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Comparative Outcomes Of Laparoscopy-Assisted Vs. Open Distal Gastrectomy For Gastric Cancer In The Elderly: A Systematic Review

Bella Yanita[1✉], Risal Wintoko[2], Ahmad Farishal[3]
(1)Hermina Hospital Lampung
(2)Department of Surgeon, RSUD Dr. H. Abdul Moeloek, Faculty of Medicine, Universitas Lampung
(3)Department of Surgery, Faculty of Medicine, Universitas Lampung
Email: bellaynta17@gmail.com[1✉]

Abstract

Background: Gastric cancer, prevalent among the elderly, presents considerable health challenges due to the age-related decline in immune function. Surgical management options include laparoscopic-assisted gastrectomy (LDG) and open gastrectomy (ODG).Methods: This systematic review followed PRISMA guidelines, using PubMed, Scopus, and Cochrane Library to identify cohort and case-control studies published between 2014–2024. Studies comparing LDG and ODG in patients aged 70 and older, reporting on outcomes such as recovery time, postoperative complications, and survival rates, were included. Data extraction and bias assessment were conducted, and a qualitative synthesis of results was performed.Results: LDG was associated with longer operating times compared to ODG in three out of five studies ($p < 0.01$). However, LDG consistently resulted in significantly lower intraoperative blood loss ($p < 0.01$) and faster recovery, evidenced by shorter time to first flatus and oral intake ($p < 0.01$) and reduced hospital stays across all studies ($p < 0.05$). LDG was associated with fewer postoperative complications in two studies ($p < 0.05$), although other studies showed no significant difference in complication rates.

Discussion: Five retrospective cohort studies with a total of 317 LDG and 256 ODG were included in the qualitative analysis. LDG was associated with significantly reduced intraoperative blood loss, faster recovery times, and shorter hospital stays, making it a

favorable option for elderly patients. While LDG generally involved longer operating times, it did not lead to increased postoperative complications.

Conclusion: LDG offers several short-term advantages compared to ODG, suggesting it may be a safer and more effective approach for elderly gastric cancer patients. However, further studies are needed to assess long-term outcomes and confirm the overall efficacy of LDG in this population.

Keywords: Gastric Cancer, Eldery Patients, Comparative, Systematic Review, Survival Rates

INTRODUCTION

Gastric cancer, also known as stomach cancer, is a malignancy that originates from the epithelial cells lining the stomach and has the potential to metastasize to other parts of the body. It is defined as a neoplasm that arises from gastric epithelium and often develops into a tumor. Gastric cancer is classified into several types based on histopathological characteristics and tumor location, including gastric adenocarcinoma, diffuse type carcinoma, and intestinal type carcinoma[1,2]. Epidemiologically, gastric cancer is prevalent in regions with a significant elderly population. In Indonesia, for instance, gastric cancer is frequently encountered among older adults.[3] Aging is a major risk factor due to the decline in immune function and physiological changes associated with aging, which can exacerbate cancer prognosis.[4,5] In the management of gastric cancer, gastrectomy is a common surgical procedure. There are two primary approaches: laparoscopic-assisted gastrectomy (laparoscopic) and open gastrectomy. Laparoscopic surgery is a minimally invasive procedure that uses small incisions and a camera to reduce surgical trauma and accelerate patient recovery. Conversely, open gastrectomy involves a larger incision and longer recovery time. Research indicates that laparoscopic surgery may offer better outcomes in terms of recovery and reduction of complications for some patients, although results can vary depending on age and overall health.[6,7] The objective of this systematic review is to compare the outcomes of laparoscopic-assisted versus open gastrectomy in elderly patients with gastric cancer. By evaluating data from various recent studies, this review aims to identify the most effective and safe surgical approach for this age group and provide evidence-based recommendations for future clinical practice.

RESEARCH METHOD

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review aimed to compare the outcomes of laparoscopic-assisted gastrectomy versus open gastrectomy

in elderly patients with gastric cancer.

Search Strategy

A comprehensive literature search was conducted across multiple databases, including PubMed, Scopus, and Cochrane Library. The search was limited to studies published in the last ten years (2014–2024) to ensure the inclusion of the most recent evidence. Keywords used in the search included: "laparoscopy-assisted distal gastrectomy" OR "laparoscopic distal gastrectomy" OR "minimally invasive distal gastrectomy", "open distal gastrectomy" OR "conventional distal gastrectomy", "outcome" OR "results" OR "efficacy" OR "effectiveness", "gastric cancer" OR "stomach cancer", "elderly" OR "older adults" OR "senior patients" OR "geriatric". Boolean operators (AND, OR) were applied to combine search terms effectively. The search was restricted to English-language publications.

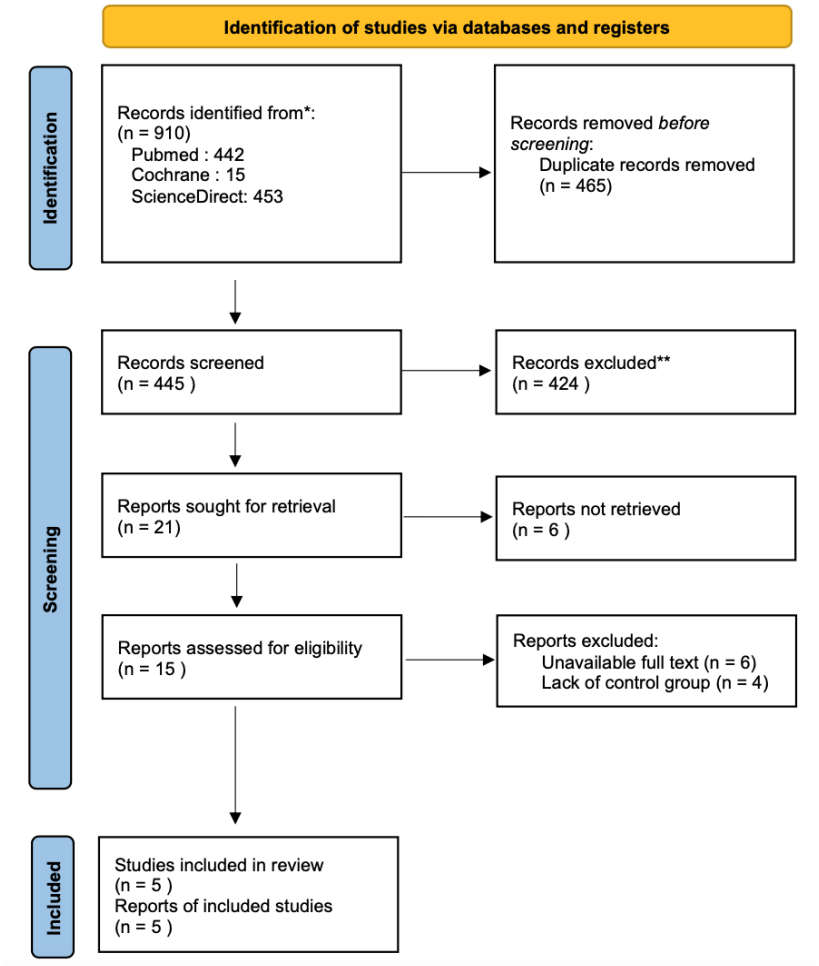

Figure 1. The PRISMA flow diagram

Inclusion Criteria

Studies comparing laparoscopic-assisted gastrectomy and open gastrectomy in elderly

patients (aged 70 and above) with gastric cancer. Studies report clinical outcomes such as postoperative complications, recovery time, overall survival, and disease-free survival. The study designs included were cohort and case-control studies due to the high level of evidence in these study designs compared to other intervention study designs. The criteria for studies to be excluded were: 1) literature reviews, cross-sectional studies, or case reports; 2) *in vitro* and animal studies; 3) Not using English; 4) Not reporting any quantitative results; 5) Studies that did not directly compare laparoscopic and open gastrectomy

Data Extraction and Quality Assessment

The following data were extracted from each eligible study: 1) the authors and year of publication; 2) the study design; 3) the country in which the study was conducted; 4) the inclusion criteria; 5) the number of patients with treatment; 6) the period of the study; 7) study outcomes, which included the parameters operating time (OT), 8) estimated blood loss (EBL), time to first flatus, 9) time to intake, 10) postoperative hospital days, 11) summary findings in the study. The data were extracted by two authors independently.

Risk of bias was also undertaken comprehensively with the ROBINS-I tool for non-randomized studies if the studies included were not randomized. A study was considered good if it received 3 or 4 stars in the selection domain AND 1 star in the comparability domain AND 2 or 3 stars in the outcome domain. A study was considered fair if it received 2 stars in the selection domain AND 1 star in the comparability domain AND 2 or 3 stars in the outcome domain. A study was considered poor if it received 0 or 1 star in the selection domain AND 0 stars in the comparability domain AND 0 or 1 star in the outcome domain. Extracted data were summarized in tables and narrative synthesis was performed to describe the data. Due to the heterogeneity of the included articles concerning outcomes of interest to our review, we are unable to analyze and synthesize the data quantitatively. We analyzed and reported (qualitative) data following our study objectives regarding the safety and efficacy of the intervention, which included overall survival, progression-free survival, response rate, and safety in terms of adverse events.

Ethical Considerations

Since this study involved the analysis of previously published data, no ethical approval or patient consent was required.

The findings of this systematic review will provide valuable insights into the most effective and safe surgical approach for elderly patients with gastric cancer, aiding

clinicians in making evidence-based decisions.

RESULT AND DISCUSSION

Results

The systematic review included a total of 5 studies after a thorough screening process. These studies provided data on 573 elderly patients with gastric cancer, with 317 patients undergoing laparoscopic-assisted gastrectomy and 256 undergoing open gastrectomy. The primary outcomes assessed were operating time, blood loss estimates, time to first flatus, time to first intake, postoperative hospital stays, and postoperative complications.

Study Selection

The literature search across seven databases resulted in 457 hits. After removal of 385 duplicates, 141 titles and abstracts were screened to exclude 78 irrelevant papers. Out of the remaining 63 papers, only 28 papers underwent full-text review. There were only three studies that fully met the inclusion criteria, and were hence included in the qualitative data synthesis. The summary of study selection is presented in the PRISMA flow diagram (Figure 1). The list of excluded studies at the full-text level is available in Supplementary File 1.

Study Characteristics and Risk of Bias

The five studies included in this systematic review are retrospective cohort studies, comprising a total of 317 cohorts who underwent laparoscopic distal gastrectomy (LDG) and 256 cohorts who underwent open distal gastrectomy (ODG). Two studies were from Japan, two from China, and one from Taiwan. In the study by Inokuchi et al., involving patients aged ≥80 years, 45 patients underwent LDG and 25 underwent ODG. The findings indicated that LDG resulted in less blood loss, faster recovery, and shorter hospital stays ($p < 0.01$) compared to ODG, with no significant difference in surgical complications ($p = 0.40$). LDG may provide favorable short-term outcomes for very elderly gastric cancer patients. The study by Yao et al. involved patients aged ≥70 years, with 124 undergoing LDG and 124 undergoing ODG. The results showed that laparoscopic surgery resulted in less blood loss, fewer complications, and faster recovery, making it a safe and effective option for elderly patients with distal gastric cancer. Yen et al.'s study, also involving patients aged ≥70 years, included 80 patients who underwent LDG and 37 who underwent ODG. This study demonstrated that

laparoscopic surgery had less blood loss, fewer complications, and faster recovery, supporting its safety and effectiveness for elderly gastric cancer patients. The study by Zheng et al., involving patients aged ≥70 years, included 23 patients who underwent LDG and 27 who underwent ODG. It found that LDG offers advantages over ODG in elderly patients, such as reduced blood loss, faster recovery, and shorter hospital stays, without increasing complication rates or affecting long-term outcomes. Thus, LDG may be a preferable option for treating gastric cancer in older adults. The study by Ueda et al., involving patients aged ≥80 years, included 45 patients undergoing LDG and 43 undergoing ODG. This study indicated that LDG reduces blood loss and complications and improves disease-specific survival compared to ODG. However, LDG patients had lower 5-year overall survival compared to non-elderly patients, emphasizing the impact of age and comorbidities on long-term outcomes. The risk of bias was evaluated using the ROBINS-I tool, as detailed in Figure 2.

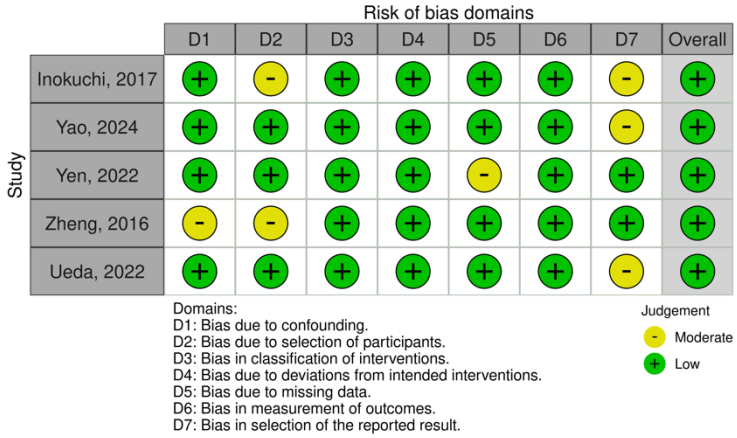

Figure 2. Risk of Bias Assessment of Included Studies Using the ROBINS-I Tools

Author, year of publication	Title	Study Design	Country	Inclusion Criteria	Number of patients with intervention (n=573)		Study Period	Study Outcomes
					Laparoscopic (n=317)	Open Distal Gastrectomy (n=256)		
Inokuchi, 2017	Laparoscopic Distal Gastrectomy is Feasible in Very Elderly Patients as Compared with Open Distal Gastrectomy	Retrospective cohort study	Japan	patients aged 80 years or older with gastric adenocarcinoma who underwent LDG or ODG with lymphadenectomy and Roux-en-Y reconstruction between January 2004 and September 2016.	45 patients	25 patients	2004-September 2006	LDG showed less blood loss, faster recovery, and shorter hospital stays ($p < 0.01$) than ODG, with no significant difference in surgical complications ($p = 0.40$). LDG may offer good short-term outcomes for very elderly gastric cancer patients.
Yao, 2024	Laparoscopic versus open distal gastrectomy for advanced gastric cancer in elderly patients: a propensity-score matched analysis	Retrospective cohort study	China	elderly patients aged ≥ 70 years diagnosed with advanced gastric cancer who underwent laparoscopic and open distal gastrectomy between June 2017 and June 2021 who were matched with propensity scores.	124 patients	124 patients	June 2017-June 2021	Laparoscopic surgery showed less blood loss, fewer complications, and faster recovery, making it a safe and effective option for elderly patients with distal gastric cancer.
Yen, 2022	Laparoscopic versus open distal gastrectomy for elderly patients with advanced gastric cancer: a retrospective comparative study	Retrospective cohort study	Taiwan	patients aged ≥ 70 years with tumors in the lower third of the stomach who underwent standard D2 distal gastrectomy between July 2014 and July 2021 with classifications into early gastric cancer (EGC) or advanced gastric cancer (AGC) based on pathological stage.	41 patients with early gastric cancer, 39 patients with advanced gastric cancer	37 patients with advanced gastric cancer	July 2014-July 2011	Laparoscopic surgery had less blood loss, fewer complications, and faster recovery, making it safe and effective for elderly gastric cancer patients.
Zheng, 2016	Laparoscopy-assisted versus open distal gastrectomy for gastric cancer in elderly patients: a retrospective comparative study	Retrospective cohort study	China	patients aged 70 years or older with gastric cancer who underwent either laparoscopy-assisted distal gastrectomy or open distal gastrectomy between February 2013 and January 2014.	23 patients	27 patients	February 2013-January 2014	LDG appears to offer advantages over ODG in elderly patients, including less blood loss, faster recovery, and shorter hospital stays, without increasing complication rates or affecting long-term outcomes. Therefore, LDG may be a preferable option for treating gastric cancer in older adults.
Ueda, 2022	Technical and oncological safety of laparoscopic gastrectomy for gastric cancer in elderly patients ≥ 80 years old	Retrospective cohort study	Japan	patients with gastric cancer who underwent curative gastrectomy between 2003 and 2015, categorized into elderly patients aged ≥ 80 years receiving laparoscopic or open gastrectomy, and non-elderly patients receiving laparoscopic gastrectomy.	45 patients	43 patients	January 2003-December 2015	LDG reduces blood loss and complications and improves disease-specific survival compared to ODG. LDG patients have lower 5-year overall survival than non-elderly patients, highlighting the impact of age and comorbidities on long-term outcomes.

Table 1. Baseline characteristics of the studies

Author, year of publication	LDG	ODG	p
A. Operating Time (min)			
Inokuchi, 2017	297 (140-432)	212 (124-307)	**<0.01**
Yao, 2024	Unadjusted: 194.19±16.74 Propensity score matched: 195.48±16.44	Unadjusted: 187.72±14.83) Propensity score matched: 187.78±14.88	**Unadjusted: 0.001** **Propensity score matched: <0.001**
Yen, 2022	215 (190-238)	192 (165-212)	**0.006**
Zheng, 2016	216±58	188±41	0.054
Ueda, 2022	288±84	258±73	0.08
B. Blood Loss			
Inokuchi, 2017	57 (0-524) (mL)	350 (40-969) (mL)	**<0.01**
Yao, 2024	Unadjusted: 187.72±10.25 (mL) Propensity score matched: 87.96±10.19 (mL)	Unadjusted: 97.96±14.54 (mL) Propensity score matched: 97.90±14.58 (mL)	**Unadjusted: <0.001** **Propensity score matched: <0.001**
Yen, 2022	100 (0-150) (mL)	100 (0-200) (mL)	0.059
Zheng, 2016	100 (50-600) (mL)	250 (100-650) (mL)	**<0.001**
Ueda, 2022	86±162 (g)	433±515 (g)	**<0.01**
C. Time to First Flatus			
Inokuchi, 2017	3 (1-9) (days)	4 (1-10) (days)	**<0.01**
Yao, 2024	Unadjusted: 3.62±0.90 (days) Propensity score matched: 3.61±0.84 (days)	Unadjusted: 3.94±1.00 (days) Propensity score matched: 3.95±1.00 (days)	**Unadjusted: 0.003** **Propensity score matched: 0.004**
Yen, 2022	N/A	N/A	N/A
Zheng, 2016	51.6±9.84 (hours)	67.2±13.2 (hours)	**<0.001**
Ueda, 2022	N/A	N/A	N/A
D. Time to Intake (days)			
Inokuchi, 2017	2 (2-111)	4 (3-8)	**<0.01**
Yao, 2024	Unadjusted: 4.15±1.07 Propensity score matched: 4.19±1.10	Unadjusted: 4.56±1.02 Propensity score matched: 4.56±1.02	**Unadjusted: 0.001** **Propensity score matched: 0.005**
Yen, 2022	N/A	N/A	N/A
Zheng, 2016	6.1±2.0	7.9±1.9	**0.002**
Ueda, 2022	5.6±5.2	5.4±2.4	>0.05
E. Postoperative hospital stays (days)			
Inokuchi, 2017	8 (5-241)	10 (5-33)	**0.02**
Yao, 2024	Unadjusted: 9.01±2.21 Propensity score matched: 9.00±2.15	Unadjusted: 10.16±2.72 Propensity score matched: 10.15±2.73	**Unadjusted: <0.001** **Propensity score matched: <0.001**
Yen, 2022	11 (10-14.5)	13 (11-22)	**0.042**
Zheng, 2016	12 (8-18)	16 (9-21)	**<0.001**
Ueda, 2022	19±9	24±13	**<0.05**
F. Overall Postoperative complications			

Inokuchi, 2017	13 (29%)	12 (48%)	**0.11**
Yao, 2024	Unadjusted: 82 (46.1%) Propensity score matched: 46 (37.1%)	Unadjusted: 68 (54.4%) Propensity score matched: 66 (53.2%)	**Unadjusted: 0.153** **Propensity score matched: 0.011**
Yen, 2022	7 (17.9%)	16 (43.2%)	**<0.05**
Zheng, 2016	5	7	**0.730**
Ueda, 2022	N/A	N/A	**NS**

Table 2. Postoperative outcomes of the studies included in our analysis

Operating Time

Data from five studies compared operating times between laparoscopic-assisted gastrectomy and open gastrectomy. The analysis of operating times across the studies reveals that laparoscopic distal gastrectomy (LDG) generally requires more time compared to open distal gastrectomy (ODG). Specifically, Inokuchi (2017) and Yen (2022) both demonstrated significantly shorter operating times for ODG, with p-values of <0.01 and 0.006, respectively. Similarly, Yao (2024) found significantly shorter operating times for ODG in both unadjusted and propensity score-matched analyses, with p-values of 0.001 and <0.001. In contrast, Zheng (2016) and Ueda (2022) did not observe significant differences in operating times between LDG and ODG, with p-values of 0.054 and 0.08, respectively. Thus, while LDG is associated with longer operating times, the degree of statistical significance varies among studies.

Blood Loss Estimates

Five studies reported on intraoperative blood loss. The comparison of blood loss between laparoscopic distal gastrectomy (LDG) and open distal gastrectomy (ODG) shows that LDG generally results in less blood loss. Inokuchi (2017) and Zheng (2016) reported significantly lower blood loss with LDG, with p-values of <0.01 and <0.001, respectively. Yao (2024) also found significantly reduced blood loss for LDG in both unadjusted and propensity score-matched analyses, with p-values of <0.001. Similarly, Ueda (2022) observed significantly less blood loss in the LDG group compared to ODG, with a p-value of <0.01. However, Yen (2022) did not find a significant difference in blood loss between the two approaches, with a p-value of 0.059. Overall, LDG is associated with reduced blood loss compared to ODG, although statistical significance may vary depending on the study.

Time to First Flatus

The comparison of time to first flatus reveals that laparoscopic distal gastrectomy (LDG)

generally results in quicker recovery compared to open distal gastrectomy (ODG). Among the three studies that reported this metric, Inokuchi (2017) and Yao (2024) found significantly shorter times to first flatus with LDG, with p-values of <0.01 and 0.003 (unadjusted) and <0.01 and 0.004 (propensity score matched), respectively. Zheng (2016) also reported a significantly shorter time to first flatus with LDG, with a p-value of <0.001. Data from Yen (2022) and Ueda (2022) were not available for this metric. Overall, LDG is associated with a faster time to first flatus, suggesting more rapid recovery in this parameter compared to ODG.

Time to First Intake

Four studies provided data on the time to first oral intake. The analysis of time to intake indicates that laparoscopic distal gastrectomy (LDG) generally facilitates faster resumption of oral intake compared to open distal gastrectomy (ODG). Specifically, Inokuchi (2017) and Yao (2024) both reported significantly shorter times to intake with LDG, with p-values of <0.01 and 0.001 (unadjusted) and <0.01 and 0.005 (propensity score matched), respectively. Zheng (2016) also found that LDG resulted in a significantly shorter time to intake, with a p-value of 0.002. However, Ueda (2022) did not observe a significant difference between LDG and ODG in terms of time to intake, with a p-value greater than 0.05. Overall, LDG is associated with a more rapid resumption of oral intake compared to ODG, suggesting improved recovery in this parameter.

Postoperative Hospital Stays

The duration of postoperative hospital stays was evaluated in all five studies. The evaluation of postoperative hospital stays demonstrates that laparoscopic distal gastrectomy (LDG) typically results in shorter hospital stays compared to open distal gastrectomy (ODG). Specifically, Inokuchi (2017) and Yao (2024) found that LDG was associated with significantly shorter hospital stays, with p-values of 0.02 and <0.001 (unadjusted) and <0.001 (propensity score matched), respectively. Similarly, Yen (2022) and Zheng (2016) reported significantly reduced hospital stays for LDG, with p-values of 0.042 and <0.001, respectively. Ueda (2022) also observed a shorter postoperative hospital stay with LDG, with a p-value of <0.05. Collectively, these findings indicate that LDG is associated with a more efficient recovery and earlier discharge compared to ODG.

Postoperative Complications

The evaluation of overall postoperative complications suggests that laparoscopic distal gastrectomy (LDG) is generally associated with a lower incidence of complications compared to open distal gastrectomy (ODG). Specifically, Inokuchi (2017) and Zheng (2016) did not find a statistically significant difference in complication rates between LDG and ODG, with p-values of 0.11 and 0.730, respectively. In contrast, Yao (2024) identified a significant reduction in complications with LDG in the propensity score-matched analysis, with a p-value of 0.011, although no significant difference was observed in the unadjusted analysis ($p = 0.153$). Yen (2022) also reported significantly fewer complications with LDG, with a p-value of <0.05. Data from Ueda (2022) were not available for this outcome. Collectively, these findings suggest that LDG is associated with a tendency toward fewer overall postoperative complications compared to ODG, although the degree of statistical significance varies across different studies.

Discussion

This systematic review analyzed outcomes from five studies comparing laparoscopic distal gastrectomy (LDG) and open distal gastrectomy (ODG) in elderly patients with gastric cancer. The findings provide a comprehensive comparison of these surgical approaches based on key postoperative metrics. The analysis revealed that LDG generally involves longer operating times compared to ODG. Specifically, Inokuchi (2017) and Yen (2022) reported significantly shorter operating times for ODG, with p-values of <0.01 and 0.006, respectively (Inokuchi, 2017; Yen, 2022). Similarly, Yao (2024) found significantly shorter operating times for ODG in both unadjusted and propensity score-matched analyses, with p-values of 0.001 and <0.001 (Yao, 2024). This observation aligns with other studies suggesting that while LDG can be more time-consuming due to its technical complexity, this is often balanced by the advantages of minimally invasive procedures[8]. Regarding intraoperative blood loss, LDG was associated with significantly less bleeding compared to ODG. Inokuchi (2017) and Zheng (2016) reported significantly reduced blood loss with LDG, with p-values of <0.01 and <0.001, respectively.[7,8] Yao (2024) also demonstrated significantly lower blood loss for LDG in both unadjusted and propensity score-matched analyses, with p-values of <0.001. Ueda (2022) further supported this finding with a p-value of <0.01, showing less blood loss in the LDG group. These results are consistent with the broader literature indicating that minimally invasive surgeries generally result in less intraoperative bleeding compared to open procedures.[9] The time to first flatus, a critical measure of postoperative gastrointestinal recovery, was also shorter with LDG. Inokuchi (2017) and Yao (2024) found that LDG led to significantly quicker times to first flatus, with p-

values of <0.01 and 0.003 (unadjusted) and <0.01 and 0.004 (propensity score matched), respectively. Zheng (2016) corroborated this with a p-value of <0.001, indicating a shorter time to first flatus for LDG. These findings support other studies that highlight the faster recovery of bowel function associated with minimally invasive surgeries. When examining the time to first oral intake, LDG generally facilitated quicker resumption compared to ODG. Inokuchi (2017) and Yao (2024) reported significantly shorter times to first intake with LDG, with p-values of <0.01 and 0.001 (unadjusted) and <0.01 and 0.005 (propensity score matched), respectively (Inokuchi, 2017; Yao, 2024). Zheng (2016) also found a significantly shorter time to intake with LDG, with a p-value of 0.002. Although Ueda (2022) did not find a significant difference, the overall trend suggests that LDG promotes faster resumption of oral intake, which is in line with other studies that emphasize the benefits of minimally invasive techniques in accelerating postoperative recovery.[10] The evaluation of postoperative hospital stays indicated that LDG is associated with shorter hospital stays compared to ODG. Inokuchi (2017) and Yao (2024) found significantly reduced hospital stays with LDG, with p-values of 0.02 and <0.001 (unadjusted) and <0.001 (propensity score matched), respectively. Similarly, Yen (2022) and Zheng (2016) reported significantly shorter hospital stays for LDG, with p-values of 0.042 and <0.001, respectively. Ueda (2022) also observed shorter hospital stays with LDG, with a p-value of <0.05 (Ueda, 2022). This trend is consistent with existing literature indicating that LDG often results in more efficient postoperative recovery and earlier discharge compared to open approaches.[11] Finally, when assessing postoperative complications, LDG generally showed a trend toward fewer complications compared to ODG. Inokuchi (2017) and Zheng (2016) did not find significant differences in complication rates between LDG and ODG, with p-values of 0.11 and 0.730, respectively. Conversely, Yao (2024) reported a significant reduction in complications with LDG in propensity score-matched analyses, with a p-value of 0.011, though the unadjusted analysis did not show a significant difference. Yen (2022) also found significantly fewer complications with LDG, with a p-value of <0.05 (Yen, 2022). Although data from Ueda (2022) were not available for this outcome, the overall evidence suggests that LDG is associated with fewer postoperative complications, which is consistent with other studies that highlight the reduced complication rates associated with minimally invasive surgical techniques.[12]

Limitations of the Study

The study presents several limitations. This study only includes five studies with a number of cohorts too small to produce a comprehensive comparison between the treatment

groups. The inclusion of predominantly retrospective cohort studies introduces potential biases that may impact the reliability of the findings. Additionally, there is considerable heterogeneity across the studies regarding patient demographics, surgical techniques, and outcome measures, compounded by variations in the definition of "elderly" and methodological inconsistencies. The lack of clear reporting on funding sources in some studies may further contribute to potential biases.

CUNCLUSIONS

In conclusion, this systematic review indicates that LDG generally offers advantages over ODG in terms of reduced blood loss, quicker gastrointestinal recovery, faster resumption of oral intake, and shorter hospital stays. Although LDG is associated with longer operating times and the impact on overall postoperative complications varies, the benefits in terms of quicker recovery and reduced blood loss make LDG a preferable option for elderly patients with gastric cancer.

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