Gastrointestinal symptomatic outcomes of laparoscopic and open gastrectomy

Bilal Kharbutli, Vic Velanovich

Bilal Kharbutli, Vic Velanovich, Division of General Surgery, Henry Ford Hospital, Detroit, MI 48202, United States

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Correspondence to: Vic Velanovich, MD, Division of General Surgery, K-8, Henry Ford Hospital, 2799 West Grand Blvd., Detroit, MI 48202, United States. vvelano1@hfhs.org

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Abstract

AIM: To compare the laparoscopic and the open gastrectomy approaches for short term morbidity, length of hospital stay and also long term gastrointestinal symptoms.

METHODS: Patients who have undergone gastrectomy had their medical records reviewed for demographic data, type of gastrectomy, short term morbidity, and length of hospital stay. Patients were contacted and asked to complete the Gastrointestinal Symptom Rating Scale (GSRS). The GSRS measures three domains of GI symptoms: Dyspepsia Syndrome (DS) for the foregut (best score 0, worse score 15), indigestion syndrome (IS) for the midgut (best score 0, worse score 12), and bowel dysfunction syndrome (BDS) for the hindgut (best score 0, worse score 16). Statistical analysis was done using the Mann-Whitney U-test.

RESULTS: We had complete data on 32 patients: 7 laparoscopic and 25 open. Of these, 25 had a gastroenteric anastomosis and 6 did not. The table shows the results as medians with interquartile range. Laparoscopic gastrectomy had a better score than open gastrectomy in the DS domain (0 vs 1, P = 0.02), while gastrectomy without anastomosis had a better score than gastrectomy with anastomosis in the IS domain (0 vs 1, P = 0.05).

CONCLUSION: Patients have little adverse gastrointestinal symptoms and preserve good gastrointestinal function after undergoing any type of gastrectomy. Laparoscopic approach had better dyspepsia and foregut symptoms. Performing an anastomosis led to mild adverse midgut and indigestion effects.

Key words: Laparoscopic; Gastrectomy; Symptomatic outcomes; Gastric tumor; Open gastrectomy; Laparoscopic gastrectomy

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INTRODUCTION

Gastrectomy is the most effective treatment for a variety of gastric pathologies, both benign and malignant, nevertheless it may lead to significant short and long term gastrointestinal symptoms in addition to an associated procedural morbidity and mortality. As minimally invasive surgery has advanced, laparoscopic gastrectomy is advocated as a treatment method for the different gastric pathologies with equivalent pathologic results, faster recovery, shorter length of stay, lower morbidity and earlier return of bowel function[1].

There have been many published studies that compare laparoscopic and open gastrectomy in regards to post operative morbidity and mortality, length of hospital stay and surgical resection adequacy for benign and malignant pathologies. Little data exist that evaluate gastrointestinal symptomatology after either laparoscopic or open
gastrectomy using objective and validated instruments such as the gastrointestinal symptom rating scale.

This study compares the laparoscopic and the open gastrectomy for short term morbidity, length of hospital stay and also long term gastrointestinal symptomatology and compares results to those published in the literature.

MATERIALS AND METHODS

Patients who had undergone elective gastrectomy for benign and malignant pathologies at our institution had their medical records reviewed for demographic data, type of gastrectomy, and short term morbidity, and length of hospital stay. Patients who had emergent surgery or combined procedures performed were excluded from the study.

Patients were contacted and asked to complete the Gastrointestinal Symptom Rating Scale (GSRS). The GSRS measures three domains of GI symptoms: Dyspepsia Syndrome (DS) assesses foregut symptomatology (best score 0, worse score 15), Indigestion syndrome (IS) for the midgut symptomatology (best score 0, worse score 12) and Bowel dysfunction syndrome (BDS) for the hindgut (best score 0, worse score 16).

Statistical analysis was done using the Mann-Whitney U-test.

RESULTS

We had complete data on 32 patients: 7 laparoscopic and 25 open. Of these, 23 had a gastroenteric anastomosis and 9 did not, (Table 1). We compared the length of stay between patients who underwent open and laparoscopic gastrectomy, (Table 2) and also between those who did and did not have gastroenteric anastomosis with their gastrectomy, (Table 3).

The results showed that patients who had laparoscopic gastrectomy had a shorter length of hospital stay (mean 5 d) compared to open gastrectomy (mean 9.6 d), (Table 2). These results are comparable to other published studies.

Table 3 shows that those who had a gastroenteric anastomosis performed with gastrectomy had longer length of hospital stay (Mean 9.8 d) compared to those who did not (Mean 5.3 d). Delay in return of bowel function was the main reason behind the prolonged hospital stay.

Median follow up was 37 mo for the open group and 29 mo for the laparoscopic group. Median age was 69 years for the open group and 73 years for the laparoscopic group. Neither comparison was statistically significant, (Table 4). We also noted that the length of time after operation did not seem to affect severity of GI symptoms.

With respect to gastrointestinal symptoms as measured by the GSRS, the comparison revealed that there is a small but statistically significant difference between patients who had open gastrectomy compared to those who had laparoscopic gastrectomy only in the DS Domain with more symptoms in open gastrectomy patients in that domain but not in the two other domains, (Table 5).

There was also a small but statistically significant difference between patients who had gastrectomy with an anastomosis and those who did not have a gastroenteric anastomosis in the DS Domain with patients who had the anastomosis having more symptoms. There was no statistically significant difference in the two other domains between these two groups, (Table 6).

Total morbidity rate was approximately 40% in the open gastrectomy group including 16% wound complications (SSI, Hernia); four patients (16%) with gastrointestinal obstruction, one with post operative MI and one patient with pneumonia. The postoperative morbidity rate in the laparoscopic group was 28%; (one patient had UTI and another had urinary retention with acute renal failure), with no wound complications. These morbidity data were equivalent to that published in the literature.

DISCUSSION

Overall, patients have relatively few adverse gastrointestinal symptoms in any of the GSRS domains after both open and laparoscopic gastrectomies, whether or not a gastroenteric anastomosis was performed. This implies that most patients return to relatively good gastrointestinal function after gastrectomy. Patients with laparoscopic gastrectomy had a slightly better median score in the DS domain compared to the open technique, while patients who had gastrectomy without an anastomosis had a...
better median score in the IS domain implying that an anastomosis had mild adverse midgut effects.

Performing open gastrectomy resulted in longer length of hospital stay and greater wound complications compared to laparoscopic gastrectomy. While performing gastroenteric anastomosis lead to slightly more Indigestion Symptomatology and longer hospital stay compared to gastrectomies without anastomosis.

These data reflect advantages for laparoscopic gastrectomy and increased midgut symptoms, albeit minor, for gastroenteric anastomosis. The results of this study will be valuable for surgeons counseling patients on the long-term effects of these operations on their quality of life.

COMMENTS

Background

Gastrectomy is the most effective treatment for a variety of gastric tumors. This study compares different aspects comparing the two most commonly used gastrectomy methods, open vs laparoscopic.

Research frontiers

Gastrectomy can lead to significant gastrointestinal symptoms. As minimally invasive surgery has advanced, laparoscopic gastrectomy is advocated as a treatment method with equivalent pathologic results, with faster recovery.

Innovations and breakthroughs

Very little data using objective, validated instruments of gastrointestinal symptoms to compare laparoscopic and open gastrectomy exist. This study compares the two methods using the Gastrointestinal Symptomatic Rating Scale (GSRS) as an objective instrument. It also compares other aspects of post operative course.

Applications

Having a better understanding of, and objective data for the comparison between the outcomes of these common gastrectomy methods will aid physicians and patients in clinical discussion and decision making.

Terminology

Gastrectomy or gastric resection is a surgical procedure for stomach resection due to variable benign and malignant causes including peptic ulcers and tumors. Laparoscopic Surgery is a minimally invasive procedure that involves the use of ports, camera and smaller incisions.

Peer review

The authors compared gastrointestinal symptomatic outcomes of laparoscopic and open gastrectomy. They found that patients have relatively little adverse gastrointestinal symptoms in any of the types of gastrectomies in any of the GSRS domains. This paper is well written and easy to read.

REFERENCES

1. Huscher CG, Mingoli A, Sgarzini G, Sansometti A, Di Paolo M, Recher A, Ponzo C. Laparoscopic versus open subtotal gastrectomy for distal gastric cancer: five year results of a randomized prospective trial. *Ann Surg* 2005; 241: 232-237

2. Reyes CD, Weber KJ, Gagner M, Divino CM. Laparoscopic vs open gastrectomy. A retrospective review. *Surg Endosc* 2001; 15: 928-931

3. Dulucq JL, Wintringer P, Perissat J, Mahajna A. Completely laparoscopic total and partial gastrectomy for benign and malignant diseases: a single institute’s prospective analysis. *J Am Coll Surg* 2005; 200: 191-197

4. Dulucq JL, Wintringer P, Stabilini C, Solinas L, Perissat J, Mahajna A. Laparoscopic and open gastric resections for malignant lesions: a prospective comparative study. *Surg Endosc* 2005; 19: 933-938

5. Chang HM, Lee SW, Nomura E, Tanigawa N. Laparoscopic versus open gastrectomy for gastric cancer patients with COPD. *J Surg Oncol* 2009; 100: 456-458

6. Varela JE, Hiyashi M, Nguyen T, Sabio A, Wilson SE, Nguyen NT. Comparison of laparoscopic and open gastrectomy for gastric cancer. *J Surg Oncol* 2006; 192: 837-842

7. Memon MA, Khan S, Yunus RM, Barr R, Memon B. Meta-analysis of laparoscopic and open distal gastrectomy for gastric carcinoma. *Surg Endosc* 2008; 22: 1781-1789

8. Strong VE, Devaud N, Allen PJ, Gonen M, Brennan MF, Coit D. Laparoscopic versus open subtotal gastrectomy for adenocarcinoma: a case-control study. *Ann Surg Oncol* 2009; 16: 1507-1513

9. Francescutti V, Choy I, Bierth L, Goldsmith CH, Anvari M. Gastrectomy and esophagogastrectomy for proximal and distal gastric lesions: a comparison of open and laparoscopic procedures. *Surg Innov* 2009; 16: 134-139

10. Kitano S, Shiraiishi N. Minimally invasive surgery for gastric tumors. *Surg Clin North Am* 2005; 85: 151-164, xi

11. Tabrizian P, Nguyen SQ, Divino CM. Laparoscopic management and longterm outcomes of gastrointestinal stromal tumors. *J Am Coll Surg* 2009; 208: 80-86

12. Feliu X, Besora P, Claveria R, Viñas X, Salazar D, Fernández E. Laparoscopic treatment of gastric tumors. *J Laparoendosc Adv Surg Tech A* 2007; 17: 147-152

13. Song KY, Park CH, Kang HC, Kim JJ, Park SM, Jun KH, Chin HM, Hur H. Is totally laparoscopic gastrectomy less invasive than laparoscopy-assisted gastrectomy?: prospective, multicenter study. *J Gastrointest Surg* 2008; 12: 1015-1021

14. Shehzad K, Mohiuddin K, Nizami S, Sharma H, Khan IM, Memon B, Memon MA. Current status of minimal access surgery for gastric cancer. *Surg Oncol* 2007; 16: 85-98

15. Berindoague R, Targaron EM, Feliu X, Artigas V, Balagué C, Alderano A, Lahoud A, Navinés J, Fernandez-Sallent E, Trias M. Laparoscopic resection of clinically suspected gastric stromal tumors. *Surg Innov* 2006; 13: 231-237

16. Rivera RE, Eagon JC, Soper NJ, Klingensmith ME, Brunt LM. Experience with laparoscopic gastric resection: results and outcomes for 37 cases. *Surg Endosc* 2005; 19: 1622-1626

17. Sexton JA, Pierce RA, Halpin VJ, Eagon JC, Hawkins WG, Linehan DC, Brunt LM, Frisella MM, Matthews BD. Laparoscopic gastric resection for gastrointestinal stromal tumors. *Surg Endosc* 2008; 22: 2583-2587

18. Liew V, Taylor C, Ghous M, Jamnagervalla M, Layani L. Laparoscopic gastric resection for benign and malignant conditions: lessons learned from 35 consecutive cases. *ANZ J Surg* 2007; 77: 787-791