

# INPLASY PROTOCOL

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## Meta-analysis of single-incision laparoscopic versus multi-trocar laparoscopic totally extraperitoneal inguinal hernia repair

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**Review question / Objective:** To evaluate the efficacy and safety of single-incision laparoscopic total extraperitoneal (SIL-TEP) and multi-trocar laparoscopic total extraperitoneal (MTL-TEP) inguinal hernia repair.

**Condition being studied:** Inguinal hernia repair has become a common operation in general surgery. Traditional multi-trocar laparoscopic surgery requires three trocars of 5-10 mm in the abdominal wall for operation; therefore, traditional multi-trocar laparoscopic surgery cannot meet the needs of patients with strict cosmetic requirements. Compared with traditional multi-trocar laparoscopic surgery, single-incision laparoscopic surgery reduces the number of surgical incisions, but it is not clear whether SIL-TEP inguinal hernia repair is similar or superior to traditional multi-trocar laparoscopic MTL-TEP inguinal hernia repair in terms of safety, efficacy and cosmetic effect. Whether SIL-TEP inguinal hernia repair has clinical application value and should be promoted requires further discussion.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 November 2022 and was last updated on 18 November 2022 (registration number INPLASY2022110085).

### INTRODUCTION

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clear whether SIL-TEP inguinal hernia repair is similar or superior to traditional multi-trocar laparoscopic MTL-TEP inguinal hernia repair in terms of safety, efficacy and cosmetic effect. Whether SIL-TEP inguinal hernia repair has clinical application value and should be promoted requires further discussion.

## METHODS

**Participant or population:** Male and female adult patients with inguinal hernia.

**Intervention:** SIL-TEP inguinal hernia repair.

**Comparator:** MTL-TEP inguinal hernia repair.

**Study designs to be included:** Randomized controlled study or nonrandomized controlled study.

**Eligibility criteria:** Male and female adult patients with inguinal hernia, including primary and/or secondary, direct and/or indirect, unilateral and/or bilateral, aged over 18 years.

**Information sources:** The Cochrane Library, Embase database, and PubMed database.

**Main outcome(s):** Unilateral operation time, bilateral operation time, pain score on the first day after operation, chronic pain rate, total complication rate, hospital stay, recurrence rate and cosmetic effect score.

**Quality assessment / Risk of bias analysis:** Two authors independently assessed the quality of the included studies and cross-checked them. Disagreements were resolved through discussion or adjudication by the third author. The modified Jadad scale was used to evaluate the quality of randomized controlled studies, including (1) generation of random sequences; (2) randomization concealment; (3) blinding; and (4) withdrawal and loss to follow-up. The total score was based on a 7 point scale, with  $\leq 3$  indicating low-quality literature and 4-7 indicating high-quality literature. The quality of nonrandomized controlled studies was evaluated using the

NOS (Newcastle-Ottawa scale, NOS) scale, including research object selection (0-4 points), comparability between groups (0-2 points), and outcome/exposure factor measurement (0-3 points), with scores  $\geq 6$  indicating high quality and  $< 6$  indicating low quality.

**Strategy of data synthesis:** Meta-analysis was performed using RevMan 5.3 software provided by the Cochrane Collaboration. Dichotomous data were analysed by odds ratio (OR), and continuous data were analysed by mean difference (MD) or standardized mean difference (SMD). At the same time, the combined effect and its 95% confidence interval (CI) were calculated. The heterogeneity analysis among the results of the included studies used the  $\chi^2$  test combined with  $I^2$  to quantitatively judge the size of the heterogeneity. If there was no statistical heterogeneity among the results of the studies ( $P > 0.10$ ,  $I^2 \leq 50\%$ ), then the fixed-effects model was used for meta-analysis; otherwise, a random-effects model was used for meta-analysis.

**Subgroup analysis:** Subgroup analysis conducted for studies with obvious heterogeneity.

**Sensitivity analysis:** Sensitivity analysis conducted for studies with obvious heterogeneity. A sensitivity analysis was repeated after deleting one study to evaluate the impact of the study on the merger effect; this process was repeated for each study.

**Country(ies) involved:** China.

**Keywords:** laparoscopic, single-incision, inguinal hernia, meta-analysis

### Contributions of each author:

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