RESEARCH





Comparative effectiveness of hybrid and laparoscopic techniques for repairing complex incisional ventral hernias: a systematic review and meta-analysis

Quan Wu¹, Weijie Ma^{2*}, Qiangian Wang³, Yagi Liu¹ and Yaokai Xu¹

Abstract

Background The recently developed Hybrid Hernia Repair technique (HHR), an adaptation of the laparoscopic method, has been proposed as a potential alternative for the treatment of complex Incisional Ventral Hernias (IVH). While single-arm studies have reported promising outcomes, a comprehensive meta-analysis affirming these benefits is lacking. This meta-analysis aims to compare the clinical outcomes of HHR and Laparoscopic Hernia Repair (LHR) in the management of IVH.

Methods An exhaustive search of the literature was conducted, targeting publications in both English and Chinese that compare HHR and LHR up to March 31, 2023. The primary outcomes examined were operation time, blood loss, and intestinal injury. Secondary outcomes included rates of seroma, wound infection, post-operative acute/chronic pain, recurrence, and mesh bulging. The RevMan 5.0 software facilitated the statistical meta-analysis.

Results The final analysis incorporated data from 14 studies, encompassing a total of 1158 patients, with 555 undergoing HHR and 603 treated with LHR. Follow-up data, ranging from 12 to 88 months, were available in 12 out of the 14 identified studies. The HHR method was associated with a significantly lower risk of seroma (OR = 0.29, P = 0.0004), but a higher risk of wound infection (OR = 2.10, P = 0.04). No significant differences were observed between the two techniques regarding operation time, blood loss, intestinal injury, intestinal obstruction, post-operative pain, mesh bulging, and recurrence.

Conclusions The HHR technique did not demonstrate a clear advantage over LHR in reducing surgical complications, apart from a lower incidence of postoperative seroma. Surgeons with substantial expertise may choose to avoid incidental conversion or intentional hybrid procedures. Further research is needed to clarify the optimal surgical approach for IVH.

Keywords Hybrid hernia repair technique, Laparoscopic hernia repair technique, Incisional ventral hernias, Metaanalysis

*Correspondence: Weijie Ma weijie.ma@hitchcock.org Full list of author information is available at the end of the article



© The Author(s) 2023. Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/. The Creative Commons Public Domain Dedication waiver (http://creativecommons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Introduction

Incisional ventral hernias (IVH) are more likely to occur in elderly or obese individuals who have previously undergone abdominal surgery with suboptimal suturing or experienced wound infections. Hernia repair is the only solution to address the abdominal defect, and it can be performed using either an open or minimally invasive IVH repair, including laparoscopic and robotic assisted technique. The laparoscopic approach for hernia repair was first introduced by Le Blanc and Booth in 1993, and it has since gained popularity due to its ability to minimize large subcutaneous flaps, reduce the risk of wound infection, and prevent transfascial suture and mesh bulging, in comparison to the open method [1-3]. Nonetheless, the laparoscopic approach accounts for an average of 2.4% conversion rate [4], primarily due to extensive intestinal adhesions. Additionally, this method may predispose patients to postoperative seroma in cases with large orifices when the hernia sac is not excised, or the defect is not closed. The superiority of either technique regarding recurrence rate control remains debatable [5, 6]. Circa 2000, a combination of open and laparoscopic techniques was proposed to address the limitations associated with both methods in IVH repair [7]. This approach has been referred to as a hybrid technique, endoscopically assisted, or limited conversion technique; however, a consensus on its definition has not been reached. The procedure typically involves initial laparoscopic adhesiolysis, or an intention to perform open adhesiolysis followed by conversion to an open approach for sac excision, defect closure, and subsequent mesh placement and fixation under pneumoperitoneum via transfascial sutures and/ or metal tacks [3, 8-12], and this procedure also can be achieved by hybrid robotic-assisted surgery introduced into clinical practice two decades ago, with posterior component separation technique for huge defects if necessary [10].

While a limited number of double-arm cohort studies [13–15] in the English literature have reported favorable outcomes with reduced postoperative morbidities, such as lower rates of bowel injury, hematoma, wound infection, and shorter hospital stays, no meta-analysis has comprehensively confirmed these advantages to date. Van den Dop [16] combined these variables as surgical site occurrences, highlighting the need to further investigate the potential benefits of the Hybrid Hernia Repair (HHR) technique. In this study, we aim to elucidate the clinical outcomes of HHR compared to the Laparoscopic Hernia Repair (LHR) technique for the management of Incisional Ventral Hernias (IVH).

Material and methods

Search strategy and data extraction

This study was designed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We conducted a literature search in the following databases: PubMed, Medline, Embase, Web of Science, Cochrane Library, CNKI, and WANFANG. Search terms and MeSH terms included "incisional ventral hernia," "hybrid technique," "endoscopically assisted," "limited conversion," and "laparoscopy repair." The publication timeframe was set between 1996 and 31 March, 2023. Additionally, reference lists of identified articles were utilized for supplementary retrieval. The search was limited to articles published in English and Chinese languages.

Following the removal of duplicates, two authors (WQ and MW) independently assessed the eligibility of the studies by reviewing abstracts and full texts. In cases where a consensus could not be reached for a particular study, the final decision was voted by author WQQ. Data pertaining to study characteristics, such as demographics, pertinent surgical details, surgical complications, and prognosis, were extracted by authors LY and XY and recorded in an Excel spreadsheet.

Inclusion and exclusion criteria

Both randomized and non-randomized clinical trials comparing the hybrid repair technique for IVH to the laparoscopic technique were included, while single-arm studies were excluded. In the hybrid operation, mesh placement was limited to either IPOM or IPOM-plus styles, characterized by intraperitoneal mesh placement repair; as such, the Minimally Invasive Less Open Sublay Operation (MILOS) was excluded [17]. Studies meeting any of the following criteria were also excluded: parastomal hernia, absence of hernia size description, animal studies, letters, reports, and conference abstracts.

Quality assessment

Authors MW and WQQ independently conducted quality assessments. Risk of bias was evaluated using two methods, including the Risk of Bias in Non-Randomized Studies of Interventions (ROBINS-I) [18] and the Cochrane risk of bias tool [19]. The former was used to assess the non-randomized studies, and the latter was to evaluate the randomized trials.

Statistical analysis

Data were reported as means \pm standard deviation (X±SD) for continuous variables and as odds ratios (OR) or risk ratios (RR) for dichotomous variables. Metaanalysis was conducted using Review Manager Version 5.0 software (The Cochrane Collaboration, Oxford, UK). Weighted mean difference (WMD) and OR/RR were used to evaluate treatment effects with corresponding 95% confidence intervals (CI) for continuous and categorical variables, respectively. Heterogeneity analysis was assessed by the I² value, with an I² value >50% or P < 0.1 considered significant; the fixed-effects or random-effects model was then applied as appropriate. Forest plots were used to display the outcomes of this meta-analyses.

Results

The comprehensive search process is depicted in Fig. 1. After the elimination of duplicates, case reports, reviews, and articles not directly related to our objective, 21 articles addressing the hybrid technique were identified. Following a thorough full-text review, six non-comparative studies were excluded. Consequently, 15 relevant articles, comprising 14 studies with 555 cases in the HHR group and 603 in the LHR group, were included in the analysis [15, 20–33].

Among these, 13 were retrospective studies, and one was a randomized controlled trial (RCT), as detailed in Table 1. Two studies were assessed as low risk of bias, with the remaining exhibiting moderate risk (Table 1). The mean diameter of the hernia defects varied from 5.55 cm to 16.8 cm in the LHR group and from 6.34 cm to 21.50 cm in the HHR group (Table 2). Eight of the 14 studies documented the "classical" process of the hybrid technique. This process typically begins with laparoscopic exploration and adhesiolysis, followed by open surgery for hernia sac removal, patch placement within the abdominal cavity, and defect closure. The procedure concluded with the laparoscopic fixation of the patch. Three of the 14 studies replaced laparoscopic exploration and adhesiolysis with open surgery, with one suggesting that robotic operation could be a viable substitute for the laparoscopic phase.

Primary outcomes: evaluations of surgical outcomes

Heterogeneity analysis for the comparison of operative time between HHR and LHR was based on 12 studies, as one study lacked standard deviation data [23].



Fig. 1 Flow Chart

Table 1 Baseline characteristics of included studies

| Author | Year | Country | No. of patients | Design | Risk of bias |
|-----------------|------------|---------------|-----------------|---------------|---------------|
| Deng [21] | 2013 | China | | Retrospective | Moderate risk |
| HHR | | | 20 | | |
| LHR | | | 20 | | |
| Taqi [20] | 2013 | China | | Retrospective | Moderate risk |
| HHR | | | 5 | | |
| LHR | | | 20 | | |
| Zhu [22] | 2014 | China | | Retrospective | Moderate risk |
| HHR | | | 102 | | |
| LHR | | | 152 | | |
| Ozturk [23] | 2015 | Turkey | | Retrospective | Moderate risk |
| HHR | | | 16 | | |
| LHR | | | 12 | | |
| Ye [24] | 2015 | China | | Retrospective | Moderate risk |
| HHR | | | 16 | | |
| LHR | | | 20 | | |
| Wang [26] | 2017 | China | | Retrospective | Moderate risk |
| HHR | | | 25 | | |
| LHR | | | 20 | | |
| Chen [27] | 2017 | China | | Retrospective | Moderate risk |
| HHR | | | 33 | | |
| LHR | | | 37 | | |
| Ahonen [15] | 2017 | Finland | | Retrospective | Moderate risk |
| HHR | | | 24 | | |
| LHR | | | 38 | | |
| Halka [25] | 2018 | United States | | Retrospective | Low risk |
| HHR | | | 25 | | |
| LHR | | | 57 | | |
| Liu [29] | 2019 | China | | Retrospective | Moderate risk |
| HHR | | | 12 | | |
| LHR | | | 23 | | |
| Zhao [30] | 2019 | China | | Retrospective | Moderate risk |
| HHR | | | 14 | | |
| LHR | | | 16 | | |
| Ahonen [28, 31] | 2018, 2020 | Finland | | RCT | Low risk |
| HHR | | | 90 | | |
| LHR | | | 94 | | |
| Tian [32] | 2020 | China | | Retrospective | Moderate risk |
| HHR | | | 20 | | |
| LHR | | | 21 | | |
| Yang [33] | 2022 | China | | Retrospective | Moderate risk |
| HHR | | | 153 | | |
| LHR | | | 73 | | |

The I² value was 99%, with p < 0.000001. Therefore, the mean difference (MD = 1.99 min) was calculated using the random-effects model, indicating that the operative time for both methods was relatively similar (p = 0.89) (Fig. 2a). Intraoperative blood loss in HHR was slightly higher than that in LHR, with an MD of 9.40 ml, 95% CI

[-1.81, 20.61], and p = 0.10, as determined from seven studies (Fig. 2a). Nine studies provided complete data on the incidence of intraoperative intestinal injury, with no heterogeneity observed (I² = 40%, p = 0.14). The risk of intestinal injury did not demonstrate a significant preference between HHR and LHR (p = 0.75) (Fig. 2b).

| Author | Gender (F/M) | Age (year) | BMI (kg/m²) | Size of hernia defect (cm) | Recurrent hernia | Grade of adhesion | Process of hvbrid method | Reduction of hernia sac | Closure of defects | Follow up (months) |
|-------------|--------------|-----------------|-------------|-------------------------------|------------------|----------------------|-----------------------------|----------------------------|-----------------------|-------------------------|
| | | | | | | | | | | |
| Deng 2013 | | | | | | NA | | Yes | Yes | 63 |
| HHR | 10/10 | 58.9 ± 3.0 | NA | 16.07 ± 3.04 | 8/20 | | r-0-L ^a | | | |
| LHR | 11/9 | 55.3 ± 3.3 | NA | 16.80 ± 2.16 | 6/20 | | | | | |
| Taqi 2013 | | | | | | NA | | Yes | Yes | 21 |
| HHR | 3/2 | 65.2 ± 0.7 | NA | 9.6±0.6 | NA | | 1-0-1 | | | |
| LHR | 12/8 | 50.3 ± 2.5 | NA | 9.3±0.2 | NA | | | | | |
| Zhu 2014 | | | | | | NA | | Yes | Yes | 48 |
| HHR | NA | NA | NA | > 10 | NA | | 1-0-1 | | | |
| LHR | NA | NA | NA | > 10 | NA | | | | | |
| Ozturk 2015 | | | | | | NA | | Yes | Yes | 12 |
| HHR | 1/15 | 59 | 29.9 | > 10 | NA | | 0-L ^b | | | |
| LHR | 3/9 | 58 | 30 | > 10 | NA | | | | | |
| Ye 2015 | | | | | | NA | | Yes | Yes | 48 |
| HHR | 10/6 | 55.9 ± 10.4 | NA | 11.75 ± 3.47 | NA | | 7-0 | | | |
| LHR | 9/11 | 56.4 ± 10.0 | NA | 12.81 ±4.17 | NA | | | | | |
| Wang 2017 | | | | | | NA | | NA | NA | 60 (37.2 ^d) |
| HHR | NA | 65.2 ± 0.7 | NA | 13.60 ± 0.80 | NA | | NA | | | |
| LHR | NA | 50.3 ± 2.5 | NA | 9.30 ± 0.20 | NA | | | | | |
| Chen 2017 | | | | | | NA | | Yes | Yes | 30 |
| HHR | NA | NA | NA | 8.0±6.0 | NA | | 1-0-1 | | | |
| LHR | NA | NA | NA | 6.0 ± 4.0 | NA | | | | | |
| Ahonen 2017 | | | | | | NA | | NA | Yes | NA |
| HHR | 16/8 | 58.0±11.4 | 31.8±5.6 | 6.34 ± 77.26 | NA | | NA | | | |
| LHR | 24/14 | 61.0 ± 12.7 | 31±6.3 | 5.55 ± 4.80 | NA | | | | | |
| Halka 2017 | | | | | | NA | | | | |
| HHR | 9/16 | 61.5 ± 11.5 | 34.7±6.8 | 21.50 ± 7.10 | 14/25 | | O-R ^c | Yes | Yes | NA |
| LHR | 38/19 | 58.1 ± 13.9 | 33.6±7.1 | 16.30 ± 5.80 | 23/57 | | | | | |
| Liu 2019 | | | | | | NA | | Yes | Yes | 70 (26 ^d) |
| HHR | 8/4 | NA | NA | 12.38 ± 3.39 | 1/12 | | 1-0-1 | | | |
| LHR | 22/1 | NA | NA | 6.67 ± 1.51 | 4/23 | | | | | |
| Zhao 2019 | | | | | | NA | | Yes | Yes | 18 |
| HHR | 2/12 | 66.8 ± 10.6 | AA | 12.36 ± 4.15 | NA | | 1-0-1 | | | |
| LHR | 2/14 | 65.6±10.6 | NA | 11.48 ± 3.18 | NA | | | | | |

| Table 2 (continued | 1) | | | | | | | | | |
|--|--|---|---|--|--|---|--|--|------------------------------------|----------------------------------|
| Author | Gender (F/M) | Age (year) | BMI (kg/m²) | Size of hernia defect (cm) | Recurrent hernia | Grade of adhesion | Process of hybrid method | Reduction of hernia sac | Closure of defects | Follow up (months) |
| Ahonen 2018, 2020 | | | | | | NA | | Yes | Yes | 12 |
| HHR | 54/36 | 60.0 ± 12.8 | NA | 10.50 ± 8.90 | NA | | NA | | | |
| LHR | 54/40 | 57±11.4 | NA | 13.20 ± 11.10 | NA | | | | | |
| Tian 2020 | | | | | | NA | | Yes | Yes | 12 |
| ННК | 13/7 | 66.6±9.4 | NA | 8.95 ± 1.58 | NA | | 1-0-1 | | | |
| LHR | 15/6 | 62.5±7.4 | NA | 8.33±1.83 | NA | | | | | |
| Yang 2022 | | | | | | NA | | Yes | Yes | 88 (41 ^d) |
| HHR | 56/97 | 62.6 ± 15.5 | NA | 13.40 ± 3.40 | NA | | 1-0-1 | | | |
| LHR | 27/46 | 60.8 ± 15.8 | NA | 12.70 ± 3.10 | NA | | | | | |
| ^a L-O-L represented the ope | operation started with ration started with op | laparoscopy, ther oen surgery and en | n followed by open i nd up with robotic si | surgery and ended ul urgery. 🔺 represente | p with laparoscopy; ^b <i>O-L</i> ed the maximum follow-L | . represented the up period and ^d rel | operation started with presented the median | ו open surgery and follow-up time. NA | ended up with l meant not avail | aparoscopy; ^c able |



| n | 1 | | | |
|---|---|---|---|----|
| | | r | ٩ | ١. |
| | | L | | |

| | HHR | ł | LHR | t | | Odds Ratio | | Ode | ds Ratio | |
|--------------------------------------|-------------|---------|-------------------------|-------|--------|--------------------|------|------------|---------------|-----|
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Fixed, 95% Cl | Year | M-H, Fi | xed, 95% Cl | |
| Intestine injury | | | | | | | | | | |
| Taqi 2013 | 0 | 5 | 0 | 20 | | Not estimable | 2013 | | | |
| Zhu 2014 | 1 | 102 | 3 | 152 | 12.5% | 0.49 [0.05, 4.79] | 2014 | | | |
| Ye 2015 | 0 | 16 | 1 | 20 | 6.8% | 0.39 [0.02, 10.33] | 2015 | | | |
| Wang 2017 | 0 | 25 | 0 | 20 | | Not estimable | 2017 | | | |
| Ahonen-Siirtola 2017 | 4 | 24 | 9 | 38 | 30.3% | 0.64 [0.17, 2.38] | 2017 | | ■┼── | |
| Ahonen-Siirtola 2018 | 1 | 90 | 5 | 94 | 25.3% | 0.20 [0.02, 1.75] | 2018 | | + | |
| Zhao 2019 | 0 | 14 | 1 | 16 | 7.1% | 0.36 [0.01, 9.47] | 2019 | | <u> </u> | |
| Liu 2019 | 0 | 12 | 0 | 23 | | Not estimable | 2019 | | | |
| Yang 2022 | 23 | 153 | 3 | 73 | 18.0% | 4.13 [1.20, 14.23] | 2022 | | | |
| Subtotal (95% Cl) | | 441 | | 456 | 100.0% | 1.10 [0.59, 2.05] | | | • | |
| Total events | 29 | | 22 | | | | | | | |
| Heterogeneity: Chi ² = 8. | .72, df = 5 | (P = 0. | 12); I ^z = 4 | 43% | | | | | | |
| Test for overall effect: Z | = 0.31 (P | = 0.75) |) | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | 100 |
| | | | | | | | | Eavoure HH | R Favoure I H | 100 |

Fig. 2 a Meta-analyses of primary outcomes: operative time and blood loss. b Meta-analyses of primary outcome: Intestine injury

Secondary outcomes: assessment of postoperative morbidities

Seroma formation and wound infection

Subsequently, comparisons of short-term postoperative complications were performed, with a focus on seroma formation and wound infection. Twelve studies provided complete data for seroma formation analysis, revealing significant heterogeneity ($I^2 = 53\%$, p = 0.02) with the risk ratio (RR)

effect measure. Upon correcting RR to odds ratio (OR) with the random-effects analysis model, heterogeneity decreased ($I^2 = 41\%$, p = 0.08). The results showed that the risk of seroma formation was significantly lower in HHR compared to LHR (OR=0.29, 95% CI [0.15, 0.57], p = 0.0004) (Fig. 3a). A similar outcome ($I^2 = 33\%$, P = 0.14; OR=0.25, P = 0.0006) was established when excluding one study [28, 31] with 1 month of seroma events different from the other included studies.

Interestingly, 12 out of 14 studies without heterogeneity ($I^2 = 0\%$, p = 0.79) demonstrated that the risk of wound infection in HHR was 2.1 times higher than in LHR (95% CI [1.02, 4.33], p = 0.04) (Fig. 3b).

Postoperative pain

Additionally, patients in the HHR group experienced a similar extent of postoperative acute pain (VAS MD = 0.84 scores) compared to the LHR group in an analysis involving four studies with 136 vs. 150 cases (p = 0.40) (Fig. 4). Two studies with 235 vs. 163 cases assessing chronic pain showed a lower incidence rate in HHR compared to LHR, but the difference was not significant (Z = 1.58, p = 0.11) (Fig. 3b).

Postoperative intestine obstruction

Four studies analyzed the difference in intestinal obstruction incidence between the two methods, finding no statistically significant difference (OR=0.96, 95% CI [0.26, 3.57], p = 0.95) (Fig. 3b).

Mesh bulging and recurrence

Twelve included studies had declared the maximum follow-up periods ranging from 12 to 88 months, with three [15, 25, 30] out of 14 studies that did not indicate the recurrent cases. None of the studies specified 1-year, 3-year, or 5-year data for further stratified analysis except one [31]. The OR value for overall recurrence rate between HHR and LHR was 0.36 (95% CI [0.08, 1.59], p = 0.18) with heterogeneity (I² = 61%, p = 0.04), indicating no statistical difference in recurrence control between the two methods. Further subgroup analysis suggested that the comparison between the two methods in recurrence rates with follow-up less than 36 months did not achieve statistical difference (Z=0.04, P=0.97), while in another subgroup analysis with follow-up equal or greater than 36 months, the result indicated HHR had a lower risk of recurrence compared to LHR (OR=0.12, 95% CI [0.03, 0.51], Z=2.91, P=0.004) (Fig. 3c).

Mesh bulging or transposition, which resembles hernia recurrence in appearance and causes patient dissatisfaction, was reported in only two studies, with no significant difference between HHR and LHR in bulging rates (OR = 0.49, 95% CI [0.16, 1.54], P = 0.22) (Fig. 3b).

Discussion

The hybrid technique was proposed around 2000. Stoikes [3] once described its indications as follows: the anticipation of significant difficulty in adhesiolysis under a fully laparoscopic scenario, recurrent hernia with prior mesh, and avoidance of extensive subcutaneous flap when the hernia preferentially bulges toward one side of the abdomen. In such cases, the hybrid technique was considered a favorable option to decrease surgical complexity. However, unexpectedly, this meta-analysis demonstrated that HHR did not offer advantages in controlling operation time or blood loss compared to LHR. This finding is similar to previous meta-analyses comparing open and laparoscopic procedures, with neither achieving statistical significance, despite both indicating that the laparoscopic procedure took less surgical time than the open procedure (Lap vs. Open, SMD: -1.83, p = 0.143 and SMD: -0.08, p = 0.97, respectively) [6, 34]. We speculate that this may be attributable not only to the more extensive surgical process in HHR compared to LHR, such as additional skin incisions, sac dissection, and closure of the orifice but also to complex morbidities or the extent of adhesion. Furthermore, the incidences of intestinal injury and obstruction between the two methods did not exhibit significant differences in 9 out of 14 studies, suggesting that experienced and proficient surgical performance can minimize potential risks occurring during dense adhesiolysis.

Cassar [35] summarized numerous studies prior to 2000, reporting that the rates of postoperative seroma formation in open procedures with mesh repair ranged from 1 to 15%, while in laparoscopic procedures, they ranged from 1 to 36%. However, a subsequent metaanalysis [34] suggested that the risk did not significantly favor patients undergoing laparoscopic repair compared to those undergoing open hernia repair (open vs. lap, OR=1.54, p = 0.38). In contrast, the results of this meta-analysis supported the notion that HHR yielded a lower incidence of postoperative hematoma or seroma than LHR. Hernia sac excision and subcutaneous suction drainage have long been considered routine processes in hybrid hernia surgery, which may contribute to the reduced risk of postoperative seroma and hematoma formation [36].

In contrast to seroma and hematoma, which are often asymptomatic and predisposed to self-resolution, wound infection is of greater concern, as it can potentially lead to mesh infection and necessitate mesh removal. In this meta-analysis, the risk of wound infection was found to be more favorable for HHR than LHR, with HHR vs LHR yielding an OR of 2.10 (P=0.04). This finding aligns with two earlier meta-analyses comparing open and laparoscopic surgeries [5, 34]. The higher risk of infection in open or combined open surgeries may be attributed to more extensive subcutaneous mobilization.

Postoperative pain is a common discomfort. In this analysis, four studies assessed pain within 1 week after surgery, referred to here as acute pain. No statistical significance was observed between the two groups in postoperative VAS scores. Sajid [6] compared the impact of acute pain between laparoscopic and open repair using

| Study or Subgroup Seroma Deng 2013 Tagi 2013 Zhu 2014 Ozturk 2015 Ahonen-Siirola 2017 Ahonen-Siirola 2018 Zhao 2019 Tian 2020 Yang 2021 Ahonen-Siirola 2018 Zhao 2019 Tian 2020 Yang 2022 Subtotal (65% CI) Total events Heterogeneity: Tau" = 0. Wound infection Tagi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Siirola 2017 Wang 2017 Ahonen-Siirola 2017 Wang 2017 Ahonen-Siirola 2017 Ahonen-Siirola 2017 Ahonen-Siirola 2018 Heiterogeneity: Chi" = 1. Test for overail effect: Z Postoperative ch Ahonen-Siirola 2017 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative int | HIR Events To Version 10 Version 10 V | R LH Total Events 20 33 5 00 102 255 16 4 16 1 24 6 33 1 125 1 86 46 14 1 20 23 163 24 514 = 16.92, df = 1 20 3 21 53 24 514 = 16.92, df = 1 20 25 102 25 102 25 102 25 102 25 102 102 102 102 102 102 102 102 102 102 103 102 103 102 103 102 104 10 105 102 105 102 102 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1 | LLHR Total Tot | I Weight. 0 6.4%. 0 16.2%. 2 4.2%. 3 12.9%. 3 12.9%. 3 12.9%. 3 12.9%. 3 15.9%. 4 18.0%. 12 4.3%. 12 4.3%. 12 4.3%. 13 6.0%. 14 18.0%. 15 10.0%. 10 89.1%. 10 89.1%. 10 89.1%. 10 89.1%. 10 89.1%. 10.0%. 100.0%. | Odds Ratio M-H. Random. 35% M-H. Random. 35% 0.30 (0.03, 3.1 Not estimable 0.21 (0.07, 06 0.06 (0.00, 1.1 0.39 (0.02, 1.0 0.10 (0.4, 5.5 0.48 (0.26, 0.8 0.36 (0.01, 9.2 0.79 (0.5, 1.35 0.48 (0.26, 0.8 0.36 (0.01, 9.2 0.79 (0.5, 1.35 0.48 (0.26, 0.8 0.50 (0.04, 5.5 0.50 (0.04, 5.5 0.50 (0.04, 5.5 0.50 (0.04, 5.5 0.50 (0.04, 5.5 0.50 (0.05, 0.1 0.28 (0.15, 0.5 1% Odds Ratio 1. M-H. Fixed. 95%.1 Not estimable 3.46 (0.14, 87.94 0.51 (0.05, 5.12 0.55 (0.06, 5.21 2.00 (0.11, 35.60 3.97 (0.49, 9.23 7 5 2.10 (1.02, 4.33 0.45 (0.17, 1.21 Not estimable 3.36 (0.29, 39.22 0.45 (0.17, 1.21 Not estimable 3.36 (0.29, 39.22 0.51 (0.02, 2.85 0.45 (0.17, 1.21) Not estimable 3.36 (0.29, 39.22 0.51 (0.02, 2.85 0.45 (0.17, 1.21) Not estimable 0.45 (0.17, 1.21) Not estimable 0.46 (0.26, 3.57) | CI Year 151 2013 162 2013 162 2013 171 2014 171 2017 171 2012 171 2012 171 2012 171 2012 171 2022 171 2022 171 2022 171 2022 172 2018 173 2017 174 2019 175 20222 176 20222 177 2022 | Od MHL Ra Od Od Terrores HH Od MHL FI Od MHL FI Od | ds Ratio ndom. 95% CI | |
|--|---|---|--|---|--|--|---|---|--------------------|
| Study or Subgroup Seroma Seroma Deng 2013 Taql 2013 Taql 2013 Zhu 2014 Ozturk 2015 Ahonen-Sintola 2017 Chen 2017 Yang 2021 Subtotal (95% C) Total events Heterogeneity: Tau" = 0. Wound infection Deng 2013 Ahonen-Sintola 2017 Ahonen-Sintola 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (95% C) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative int Heterogeneity: Chi" = 1. Test for overall effect: Z Monen-Sintola 2017 Ahonen-Sintola 2017 | Events Ts 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 2 2 2 1 2 2 1 2 2 3 2 7 4 2 2 3 2 7 4 2 2 3 2 7 4 2 2 3 2 7 4 2 2 3 2 7 4 2 2 3 2 7 2 2 3 5 7 7 1 2 3 2 7 2 3 3 2 7 2 3 3 2 7 2 3 3 2 7 2 3 3 2 7 2 3 3 2 3 3 2 3 3 2 3 3 3 3 3 1 1 3 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 3 3 1 1 2 2 2 3 7 7 1 2 2 1 | Total Events 20 3 5 0 102 25 16 4 16 4 16 4 20 25 16 4 16 4 23 6 4 16 4 16 23 6 4 6 4 6 20 2 5 14 114 = 1.6 2, df = 1 20 2 5 14 = 0.2 2 5 14 = 0.2 4 20 1 20 2 5 14 = 0.0004) R LL 1 5 3 24 20 1 20 2 16 1 6 6 6 4 20 2 20 1 20 2 16 3 3 3 24 4 25 90 0 25 5 12 25 16 16 16 16 16 16 16 16 16 16 16 2 16 2 17 2 17 2 16 2 26 2 10 2 | nts_Total 3 200 20 25 152 1 200 26 152 1 201 27 1 201 27 1 201 27 1 201 20 20 20 20 | Weight Weight 0 6.4% 2 16.2% 3 12.1% 3 12.9% 3 12.9% 3 12.9% 3 12.9% 3 12.9% 3 15.9% 3 15.9% 0 8.1% 10 8.1% 10 8.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 83.1% 10 84.4% 10.0% 10.0% | M-H. Random. 95% 0.30 [0.03, 3]. Not estimate 0.21 [0.07, 64] 0.21 [0.07, 64] 0.06 [0.00, 1]. 0.23 [0.02, 10] 0.27, 42] 0.70 [0.05, 13] 0.27, 42] 0.70 [0.05, 13] 0.26 [0.27, 42] 0.70 [0.05, 13] 0.46 [0.26, 06] 0.46 [0.26, 06] 0.46 [0.26, 06] 0.45 [0.05, 0.45] 0.65 [0.06, 16] 0.46 [0.26, 06] 0.48 [0.26, 06] 0.56 [0.06, 52] 0.05 [0.02, 01] 0.75 [0.05, 13] 0.35 [0.23, 956] 1% Not estimable 1.35 [0.26, 9.72] 0.55 [0.06, 521] 2.05 [0.06, 521] 2.00 [0.11, 350] 3.46 [0.14, 48794] 0.55 [0.06, 521] 2.05 [0.06, 521] 2.00 [0.11, 350] 3.56 [0.26, 9.37] 0.57 [0.49, 9237] 3.57 [0.49, 9237] 2.10 [1.02, 4.33] 1.50 [0.26, 9.32] 0.55 [0.26, 9.32] 2.50 [0.26, 9.32] 3.36 [0.39, 30.26] 3.36 [0.39, 30.26] 0.45 [0.17, 1.21] Not estimable 3.36 [0.29, 33.26] 3.36 [0.26, 357] 0.36 [0.26, 357] | C I Year [5] 2013 [5] 2013 [2] 2014 [2] 2014 [2] 2014 [2] 2014 [2] 2014 [2] 2014 [2] 2014 [3] 2015 [2] 2014 [3] 2017 [2] 2022 [3] 2013 [3] 2014 [3] 2015 [3] 2017 [2] 2018 [2] 2018 [2] 2018 [2] 2019 [3] 2020 [3] 2022 [3] 2022 [3] 2020 [3] 2022 [3] 2020 [3] 2020 [3] 2020 | MHLRa 0.005 0.1 Favours HH Odd MHLF | Indom. 95% Cl | - |
| Deng 2013 Taqi 2013 Taqi 2013 Zhu 2014 Ge 2015 Ge 2015 Chan 2017 Ahonen-Siircla 2018 Zhu 2014 Ge 2015 Ge 2015 | $\begin{array}{c} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$ | 20 3 5 00 102 25 16 45 16 25 16 25 16 25 16 25 16 25 16 25 16 25 16 25 16 25 14 11 20 2 153 24 14 11 20 1 153 24 154 14 1120 2 153 24 153 24 153 24 153 24 20 102 16 3 16 3 324 26 15 16 3 324 27 15 16 3 324 28 10 29 00 25 11 16 3 32 1 16 3 32 1 16 3 32 1 153 24 24 6 16 3 16 3 32 4 25 11 16 3 32 4 25 11 16 3 32 4 25 11 16 3 32 4 25 12 17 2 16 3 32 1 153 24 25 1 16 3 32 4 25 12 17 2 16 3 16 3 16 3 17 2 17 2 18 2 19 0 20 2 10 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 0.20 (D.03, 31 Net estimate 0.16 (D.00, 11 0.36 (D.00, 11 0.36 (D.00, 11 0.36 (D.01, 12 0.36 (D.03, 138 43 Not estimate 1.36 (D.32, 25.36 1.36 (D.32, 35.36 1.36 (D.32, 35.36) 1.36 (D.32, 35.36 1.36 (D.32, 35.36) 1.36 (D.3 | [5] 2013 [2] 2014 [2] 2014 [2] 2015 [2] 2015 [2] 2015 [2] 2015 [2] 2015 [2] 2017 [2] 2017 [2] 2017 [2] 2018 [2] 2013 [2] 2013 [2] 2013 [2] 2013 [2] 2013 [2] 2014 [2] 2015 [2] 2016 [2] 2017 [2] 2018 [2] 2018 [2] 2018 [2] 2018 [2] 2018 [2] 2019 [2] 2012 [3] 2020 [3] 20202 [3] 20202 [3] 20202 | 0.005 0.1 Favours HH 0dd | a favours LHR ds Ratio xxed. 95% Cl | |
| Tag_2013 Zhu 2014 Ozturk 2015 Ve 2015 Ahonen-Siirola 2017 Chen 2017 Vang 2017 Ahonen-Siirola 2018 Zhao 2019 Tial 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau" = 0. Test for overail effect: Z Vang 2017 Ahonen-Siirola 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Siirola 2017 Ahonen-Siirola 2018 Heterogeneity: Chi" = 1. Test for overail effect: Z Postoperative ch Ahonen-Siirola 2018 Heterogeneity: Chi" = 4. Test for overail effect: Z Postoperative ch Ahonen-Siirola 2018 Heterogeneity: Chi" = 4. Test for overail effect: Z Postoperative ch Ahonen-Siirola 2017 Ahonen-Siirola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Mesh bulging/tra Derg 2013 Ahonen-Siirola 2020 Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Mesh bulging/tra Derg 2013 Ahonen-Siirola 2020 Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Mesh bulging/tra Derg 2013 Chal events Heterogeneity: Chi" = 1. Test for overail effect: Z Mesh bulging/tra Derg 2013 Ahonen-Siirola 2020 Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overail effect: Z Subto | $\begin{array}{c} 0 \\ 4 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$ | $ \begin{array}{ccccc} & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ $ | 0 20 0 20 5 152 12 20 6 38 1 37 1 20 6 38 6 44 1 16 6 44 4 1 16 6 44 4 1 16 6 44 4 1 16 6 44 1 10 (P = 0. 1 22 1 22 1 22 1 22 1 23 5 33 3 3 3 3 1 22 1 2 2 4 9 1 7 1 2 2 5 1 7 5 5 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 | al Usedinity of the second sec | Not estimable 0.21 (10.07, 06 0.06 (10.0, 11, 0.39 (10.02, 10.3 1.07 (10.7, 4.2 0.36 (10.01, 9.2 0.79 (10.5, 13.5 0.48 (12.5, 0.8 0.36 (10.19, 9.2 0.79 (10.5, 13.5 0.48 (12.5, 0.8 0.36 (10.2, 9.5 0.5 (10.4, 5.5 1% Odds Ratio 1. MH. Fixed, 95%, 1 MH. Fixed, 95%, 1 Not estimable 3.45 (10.14, 87.9 0.45 (10.3, 138.43 Not estimable 3.46 (10.14, 87.9 0.55 (10.05, 5.12 0.55 (10.05, 5.12 0.45 (10.17, 1.21 Not estimable Not estimable Not estimable Not estimable | cols cols <thcols< th=""> cols cols <thc< td=""><td>0.005 0.1 Favours HH 0.006 MH, F</td><td>R Favours LHR</td><td>- 200 - -</td></thc<></thcols<> | 0.005 0.1 Favours HH 0.006 MH, F | R Favours LHR | - 200 - - |
| Zhu 2014 Ozturk 2015 Ye 2015 Ahonen-Siirtola 2017 Chen 2017 Wang 2017 Tan 2010 Tan 2010 Tan 2022 Subtotal (65% C) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Number 2013 Zhu 2014 Deng 2013 Zhu 2014 Deng 2013 Zhu 2014 Chen 2017 Ahonen-Siirtola 2017 Wang 2017 Ahonen-Siirtola 2017 Wang 2017 Ahonen-Siirtola 2018 Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative inf Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative inf Ahonen-Siirtola 2017 Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative inf Taig 2013 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Noreal for 2017 Ahonen-Siirtola 2020 Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} \mathbf{A} & \mathbf{A} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 0 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ $ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 25 152 1 2 1 2 1 2 1 2 1 2 1 1 1 2 1 1 1 2 1 2 1 1 1 2 1 2 1 2 1 2 1 1 0 2 1 2 0 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 | 2 16.2% 3 10.2% 3 10.2% 4 2% 4 3% 4 3 | 0.21 (0.07, 60 0.06 (0.00, 1.1 0.39 (0.02, 1.3 0.37 (0.27, 4.2 0.36 (0.01, 9.2 0.37 (0.05, 1.3.5 0.48 (0.26, 0.05, 1.3.5 0.48 (0.26, 0.05, 1.3.5 0.48 (0.26, 0.05, 1.5 0.05 (0.02, 0.1 0.29 (0.15, 0.5 1% 0.05 (0.04, 5.3 0.05 (0.02, 0.1 0.29 (0.15, 0.5 1% 0.05 (0.03, 1.59 60 6.48 (0.14, 6.79 0.51 (0.05, 518 0.05 (0.05, 518) 0.05 (0.05, 518 0.05 (0.05, 518) 0.05 (0.05, | S21 2014 S21 2014 S21 2014 S21 2014 S21 2017 S21 2017 S21 2017 S21 2017 S21 2017 S21 2017 S21 2019 S21 2019< | 0.005 0.1 Favours HH Odd MHJ. F | Tarrow Cl | |
| Orabits Orabits Orabits Abins Siticials 2017 Abins Siticials 2017 Abons Siticials 2017 Abons Siticials 2017 Abons Siticials 2017 Abons Siticials 2018 Zhao 2019 Subtotal (65%) Coll Vang 2022 Subtotal (65%) Total events Heterogeneity: Tau" = 0. Test for overall effect: Z Wound infection Taaj 2013 Zhu 2014 Deng 2013 Zhu 2014 Coll Chen 2017 Abones: Sitrola 2017 Wang 2017 Abones: Sitrola 2018 Huit 2019 Lui 2010 Lui 2010 Lui 2010 Lui 2010 Lui 2010 Lui 2011 Abones: Sitrola 2017 Abones: Sitrola 2020 Subtotal (65%) C) Total events Heterogeneity: Chi# = 1. Test for overall effect: Z Postoperative int Hotal (16%) Sittola 2017 Abones: Sittola 2017 Abones: Sittola 2017 AbonenSittola 2017 | $\begin{array}{c} & 0 \\ & 0 \\ & 0 \\ & 1 \\ & 0 \\ & 1 \\ & 0 \\ & 1 \\ & 0 \\ & 1 \\ & 0 \\ & 1 \\ & 1 \\ & 2 \\ & 2 \\ & 2 \\ & 2 \\ & 1 \\ & 2 \\ & 2 \\ & 2 \\ & 1 \\ & 2 \\$ | $\begin{array}{c} 1 & 6 & - \\ 1 & 6 & - \\ 2 & 4 & 6 & - \\ 2 & 5 & - \\ 2 & 5 & - \\ 2 & 5 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & 2 & - \\ 1 & - \\$ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 1 4.2.% 1 4.2.% 2 1.2.% 2 2.3.% 2 2.3.% 2 2.3.% 2 2.3.% 2 2.3.% 2 3.7.% 2 2.3.% 2 3.7.% 3 1.5.% 3 10.8.% 3 10.8.% 3 10.8.% 3 10.8.% 3 10.8.% 3 10.8.% 2 100.0.% 3 10.8.% 2 100.0.% 3 10.8.% 2 100.0.% | 0.36 (0.2), 10.3 0.37 (0.2), 10.3 0.37 (0.2), 12.3 0.76 (0.0), 12.3 0.76 (0.0), 12.3 0.76 (0.0), 12.3 0.76 (0.0), 12.3 0.76 (0.0), 12.4 0.76 (0.0), 12.4 0.76 (0.0), 12.4 0.76 (0.0), 12.4 0.76 (0.0), 12.4 0.76 (0.0), 12.4 0.76 (0.0), 12.4 1% Odds Ratio 1 M-H. Fixed, 35%: 1 6.48 (0.2), 13.44 5.3.5 (0.3), 138.43 Not estimable 3.36 (0.2), 138.43 Not estimable 3.46 (0.1, 4, 67.54 0.55 (0.00, 5.21 2.00 (0.1, 13.64) 3.97 (0.40, 92.37 5 2.10 (1.1, 92.43) 3.01 (0.1, 10.61) 5 0.33 (0.10, 10.61) 5 0.33 (0.10, 1.06) 5 0.33 (0.10, 1.06) 5 0.33 (0.10, 1.06) 5 0.33 (0.10, 1.07) 5 0.45 (0.27, 3.22) 5 0.51 (0.02, 3.26) | GL 19 2017 32 0017 32 0017 33 0017 33 0017 340 0017 2019 35 0017 2012 36 0017 2012 37 0017 2022 37 0017 2022 37 0017 2022 38 0018 2018 31 2015 2017 32 2017 2018 31 2017 2018 32 2019 3 31 2012 3 32 2019 3 33 2020 3 34 2020 3 | 0.005 0.1 Favours HH MH, E | a Favours LHR ds Ratio xed. 95% Cl | |
| Ahonen-Sinicia 2017 Chen 2017 Wang 2017 Ahonen-Sinicia 2018 Zhao 2019 Tian 2020 Subtotal (9% CI) Total events Heterogenety: Tau" = 0. Test for overall effect 2 Wound infection Taig 2013 Doing 2013 Zhu 2014 Octurk 2015 Ye 2015 Chen 2017 Ahonen-Sinicia 2018 Heterogenety: Ch ¹ = 4 Heterogenety: Ch ¹ = 4 Heterogenety: Ch ¹ = 4 Heterogenety: Ch ¹ = 4 Heterogenety: Ch ² = 1 Heterogenety: Ch ² = 1 Taig 2013 Ye 2015 Situbatal (9% CI) Taid events Heterogenety: Ch ² = 1 Test for overall effect Z Mensh budging/tra Deng 2013 Ahonen-Situba 2017 Ahonen-Situba 2017 Ahonen-Situba 2017 Heterogenety: Ch ² = 1. Test for overall effect Z Mensh budging/tra Deng 2013 Ahonen-Situba 2017 Taid 2015 Ye 2015 Chen 2017 Heterogenety: Ch ² = 1. Test for overall effect Z Nonen-Situba 2020 Taig 2022 Subtotal (9% CI) Taid 2015 Ye 2015 Chen 2017 Heterogenety: Ch ² = 1. Test for overall effect Z Nonen-Situba 2020 Taig 2013 Taig 2013 Taig 2013 Taig 2013 Taig 2017 Heterogenety: Tai ² = 1. Test for overall effect Z | 7 4 0 1 3 27 4 2 = 0.43; Chi ² = 1 4 2 = 0.43; Chi ² = 1 4 2 = 0.43; Chi ² = 1 5 HHR 5 Events T ion 0 3 3 1 1 8 3 3 7 1 8 3 3 1 1 8 3 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 3 1 1 8 1 8 1 8 1 1 8 1 8 1 1 1 8 1 1 1 8 1 1 1 1 8 1 1 1 1 8 1 1 1 1 1 8 1 1 1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 | 24 6 33 1 125 1 86 46 14 1 20 2 153 24 514 144 = 16.92, df = 10 20 102 102 102 102 102 102 102 103 24 20 102 102 102 103 24 103 1 104 25 20 102 105 12 105 12 1 | 6 38 1 37 1 20 46 94 1 16 46 94 1 16 2 21 2 21 2 37 3 3 114 1 0 (P = 0. 1 2 97 1 2 97 1 2 0% 1 2 99 1 7 1 2 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 | a 12.9% 3 72.9% 3 8% 3 75% 3 15.9% 4 22.6% 5 5.9% 5 5.9 | 1.07 (0.27, 4.2 0.36 (0.01, 9.2 0.79 (0.5, 1.35 0.48 (0.26, 0.8 0.36 (0.04, 9.2 0.50 (0.04, 5.5 0.55 (0.26, 0.1 0.45 (0.26, 0.1 0.45 (0.26, 0.1 0.45 (0.26, 0.1 0.45 (0.45, 0.1 0.45 (0.45, 0.1 0.45 (0.45, 0.1 0.45 (0.14, 0.1 0.45 (0.14, 87.94 0.45 (0.16, 1.4, 87.94 0.45 (0.16, 1.4, 87.94 0.45 (0.16, 1.4, 87.94 0.45 (0.16, 1.4, 87.94 0.45 (0.17, 1.21 0.45 (0.17, 1.21 0.45 (0.17, 1.21 0.45 (0.17, 1.21 0.45 (0.26, 3.25 0.45 (0.26, 3.45 0.45 (0.26, 3.45) 0.45 (0.26 | CEI Year 800 2017 900 2018 901 2020 901 2020 901 2020 901 2020 901 2020 901 2022 901 2022 902 2022 903 2022 903 2022 904 2022 905 2022 | 0.005 0.1 Favours HH | R Favours LIR k Favours LIR ts Ratio xed. 95% Cl | - |
| Chen 2017 Wang 2017 Ahonen-Siirtola 2018 Zhao 2019 Tian 2020 Yullahotal (55% C) Total events Heterogeneity: Tau' = 0. Test for overall effect: Z Usubatcal (55% C) Total events Heterogeneity: Chi' = 4. Yang 2013 Zhu 2014 Ozturk 2015 Ya 20120 Chan - Siirtola 2017 Ahonen-Siirtola 2018 Halka 2018 Vang 2027 Subtotal (55% C) Total events Heterogeneity: Chi'' = 4. Heterogeneity: Chi'' = 4. Heterogeneity: Chi'' = 4. Ahonen-Siirtola 2018 Heterogeneity: Chi'' = 4. Ahonen-Siirtola 2018 Heterogeneity: Chi'' = 4. Ahonen-Siirtola 2020 Subtotal (55% C) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Subtotal (55% C) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (55% C) Total events Heterogeneity: Tau'' = 1. Test for overall effect: Z | $\begin{array}{c} 0 \\ 0 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2$ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 3.8% 3.7% 4.7% 2.6% 1 2.6% 3.7% 3.7% 5 5.9% 5 1.5% 5 1.5% 5 1.5% 5 1.5% 5 1.5% 6 1.6% 7 2.2% 7 7.2% 6 100.0% 6 100.0% 10 89.1% 10 89.1% 10.0% 100.0% 10 81.16% 10.0% 100.0% | 0.36 [0.1, 22 0.79 [0.05, 13.5 0.48 [0.26, 0.05, 13.5 0.48 [0.26, 0.05, 13.5 0.48 [0.26, 0.05, 14.5 0.36 [0.01, 9.4 0.50 [0.04, 5 0.25 [0.02, 0.1 0.29 [0.15, 0.5 1% 0.45 [0.26, 373 0.55 [0.05, 518 0.55 [0.05, 23, 922 0.55 [0.05, 29, 922 0.55 [0.05, 29, 922 0.55 [0.05, 29, 922 0.55 [0.05, 29, 922 0.55 [0.05, 28, 92] 0.55 [0.05, 2 | 231 2017 2017 2019 2018 2018 2018 2018 2010 2017 2019 2020 2017 2011 2018 2014 31 2016 2015 41 2016 2017 2012 2018 2018 31 2016 2018 31 2017 2019 71 2022 2018 31 2016 2019 71 2022 2022 31 2018 2022 31 2022 2020 31 2022 | 0.005 0.1 Favours HH Odd MHL F | Favours LHR ds Ratio xxed. 95% Cl | - |
| Anonen-Siricla 2018 Zhao 2019 Zhao 2019 Subtotal (95% CI) Tian 2020 Subtotal (95% CI) Total events Heterogeneity: Tau" = 0. Test for overall effect: Z Wound infection Taqi 2013 Deng 2013 Zhu 2014 Octurk 2015 Chen 2017 Ahonen-Siricla 2017 Wang 2017 Ahonen-Siricla 2018 Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative ch Ahonen-Siricla 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative ch Ahonen-Siricla 2017 Ye 2015 Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative ch Ahonen-Siricla 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siricla 2020 Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siricla 2020 Zubtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z | $\begin{array}{c} 3 & 2^{7} \\ 4 & 2^{7} \\$ | $\begin{array}{c} & & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & & \\$ | 46 54 16 2 17 16 24 73 110 17 24 73 111 12 111 12 111 12 111 12 111 12 111 12 111 12 111 17 | 1 22.6% 5 3.7% 5 3.7% 1 5.9% 1 15.9% 1 15.9% 1 15.9% 1 100.0% 10 8.1% 12 4.3% 12 4.3% 12 4.3% 12 4.3% 12 4.3% 12 4.3% 13 12.2% 10 89.1% 10 89.1% 10 89.1% 10 89.1% 10 89.1% 10 84.4% 2 100.0% | 0.48 (D.26, 0.0) 0.36 (0.01, 9.4) 0.50 (D.04, 59) 0.50 (D.04, 59) 0.50 (D.02, 0.1) 0.29 (D.15, 0.5) 1% Not estimable 3.36 (D.32, 35.36) 6.48 (D.30, 138.43) Not estimable 3.36 (D.32, 35.36) 6.48 (D.30, 138.43) Not estimable 3.36 (D.31, 4, 67.34) 0.55 (D.06, 52.1) 2.05 (D.06, 52.1) 2.05 (D.06, 52.1) 3.37 (D.1, 4, 67.34) 0.55 (D.06, 52.1) 2.05 (D.07, 12.1) Not estimable 3.36 (D.26, 9.22, 4.33) 3.37 (D.1, 1.00) 3.37 (D.1, 1.00) 3.36 (D.20, 9.22) 3.01 (D.1, 1.00) 3.01 (D.1, 1.00) 3.04 (D.1, 1.21) Not estimable 3.36 (D.20, 3.22) 3.36 (D.20, 3.23) | coli p coli p p 2019 2020 cl Year cl Year cl Year cl 2017 2022 cl Year cl 2018 2013 cl Year di 2013 2014 cl Year di 2013 2014 cl Year di 2014 2016 cl Year di 2017 cl Year cl Year di 2018 j cl Year di 2022 j cl Year di 2022 j cl Year | 0.005 0.1 Favours HH MHLF | A Favours LHR | - - - |
| Zhao 2019 Tian 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau" = 0. Test for overall effect: Z Wound Infection Tagi 2013 Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Heterogeneity: Chi" = 4. Postoperative ch Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi" = 4. Postoperative int Tagi 2013 Zhu 2014 Vang 2027 Subtotal (95% CI) Total events Heterogeneity: Chi" = 4. Postoperative int Tagi 2013 Zhonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Mesh bulging/tra Derg 2013 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogenei | $\begin{array}{c} 0 \\ 1 \\ 4 \\ 2 \\ 1 \\ 1 \\ 2 \\ 2 \\ 2 \\ 1 \\ 2 \\ 2 \\ 2$ | 14 1 14 1 20 2 514 144 = 6.92, df = 16.92, df = 16.92, df = 16.92, df = 16.92, df = 17.92, df = | 1 1 61 2 21 2 2 2 21 2 3 3 3 3 3 2 1 1 4 10 (P = 0. 10 1 2 1 1 1 0 (P = 0. 10 1 2 1 1 1 0 (P = 0. 10 1 2 1 1 0 1 0 2 1 1 1 0 1 1 0 1 1 0 1 1 1 0 1 1 0 1 1 0 1 1 1 0 1 1 0 1 1 1 0 1 1 0 1 1 0 1 1 1 0 | 3.7% 3.7.% 5.9% 5.9% 5.9% 100.0% 100.0% 100.0% 12.4.3% 10.0.4% 10.0.6% 10.0.6% | 0.36 (0.01, 9.4 0.50 (0.04, 5.9 0.05 (0.04, 5.9 0.05 (0.02, 0.1 0.29 (0.15, 0.5 1%) 00dds Ratio 1 M-H. Fixed. 95%; Mot estimable 3.35 (0.32, 35.36 5.45 (0.31, 134.34 Not estimable 5.46 (0.14, 87.94 6.45 (0.31, 134.34 Not estimable 5.47 (0.14, 87.94 6.47 (0.31, 134.34 Not estimable 5.47 (0.14, 147.94 6.47 (0.31, 144.14 Not estimable 5.47 (0.14, 147.94 6.47 (0.47, 144.14 0.45 (0.17, 142.14 Not estimable 5.36 (0.29, 39.22 0.51 (0.09, 28.86 6.36 (0.26, 35.77) | (7) 2019 (7) 2019 (7) 2022 (7) 2023 (7) 2024 (7) 2024 (7) 2024 (7) 2024 (7) 2022 (7) 2024 (7) 2024< | 0.005 0.1 Favours HH 000 MH, F | R Favours LHR ds Ratio | - |
| Tian 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Yang 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Siirtola 2017 Wang 2017 Ahonen-Siirtola 2017 Chan 2017 Ahonen-Siirtola 2018 Heterogeneity: Chi ² = 4. Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative int Heterogeneity: Chi ² = 1. Test for overall effect: Z Motens-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Motens Distrota Heterogeneity: Chi ² = 1. Test for overall effect: Z Motens Distrota Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 4 \\ + 4 \\ + 4 \\ + 4 \\ + 5 \\ +$ | 20 2 21 20 2 153 224 514 144 = 16.92, df = 10 = 0.0004) R LL Total Events 5 20 102 16 16 33 24 25 102 16 321 12 15 225 11 ($P = 0.23$); P P = 0.41) bistruction 5 16 225 11 ($P = 0.22$); P P = 0.22); P P = 0.22); P No. 22 102 103 104 105 102 102 102 102 102 102 102 102 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 5.5% | 0.50 (0.04, 5) 0.05 (0.02, 0) 0.29 (0.15, 0.5 0.25 (0.02, 0) 0.29 (0.15, 0.5 1% 0.04 s Ratio 1% 1% 1% 1% 1% 1% 1% 0.04 s Ratio 1% 1% 1% 1% 0.04 s Ratio 1% 1% 1% 0.04 s Ratio 1% 1% 1% 0.04 s Ratio 1% 1% 0.05 (10.0, 1% 1.59 (0.2, 5% 0.05 (10.05, 5% 0.05 (10.05, 5% 0.05 (10.05, 5% 0.05 (10.05, 5% 0.045 (20.4, 3%) 1.59 (0.26, 9% 0.05 (10.05, 5% 0.05 (10.05, 5% 0.045 (20.4, 3%) 1.04 (1.15, 14.09 0.45 (0.17, 1.21) Not estimable 1% 1.04 (0.15, 14.09 0.45 (0.17, 1.21) Not estimable 1.38 (0.29, 39.28 0.45 (0.07, 1.21) 1.44 (0.15, 14.09 0.45 (0.47, 1.21) 1.44 (0.15, 14.09 0.45 (0.47, 1.21) 1.44 (0.15, 14.09 0.45 (0.47, 2.3) 0.45 (0.47, 2.3) 1.44 (0.15, 14.09 0.45 (0.47, 1.21) 1.44 (0.45, 14.09 1.44 (0.45, 14.09) 1.44 (0.45, | Hold 2020 Cl Year 2022 277 2023 2022 2013 2013 31 2014 42 2017 31 2017 31 2018 32 2017 32 2017 33 2020 34 2022 35 2022 | 0.005 0.1 Favours HH Odd M-H. F | A Favours LHR ds Ratio Xxed. 95% CI | 200 |
| subtotal (65% CI) Total events Hetercogeneity: Tau" = 0. Test for overall effect: Z Wound infection Taqi 2013 Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Sirtola 2017 Wang 2017 Ahonen-Sirtola 2018 Heterogeneity: Chi" = 4. Heterogeneity: Chi" = 4. Heterogeneity: Chi" = 4. Heterogeneity: Chi" = 4. Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative ch Ahonen-Sirtola 2020 Yang 2022 Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Postoperative ch Heterogeneity: Chi" = 1. Test for overall effect: Z Monen-Sirtola 2017 Ahonen-Sirtola 2020 Yang 2022 Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Sirtola 2020 Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (65% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z | $\begin{array}{c} 42\\ 42\\ = 0.43; Chi^2 = 1\\ 5\\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$ | $\begin{array}{c} \mathbf{F}_{1} & \mathbf{F}_{2} & \mathbf{F}_{2} \\ \mathbf{F}_{1} & \mathbf{F}_{2} & \mathbf{F}_{2} \\ \mathbf{F}_{2} & \mathbf{F}_{2} & \mathbf{F}$ | LHR ents Tota ents Tota ents Tota ents Tota ents Tota ents 1 29 1 20 1 3 1 3 1 20 1 20 1 3 1 20 1 20 1 3 1 20 1 3 1 20 1 3 1 20 1 3 1 3 1 20 1 3 1 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 | al Weight bl 0. bl 0. bl 10. bl 1.5. bl 1.0.% bl 1.0.% bl 1.0.% bl 1.5.% bl 1.5.% | 0.29 (0.15, 0.5 0.29 (0.15, 0.5 1% 0.04ds Ratio 1 M-H. Fixed, 39%; 1 Not estimable 3.36 (0.32, 35.36 0.48 (0.3), 138.43 Not estimable 3.46 (0.14, 87.94 0.55 (0.06, 5.21 0.55 (0.06, 5.21 0.05 (0.07, 1.21 0.44 (0.15, 14.09 0.45 (0.17, 1.21 Not estimable 3.36 (0.28, 357, 10.09, 2.86 0.51 (0.09, 2.86 0.51 (0.09, 2.86 0.51 (0.09, 2.86 | CI Year e 2013 3] 2013 3] 2013 3] 2014 4] 2014 2] 2018 2] 2017 4] 2017 2] 2018 2] 2019 2] 2019 3] 2022 3] 2022 3] 2022 3] 2022 | Odd Odd MHLF | A Favours LHR ds Ratio xed. 95% Cl | |
| Total events Heterogeneity: Tau" = 0. Test for overall effect: Z Study or Subgroup Wound Infection Tagl 2013 Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Chi" = 4. Postoperative inf Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Chi" = 4. Postoperative inf Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi" = 1. Test for overall effect: Z | $\begin{array}{c} 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | LLHR ents Tota 0 22 (1 2) 0 1 2) 0 1 2) 0 1 2) 0 1 2) 0 1 2) 0 2 2) 1 22 (2) 1 23 (2) | all Weight all Weight 20 0 21 20 22 3.7% 23 3.7% 24 18.0% 25 21.2% 26 10.0% 33 10.0% 10 89.1% 33 10.0% 30 10.0% 32 10.0% 34 18.0% 44 18.0% 35 0.2% 36 100.0% 37 100.0% 38 15.5% | Odds Ratio 1% 0.0dds Ratio 1 M-H. Fixed, 95%, 1 Not estimable 3.35 [0.32, 35.36 6.48 [0.30, 138.43 Not estimable 1.59 [0.26, 9.72 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.06, 5.21 0.55 [0.07, 1.21 0.55 [0.07, 1.21 Not estimable 3.36 [0.29, 322 0.51 [0.02, 30.22 0.51 [0.02, 30.22 0.51 [0.02, 30.23 0.51 [0.02, 326 0.51 [0.02, 356 0.51 [0.02, 356 0.51 [0.02, 357 | CI Year e 2013 3] 2014 3] 2014 2017 2018 2017 3] 2017 2] 2018 2] 2019 3] 2019 3] 2019 3] 2020 3] 2022 3] 2022 3] 2022 3] 2020 3] 2020 4] 2 | 0.005 0.1 Favours HH 0.00 MHL F - - - - - - - - - - - - - - - - - - - | R Favours LHR | - |
| Study or Subgroup Wound infection Tasi for overall effect: Z Nound infection Tagi 2013 Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Sintola 2017 Wang 2017 Ahonen-Sintola 2018 Halka 2018 Liu 2019 Liu 2019 Chal events Heterogeneity: Chill = 4 Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chill = 4 Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chill = 4 Heterogeneity: Chill = 1 Tagi 2013 Ye 2015 Ahonen-Sintola 2018 Subtotal (95% CI) Total events Heterogeneity: Chill = 1 Test for overall effect: Z Notal events Heterogeneity: Chill = 1 Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chill = 1 Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Taul = 1 Heterogeneity: Taul = 1 Tagi 2013 | $\begin{array}{c} = 0.43; (m) = 1 \\ = 0.43; (m) = 1 \\ = 0.45; (m) = 1 \\ = 0.45; (m) = 0.4$ | R LF Total Events 5 20 102 16 16 33 24 25 102 16 16 33 24 25 12 12 135 14 ($P = 0.79$); P P = 0.04) in 8 225 1 ($P = 0.79$); P P = 0.04) in 8 225 1 ($P = 0.79$); P P = 0.04) in 8 225 1 ($P = 0.22$); P P = 0.22); $PP = 0.22$); $PP = 0.22$; $PPP = 0.22$; $PPP = 0.22$; $PPP = 0.22$; $PPPPPPPP$ | LHR ents Tota 0 22 1 22 0 35 0 155 0 155 0 155 0 155 0 155 0 155 0 155 0 155 0 155 1 2 99 4 55 1 2 99 1 77 5 66 1 3 3 2 99 1 3 3 1 3 3 2 99 1 3 3 1 3 3 2 99 1 77 5 96 1 3 3 1 77 5 96 1 77 5 96 1 77 5 96 1 77 5 96 1 77 5 96 1 77 5 96 1 9 9 9 | (00); r = 4 al Weight 20 20 21, 22 23, 7% 24, 3% 25, 3% 26, 5% 26, 4% 27, 43, 4% 28, 4% 31, 10, 6% 31, 10, 6% 31, 10, 6% 31, 10, 10, 10, 10, 10, 10, 10, 10, 10, 1 | Odds Ratio MH. Fixed. 95% // Not estimable 3.36 [0.32, 353 and 159 66 6.48 [0.14, 87 94 0.51 [0.26, 972 0.55 [0.26, 573 and 159 66 0.56 [0.26, 972 0.55 [0.26, 972 0.55 [0.26, 972 0.55 [0.26, 972 0.55 [0.26, 972 2.00 [0.11, 326 2.00 [0.11, 326 2.00 [0.11, 326 3.97 [0.49, 32.37 2.10 [1.92, 4.33 0.43 [0.10, 106 0.45 [0.17, 1.21 Not estimable 3.36 [0.29, 922 0.51 [0.02, 926 0.53 [0.10, 1.06 0.45 [0.17, 1.21 Not estimable 3.36 [0.29, 922 0.51 [0.09, 286 0.96 [0.26, 357 | CI Year = 2013 = 2013 = 2014 = 2015 = 2015 = 2015 = 2015 = 2018 = 2018 = 2018 = 2018 = 2018 = 2018 = 2019 = 2019 = 2019 = 2013 = 2013 = 2014 = 2015 = 2014 = 2015 = 2022 = 202 | 0.005 0.1 Favours HH Odd MHJ. FI | I 10 R Favours LHR ds Ratio xxed. 95% Cl | |
| Study or Subgroup Wound infection Taqi 2013 Deng 2013 Zhu 2014 Ozturk 2015 Ye 2015 Chen 2017 Ahonen-Sintola 2018 Halia 2018 Ulu 2019 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 4. Postoperative ch Ahonen-Sintola 2020 Yang 2022 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative di Ahonen-Sintola 2020 Yang 2022 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative di Ahonen-Sintola 2017 Ahonen-Sintola 2017 Ahonen-Sintola 2017 Zhanen-Sintola 2017 Zhanen-Sintola 2018 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Sintola 2020 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z | HHR HHR 3 2 3 3 7 1 3 2 3 3 7 1 1 2 3 3 7 1 1 2 3 3 7 1 1 3 2 3 3 7 1 1 1 1 2 3 3 7 1 1 1 1 2 3 3 7 1 1 1 1 2 3 3 7 1 1 1 1 2 3 3 7 2 1 1 1 1 1 1 2 3 3 1 1 1 1 1 1 2 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 | R LL Total Event 5 20 102 16 16 16 16 16 24 90 90 90 90 90 90 90 90 90 90 | LHR ents Tota 0 2 2 0 15 0 3 3 3 0 2 9 1 7 566 1 7 1 7 566 1 7 1 7 566 1 7 1 7 566 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 | al Weight 20 20 20 20 21 24 24 24 24 24 24 24 24 24 24 24 24 24 | Odds Ratio <u>MH</u> , Fixed, 3954, 1 Not estimable 5 3.36 [0.32, 35.36 6 448 [0.30, 138.43 Not estimable 5 1.56 [0.26, 172 0.55 [0.06, 5.21 5 0.55 [0.07, 1.21 Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable | CI Year e 2013 3] 2013 2014 2014 2014 2017 2] 2018 3] 2017 2] 2018 3] 2012 2] 2018 3] 2012 3] 2022 3] 2022 4] 2022 | 0.005 0.1 Favours HH MH, F | ds Ratio | |
| Study or Subgroup Wound infection Tadi 2013 Deng 2013 Zhu 2014 Ozturk 2015 Ye 2015 Chen 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Halka 2018 Liu 2019 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1, Test for overall effect: Z Postoperative int Tagi 2013 Ye 2015 Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1, Test for overail effect: Z Monen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1, Test for overail effect: Z Mesh bulging/tra Deng 2013 Cher 2015 Chen 2017 Waral recurrence Deng 2013 Test for overail effect: Z Stubtotal (95% CI) | HHR From Events. T ion 0 3 3 7 1 7 1 8 3 2 3 3 7 1 1 8 2 3 3 7 1 1 8 2 3 3 1 1 8 2 3 3 1 1 8 2 9 9 1 1 1 8 2 1 9 9 1 1 1 8 2 1 9 9 1 1 1 8 2 1 9 9 1 1 1 8 2 1 9 9 1 1 1 1 8 2 1 9 9 1 1 1 1 8 2 1 9 9 1 1 1 1 8 2 1 9 9 1 1 1 1 1 8 2 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 | R LL Total Event 5 20 102 16 16 16 33 24 25 90 25 12 153 521 1 16 16 16 16 16 16 16 16 16 | LLHR ants Tota 0 2 1 2 0 0 1 2 0 0 1 2 0 0 1 2 0 0 0 1 2 9 0 0 2 0 0 1 1 7 1 7 1 1 1 7 1 | al Weight 00 0 10 8.1%, W 12 3.7%, V 12 3.7%, V 12 3.7%, V 13 2.12%, V 14 18.0%, V 15 10.0%, V 10 89.1%, V 10 99.1%, V 10 9 | Odds Ratio t M-H. Fixed, 95% / 1 Not estimable 3.36 (0.32, 35.36 6 4.9 (0.3, 158.43 Not estimable 3.46 (0.14, 87.94 0.55 (0.06, 5.21 0.55 (0.06, 5.21 2.055 (0.06, 5.21 0.55 (0.06, 5.21 2.00 (0.11, 3.50 (0.49, 92.37 2.10 (1.02, 4.33 3.97 (0.49, 92.37 2.10 (1.02, 4.33 3.97 (0.49, 92.37 0.45 (0.17, 1.21 Not estimable 3.36 (0.29, 39.28 0.45 (0.17, 1.21 0.51 (0.92, 38.26 0.56 (0.28, 357) 0.98 (0.28, 357) | CI Year 2013 2013 2013 2013 2014 2015 2015 2017 2017 2017 2012 2018 2019 2022 2022 2022 2022 | 0.005 0.1 Favours HH Odd M-H. F | 1 10 R Favours LHR is Ratio ixed. 95% CI | - |
| Study or Subgroup Wound infection Tadi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Ahonen-Sintola 2017 Wang 2017 Ahonen-Sintola 2018 Halka 2018 Liu 2019 Liu 2019 Chen 2017 Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Postoperative ch Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Mostoperative inf Tadi 2013 Ye 2015 Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Mostoperative inf Heterogeneity: Chill = 1. Test for overall effect Z Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Subtotal (95% CI) Total events Heterogeneity: Chill = 1. Test for overall effect Z Subtotal (95% CI) Total events Heterogeneity: Tarl = 1. Test for overall effect Z | HHR Events T a 2 3 3 3 3 3 3 3 3 3 3 3 3 3 | R LF Total Event 5 20 102 16 16 33 24 25 12 12 13 521 1 ($P = 0.79$); P P = 0.04) in 8 ($P = 0.79$); P P = 0.04) in 8 235 1 ($P = 0.79$); P P = 0.04) 1 133 1 ($P = 0.22$); P C = 0.95; P P = 0.95; P C = 0.9 | LHR ents Tota 0 22 1 22 0 35 0 15 0 15 0 15 0 15 0 15 0 15 0 15 0 15 1 2 1 2 566 1 2 567 1 2 567 1 2 567 1 7 15 567 1 7 16 1 7 16 1 7 16 1 7 17 16 1 7 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 7 17 16 1 3 3 3 2 9 9 1 7 16 1 3 3 1 1 7 16 1 7 17 16 1 3 1 3 1 3 1 7 16 1 7 17 16 1 3 3 3 1 3 1 7 16 1 7 17 16 1 3 3 3 1 3 1 7 16 1 7 17 16 1 3 3 3 1 3 1 7 16 1 7 17 17 17 17 17 16 1 7 17 17 17 17 17 17 17 17 17 1 | al Weight 20 20 20 20 21 22 23.7% 23.7% 24.3% 24.3% 24.2% 24.2% 24.2% 24.2% 24.2% 24.2% 24.2% 24.2% 24.3% 24.2% 24.3% 24.2% 24.3% 24 | Odds Ratio MH. Fixed, 95%. Not estimable 3.36 [0.30, 35.36 7.59 [0.36, 159.69 6.48 [0.30, 138.49 0.51 [0.05, 5.18 Not estimable 1.59 [0.26, 9.72 0.055 [0.06, 5.21 0.200 [0.11, 92, 9.72 2.00 [0.11, 92, 9.72 2.00 [0.11, 92, 9.73 2.10 [1.92, 9.73 2.10 [1.92, 9.73 2.10 [1.92, 9.73 2.10 [1.92, 9.72 3.00 [0.20, 9.74 0.05 [0.02, 9.75 0.05 [0.02, 9.74 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.02, 9.75 0.05 [0.26, 9.77 0.05 [0.26, 9.75 0.05 [0.25 [0.26, | Cl Year = 2013 3) 2013 3) 2013 3) 2014 4) 2017 4) 2017 2) 2018 4) 2017 2) 2018 4) 2017 1) 2019 3) 2020 3) 2022 3) 2022 4) 2 | Favours HH Odd MHL F | R Favours LHR ds Ratio Xrd, 95% Cl | - |
| Study of Subgroup Gai 2013 Deng 2013 2Dux 2014 2Dux 2014 2Dux 2015 Chen 2017 Ahonen-Sircla 2017 Wang 2017 Ahonen-Sircla 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (85% CI) Total avents Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative ch Ahonen-Sircla 2020 Yang 2022 Subtotal (85% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative dh Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2018 Ahonen-Sircla 2017 Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Derg 2013 Ahonen-Sircla 2020 Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z | HHR HHR HHR 1 1 1 1 1 2 2 2 2 2 4 4 5 4 4 5 4 4 5 4 4 5 5 4 4 5 5 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 | R LL Total Event 5 20 102 102 102 16 16 3 24 25 5 12 15 24 25 12 15 21 12 15 21 13 8 ($P = 07$); P P = 0.04) 1 8 2 1 ($P = 02$); P P = 0.22); P 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 | LLHR ents Total 0 24 1 21 0 155 0 24 0 155 0 24 0 24 2 9 2 9 1 2 36 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 | al Weight 20 20 20 20 20 20 20 20 20 20 | Odds Patio 1 M-H. Fixed, 95% / 1 Not estimable 3.6 (0.22, 55.8) 7.59 (0.38, 159.60) 6.48 (0.38, 159.60) 6.48 (0.30, 138.44) 0.51 (0.55, 518) Not estimable 3.46 (0.14, 87.94) 1.59 (0.22, 9.72) 2.00 (0.11, 35.00) 2.20 (0.11, 35.00) 3.37 (0.49, 32.37) 2.30 (1.01, 1.06) 1.44 (0.15, 14.09) 1.44 (0.15, 14.09) 0.45 (0.47, 1.27) Not estimable 3.36 (0.29, 39.28) 3.30 (0.20, 2.93) 3.36 (0.29, 39.28) 3.07 (0.49, 32.37) 2.10 (1.02, 4.33) 1.44 (0.15, 14.09) 0.45 (0.47, 1.27) Not estimable 3.36 (0.29, 39.28) 3.36 (0.29, 39.28) 0.35 (0.07, 2.86) 0.45 (0.47, 1.27) 0.45 (0.47, 1.27) | CI Year e 2013 3] 2014 3] 2014 3] 2015 e 2015 e 2017 2] 2017 e 2017 2] 2018 1] 2018 1] 2019 7] 2022 3] 2020 3] 2014 4] 2017 5] 2018 5] 2019 5] 2020 5] 2020 | 0dd <u>M+H,E</u> | de Ratio | - |
| Study or Subgroup Wound Infection Taql 2013 Deng 2013 Zhu 2014 Ozburk 2015 Ye 2015 Chen 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Halka 2018 Subtotal (85% CI) Subtotal (85% CI) Total events Heterogeneity: Ch ² = 4. Postoperative ch Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Ch ² = 4. Postoperative ch Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Ch ² = 1. Test for overail effect: Z Monen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (85% CI) Total events Heterogeneity: Ch ² = 1. Test for overail effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Total events Heterogeneity: Ch ² = 1. Test for overail effect: Z <td>$\begin{array}{c} \hline \text{events} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$</td> <td>$\begin{array}{c c c c c c c c c c c c c c c c c c c$</td> <td>ents Tota 0 22 1 22 0 15: 0 12 0 12 0 12 0 12 0 12 0 12 0 12 1 20 1 7: 1 7: 566 12 1 7: 566 12 1 7: 1 7: 1 7: 566 12 1 7: 1 7: 1 7: 1 7: 1 7: 1 7: 1 7: 1 7:</td> <td>al Weight Weight Veight Veight</td> <td>M.H. Fixed. 32%; J Not estimable 0.35 [0:32, 35:36 6.48 [0:30, 138.43 Not estimable 1.59 [0:26, 9:72 0.55 [0:05, 5:16] 3.46 [0:14, 87.94 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:07, 13:50 3.97 [0:49, 32:37 2.10 [1:02, 4:33 0.45 [0:17, 1:21 Not estimable Not estimable 3.36 [0:29, 32:26 0.51 [0:09, 2:86 0.51 [0:09, 2:86 0.56 [0:26, 3:57]</td> <td>CI Year e 2013 3] 2013 2] 2014 2] 2014 4] 2017 2] 2015 4] 2017 2] 2018 2] 2018 2] 2018 2] 2018 2] 2019 7] 2022 3] 2020 3] 2020 4] 2</td> <td></td> <td>xed. 95% Cl</td> <td>-</td> | $\begin{array}{c} \hline \text{events} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | ents Tota 0 22 1 22 0 15: 0 12 0 12 0 12 0 12 0 12 0 12 0 12 1 20 1 7: 1 7: 566 12 1 7: 566 12 1 7: 1 7: 1 7: 566 12 1 7: 1 7: 1 7: 1 7: 1 7: 1 7: 1 7: 1 7: | al Weight Weight Veight | M.H. Fixed. 32%; J Not estimable 0.35 [0:32, 35:36 6.48 [0:30, 138.43 Not estimable 1.59 [0:26, 9:72 0.55 [0:05, 5:16] 3.46 [0:14, 87.94 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.55 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:06, 5:21 0.50 [0:07, 13:50 3.97 [0:49, 32:37 2.10 [1:02, 4:33 0.45 [0:17, 1:21 Not estimable Not estimable 3.36 [0:29, 32:26 0.51 [0:09, 2:86 0.51 [0:09, 2:86 0.56 [0:26, 3:57] | CI Year e 2013 3] 2013 2] 2014 2] 2014 4] 2017 2] 2015 4] 2017 2] 2018 2] 2018 2] 2018 2] 2018 2] 2019 7] 2022 3] 2020 3] 2020 4] 2 | | xed. 95% Cl | - |
| Wound infection Tagl 2013 Zhu 2014 Ozturk 2015 Ye 2015 Chen 2017 Mang 2017 Ahonen-Siirola 2017 Wang 2017 Ahonen-Siirola 2018 Heizogeneity: Chi' = 4. Test for overall effect: Z Postoperative ch Ahonen-Siirola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Postoperative inf Tagl 2013 Ye 2015 Ahonen-Siirola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Mesh bulging/tra Best 2013 Heterogeneity: Chi'' = 1. Test for overall effect: Z Mesh bulging/tra Heterogeneity: Chi'' = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi'' = 1. Test for overall effect: Z Noverall recurrence Deng 2013 Tagl 2013 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtotal 2020 Tian 2020 Wanbrada (95% CI) Total events Heterogeneity: Tau'' = 1. Test for overall effect: Z | to n 0 3 2 3 0 1 1 8 3 2 3 0 1 1 8 3 2 3 0 1 1 8 3 2 2 3 0 1 1 8 3 2 2 3 0 1 1 1 8 3 2 2 3 1 1 1 8 3 2 2 2 1 (P = 8 4 5 2 1 (P = 8 4 5 2 1 (P = 1 6 2 2 5 4 1 1 1 2 3 2 2 1 (P = 1 6 2 2 5 4 1 1 1 2 3 2 1 2 5 4 1 1 1 1 2 3 2 1 2 1 5 4 1 1 1 1 2 3 2 2 1 2 1 5 4 1 2 1 5 4 1 2 1 5 4 1 1 4 1 4 1 1 1 4 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 | $\begin{array}{c} 5\\ 20\\ 102\\ 102\\ 16\\ 16\\ 33\\ 24\\ 25\\ 12\\ 12\\ 15\\ 324\\ 12\\ 15\\ 324\\ 12\\ 12\\ 12\\ 135\\ 12\\ 225\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\ 225\\ 1\\ 1\\ 225\\ 1\\$ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 20 20 20 20 21 22 23 23 23 23 23 24 24 24 24 24 24 25 26 20 20 20 20 20 20 20 20 20 20 | Not estimable 3.36 (0.32, 55 34 7.59 (0.36, 159 66 6.48 (0.34, 153 46 0.51 (0.03, 153 46 0.51 (0.05, 518 Not estimable 1.59 (0.26, 9.72 2.00 (0.11, 35.06 3.97 (0.49, 32.37 2.10 (1.92, 4.33 0.33 (0.10, 1.08 1.44 (0.15, 14.09 0.45 (0.17, 1.21 Not estimable Not estimable Not estimable Not estimable | e 2013 §] 2013 §] 2013 §] 2015 e 2015 §] 2017 e 2017 §] 2017 [2 2018 8] 2019 [] 2019 [] 2022 §] 2028 [] 2020 [] 20 | . | | - |
| Deng 2013 2014 2014 2014 2014 2015 Chen 2017 Ahonen-Sircla 2017 Wang 2017 Ahonen-Sircla 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (95% C) Total avents Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative ch Ahonen-Sircla 2020 Yang 2022 Subtotal (95% C) Total avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative dh Ahonen-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Zhoren-Sircla 2017 Ahonen-Sircla 2017 Ahonen-Sircla 2017 Chal avents Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Sircla 2020 Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z | $\begin{array}{c} 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ $ | 20 102 102 102 102 102 102 102 1 | 1 21 0 151 0 21 0 21 0 22 0 22 1 27 1 27 1 27 1 17 162 162 1 172 0 22 0 22 1 77 56 90 3 24 5 3 3 324 9 9 | 0 8.1%; 20 8.1%; 22 7.3%; 23 4.3%; 38 21.2%; 44 18.0%; 33 6.00,0%; 33 10.0%; 34 18.0%; 35 10.0%; 36 10.0%; 31 10.0%; 32 10.0%; 34 18.0%; 35 10.0%; 36 10.0%; 37 100.0%; | 3.36 [0.22, 552 [0.22, 552 [0.23, 553 [0.25, 552 [0.2 | 3 2013 3 2014 3 2015 4 2017 3 2017 3 2017 2 2017 2 2017 2 2017 2 2017 2 2017 2 2017 2 2019 7 2022 3 2020 2 2022 | II .II. | | - |
| Zhu 2014 Zhu 2015 (Chen 2015 (Chen 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 4. Postoperative ch Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Postoperative int Taqi 2013 Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Mesh bulging/tra Derg 2013 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2027 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z | $\begin{array}{c} 2\\ 3\\ 3\\ 0\\ 1\\ 1\\ 1\\ 8\\ 3\\ 1\\ 1\\ 8\\ 8\\ 3\\ 1\\ 1\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\\$ | $\begin{array}{c} 102\\ 102\\ 16\\ 16\\ 33\\ 24\\ 25\\ 90\\ 25\\ 12\\ 153\\ 521\\ 1\\ 8\\ 7\\ 9\\ 9\\ 9\\ 0\\ 25\\ 12\\ 1\\ 1\\ 1\\ 3\\ 235\\ 1\\ 1\\ 235\\ 1\\ 1\\ 223\\ 1\\ 235\\ 1\\ 1\\ 1\\ 7\\ 9\\ 9\\ 0.05\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$ | $\begin{array}{c} 0 & 15.7\\ 0 & 11.7\\ 0 & 21.7\\ 0 & 31.3\\ 3 & 33.3\\ 3 & 33.3\\ 2 & 99.4\\ 4 & 57.7\\ 1 & 22.9\\ 9 & 94.4\\ 1 & 27.7\\$ | 22 3.7% 22 4.3% 20 3.7% 21 4.3% 20 21.2% 20 3.12.2% 41 18.0% 23 6.0% 23 6.0% 31 12.2% 40 89.1% 33 100.0% 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 | 6 7.59 (0.36, 159.69) 6 4.89 (0.3, 0.138.43) Not estimable 3.46 (0.14, 87.94) 6 0.51 (0.05, 5.14) Not estimable 1.59 (0.26, 9.72) 0.55 (0.06, 5.21) 2.00 (0.11, 3.50) 3.97 (0.49, 32.37) 2.10 (1.02, 4.33) 1.44 (0.15, 14.09) 0.45 (0.17, 1.21) Not estimable Not estimable Not estimable 3.36 (0.29, 39.22) 0.51 (0.09, 2.86) 0.96 (0.26, 3.57) | a) 2014 a) 2015 a) 2015 a) 2017 a) 2017 a) 2017 a) 2017 a) 2017 a) 2018 a) 2019 a) 2022 b) a) b) 2021 a) 2022 b) a) | | • • • • | - |
| Ozturk 2015 Ve 2015 Chen 2017 Ahonen-Sintola 2017 Wang 2017 Ahonen-Sintola 2018 Halka 2018 Liu 2019 Yang 2027 Stotoperative ch Ahonen-Sintola 2018 Halka 2018 Liu 2019 Yang 2022 Postoperative ch Ahonen-Sintola 2020 Subtotal (95% CI) Test for overall effect: Z Postoperative int Heterogeneity: Chi* = 1. Test for overall effect: Z Postoperative int Tagi 2013 Ahonen-Sintola 2017 Ahonen-Sintola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi* = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Sintola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi* = 1. Test for overall effect: Z Subudy or Subgroup Overall recurrenc Deng 201 | $\begin{array}{c} 3 \\ 0 \\ 1 \\ 1 \\ 1 \\ 3 \\ 23 \\ 1 \\ 1 \\ 1 \\ 3 \\ 24 \\ 69, df = 8 (f = 8 (f = 1 (f =$ | 16 16 16 32 24 25 12 15 521 1 ($P = 0.79$); $P = 0.04$) inin 82 1 ($P = 0.79$); $P = 0.04$) 1 1 225 1 ($P = 0.79$); $P = 0.04$) 1 1 1 225 1 ($P = 0.22$); $P = 0.04$) 1 1 1 2 1 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 12 4.3% 12 4.3% 20 4.3% 37 4.3% 38 2.1.2% 20 2.0% 37 18.0% 37 2.0% 33 12.2% 46 100.0% 30 89.1% 31 10.0% 32 100.0% 33 100.0% 30 100.0% 30 2 30 0.0% | 6.48 (0.30, 158.43) Not estimabil 3.46 (0.34, 87.94) 0.51 (0.05, 5.18) Not estimabili 1.59 (0.26, 9.72) 2.00 (0.11, 5.21) 2.00 (0.11, 5.21) 2.01 (0.14, 3.23) 2.01 (1.102, 4.33) 0.33 (0.10, 1.06) 1.44 (0.15, 14.09) 0.45 (0.17, 1.21) Not estimabili Not estimabili Not estimabili 3.36 (0.29, 39.28) 0.51 (0.09, 2.86) 0.96 (0.26, 3.57) | 3] 2015 2015 2017 2017 2017 2017 2018 2019 2019 1 2019 2022 20 3 2020 3 2020 | - - - | • • • • • | |
| Chen 2017 Chan 2017 Alvanan-Siricla 2017 Alvanan-Siricla 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (95% C)] Total events Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative ch Ahonen-Siricla 2020 Yang 2022 Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative dh Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative dh Ahonen-Siricla 2017 Ahonen-Siricla 2017 Ahonen-Siricla 2017 Zhonen-Siricla 2017 Chal events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siricla 2020 Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study of Subgroup Overall recurrenc Deng 2013 Taiq 2013 Zhu 2014 Ozturk 2015 Chen 2017 Vang 2027 Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C)] Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z | $\begin{array}{c} & & & & & & \\ & & & & & & \\ & & & & & $ | $\begin{array}{c} 133\\ 133\\ 24\\ 24\\ 24\\ 24\\ 25\\ 26\\ 12\\ 153\\ 521\\ 12\\ 153\\ 521\\ 12\\ 153\\ 521\\ 12\\ 215\\ 16\\ 235\\ 16\\ 235\\ 16\\ 24\\ 90\\ 516\\ 155\\ 16\\ 24\\ 90\\ 135\\ 16\\ 24\\ 90\\ 135\\ 16\\ 24\\ 90\\ 135\\ 16\\ 22\\ 135\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102$ | 0 3: 3 3 3 32 2 9 4 4 55 1 2: 566 1 2 96 1 2 96 1 2 97 1 63 1 3 1 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 | 37 4.3% 38 21.2% 20 20 44 18.0% 7 22.3% 33 6.0% 33 12.2% 46 100.0% 33 10.9% 30 89.1% 31 10.9% 32 100.0% 33 100.0% 34 15.6% 44 84.4% 2 100.0% | 3.46 [0:14,87:94] 0.57 [0:05,518] Not estimability 1.59 [0:26,972] 2.00 [0:11,3503] 2.00 [0:11,3503] 3.97 [0:49,32,37] 2.10 [1:02,972] 0.53 [0:01,136] 3.97 [0:49,32,37] 2.10 [1:02,972] Not estimability Not estimability Not estimability 3.36 [0:29, 3926] 0.45 [0:29, 3926] 0.51 [0:09, 29, 3926] 0.51 [0:09, 29, 3926] 0.51 [0:09, 28, 357] | 4 2017 3 2017 e 2017 2 2018 1 2018 2 2019 7 2022 3 2020 3 2020 3 2022 3 2020 | | • • • • • • | |
| Ahonen-Siirtola 2017 Wang 2017 Ahonen-Siirtola 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 4. Fest for overall effect Z Postoperative ch Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect Z Postoperative int Taqi 2013 Ye 2015 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect Z Mesh bulging/tra Derg 2013 Ahonen-Siirtola 2020 Zubtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Taqi 2013 Zhu 2014 Oztuk 2015 Chen 2017 Wang 2017 Liu 2019 Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z | 7 1 1 0 3 3 1 1 1 8 3 3 1 1 8 4.9, df = 0 (f 4 5 (f 4 (f 4 | 24 25 90 25 12 153 521 1 8 ($P = 0.79$); P P = 0.04) 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 2 1 2 2 1 2 1 2 1 2 1 2 2 1 2 1 2 1 2 2 2 1 2 1 2 2 2 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 88 21.2% 41 18.0% 57 22.3% 53 6.0% 54 18.0% 57 22.3% 58 12.2% 60 89.1% 53 10.0% 50 33 50 50 | 0.51 [0.05, 514] Not estimable 1.59 [0.26, 972] 0.55 [0.06, 521] 0.55 [0.06, 524] 0.57 [0.49, 323] 2.10 [1.02, 4.33] 0.33 [0.10, 1.08] 1.44 [0.15, 14.09] 0.45 [0.17, 1.21] Not estimable Not estimable 3.36 [0.29, 39.28] 0.51 [0.09, 2.86] 0.96 [0.26, 3.57] | 2017 2017 2017 2018 2018 2019 2019 2022 | • · | • • • • | |
| Wang 2017 Ahonen-Siirdola 2018 Halka 2018 Liu 2019 Yang 2022 Subtotal (85% C)) Total events Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative ch Ahonen-Siirdola 2020 Yang 2022 Subtotal (85% C)) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative int Taaj 2013 Ahonen-Siirdola 2017 Ahonen-Siirdola 2017 Ahonen-Siirdola 2018 Ye 2015 Ahonen-Siirdola 2017 Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh budging/tra Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% C)) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% C) Taaj 2013 Zhu 2014 Chan Siirdola 2020 Yang 2022 Subtotal (95% C)) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z | $\begin{array}{c} 0 \\ 8 \\ 3 \\ 1 \\ 1 \\ 8 \\ 23 \\ 1 \\ 1 \\ 8 \\ 23 \\ 24 \\ 24 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25$ | 25 25 90 25 12 13 8($P = 0.79$); $P = 0.04$) iin 82 153 1($P = 0.29$); $P = 0.22$; $P = 0.11$) bistruction 5 16 24 90 135 1($P = 0.22$); $P = 0.95$); $P = 0.22$; $P = 0$ | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 20 44 18.0% 57 22.3% 53 6.0% 53 12.2% 56 100.0% 50 89.1% 51 10.9% 51 10.9% 50 10 50 | Not estimable 1.59 [0.26, 9.72 2.00 [0.1, 9.72 2.00 [0.1, 9.73 3.97 [0.49, 32.37 2.10 [1.02, 4.33 0.33 [0.10, 1.08 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 0.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | 2017 2018 2018 2019 2019 2022 3 2020 3 2022 3 2020 3 2022 3 3 2020 4 4< | | • • • | |
| Anonen-sintola 2018 Halka 2018 Vang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi ²¹ 4. Postoperative ch Ahonen-Sintola 2020 Total events Heterogeneity: Chi ²² 4. Postoperative ch Ahonen-Sintola 2020 Total events Heterogeneity: Chi ²² 4. Postoperative int Tadi 2013 Ahonen-Sintola 2017 Ahonen-Sintola 2017 Ahonen-Sintola 2017 Chal events Heterogeneity: Chi ²² 4. Test for overall effect: Z Mesh bulging/tra Berg 2013 Ahonen-Sintola 2020 Total events Heterogeneity: Chi ²² 4. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ²² 4. Study or Subgroup Overall recurrenc Deng 2013 Taqi 2013 Chal 2017 Chal events Heterogeneity: Chi ²² 4. Subtotal (95% CI) Total events Heterogeneity: Chi ²² 4. Test for overall effect: Z | o 3 1 1 23 24 25 26 27 27 27 27 27 27 27 27 27 27 | $\begin{array}{c} \text{y-u} \\ \text{y-u} \\ 225 \\ 12 \\ 123 \\ 153 \\ 153 \\ 153 \\ 151 \\ 161 \\ $ | $\begin{array}{cccc} & 2 & 9 \\ 2 & 4 & 5; \\ 1 & 2; \\ 5 & 566 \\ 5 & 566 \\ 1 & 12 \\ 5 & 566 \\ 1 & 12 \\ 1 &$ | № 18.0% № 18.0% № 7 22.3% 6.0% № 12.2% 6 100.0% № 3 № 3 № 3 № 100.0% № 100.0% № 2 № 100.0% | 1.59 (0.26, 9.72) 0.55 (0.06, 5.21) 2.00 (0.11, 35.06) 3.97 (0.49, 9.23) 5 2.10 (1.02, 4.32) 5 0.33 (0.10, 1.08) 5 0.33 (0.10, 1.08) 1.44 (0.15, 14.09) 0.45 (0.17, 1.21) Not estimable 3.36 (0.29, 39.28) 0.51 (0.09, 2.86) 0.96 (0.26, 3.57) | 2018 2018 2018 2019 2019 2022 2022 2020 2022 2022 2022 2022 | | | |
| Liu 2019 Liu 2019 Liu 2019 Arron 2022 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 4. Fest for overall effect: Z Postoperative ent Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 1\\ 3\\ 23\\ =4.69, df = 0 \ (df = 0 \ (df$ | $\begin{array}{c} -12 \\ -12 \\ 153 \\ 521 \\ 153 \\ 521 \\ 162 \\$ | 1 2 94 12 94 12 94 1 77 566 12 94 1 77 1 167 13 18 18 18 19 20% 0 24 0 24 1 33 18 20% 0 24 0 24 1 33 18 20% 0 24 0 24 1 33 18 20% 0 24 0 24 0 24 13 18 13 18 12 13 18 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 13 18 12 18 12 13 18 12 12 18 14 17 18 13 18 17 18 13 18 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | 23 6.0% 73 12.2% 66 100.0% 70 89.1% 73 10.9% 73 10.9% 73 100.0% 100.0% 100.0% | 2.00 [b / 1, 35.02 3.97 [0.49, 32.37 2.10 [1.02, 4.33 2.10 [1.02, 4.33 2.10 [1.02, 4.33 3.10 [1.02, 4.33 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 3] 2019 7] 2022 1] 3] 2020 3] 2020 3] 2022 1] | - | • • | |
| Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 4. Test for overall effect: Z Postoperative ch Ahonen-Siirotal 2020 Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative int Tadi 2013 Ahonen-Siirotal 2017 Ahonen-Siirotal 2017 Ahonen-Siirotal 2018 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirotal 2020 Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Tadi 2013 Zhu 2014 Dotant 2015 Chen 2017 Chan 2020 Yang 2022 Subtotal (85% CI) Total events | $\begin{array}{c} 8\\ 23\\ = 4.69, df = 6(1)\\ t; z = 2.01 (P = 0)\\ 0 & 4\\ 1 & 3\\ 7 & 1\\ = 1.25, df = 1(1)\\ t; z = 1.58 (P = 0)\\ 0 & 7\\ 2 & 2\\ 1 & 1\\ 2 & 2\\ 1 & 1 $ | 153 521 16 ($P = 0.79$); $P = 0.04$) 17 18 82 153 17 225 1 ($P = 0.23$); $P = 0.11$) bstruction 5 16 24 90 135 1 ($P = 0.22$); $P = 0.22$; $P = 0.22$; $P = 0.22$); $P = 0.22$; $P = $ | $\begin{array}{c} 1 & 7; \\ 566\\ 12 \\ ^2 = 0\% \end{array}$ $\begin{array}{c} 12 & 9(\\ 1 & 7; \\ 163\\ 13 \\ ^2 = 20\% \end{array}$ $\begin{array}{c} 0 & 2(\\ 0 & 2(\\ 1 & 33\\ ^2 = 20\% \end{array}$ $\begin{array}{c} 0 & 2(\\ 0 & 2(\\ 1 & 33\\ 4 & 9(\\ 1 & 72\\ 1 & 34\% \end{array}$ $\begin{array}{c} 0 & 2(\\ 0 & 2(\\ 1 & 33\\ 4 & 9(\\ 1 & 72\\ 1 & 34\% \end{array}$ | 3 12.2% 400.0% 89.1% 3 10.9% 3 100.0% 10.6% 15.6% 4 84.4% 2 100.0% | 3.97 (0.49, 22.37 2.10 [1.02, 4.33 0.33 [0.10, 1.06 1.44 (0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 7] 2022 8] 2020 8] 2020 9] 2022 1] | - | • - - | |
| Journard (19% CI) Total events Totalevents Totalevents Totalevents | $\begin{array}{c} 23 \\ = 4,9, df = 6 \ (f = 6) $ | 2×1 3×1 $8 (P = 0.79); F^2$ P = 0.04) 153 153 1235 $1 (P = 0.26); F^2$ P = 0.11) P = 0.11) $P = 0.05); F^2$ $1 (P = 0.22); F^2$ 1 (P = 0.22); F | 566 12 12 12 12 12 12 12 12 12 12 | 100.0% 89.1% 3 10.9% 3 100.0% 10 10 10 10 10 10 10 10 10 10 | 2.10 [1.02, 4.33 0.33 [0.10, 1.06 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 3] 2020 3] 2022] | - | ▼ | |
| Heterogeneity: Chi ² = 4. Test for overall effect: 2 Postoperative ch Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Postoperative int Taqi 2013 Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2018 Ahonen-Siirtola 2020 Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Study or Subgroup Dorent recurrenc Deng 2013 Tahi 2014 Zotark 2015 Ye 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. | = 4.69, df = 10, (f) = 5.60, (f) | 8 (P = 0.79); P = 0.04); P = 0.04); P = 0.04); P = 0.05); P = 0.01); D = 0.05; P = 0.01); D = 0.05; P = 0.01); D = 0.05; D = 0.02; P = | $ r^2 = 0\%$ 12 9% 1 17; 13 16; 13 16; 16; 16; 16; 16; 16; 16; 16; | 20 89.1% 73 10.9% 3 100.0% 20 20 20 20 20 20 20 20 20 20 | 0.33 [0.10, 1.08 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 8] 2020 9] 2022 1] | - | ► | |
| Test for overall effect: Z Postoperative ch Ahonen-Sirtola 2020 Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative int Taqi 2013 Ahonen-Sirtola 2017 Ahonen-Sirtola 2017 Ahonen-Sirtola 2018 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Sirtola 2020 Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% CI) Taqi 2013 Taqi 2013 Taqi 2013 Chen 2017 Chen 2017 Chen 2017 Chan 2020 Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Chen 2017 Chen 2017 | $\begin{array}{c} \pm z = 2.01 \ (P = \\ \circ \text{ chronic pain} \\ 0 & 4 \\ 3 \\ = 1.25, \ (f = 1() \\ 1.25, \ (f = 1() \ (f = 1() \\ 1.25, \ (f = 1() \ (f$ | P = 0.04) iin $B2 = 1$ $153 = 225$ $225 = 1$ $P = 0.11)$ bistruction 5 16 24 90 135 17 ($P = 0.22$); P P = 0.95) in 20 B2 B2 102 102 102 102 102 102 102 102 102 10 | 12 94 1 77 162 13 1 ² = 20% 0 24 0 24 1 34 4 94 172 5 5 5 5 3 26 6 96 110 9 | 80 89.1% 3 10.9% 3 100.0% 100.0% 100.0% 100.0% 100.0% | 0.33 [0.10, 1.06 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable 3.36 [0.29, 39.26 0.51 [0.09, 2.66 0.96 [0.26, 3.57 | 8] 2020 9] 2022] | - | ► | |
| Postoperative ch Ahonen-Silicia 2020 Yang 2022 Subtotal (8% CI) Total events Test for overall effect: Z Postoperative int Taraj 2013 Ye 2015 Ahonen-Silicia 2017 Ahonen-Silicia 2017 Ahonen-Silicia 2017 Subtotal (8% CI) Total events Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen Silicia 2020 Subtotal (8% CI) Total events Heterogeneity: Chi# 1. Test for overall effect: Z Overall recurrence Deng 2013 Taraj 2013 Chen 2017 Wang 2017 Chen 2017 Wang 2017 Taraj 2013 Chen 2017 Wang 2017 Taraj 2015 Taraj 2013 Taraj 2013 Chen 2017 Wang 2017 Taraj 2013 Taraj 2013 Chen 2017 Wang 2017 Taraj 2017 Ta | $\begin{array}{c} \text{a chronic pain} \\ \text{a chronic pain} \\ 0 & 4 \\ 3 & 3 \\ \end{array} \\ = 1.25, \text{ of } = 1 (\text{ f} = 1 ($ | lin B2 1 153 235 1 1 ($P = 0.26$); $P = 0.12$) bstruction 5 16 24 90 135 1 ($P = 0.22$); $P = 0.95$) lon 0 22 102 102 1 ($P = 0.22$); $P = 0.22$); $P = 0.22$) R LH Total Events 20 3 5 0 10 10 10 10 10 10 10 10 10 10 10 10 1 | 12 9(1 7; 13 13 1 ² = 20% 0 2(1 3; 4 9(17; 5 5 ; 1 ² = 34% 3 2(6 9(11(9 | 30 89.1% 73 10.9% 33 100.0% 100 10 10 10 10 10 10 10 10 1 | 0.33 [0.10, 1.00 f) 1.44 [0.15, 14.09 o) 0.45 [0.17, 1.21 o) Not estimable Not estimable 3.36 [0.29, 39.28 f) 0.51 [0.09, 2.86 fo) 0.96 [0.26, 3.57 o) | 3] 2020 9] 2022] | - | ► | |
| Anonen-Siirdia 2020 Yang 2022 Subtotal (8% C) Total events Heterogeneity, Chi" = 1. Tacji 2013 Ye 2015 Anonen-Siirdia 2017 Anonen-Siirdia 2017 Anonen-Siirdia 2018 Subtotal (8% C, Chi" = 1. Tacji 2013 Ye 2015 Total events Heterogeneity, Chi" = 1. Tacji 2013 Monen-Siirdia 2018 Subtotal (8% C, Chi" = 1. Tacji 2013 Anonen-Siirdia 2020 Subtotal (8% C, Chi" = 1. Tacji 2013 Tacji 2013 Tacji 2013 Tacji 2013 Tacji 2014 Zubtota (18% C, Chi" = 1. Tana 2020 Yang 2022 Subtota (8% C, Chi" = 1. Tacji 2013 Anonen-Siirdia 2020 Tacji 2014 Zubtota (18% C, Chi" = 1. Tacji 2017 Tacji 20 | $\begin{array}{c}$ | $\begin{array}{c} & & & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & &$ | 12 9(1 7; 16; 13 13 13 13 13 13 13 14 9 0 2(0 2(0 2(1 33) 17 5 5 5 5 5 5 5 5 5 5 5 5 5 | 00 89.1% 73 10.9% 100.0% 20 20 20 20 20 20 20 20 20 20 | 0.33 [0.10, 1.08 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 8] 2020 9] 2022]] | | • | |
| Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Postoperative int Taqi 2013 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra- Bultotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% Cl) Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Uang Suito Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Subtotal (95% Cl) Total events Heterogeneity: Chi ² = 1. Test for overall effect are subtotal (95% Cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 3\\ 7\\ = 1.25, df = 1(f)\\ t: Z = 1.58 (P = f)\\ 0\\ 0\\ 7\\ 2\\ 8\\ = 1.51, df = (f)\\ t: Z = 0.06 (P = f)\\ (transposition \\ 0\\ 0\\ 4\\ = 1.14, df = 1(f)\\ t: Z = 1.23 (P = f)\\ (transposition \\ 1\\ t: Z = 1.23 (P = f)\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$ | 153 235 1 ($P = 0.26$); $P = 0.11$) bbstruction 5 16 24 90 135 1 ($P = 0.22$); $P = 0.95$) 100 20 82 102 1 ($P = 0.22$); $P = 0.22$; $P = 0.22$); $P = 0.22$; $P = 0$ | 1 7; 16; 13 13 1 ² = 20% 0 24 0 24 0 24 1 33 4 94 172 5 5 1 ² = 34% 3 24 6 94 110 9 | 73 10.9% 33 100.0% 20 20 20 20 20 20 20 20 20 20 20 20 20 | 1.44 [0.15, 14.09 0.45 [0.17, 1.21 Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57 | 9] 2022 | 4 | | |
| Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Tasi correct effective Postoperative int Tagi 2013 Ye 2015 Ahonen-Siintola 2017 Ahonen-Siintola 2018 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Total events Heterogeneity: Ch ² = 1. Test for overall effect: Z Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Study or Subgroup Overall recurrence Deng 2013 Tagi 2013 Chan events Hu 2015 Chen 2017 Van 2015 Chen 2017 Van 2015 Chen 2017 Van 2015 Chen 2017 Van 2016 Chen 2017 Van 2016 Chen 2017 Tagi 2017 Tag | $\begin{array}{c} 7 \\ 7 \\ 1,25, df = 1 (f \\ 1, f = 1, f \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$ | 235 1 1 ($P = 0.26$); $P = P = 0.11$) bibstruction 5 16 24 90 135 1 ($P = 0.22$); $P = 0.95$) ion 1 ($P = 0.22$); $P = 0.95$) ion 1 ($P = 0.22$); $P = 0.22$) 1 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 2 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$); $P = 0.22$) 3 ($P = 0.22$); $P = 0.22$ | 162 13 1 ² = 20% 0 2(1 3(4 9- 172 5 1 ² = 34% 3 2(6 9(110 9 | 20 20 20 20 20 20 20 20 20 20 20 20 20 2 | Not estimable Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 286 0.96 [0.26, 3.57) |] | | | |
| Total events Total events Heterogeneity: Ch ² = 1. Test for overall effect: 2 Postoperative int Taqi 2013 Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: 2 Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Test for overall effect: 2 Subtotal (95% CI) Total events Heterogeneity: Ch ² = 1. Corrent recurrenc Deng 2013 Tabi 2014 Zottark 2015 Ye 2015 Chen 2017 Wang 2017 Liu 2014 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tar ² = 1. Test for overall effect: Z | = 1.25, df = 1 (f, t; t; 2 = 1.25, df = 1) $= 1.55, df = 0$ $= 1.51, df = 0$ $= 1.51, df = 1 (f, 0)$ $= 1.51, df = 1 (f = 1) (f = 1$ | 1 (P = 0.26); P = 0.11; P = 0.11; P = 0.11; P = 0.11; P = 0.12; P = 0.12; P = 0.22; | 13 12 = 20% 0 2(1 3(4 9- 172 5 12 = 34% 3 2(6 9(110 9 | 20 20 38 15.6% 14 84.4% 2 100.0% | Not estimable Not estimable 3.36 (0.29, 39.28 0.51 (0.09, 2.86 0.96 [0.26, 3.57] | | | | |
| Test for overall effect: Z Postoperative int Tag 2013 Ye 2015 Anonen-Siirola 2017 Anonen-Siirola 2017 Tolal events Heterogeneity: Ch ² = 1. Test for overall effect: Z Mesh bulging/tra Dorg 2013 Anonen-Siirola 2020 Subtola (95%, Ch ²) Tolal events Heterogeneity: Ch ² = 1. Test for overall effect: Z Study of Subtola (95%, Ch) Tag 2017 Mag 2017 | $\begin{array}{c} \pm z = 1.58 \ (P = \\ \text{intestine obs} \\ 0 \\ 7 \\ 2 \\ 8 \\ 2 \\ 4 \\ = 1.51, \text{ df} = (1) \\ (\pm z = 0.06 \ (P = \\ 1 \\ \text{transposition} \\ 0 \\ 4 \\ = 1.14, \text{ df} = 1 \\ 1 \\ \pm z = 1.23 \ (P = \\ 1 \\ \text{transposition} \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \\ 0 \\ 1 \\ 1$ | P = 0.11) bistruction 5 16 24 90 90 135 135 10 P = 0.95) 10 P = 0.95) 10 P = 0.95) 102 102 1(P = 0.29); P P = 0.22); P = 0.22); P P = 0.22); P = 0.22); | 0 20 0 22 1 34 4 94 172 5 5 5 5 5 5 5 5 5 5 3 20 6 90 110 9 | 20 20 38 15.6% 34 84.4% 2 100.0% | Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | | | | |
| Postoperative int Taqi 2013 Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Study or Subgroup Overall recurrence Deng 2013 Taqi 2013 Chen 2013 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Tagi 2017 Tagi 2017 Chen 2017 Tagi 2017 Tagi 2017 Chen 2017 Tagi 20 | $\begin{array}{c} \text{intestine obs}\\ \text{o} & 0\\ 0\\ 7\\ 2\\ 8\\ 2\\ 2\\ 1,51, df = 1(f = 1($ | bistruction 5 16 24 90 135 1 ($P = 0.22$); $P = 0.95$) 100 102 102 1 ($P = 0.29$); $P = 0.22$) 102 1 ($P = 0.29$); $P = 0.22$) 2 ($P = 0.29$); $P = 0.22$) 2 ($P = 0.29$); $P = 0.22$) 2 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0.22$) 3 ($P = 0.29$); $P = 0$ | 0 24 0 22 1 34 4 94 172 5 5 1 ² = 34% 3 20 6 90 110 9 | 20 20 38 15.6% 34 84.4% 2 100.0% | Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | | | | |
| Taqi 2013 Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Mesh bulgngt% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Dubtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Dubtotal (95% Ci) Total events Heterogeneity: Chi ² = 1. Corrent recurrenc Deng 2013 Tahi 2014 Zotturk 2015 Ye 2015 Chen 2017 Wang 2017 Lui 2014 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% Ci) Total events Heterogeneity: Tau ² = 1. Test for overall effect: 2 | $\begin{array}{c} \text{mitual of COS}\\ 7 & 2 \\ 8 & 2 \\ = 1.5.1, \text{ df} = 1 (f \\ 12 & 2 & 0.06 (P = 1) \\ \text{(transposition} \\ 0 & 4 \\ = 1.14, \text{ df} = 1 (f \\ 14, \text{ df} = 1 (f \\ 14, \text{ df} = 1) \\ \text{(transposition} \\ 14, \text{ df} = 1 (2 + 1) \\ \text{(transposition} \\ 14, \text{ df} = 1 \\ \text{(transposition} \\ 14, \text{ df} = 1 \\ \text{(transposition} \\ 14, \text{ df} = 1 \\ 15, \text{ df} = 1 \\ 14, \text{ df}$ | 5 16 24 90 135 1 (P = 0.22); I ² P = 0.95) 102 1 (P = 0.29); I ² P = 0.22) R LH <u>Total Events</u> 20 3 20 20 20 20 20 20 20 20 20 20 | 0 20 0 20 1 33 4 94 172 5 5 1 ² = 34% 3 20 6 90 110 9 | 20 20 38 15.6% 34 84.4% 2 100.0% | Not estimable Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | - 0010 | | | |
| Ye 2015 Ahonen-Siirtola 2017 Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study of Subgroup Overall recurrenc Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Chan 2017 Vang 2017 Chen Siirtola 2020 Alian 2020 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 0 \\ 7 \\ 2 \\ 8 \\ 4 \\ = 1.51, df = (1) \\ (transposition \\ 0 \\ 4 \\ = 1.14, df = (1) \\ (transposition \\ 1 \\ (tr$ | 16 24 90 135 1 ($P = 0.22$); $P = 0.95$) ion 20 82 102 1 ($P = 0.29$); $P = 0.22$) R LH Total Events 20 3 5 0 3 5 0 3 | 0 20 1 38 4 94 172 5 3 20 6 90 110 9 | 20 38 15.6% 34 84.4% '2 100.0% | Not estimable 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | e 2013 | | | |
| Ahonen-Siirtola 2017 Ahonen-Siirtola 2018 Subtotal (95% CI) Total events Heterogeneity: Chi ^e = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ^e = 1. Test for overall effect: Z Subty or Subgroup Overall recurrenc Deng 2013 Taql 2013 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Datote (95% CI) Total events Heterogeneity: Tau ^e = 1. Test for overall effect: Z | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 24 90 135 1 (P = 0.22); P P = 0.95) ion 20 82 102 1 (P = 0.29); P = 0.22) R LH Total Events 20 3 5 0 0 | 1 34 4 94 172 5 5 5 5 5 3 20 6 90 6 90 110 9 | 38 15.6% 34 84.4% 72 100.0% | 3.36 [0.29, 39.28 0.51 [0.09, 2.86 0.96 [0.26, 3.57] | e 2015 | | | |
| Alchenis-antoida 2016 Alchenis-antoida 2016 Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Mesh bulggrig/tra Deng 2013 Ahonen-Siintoia 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: 2 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Corrent recurrenc Deng 2013 Tabia 2013 Tabia 2013 Tabia 2014 2015 Chen 2017 Wang 2017 Wang 2017 Wang 2017 Uia 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 0 & 2 \\ = 1.51, df = 1 (i) \\ = 1.51, df = 1 (i) \\ t: Z = 0.06 (P =) \\ 0 & 4 \\ = 1.14, df = 1 (i) \\ = 1.14, df = 1 (i) \\ t: Z = 1.23 (P =) \\ \hline \\$ | 90 135 1 (P = 0.22); P P = 0.95) ion 20 82 102 1 (P = 0.29); P P = 0.22) R LH Total Events 20 3 5 0 0 | 4 94 172 5 ; ² = 34% 3 20 6 90 110 9 | 24 04.4% 22 100.0% | 0.96 [0.26, 3.57] | 3] 2017 | | | |
| Total events Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study of Subgroup Overall recurrenc Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Chen 2017 Chan 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 4 \\ = 1.51, df = 1 (f) \\ transposition \\ 0 \\ 0 \\ 4 \\ = 1.14, df = 1(k) \\ transposition \\ 4 \\ = 1.14, df = 1(k) \\ transposition \\ 1 \\ transp$ | 1 (P = 0.22); ² P = 0.95) ion 20 82 102 1 (P = 0.29); ² P = 0.22) R LH Total Events 20 3 5 0 0 | 5 ² = 34% 3 2(6 9(110 9 | | | 5] 2018 7] | | | |
| Heterogeneity: Chi ² = 1. Test for overall effsct: Z Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study or Subgroup Overall recurrenc Deng 2013 Taqi 2013 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Chen 2017 Liu 2019 Ahonen-Siirtola 2020 Taqi 2021 Chen 2017 Taqi 2017 Liu 2019 Ahonen-Siirtola 2020 Taqi 2020 Chen 2017 Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | = 1.51, df = 1 (f, | 1 (P = 0.22); ² P = 0.95) ion 20 82 102 1 (P = 0.29); ² P = 0.22) R LH Total Events 20 3 5 0 | 3 20 6 90 110 9 | | | | | | |
| Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (85% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study or Subgroup Overall recurrenc Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2017 Liu 2015 Ahonen-Siirtola 2020 Yang 2022 Subtotal (85% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} \text{HRR} \\ \text{(transposition} \\ 0 \\ 4 \\ = 1.14, \text{ df} = 1 (\text{ f} \\ 4 \\ = 1.14, \text{ df} = 1 (\text{ f} \\ \text{(transposition} \\ $ | 20 82 102 1 (P = 0.29); ² P = 0.22) R LH Total Events 20 8 20 8 20 8 102 102 102 102 102 102 102 102 | 3 20 6 90 110 9 | | | | | | |
| Mesh bulging/tra Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Overall recurrenc Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Chan 2017 Chan 2017 Chan 2017 Chan Siirtola 2020 Aina 2020 Subtotal (95% CI) Total events | $\label{eq:constraint} \begin{array}{c} \mbox{transposition} \\ 0 & 4 \\ = 1.14, \mbox{df} = 1.14, \mbox{df} = 1.14, \mbox{df} = 1.123 \mbox{ (P = 1)} \\ \hline \mbox{transposition} \\ transpositio$ | 20 82 102 1 (P = 0.29); I ² P = 0.22) R LH Total Events 20 3 5 0 | 3 20 6 90 110 9 | | | | | | |
| Deng 2013 Ahonen-Siirtola 2020 Subtotal (95% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study or Subbgroup Overall recurrenc Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | 0 4 4 = 1.14, df = 1 (f = 1(f = | 20 82 102 1 (P = 0.29); I ² P = 0.22) R LH <u>Total Events</u> 20 3 5 0 | 3 20 6 90 110 9 | | | | | | |
| Subtained (9% CI) Total events Heterogeneity: Chi ² = 1. Test for overall effect: Z Study or Subgroup Overall recurrenc Deng 2013 Zhu 2014 Ozturk 2015 Ye 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siintola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | <pre>U</pre> | 102 102 1 (P = 0.29); ² P = 0.22) R LH <u>Total Events</u> 20 3 | 9 | 0 38.6% | 0.12 [0.01, 2.53 | 3] 2013 | - | | |
| Total events Heterogeneity: Chi ^p = 1. Test for overall effect: Z Study or Subgroup Overall recurrenc Deng 2013 Zhu 2014 Ozturk 2015 Chen 2017 Chen 2017 Chan 2020 Yang 2021 Subtotal (6%% Cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 4 \\ = 1.14, df = (l) \\ tz \ z = 1.23 \ (P = l) \\ \hline \\ $ | 1 (P = 0.29); I ² P = 0.22) R LH <u>Total Events</u> 20 3 | 9 | 0 100.0% | 6 0.49 [0.16, 1.54] | 4] 2020 4] | | | |
| Heterogeneity: Chr = 1. Test for overall effect: Z Overall recurrenc Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Ve 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (65% Cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | HHR Events It Z = 1,23 (P = HHR Events It Z = 1,23 (P = 1,23 (P = 1,23 (P = 1,23 (P = 1,23 (P = | 1 (P = 0.29); P P = 0.22) R LH <u>Total Events</u> 20 3 | 10 1001 | | | | | | |
| Study or Subgroup Overall recurrence Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtota 2020 Tian 2020 Subtotal (65% cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | HHR Events Tc ence rate 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | R LH Total Events | 1* = 12% | | | | | | |
| Study or Subgroup Overall recurrenc Deng 2013 Zhu 2014 Ozurk 2015 Chen 2017 Labort Labort Subotal (6%) Subtotal (6%) Test (or overall effect: Z | $\begin{array}{c} \mbox{HHR} \\ \mbox{Events } Tc \\ \mbox{encorrel} rate \\ \mbox{o} \mbox{o} \\ \mbox{o} \ \mbox{o} \\ \mbox{o} \ \mbox{o} \\ \mbox{o} \ \mbox{o} \\ \mbox{o} \ \mbox$ | R LH Total Events 20 3 | | | | | | | |
| Study or Subgroup Overall recurrence Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siintola 2020 Tian 2020 Subtotal (95% cl)) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} \mbox{HHR} & \mbox{H} \\ \mbox{ence} rate & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$ | R LH Total Events 20 3 | | | | | 0.001 0.1 | 1 10 | 1000 |
| Study or Subgroup Overall recurrenc Dang 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siintola 2020 Tian 2020 Subtotal (65% cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | HHR Events Ts ence rate 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | R LH Total Events 20 3 | | | | | Favours HH | R Favours LHR | |
| Study or Subgroup Overall recurrence Deng 2013 Taqi 2014 2014 Obstant 2015 Ockurk 2015 Ochen 2017 Wang 2017 Liu 2018 Ahonen-Siintola 2020 Yang 2022 Subtotal (85% cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | Evants T encorate 1 0 0 1 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 | Total Events | | | Odds Patio | | 04 | de Patio | |
| Overall recurrence Deng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Chen 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau² = 1. Test for overall effect: Z | $\begin{array}{c} \text{ence rate} \\ \hline \\ 0 \\ 0 \\ 1 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$ | 20 3 | nts Total | Weight | M-H, Random, 95% | CI Year | M-H, Ra | ndom, 95% Cl | |
| Leng 2013 Taqi 2013 Zhu 2014 Ozturk 2015 Ye 2015 Chen 2017 Liu 2019 Ahonen-Siitota 2020 Tian 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 1 \\ 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$ | 20 3 | | | | | | | |
| Zhu 2013 Zhu 2014 Ozturk 2015 Ve 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Sittola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | (1,1,2,2,2,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3, | | 3 20 |) 18.8% | 0.30 [0.03, 3.1 | 15] 2013 | | | |
| Ozturk 2015 Ye 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Tian 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$ | 102 1 | 1 152 | 2 13.3% | 0.49 [0.02, 12.2 | 21] 2014 | | | |
| re 2015 Chen 2017 Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | 0 0 0 2 + 1.59; Chi ² = 1 t; Z = 1.34 (P = te in subgroup 1 0 0) 5 5 0 1 = 0.00; Chi ² = 0 1 = 0.00; Chi ² = 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 | 16 0 | 0 12 | 12.9% | 2.42 [0.09, 64.7 | 70] 2015 | | | |
| Wang 2017 Liu 2019 Ahonen-Siirtola 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | 0 0 5 1.59; Chi ² = 1 4 1 = 1.59; Chi ² = 1 1 z = 1.34 (P = 1 t z = 1.34 (P = 1 0 0 1 = 0 0 1 = 0.00; Chi ² = 0.00; Chi ² = 0 1 = 0.00; Chi ² = | 16 0 33 0 | U 20 0 37 | 7 | Not estimat | ble 2015 | | | |
| Liu 2019 Ahonen-Siirtola 2020 Tian 2020 Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $ | 25 0 | 0 20 |) | Not estimat | ble 2017 | | | |
| Anonen-Siirtola 2020 Tian 2020 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | y 5 0 2 4 9 = 1.59; Chi ² = 1 t: Z = 1.34 (P = 0 1 0 0 5 0 0 5 0 1 5 0 1 5 0 1 5 0 1 5 0 1 5 0 1 5 0 1 5 1 1 1 5 5 1 1 1 1 | 12 0 | 0 23 | 4 | Not estimat | ble 2019 | | | |
| Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} & & & \\ & & & \\ & & & \\$ | 82 6 20 n | б 90 | | 0.91 [0.27, 3.1 Not estimate | IUJ 2020 | _ | 1 | |
| Subtotal (95% CI) Total events Heterogeneity: Tau ² = 1. Test for overall effect: Z | $\begin{array}{c} 4\\ 9\\ 9\\ 1.59; Chi^2 = 1\\ t; Z = 1.34 \ (P = \\ 0\\ 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$ | 153 15 | 0 21 | 28.8% | 0.05 /0.01 | 23] 2022 | | | |
| Heterogeneity: Tau ² = 1. Test for overall effect: Z | 9 = 1.59; Ch ² = 1 t: Z = 1.34 (P = 0 1 0 0 5 0 1 = 0.00; Chi ² = 0 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | 484 | 0 21 15 73 | 28.8% | 0.05 [0.01, 0.2 | 59] | | | |
| Test for overall effect: Z | t: Z = 1.34 (P = tte in subgroup 0 1 0 0 1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 | 25 = 10.15. df = 4 | 0 21 15 73 488 | 28.8% 26.2% 100.0% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 | | | | |
| | te in subgroup 0 1 0 5 0 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | P = 0.18) | 0 21 15 73 488 25 4 (P = 0.0 |) 28.8% 3 26.2% 100.0%)4); ² = 61% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 % | | | | |
| Recurrence set- ' | 0 1 0 5 0 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | oun (fellow ···· | 0 21 15 73 488 25 4 (P = 0.0 |) 28.8% 3 26.2% 3 100.0%)4); I ² = 61% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 | | | | |
| Taqi 2013 | 1 0 5 0 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | | 0 21 15 73 488 25 4 (P = 0.0 | 28.8% 26.2% 100.0% 04); I ² = 61% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 | | | | |
| Ozturk 2015 | 0 5 0 1 6 = 0.00; Chi ² = 0 t; Z = 0.04 (P = | 16 0 | 0 21 15 73 488 25 4 (P = 0.0 up<36 mon 0 20 |) 28.8% 3 26.2% 3 100.0%)(1); 1 ² = 61%)(1); 1 ² = 61% | 0.05 (0.01, 0.2 0.36 (0.08, 1.5 % | ble 2013 | | +• | |
| Chen 2017 Abonen-Siirtola 2020 | 0 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | 33 0 82 0 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 | 28.8% 26.2% 100.0% 04); l ² = 61% | 0.05 (0.01, 0.2 0.36 (0.08, 1.5 % Not estimab 2.42 (0.09, 64.7 | ble 2013 70] 2015 | | _ | |
| Tian 2020 | 1 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | 20 0 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 | 0 28.8% 3 26.2% 3 100.0% 04); l ² = 61% potths) 1 22.2% 1 22.2% | 0.05 (0.01, 0.2 0.36 (0.08, 1.5 % Not estimat 2.42 (0.09, 64.7 Not estimat | ble 2013 70] 2015 ble 2017 | _ | I | |
| Subtotal (95% CI) | 6 = 0.00; Chi ² = 0 t: Z = 0.04 (P = | 156 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 |) 28.8% 3 26.2% 3 100.0% 04); I ² = 61% 9 nths) 2 12.2% 3 87.8% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 % Not estimab 2.42 [0.09, 64,7 Not estimab 0.91 [0.27, 3.1 Not estimab | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 | _ | • | |
| Lotal events Heterogeneity: Tau ² = 0 | t: Z = 0.04 (P = | | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 180 |) 28.8% 3 26.2% 3 100.0% 04); l ² = 61% onths)) 212.2%) 87.8% | 0.05 [0.01] 0.2 0.36 [0.08, 1.5 % Not estimat 2.42 [0.09, 64.7 Not estimat 0.91 [0.27, 3.1 Not estimat 1.02 [0.32, 3.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] | - | 1 | |
| Test for overall effect: Z | | 6 = 0.30 cH - 1 /f | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 12 0 37 6 90 0 21 180 6 |) 28.8% 3 26.2% 3 100.0% 0(4); l ² = 61% (101.0%) 12.2%) 87.8% 100.0% 3): l ² = 0% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 % Not estimat 2.42 [0.09, 64.7 Not estimat 0.91 [0.27, 3.1 Not estimat 1.02 [0.32, 3.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] | - | | |
| - | | 6 = 0.30, df = 1 (F P = 0.97) | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 180 6 1 (P = 0.58 |) 28.8% 3 26.2% 3 100.0% 0(4); ² = 61%) 2 12.2% 4 700.0% 3); ² = 0% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 % Not estimat 2.42 [0.09, 64.7 Not estimat 0.91 [0.27, 3.1 Not estimat 1.02 [0.32, 3.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] | - | | |
| Recurrence rate in Depg 2013 | te in subgroup | 6 = 0.30, df = 1 (F P = 0.97) | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 180 6 1 (P = 0.58 |) 28.8% 3 26.2% 3 100.0% 0(4); ² = 61%) 2 12.2% 3 7.8% 1 100.0% 3); ² = 0% | uuts (UU1, 0.2 0.36 [0.08, 1.5 % % 2.42 [0.09, 64.7 Not estimat 0.91 [0.27, 3.1 Not estimat 1.02 [0.32, 3.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] | - | | |
| Zhu 2014 | 0 1 | 6 = 0.30, df = 1 (F P = 0.97) pup (follow-up) | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 180 6 1 (P = 0.58 up>= 36 m 3 20 |) 28.8% 3 26.2% 100.0% 004); l ² = 61%) 212.2%) 87.8% 100.0% 3); l ² = 0% nonths)) 28.6% | 0.36 (0.08, 1.5 0.36 (0.08, 1.5 % % Not estimat 2.42 (0.09, 64.7 Not estimat 0.97 (0.27, 3.1 Not estimat 1.02 (0.32, 3.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] | - | | |
| Ye 2015 | 0 | 6 = 0.30, df = 1 (F P = 0.97) bup (follow-up 20 3 102 1 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 20 0 20 0 22 0 37 6 90 0 21 180 6 1 (P = 0.58 up>= 36 m 3 20 1 152 |) 28.8% 3 26.2% 100.0% 004); l ² = 61% 004); l ² = 61% 100.0% 1 2 12.2% 1 87.8% 1 00.0% 3); l ² = 0% nonths) 1 28.6% | uus (ju 0, 1, 2 0.36 (p.08, 1, 5 % Not estimat 2.42 (p.09, 6.47 Not estimat 0.91 (p.27, 3, 1 Not estimat 1.02 (p.32, 3, 2 0.30 (p.03, 3, 1 0.49 (p.02, 12.2 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] 15] 2013 21] 2014 | - | <u> </u> | |
| wang 2017 Liu 2019 | 0 | 6 = 0.30, df = 1 (F P = 0.97) 20 3 102 1 16 0 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 20 0 20 0 20 0 21 180 6 1 (P = 0.58 up>= 36 m 3 20 1 152 0 20 0 20 0 21 1 0 21 0 21 0 21 0 21 1 10 0 20 0 20 0 20 0 20 0 20 0 21 1 10 1 1 |) 28.8% 3 26.2% 100.0% 04); l ² = 61% potths) 2 12.2% 3 7 12.2% 3 7 100.0% 3); l ² = 0% nonths) 2 26.6% 1 100.0% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 % Not estimat 2.42 [0.06, 6.7 Not estimat 0.91 [0.27, 3.1 Not estimat 1.02 [0.32, 3.2 0.30 [0.03, 3.1 0.49 [0.02, 1.22 Not estimat | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] 15] 2013 21] 2014 ble 2015 | - | <u> </u> | |
| Yang 2022 | 0 | 6 = 0.30, df = 1 (F > = 0.97) 20 3 102 1 16 0 25 0 12 7 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 20 0 20 0 20 0 21 180 6 1 (P = 0.58 mup>= 36 m 3 20 1 152 0 20 0 20 0 21 1 5 1 5 2 6 1 6 2 7 3 7 6 90 0 21 1 80 6 1 7 1 7 8 7 1 80 6 1 7 1 80 6 1 7 1 80 6 1 7 2 8 1 80 1 80 1 15 2 8 1 80 1 80 0 90 0 0 1 1 1 80 0 80 0 0 1 1 1 80 0 80 0 0 0 1 1 1 1 1 1 80 0 80 0 1 1 1 1 1 1 80 0 80 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |) 28.8% 3 26.2% 3 100.0% 04); l ² = 619) 87.8% 1 100.0% 3); l ² = 0% nonths)) 28.6% ! 16.9%) | UUS [U.0.1, 0.2] 0.36 [0.08, 1.5 0.36 [0.08, 1.5 % Not estimati 2.42 [0.09, 6.4 - Not estimati 0.91 [0.27, 3.1 Not estimati 1.02 [0.32, 3.2 0.30 [0.03, 3.1 0.49 [0.02, 1.2] 0.30 [0.03, 3.1 0.49 [0.02, 1.2] | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] 15] 2013 21] 2014 ble 2015 ble 2017 ble 2017 | - - | <u> </u> | |
| | 2 1 | 6 = 0.30, df = 1 (F > = 0.97) 20 3 102 1 16 0 25 0 12 0 153 15 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 20 0 20 0 20 0 37 6 90 0 21 180 6 1 (P = 0.58 1 (P = 0.58 1 (P = 0.58) 1 (P = 0.58) |) 28.8% 3 26.2% 4 100.0% 04); l ² = 61% 04); l ² = 61% 2 12.2% 7 3 7.8% 1 100.0% 3); l ² = 0% nonths) 2 28.6% 2 16.9% 3 54.5% | 0.05 (0.01, 0.2 0.36 (0.08, 1.5 0.36 (0.08, 1.5 Not estimat 0.91 (0.27, 3.1 Not estimat 1.02 (0.32, 3.2 0.30 (0.03, 3.1 0.49 [0.02, 12.2 Not estimat Not estimat Not estimat | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 2020 2020 3] 15] 2013 21] 2014 ble 2015 ble 2019 2019 2019 2019 2019 2019 2019 2019 | | | |
| Subtotal (95% CI) | 2 1 | 6 = 0.30, df = 1 (f P = 0.97) 20 3 102 1 16 0 25 0 12 0 153 15 328 | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 37 6 90 0 21 180 0 6 1 (P = 0.58 1 (P = 0.58) 1 (P = |) 28.8% 3 26.2% 4 100.0% 04); ² = 615 04); ² = 615 0 87.8% 1 100.0% 1 2 12.2% 1 37.8% 1 2 2.6% 2 16.9% 1 54.5% 1 400.0% | 0.05 [0.01, 0.2 0.36 [0.08, 1.5 0.36 [0.08, 1.5 % Not estimat 0.91 [0.27, 3.1 0.40 [0.27, 3.2 0.30 [0.03, 3.1 0.49 [0.02, 1.2 Not estimat Not estimat Not estimat Not estimat Not estimat Not estimat | ble 2013 70] 2015 ble 2017 ble 2010 2020 ble 2020 33] 15] 2013 21] 2014 ble 2015 ble 2019 2015 ble 2019 23] 2022 51] | | | |
| Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0 | 2 1 3 = 0.35: Chi² = 2 | 6 = 0.30, df = 1 (F = 0.97) bup (follow-up: 20 3 102 1 16 0 25 0 15 15 328 19 = 2 52 rff = 2 rff | 0 21 15 73 488 25 4 (P = 0.0 0 20 0 20 0 22 0 37 6 90 0 21 180 6 1 (P = 0.58 10 20 0 21 10 20 0 21 10 20 0 21 10 20 0 21 0 12 0 20 0 21 0 20 0 21 0 20 0 20 0 21 0 20 0 20 0 12 0 37 6 90 0 21 0 21 0 20 0 21 0 12 0 20 0 21 0 12 0 20 0 21 0 12 0 20 0 21 0 20 0 12 0 20 0 21 0 20 0 21 0 20 0 21 0 20 0 21 0 20 0 21 0 21 0 22 0 21 0 21 10 20 0 21 1 52 0 20 0 20 1 52 0 20 0 20 1 52 2 7 3 20 0 22 2 7 3 20 0 22 2 7 3 20 0 22 2 7 3 20 0 20 0 21 1 57 3 20 0 20 0 22 2 7 3 20 0 20 0 22 2 7 3 20 0 20 0 22 2 7 3 20 0 20 0 20 0 20 0 20 2 7 3 20 0 20 0 20 0 20 2 7 3 20 0 20 0 20 0 20 0 20 2 7 3 20 2 7 2 7 2 7 3 20 0 |) 28.8% 3 26.2% 4 100.0% 04); l ² = 619 004); l ² = 619 0 87.8% 1 100.0% 3); l ² = 0% 1 00.0% 1 00.0% 3); l ² = 0% 1 00.0% 3); l ² = 0% 1 00.0% 1 | U US [U 01, 02] 0.36 [0.08, 1.5 % Not estimati 2.42 [0.09, 6.4.7 Not estimati 0.91 [0.27, 3.1 Not estimati 1.02 [0.32, 3.2 0.30 [0.03, 3.1 0.49 [0.02, 12, 3.2 Not estimati Not estimati Not estimati 0.50 [0.01, 0.2 0.12 [0.03, 0.5 0.12 [0.03, 0.5 1 | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] 15] 2013 21] 2014 ble 2015 ble 2017 ble 2019 23] 2022 51] | | | |
| Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z | 2 1 3 = 0.35; Chi ² = 2 t: Z = 2.91 (P = | 6 = 0.30, df = 1 (F = 0.97) bup (follow-up: 20 3 102 1 16 0 25 0 12 0 15 15 328 19 = 2.52, df = 2 (F = 0.004) | 0 21 15 73 25 4 (P = 0.0 0 20 0 22 0 37 6 90 0 21 180 1 (P = 0.58 up>= 36 m 3 20 1 (P = 0.58 up>= 36 m 3 20 1 152 0 20 0 23 1 57 3 308 19 2 (P = 0.28 |) 28.8% 3 26.2% 4 100.0% 004); l ² = 619 2 12.2% 3 100.0% 3 100.0% 3 ; l ² = 0% 16.9% 4 54.5% 4 100.0% 3 ; l ² = 21% | U US [U 01, 02] 0.36 [0.08, 15] Not estimat 2.42 [0.09, 6.47] Not estimat 0.91 [0.27, 31] 1.02 [0.32, 3.2 0.30 [0.03, 3.1 0.49 [0.02, 12.2 Not estimat Not estimat 1.02 [0.32, 3.2 0.30 [0.03, 0.5] 0.5 5 | ble 2013 70) 2015 50le 2017 10) 2020 50le 2020 23] 15] 2013 21] 2014 50le 2015 50le 2017 50le 2019 23] 2022 51] | | | |
| Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z | 2 1 3 = 0.35; Chi ² = 2 t: Z = 2.91 (P = | $\begin{array}{c} 6\\ = 0.30, df = 1 \ (F\\ P = 0.97) \\ \begin{array}{c} \text{oup} \ (follow-up)\\ 20 \ 3\\ 102 \ 1\\ 16 \ 0\\ 25 \ 0\\ 12 \ 0\\ 153 \ 15\\ 328 \\ \end{array}$ | 0 21 15 73 25 4 (P = 0.0 0 20 0 12 0 37 6 90 0 21 180 6 1 (P = 0.58 up>= 36 m 3 20 1 152 0 20 0 21 1 80 6 1 (P = 0.58 1 9 2 (P = 0.28 1 9 1 9 1 9 2 (P = 0.28 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 |) 28.8% 3 26.2% 100.0% 04); I ² = 619 04); I ² = 619 04); I ² = 619 04); I ² = 61 | 0.05 (0.01, 0.2 0.36 (0.08, 1.5 0.36 (0.08, 1.5 % Not estimat 0.91 (0.27, 3.1 Not estimat 1.02 (0.32, 3.2 0.30 (0.03, 3.1 0.49 [0.02, 1.2, 2 Not estimat Not estimat Not estimat Not estimat | ble 2013 70] 2015 ble 2017 10] 2020 ble 2020 23] 15] 2013 21] 2014 ble 2015 2015 2019 2019 23] 2022 11] | - | | 4 |

Fig. 3 a Meta-analyses of secondary outcome: seroma formation. b Meta-analyses of dichotomous variables in the secondary outcomes. c Meta-analysis of recurrence rate and subgroup analysis



Fig. 4 Meta-analyses of secondary outcome:postoperative acute pain

two RCT trials. The results demonstrated that the laparoscopic approach did not show superiority, lap vs open, VAS SMD = -0.04, P = 0.84, and similar outcomes were observed in two other later RCT trials [37, 38]. In contrast, chronic pain is defined as moderate or severe discomfort persisting for 6 to 8 weeks or even longer than 3 months after the procedure, as reported in various literatures [33, 39]. Chronic pain is relatively uncommon in the laparoscopic era. The incidence rate was reported as 1.6% (13/819) by Heniford [40] and 1.5% (6/389) by Franklin [41]. A recent systematic review [42] contributed a pooled incidence rate of 4.49% (0–15.3) for chronic pain in the HHR group, which is nearly as low as that in the LHR group. The causes of chronic pain are associated with skin incision, prosthetic material, and surgical technique, including tension-free procedures, mesh fixation, nerve injury, and nerve entrapment. Since the LHR and HHR methods are relatively similar in surgical procedures, they are expected to have no significant difference in the incidence rate of chronic pain. In this analysis, the risk preference did not show a significant discrepancy between the two techniques, despite the OR of 0.45 indicating the risk more prefer LHR, which appears to confirm the result mentioned above.

This analysis also demonstrated no significant variation in recurrence rates between HHR and LHR method. However, a pronounced heterogeneity was observed. To address this, we designated a minimum follow-up period of 36 months as a benchmark for evaluating hernia recurrence rates [4], establishing a cutoff point to facilitate subgroup analyses aimed at delineating the source of the heterogeneity. Notably, no heterogeneity was observed within the individual subgroups, indicating that the disparate follow-up durations across the selected trials may have contributed to the significant heterogeneity noted in the overall analysis. Due to the lack of specified data on 1-, 3-, or 5-year recurrence rates, it remains inconclusive whether the risk of recurrence beyond 36 months is more favorable with LHR compared to HHR based on the available trials featuring varied follow-up durations.

Hernia recurrence rates can vary based on the repair methods and materials used. Incisional hernias repaired by suturing have high recurrence rates (12-54%), while mesh repair is associated with recurrence rates ranging from 2 to 36% [6, 43]. Al Chalabi [5] summarized five randomized trials involving 611 IVH patients with follow-up periods ranging from 8 to 35 months, revealing a risk ratio for recurrence rate of 1.29 for laparoscopic versus open repair (95% CI [0.79, 2.11], P = 0.30). Awaiz [34] also reported a pooled OR of 1.41 for laparoscopic versus open repair (95% CI [0.81, 2.46], P = 0.23) based on six RCT trials consisting of 751 IVH patients with followup periods between 2 and 35 months. In the era of mesh repair, the likelihood of encountering high recurrence rates appears to be substantially reduced. Our findings reinforce the reliability of this conclusion, although there were few RCT trials included in this meta-analysis.

Mesh bulging, characterized by uneven protrusions in the area of previous hernia repair, is also referred to as pseudo-recurrence and has been associated with inadequate surgical techniques, particularly when employing the bridging technique without closure of defects [44, 45]. In this analysis, two included studies reported no significant differences in mesh bulging occurrence between the two methods. However, neither study specified whether the bridging technique was used in the laparoscopic procedures.

Several limitations are associated with this analysis. First, the inclusion of a large number of non-randomized and retrospective studies potentially increased the risk of selection bias. Second, methodological discrepancies existed among the included studies; for instance, some studies did not report whether defect closure and hernia sac dissection were performed. The HHR method was described as beginning with laparoscopy, transitioning to open, and concluding with laparoscopy; however, some studies reported laparoscopy followed by open, while others did not specify this aspect. Additionally, the evaluation of the extent of abdominal adhesions varied. Lastly, double-arm cohort studies comparing HHR with LHR are scarcely found in English literature. Interestingly, single-arm studies focusing solely on the effect of HHR are more prevalent. To augment the sample size and thus enhance the robustness of our analysis, we incorporated findings from Chinese comparative studies. However, this strategy may potentially increase the risk of language bias. The potential bias will diminish as the literature continues to be enriched with additional randomized controlled trials and comparative studies.

Conclusion

Given the absence of low risk biased Randomized Controlled Trials (RCTs) up until now, considerable caution is required in interpreting the outcomes due to significant heterogeneity in surgical procedures and reporting of postoperative complications. At present, the Hybrid Hernia Repair (HHR) technique does not appear to offer a distinct advantage over the Laparoscopic Hernia Repair (LHR) method in terms of mitigating surgical complications, except for a lower postoperative seroma incidence. Surgeons with significant expertise may avoid incidental conversions or intentional hybrid procedures. Future research should aim to conduct low-risk biased RCTs to clarify these findings and establish the optimal surgical approach for Incisional Ventral Hernias (IVH).

Supplementary Information

The online version contains supplementary material available at https://doi. org/10.1186/s12893-023-02254-6.

Additional file 1: Supplementary Table S1. The Risk of bias domains (ROBINS-I) of included studies. Supplementary Table S2. The Cochrane risk of bias tool for assessing risk of bias in included studies. Supplementary Table S3. Source of the Chinese studies included this analysis

Acknowledgements

Thanks to all participated surgeons, investigators and patients in this study.

Authors' contributions

WQ conceived the study and wrote the paper. MW undertook and refined the searches and co-wrote the paper and prepared Fig. 1. WQQ undertook the statistical analyses and helped to revise the intellectual content and prepared Figs. 2–4. LY and XY extracted all dada, and they prepared Tables 1–2. All authors read and approved the final manuscript.

Funding

None.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval and consent to participate

No ethical approval and patient consent are required because all analyses were based on previous published studies.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹Department of General Surgery, Beijing Jishuitan Hospital, Capital Medical University, 31 Xinjiekou East Street, Xicheng District, Beijing 100035, China. ²Department of Pathology and Laboratory Medicine, Dartmouth Hitchcock Medical Center, Geisel School of Medicine at Dartmouth, Lebanon, NH, USA. ³Department of Epidemiology and Biostatistics, Beijing Research Institute of Traumatology and Orthopaedics, Beijing Jishuitan Hospital, Beijing 100035, China.

Received: 20 May 2023 Accepted: 31 October 2023 Published online: 16 November 2023

References

- LeBlanc KA, Booth WV. Laparoscopic repair of incisional abdominal hernias using expanded polytetrafluoroethylene: preliminary findings. Surg Laparosc Endosc. 1993;3:39–41 PMID: 8258069.
- LeBlanc KA, Booth WV, Whitaker JM, et al. Laparoscopic incisional and ventral herniorrhaphy in 100 patients. Am J Surg. 2000;180:193–7. https:// doi.org/10.1016/s0002-9610(00)00443-8.
- Stoikes N, Quasebarth M, Brunt LM. Hybrid ventral hernia repair: technique and results. Hernia. 2013;17:627–32. https://doi.org/10.1007/ s10029-013-1092-9.
- LeBlanc KA. Incisional hernia repair: laparoscopic techniques. World J Surg. 2005;29:1073–9. https://doi.org/10.1007/s00268-005-7971-1.
- Al Chalabi H, Larkin J, Mehigan B, et al. A systematic review of laparoscopic versus open abdominal incisional hernia repair, with meta-analysis of randomized controlled trials. Int J Surg. 2015;20:65–74. https://doi.org/ 10.1016/j.ijsu.2015.05.050.
- Sajid MS, Bokhari SA, Mallick AS, et al. Laparoscopic versus open repair of incisional/ventral hernia: a meta-analysis. Am J Surg. 2009;197:64–72. https://doi.org/10.1016/j.amjsurg.2007.12.051.
- Neff M, Cantor B, Geis WP. Laparoscopic-assisted primary repair of a complicated ventral incisional hernia. JSLS. 2005;9:241–4 PMID: 15984722.
- Yoshikawa K, Shimada M, Kurita N, et al. Hybrid technique for laparoscopic incisional ventral hernia repair combining laparoscopic primary closure and mesh repair. Asian J Endosc Surg. 2014;7:282–5. https://doi. org/10.1111/ases.12113.
- Meytes V, Lee A, Rivelis Y, et al. Hybrid fascial closure with laparoscopic mesh placement for ventral hernias: a single surgeon experience. Ann Laparosc Endosc. 2017;2(55–60) https://doi.org/10.21037/ales.2017.02.31.
- Kudsi OY, Chang K, Bou-Ayash N, et al. Hybrid robotic hernia repair for incisional hernias: perioperative and patient-reported outcomes. J Laparoendosc Adv Surg Tech A. 2021;31:570–8.
- Wasim MD, Muddebihal UM, Rao UV. Hybrid: evolving techniques in laparoscopic ventral hernia mesh repair. J Minim Access Surg. 2020;16:224–8. https://doi.org/10.4103/jmas.JMAS_163_18.
- Romanowska M, Okniński T, Pawlak J. Hybrid technique for postoperative ventral hernias – own experience. Wideochir Inne Tech Maloinwazyjne. 2016;10:534–40. https://doi.org/10.5114/wiitm.2015.55689.
- Eitan A, Bickel A. Laparoscopically assisted approach for postoperative ventral hernia repair. J Laparoendosc Adv Surg Tech A. 2002;12:309–11. https://doi.org/10.1089/109264202320884036.
- Ji Y, Zhan X, Wang Y, et al. Combined laparoscopic and open technique for the repair of large complicated incisional hernias. Surg Endosc. 2013;27:1778–83. https://doi.org/10.1007/s00464-012-2680-y.
- Ahonen-Siirtola M, Rautio T, Biancari F, et al. Laparoscopic versus hybrid approach for treatment of incisional ventral hernia. Dig Surg. 2017;34:502–6. https://doi.org/10.1007/s00464-019-06735-9.
- 16. Van den Dop LM, Smet G, Kleinrensink G, et al. Hybrid operation technique for incisional hernia repair: a systematic review and meta-analysis

of intra- and postoperative complications. Hernia. 2021;25:1459–69. https://doi.org/10.1007/s10029-021-02497-3.

- Reinpold W, Schröder M, Berger C, et al. Mini- or less-open sublay operation (milos): a new minimally invasive technique for the extraperitoneal mesh repair of incisional hernias. Ann Surg. 2019;269:748–55. https://doi. org/10.1097/SLA.0000000002661.
- Sterne JA, Hernán MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. BMJ. 2016;355:i4919. https://doi.org/10.1136/bmj.i4919.
- Higgins JPT, Altman DG, Gotzsche PC, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. BMJ. 2011;343:d5928. https://doi.org/10.1136/bmj.d5928.
- Taqi M, Zhong WM, Zhang GY, et al. Laparoscopic tension-free hernioplasty for abdominal wall incisional hernia: a report of 25 cases. J Laparosc Surg. 2013;18:301–4. https://doi.org/10.13499/j.cnki.fgjwkzz.2013.04.014.
- Deng XZ, Wu B, Fan YB, et al. Hybrid repair technique for the treatment of incisional hernia: 40 cases report. J Surg Concepts Pract. 2013;18:232–5. https://doi.org/10.3969/j.issn.1007-9610.2013.03.010.
- Zhu YL, Chen J, Shen YM, et al. Hybrid technique in the treatment of the huge abdominal incisional hernia: an analysis of clinic therapeutic effect. Chin J Pract Surg. 2014;34:432–4. https://doi.org/10.7504/CJPS.ISSN1005-2208.2014.05.18.
- Ozturk G, Malya FU, Ersavas C, et al. A novel reconstruction method for giant incisional hernia: hybrid laparoscopic technique. J Minim Access Surg. 2015;11:267–70. https://doi.org/10.4103/0972-9941.142403.
- Ye JX, Cai X, Ma DD, et al. Comparison of the clinical efficacy between hybrid technique and laparoscopic intraperitoneal onlay mesh for the abdominal incisional hernia repair. J Laparosc Surg. 2015;20:866–9. https://doi.org/10.13499/j.cnki.fqjwkzz.2015.11.866.
- Halka JT, Vasyluk A, DeMare AM, et al. Robotic and hybrid robotic transversus abdominis release may be performed with low length of stay and wound morbidity. Am J Surg. 2018;215:462–5. https://doi.org/10.1016/j. amjsurg.2017.10.053.
- Wang JL, Hua YM, Zhu CY, et al. Skills of laparoscopy or hybrid surgery for large and huge incisional abdominal hernia. Chin J Min Inv Surg. 2017;17:276–8. https://doi.org/10.3969/j.issn.1009-6604.2017.03.024.
- Chen G, Meng YX, Li SJ, et al. Laparoscopic and hybrid technique for the repair of incisional hernia: a report of 70 cases. Chin J Gen Surg. 2017;32:997–9. https://doi.org/10.3760/cma.j.issn.1007-631X.2017.12.004.
- Ahonen-Siirtola M, Nevala T, Vironen J, et al. Laparoscopic versus hybrid approach for treatment of incisional ventral hernia: a prospective randomized multicenter study of 1-month follow-up results. Hernia. 2018;22:1015–22. https://doi.org/10.1007/s10029-018-1784-2.
- Liu ZC, Zhou JP, Gao W, et al. Diagnosis and treatment of abdominal incisional hernia: a report of 79 cases. Med J Liaoning. 2019;33:22–5 https://kns.cnki.net/kcms/detail/detail.aspx?FileName=LNYX201903009& DbName=CJFQ2019.
- Zhao C, Yao HQ. Clinical study of hybrid surgery and laparoscopic repair in the treatment of incision hernia of abdominal wall. Chin J Hernia Abdominal Wall Surg (Electronic Edition). 2019;13:537–9. https://doi.org/ 10.3877/cma.j.issn.1674-392X.2019.06.014.
- 31. Ahonen-Siirtola M, Nevala T, Vironen J, et al. Laparoscopic versus hybrid approach for treatment of incisional ventral hernia: a prospective randomised multicentre study, 1-year results. Surg Endosc. 2020;34:88–95. https://doi.org/10.1007/s00464-019-06735-9.
- Tian GJ, Liu P, Yang P, et al. Clinical study of open surgery assisted laparoscopy and complete laparoscopic repair in the treatment of abdominal incisional hernia. Chin J Hernia Abdominal Wall Surg(Electronic Edition). 2020;14:481–4. https://doi.org/10.3877/cma.j.issn.1674-392X.2020.05.004.
- Yang S, Wang M, Nie Y, et al. Outcomes and complications of open, laparoscopic, and hybrid giant ventral hernia repair. World J Clin Cases. 2022;10:51–61. https://doi.org/10.12998/wjcc.v10.i1.51.
- Awaiz A, Rahman F, Hossain MB, et al. Meta-analysis and systematic review of laparoscopic versus open mesh repair for elective incisional hernia. Hernia. 2015;19:449–63. https://doi.org/10.1007/s10029-015-1351-z.
- Cassar K, Munro A. Surgical treatment of incisional hernia. Br J Surg. 2002;89:534–45. https://doi.org/10.1046/j.1365-2168.2002.02083.x.
- Bittner R, Bain K, Bansal VK, et al. Update of guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (international Endohernia society (IEHS)): part B. Surg Endosc. 2019;33:3511–49. https:// doi.org/10.1007/s00464-019-06907-7.

- Misra MC, Bansal VK, Kulkarni MP, et al. Comparison of laparoscopic and open repair of incisional and primary ventral hernia: results of a prospective randomized study. Surg Endosc. 2006;20:1839–45. https://doi.org/10. 1007/s00464-006-0118-0.
- Barbaros U, Asoglu O, Seven R, et al. The comparison of laparoscopic and open ventral hernia repairs: a prospective randomized study. Hernia. 2007;11:51–66. https://doi.org/10.1007/s10029-006-0160-9.
- Mathes T, Prediger B, Walgenbach M, et al. Mesh fixation techniques in primary ventral or incisional hernia repair. Cochrane Database Syst Rev. 2021;5:CD011563. https://doi.org/10.1002/14651858.CD011563.pub2.
- Heniford BT, Park A, Ramshaw BJ, et al. Laparoscopic repair of ventral hernias : nine years' experience with 850 consecutive hernias. Ann Surg. 2003;238:391–9. https://doi.org/10.1097/01.sla.0000086662.49499.ab.
- Franklin ME, Gonzalez JJ, Glass JL, et al. Laparoscopic ventral and incisional hernia repair: an 11-year experience. Hernia. 2004;8:23–7. https:// doi.org/10.1007/s10029-003-0163-8.
- Sharma A, Sinha C, Baijal M, et al. Hybrid approach for ventral incisional hernias of the abdominal wall: a systematic review of the literature. J Minim Access Surg. 2021;17:7–13. https://doi.org/10.4103/jmas.JMAS_ 146_19.
- Rudmik LR, Schieman C, Dixon E, et al. Laparoscopic incisional hernia repair: a review of the literature. Hernia. 2006;10:110–9. https://doi.org/10. 1007/s10029-006-0066-6.
- Deerenberg EB, Verhelst J, Hovius SER, et al. Mesh expansion as the cause of bulging after abdominal wall hernia repair. Int J Surg Case Rep. 2016;28:200–3. https://doi.org/10.1016/j.ijscr.2016.09.051.
- Suwa K, Okamoto T, Yanaga K. Closure versus non-closure of fascial defects in laparoscopic ventral and incisional hernia repairs: a review of the literature. Surg Today. 2016;46:764–73. https://doi.org/10.1007/ s00595-015-1219-y.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.