Manqin Hu.
Email: 1877866245@qq.com
Author 2 - Jie Huang.
Author 3 - Dingwei Xu.
Author 4 - Yan Zhang.
Author 5 - Ao Li.
Author 6 - Xincheng Li.