Biomedical Research 2017; 28 (22): 10092-10095 *ISSN 0970-938X*
www.biomedres.info

Comparison among the early gastric cancer patients receiving laparoscopy radical gastrectomy and those receiving open radical gastrectomy in prognosis and survival rate.

Lei Zhou[1#], Guochao Zhang[1#], Jixi Liu[2], Haibin Liu[1], Chaofeng Li[1*]

[1]Department of General Surgery, China-Japan Friendship Hospital, Beijing 100029, PR China

[2]Department of Gastroenterology, China-Japan Friendship Hospital, Beijing 100029, PR China

[#]These authors contributed equally.

Abstract

Objective: To compare and analyze the differences among the early gastric cancer patients receiving laparoscopy and those receiving open radical gastrectomy in prognosis and survival rate.

Methods: controlled trials were used for analysis and comparison. 200 cases of early gastric cancer patients received and cured by the general surgery department of the Hospital between 2012 and 2015 were randomly selected as research and observation objects. With the method of random grouping, 200 patients were divided into the laparoscopy group and the open surgery group. Each of them contained 100 cases of patient. Among them, the patients in the laparoscopy group received laparoscopy radical gastrectomy for treatment and the patients in the open surgery group received open radical gastrectomy for treatment. Operation time, intraoperative blood loss volume, ventilation duration, hospital stay, postoperative life quality of the patients, and one-year, three-year and five-year survival rate respectively were set as the indicators for clinical evaluation to compare these two groups of patients.

Results: The operation time (168.23 ± 28.36) of the patients in the laparoscopy group was significantly longer than that (134.56 ± 27.57) of the patients in the open surgery group (P<0.05), and the difference was statistically significant; the intraoperative blood loss volume (131.68 ± 26.68 mL) of the patients in the laparoscopy group was significantly lower than that (178.36 ± 35.66 mL) of the patients in the open surgery group (P<0.05), and the difference was of statistical value; the hospital stay (9.36 ± 1.35 d) of patients in the laparoscopy group was significantly shorter than that (12.32 ± 1.65 d) of the patients in the open surgery (P<0.05), and the difference was statistically significant; the ventilation duration (2.65 ± 0.32 d) of the patients in the laparoscopy group was significantly shorter than that (4.72 ± 1.42 d) of the patients in the open surgery (P<0.05), and the difference was statistically significant; the postoperative life quality (scoring 48.35 ± 6.64 points) of the patients in the laparoscopy group was significantly higher than that (scoring 78.46 ± 6.59 points) of the patients in the control group (P<0.05), and the difference was statistically significant; there was no significant differences in the one-year, two-year and three-year survival rate between the two groups, and the difference was not statistically significance.

Conclusion: compared with the open radical gastrectomy, the laparoscopy radical gastrectomy has the advantages including small trauma, less pain, and faster improvement of postoperative life quality. Besides, its postoperative survival rate is similar to that of the traditional radical gastrectomy. Therefore, it is worthy to be promoted and referred in clinic practices.

Keywords: Early gastric cancer, Laparoscopy radical gastrectomy, Open radical gastrectomy, Survival rate.

Accepted on December 22, 2017

Introduction

In the past, the early gastric cancer patients (Figures 1 and 2) mainly received open radical gastrectomy for treatment. The open surgery belongs to traditional treatment which causes big traumas and brings greater blow to the patients. The patients receiving the open surgery have a quite slow postoperative recovery [1]. In recent years, with the development of laparoscopy technique, domestic clinical study on the laparoscopy surgery treatment early gastric cancer has made substantial development. Laparoscopic surgery is a newly emerging minimally invasive approach, which is expected to an inexorable trend for the development of operative method. With the rapid progress of industrial manufacturing technology,

a solid basis has been established by fusion of new techniques and new methods. Moreover, doctors have been more and more sophisticated on operations at present, previous open operations have been replaced by internal urethrotomy. The conventional approach of retroperitoneal laparoscopic surgery is to cut three small incisions with diameter of 3 cm at patient waist, and then insert a tubelike working channel called "trocar" (all subsequent operations will be conducted *via* the three channels.); after that, remaining operative processes that are identical to open surgery are conducted with a special extended operative instrument under TV monitoring, and comparable surgical effect can be obtained. This article selected the early gastric cancer patients receiving radical gastrectomy in the general surgery department of the Hospital between 2012 and 2015 as study object to compare and analyze the differences among the early gastric cancer patients receiving laparoscopy and those receiving open radical gastrectomy in prognosis and survival rate. The specific steps and experience summary were firstly reported as follows.

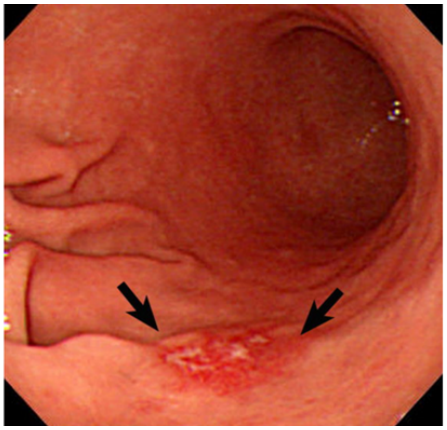

Figure 1. *Sketch map of earl gastric cancer.*

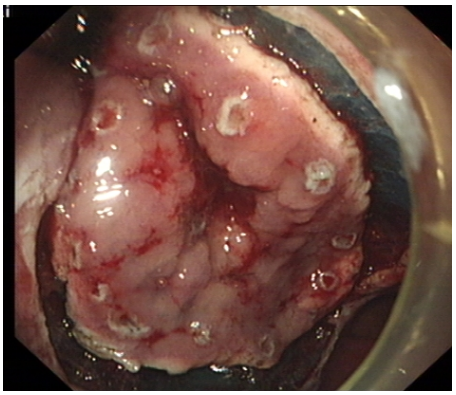

Figure 2. *Mucosal performance of earl gastric cancer [1].*

Materials and Methods

General materials

Controlled trials were used for comparison and analysis. With the method of random grouping, 200 patients were divided into the laparoscopy group and the open surgery group. Each of them contained 100 cases of patient. Among them, the patients in the laparoscopy group received laparoscopy radical gastrectomy (Figure 3) for treatment and the patients in the open surgery group received open radical gastrectomy for treatment. Among the patients in the laparoscopy group, there were 50 male cases and 50 female cases; the patients' ages were between 38 and 72 years old, and the average age was 53.21 ± 8.05 years old. Among the patients in the control group, there were 50 male cases and 50 female cases; the patients' ages were between 39 and 72 years old, and the average age was 53.13 ± 8.12 years old. After grouping, the clinical staff shall make full description of the operation method, advantages and disadvantages of these two types of operations to the patients, so that the patients can understand the relevant information of them. This group of controlled trials were argued and approved by the Ethics Committee. All patients recognized the operation method selected by each group, and all of them had signed informed consent. Inclusion criteria: 1) The patients shall receive histopathology examination before operation, and are clinically diagnosed with gastric cancer. 2) The patients shall receive preoperative imaging examination, and no cancer metastasis in lungs and liver which is commonly found in the gastric cancer patients and lymphoid tissue invasion around the abdominal aorta are found [2,3]. The exclusive criteria are patients with severe heart-liver-kidney dysfunction, coagulation diseases or mental disturbance.

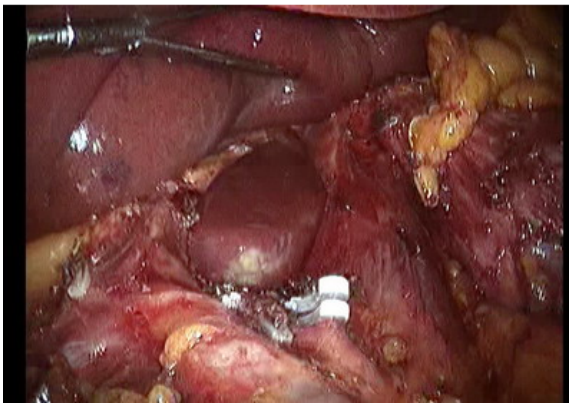

Figure 3. *Sketch map of laparoscopy radical gastrectomy [5].*

Therapeutic method

Operation method of the patients in the open surgery group: The patients were intubated with tracheal and received general anesthesia. After the lesions were exposed through operation, tumor size, pathological types and infiltration depth were observed according to the gastric treatment guidelines. All patients shall receive lymph node dissection and the number of the cleaned lymph nodes shall be recorded; the submucosal carcinoma as well as the small gastric cancer within the mucosa shall be performed with D1 operation [4]. More than half of this type of early gastric cancer occurs in sinus is lesser curvature side of antrum. And the center-pente type is frequently found in the clinical. It is important to note that the range of cancer excision on the gastric body and the above parts shall be enlarged appropriately to prevent

misdiagnosis [5]. The patients with a cancer lesion about 2 to 4 cm and the patients with multifocal cancer shall receive D2 operation. This type of cancer is not commonly found in clinical diagnosis and treatment, and it accounts for about 4.5% to 13% of early gastric cancers. And, its incidence part is often near the gastric angle and the far end of the gastric body. In the clinical diagnosis and treatment, its IIc type is frequently found.

Operation method of the patients in the laparoscopy group: The patients received general anesthesia after they were intubated with tracheal. The following laparoscopy operation adopted the five-hole operation method. The patients took supine position, namely lowering head, protruding pelvis and parting legs. The surgeons stood between the legs of the patients, and the assistants respectively stood on both sides of the patients. A camera was set at the first puncture hole at the umbilicus and 15 mmHg pneumoperitoneum, was maintained. Besides, four puncture cannulas were respectively placed in the left, right, above and middle abdomen to prevent the operating instrument [6]. The gastrectomy method depended on the location and size of the cancer lesion. The common gastrectomy method included proximal gastric resection, distal gastric resection, and total gastric resection. All of the patients were performed with total intra-abdominal anastomosis, and the lymph node dissection methods including D1+α type,D1+β type, and D2 type were selected according to the specific circumstances of the lymph node. The number of the cleaned lymph nodes was recorded.

Evaluation criterion

Clinical indexes including operation time, intraoperative blood loss volume, ventilation duration, hospital stay, postoperative life quality of the patients, and one-year, three-year and five-year survival rate were compared between the two groups.

Statistical treatment methods

In the analysis of this group of controlled trials, the statistical analysis software SPSS19.0 was adopted. All data generating from the analysis of this group of controlled trials is analyzed and processed with this software. Among it, the measurement data was expressed in the form of mean plus or minus average ($\bar{x} \pm s$), and chi-square was used in the comparison between groups; the counting data was expressed in the form of natural number (n) and percentage (%), and t was used in the comparison between groups. In statistical analysis, 0.05 was used as the inspection standard, and the confidence interval was 95%. When $P<0.05$, the comparison between groups was considered to have significant differences and have statistical value.

Results

The operation time of the patients in the laparoscopy group was significantly longer than that of the patients in the open surgery group ($P<0.05$), and the difference was statistically significant; the intraoperative blood loss volume of the patients in the laparoscopy group was significantly lower than that of the patients in the open surgery group ($P<0.05$), and the difference was statistically significant; the hospital stay of patients in the laparoscopy group was significantly shorter than that of the patients in the open surgery ($P<0.05$), and the difference was statistically significant; the ventilation duration of the patients in the laparoscopy group was significantly shorter than that of the patients in the open surgery group ($P<0.05$), and the difference was statistically significant; the postoperative life quality of the patients in the laparoscopy group was significantly higher than that of the patients in the control group ($P<0.05$), and the difference was statistically significant; there was no significant difference between the one-year, two-year and three-year survival rate of the patients of the two groups, and the difference was not statistically significant (Tables 1 and 2).

Table 1. *Comparison between two groups of patients in operation situation (n, x ± s).*

Group	Cases	Operation time	Intraoperative blood loss volume	Hospital stay	Ventilation duration
Laparoscopy group	100	168.23 ± 28.36	131.68 ± 26.68	9.36 ± 1.35	2.65 ± 0.32
Open surgery group	100	134.56 ± 27.57	178.36 ± 35.66	12.32 ± 1.65	4.72 ± 1.42

Table 2. *Comparison between two groups of patients in postoperative life quality, and One-year, three-year and five-year survival rate (n, x± s, %).*

Group	Cases	Life quality	One year after operation	Three years after operation	Five year after operation
Laparoscopy group	100	48.35 ± 6.64	98%	95%	72%
Open surgery group	100	78.46 ± 6.59	98%	94%	91%

Discussion

In 1983, the Australian scholar Marshall Warren and Marshall for the first time extracted helicobacter pylori (HP) from the gastric mucosa tissues of the patients with chronic gastritis through gastric mucosa tissue biopsy. The relationship between HP infection and incidence of gastric cancer has always been the focus and difficulty of clinical research [7,8]. In 1998, Watanaba and Honda successfully induced the incidence of gastric cancer in mongolian gerbil through HP infection. With the animal experiments, they proved that there was relationship between HP and gastric cancer incidence. In 2003, domestic digestive disease research institution for the first time established the gastric cancer model that HP infected Mongolia gerbil. The researchers only used international standard strain ATCC43504 of HP or clinical gastric cancer isolate strain to perform long-term infection (84) in Mongolia gerbil and induced gastric cancer incidence. According to relevant experiences of domestic animal tests, the vast majority of gastric cancer research scholars believed that HP infection mainly played a role in the initial stage of gastric cancer, and it played a very important role in active gastritis, atrophic gastritis and the development of intestinal metaplasia. In other words, HP infection started the incidence of gastric cancer.

The extensive infection of HP can induce intestinal type gastric adenocarcinoma, atrophic gastritis, and intestinal metaplasia, etc. According to relevant data, the pathological change of the Mongolian gerbils infected with HP is similar to that of the human infected with HP; the morphological change of the HP infection and the gastric mucosal tissues formed by intestinal type gastric cancer is as follows: from HP infection associated acute gastritis to chronic active gastritis to atrophic gastritis to intestinal metaplasia, atypical hyperplasia, intestinal type gastric cancer [9]. Related histomorphology experimental researches showed that severe atrophy and intestinal metaplasia can improve the crisis of gastric cancer incidence. The latest clinical research suggests that chronic active gastritis is also an important risk factor for gastric cancer incidence. Intestinal metaplasia is a very important transitional stage in the malignant transformation process of gastric mucosal cells of the patients. In recent years, with the development of laparoscopy technique, clinical research on laparoscopy treatment for early gastric cancer in China has also made great development. Laparoscopy radical gastrectomy overcomes the shortages of traditional open surgery such as big trauma, and slow postoperative recovery, and brings good news to patients. In sum, laparoscopy radical gastrectomy is worthy to be promoted in clinical practices and to be referred [10].

Acknowledgement

Clinical study of endoscopic, laparoscopic and sentinel lymph node biopsy in patients with gastric cancer - Hospital of China-Japan Friendship Hospital(No. 2014-2-MS-14).

Reference

1. Mapei P. Comparison among the early gastric cancer patients receiving laparoscopy radical gastrectomy and those receiving open radical gastrectomy in prognosis and survival rate. Chinese J Clin Physicians 2014; 2: 350-352.
2. Xiaofeng L, Shenghu Y, Hanyun Y, Liping Q. Observation of the medical effect of laparoscopy d2 radical operation on 30 cases of patients with locally advanced distal gastric cancer. Shandong Med 2016; 13: 54-56.
3. Shengan S, Baowei H, Shuaijun D, Chaohui L. Comparison between laparoscopy distal radical gastrectomy and traditional open surgery in the medical effect on earl gastric cancer. Chinese J New Clin Med 2016; 5: 406-409.
4. Chunyang Z, Chaoshun Z. Study on the clinical effect of laparoscopy radical gastrectomy and open radical gastrectomy on the treatment of earl gastric cancer. Public Med Forum Mag 2015; 34: 4791-4792.
5. Tianhui Z, Jingyu D. Comparison among the early gastric cancer patients receiving laparoscopy radical gastrectomy and those receiving open radical gastrectomy in clinical effect. J Mudanjiang Med University 2013; 6: 41-43.
6. Spiliotis J, Efstathiou E, Matsubara A, Osman MM, Choo SP. Molecular biology of gastric cancer. Asian Pac J Surg Oncol 2016; 2: 86-100.
7. Imada T, Yukawa N, Nakatsuji M, Tan B, Tan JY, Fock KM. Lymph node dissection for gastric cancer. Asian Pac J Surg Oncol 2016; 2: 101-120.
8. Yamada N, Maeda K, Sawada T, Jeong ID, Noh SH, Zhao Y. Surgical management of gastric cancer. Asian Pac J Surg Oncol 2016; 2: 121-134.
9. Liu K, Chen XZ, Nakamura I, Ohki S, Eslick GD. Laparoscopic surgery for gastric cancer: survival outcome and prognostic factor. Asian Pac J Surg Oncol 2016; 2: 135-142.
10. Jin XL, Guo Y, Ye M, Shibasaki H, Davidson LE. Outcomes of gastric cancer Resection in elderly. Asian Pac J Surg Oncol 2016; 2: 143-152.

***Correspondence to**

Chaofeng Li

Department of General Surgery

China-Japan Friendship Hospital

PR China