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THE SURGICAL PROCEDURE FOR ESOPHAGOGASTRIC JUNCTION CANCER — DISCUSSING THE TACTICS

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Introduction. *Currently, there is no standardized surgical tactics for the esophagogastric junction cancer treatment. The issues of the resection margin, volume of lymphodissection and the optimal size of the gastric stump are still being discussed. This article analyzes the influence of these parameters on the recurrence-free survival and postoperative quality of life for patients, according to the literature data.* ***Objective.*** *Analysis of the treatment outcomes for patients with esophagogastric junction cancer, depending on the surgical tactics.* ***Materials and Methods.*** *The article analyzes the literature data evaluating various approaches in the surgical treatment of esophagogastric junction cancer. We present an example (from the Yasuyuki Seto study) of a patient with proximal gastric adenocarcinoma with a depth of T3 invasion and the surgical tactics regarding the size of the gastric stump. a A great advantage of the resection margin located at 2 cm from the proximal margin and at 5 cm from the distal margin has been shown. According to the results of our own observations, a patient with proximal gastric adenocarcinoma with an invasion depth of T3 underwent a resection with the proximal and distal resection margins of 13 and 65 mm, respectively. Negative resection margins were diagnosed intraoperatively. The patient's recurrence -free survival was 6 years. A total gastrectomy or esophagectomy are not the operations of choice because of the worsening of the patient's quality of life. When analyzing the depth of invasion according to the literature data, it has been found that an invasion in the esophagus of more than 30 mm is associated with an increased risk of metastatic lymph nodes of the superior and middle mediastinum. With a gastric invasion length of more than 40 mm, lymph nodes of lesser curvature along the right gastric artery are affected. According to the literature, a gastric stump with the size of more than two-thirds of the organ size was favorable in terms of the postoperative quality of life. Many authors indicate the positive effect of maintaining the gastroesophageal sphincter and cardia of the stomach. In the study by Yasuyuki Seto, proximal gastric resection was applied only if it was possible to maintain more than 12 cm in the small curvature and 25 cm in the large curvature.* ***Conclusion.*** *When choosing the surgical tactics for the esophagogastric junction cancer, one needs to focus on the patient's quality of life after the surgery. It is necessary to achieve negative resection margins in each case. The resection margins should be more than 2 and 5 cm for the proximal and distal margins, respectively. Dissection of the lymph nodes of the middle and superior mediastinum should be carried out with invasion of the tumor into the esophagus by more than 30 mm, removal of the lymph nodes of the lesser curvature of the stomach along the right gastric artery must be carried out if the tumor invasion into stomach is more than 40 mm. It is optimal to keep the gastric stump equal to two-thirds of the size of the organ. The issue of the surgical tactics in cancer of the esophageal-gastric transition is of great practical importance and requires a further study.*

Keywords: *gastric cancer, cancer of the esophagus, quality of life, resection, gastrectomy, reconstruction.*

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INTRODUCTION

The choice of optimal resection margin is an important decision for postoperative prognosis. The minimum margin indentation of resection in cancer of the esophagogastric junction (EGJ) has been studied by many modern researchers, and its effect on patient survival has been evaluated.

CANCER OF THE ESOPHAGOGASTRIC JUNCTION: SURGICAL APPROACHES AND QUALITY OF LIFE OF THE PATIENT AFTER SURGERY. LITERATURE REVIEW

N. Niclauss et al. [1] conducted an extensive review of 13 retrospective studies with 2,648 patients and evaluated surgical approaches, resection margins, and their relationship with patient survival. Five studies were carried out on the minimum (2–6 cm) indentation of the proximal margin of resection. In three other studies, the authors argued that the necessary approach should in any case provide a resection of R0. It was also reported that due to the high degree of influence of indentation margin on patient survival, it should be at least 2 cm.

M. Bissolati et al. in their study described the relationship between positive and negative resection margins [2]. The authors demonstrated a significant difference in the survival of patients after surgery, depending on the state of the resection margins, which were 89.5 and 28.9 months for the negative and positive margins, respectively. In addition, the authors argued that in EGJ cancer T1, indentation of less than 2 cm is a risk factor for the presence of a positive resection margin, and in T2–T4 cancer stages, indentation of less than 3 cm is a risk factor.

In their study, Y. Qureshi et al. [3] indicate the optimal proximal resection margin as an indentation of 1.7–3 cm. The authors intended to answer the question whether the greater indentation of the proximal resection margin is associated with higher rates of relapse-free and overall survival after esophagectomy. Thus, the average width of the proximal resection margin was 3.5 cm (1.0–6.0 cm). The authors revealed that a greater indentation did not affect the relapse-free survival of patients, but it improved overall survival rates. A margin of less than 1.7 cm exacerbated the prognosis of patients. C. Mariette et al. [4] analyzed the survival terms of patients with a positive and negative margin of resection after surgical treatment with EGJ adenocarcinomas, and the indicators were 11.1 and 36.3 months, respectively. The authors did not detect infiltration with tumor cells at a distance of 7 cm from the tumor, and therefore, an indentation of the proximal resection margin of at least 7 cm was recommended. H. Ito et al. [5] evaluated the results of surgeries for prostate cancer for over 10 years in order to establish the extent of the indentation providing a negative resection margin. In a group of 82 patients, five-year survival rate was 30%. The authors found that for EGJ cancer stages T3–T4, an indentation of the proximal resection margin of not less than 6 cm was optimal.

A. Barbour et al. [6] described an 18-year follow-up of 505 patients who underwent resection of the esophagus or stomach without neoadjuvant chemotherapy. The researchers

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revealed that with tumors of the T1 and T2 stages, the indentation of the proximal resection margin of 3.8 cm was sufficient; while for tumors of a higher stage, an indentation of more than 3.8 cm was proposed. S. Tsujitani et al. [7] analyzed histologically 175 samples of the proximal margins of the resected EGJ tumors. The authors claim that an indentation of more than 4 cm ensures a safe state of the proximal margin, with the exception of cases of tumor metastasis to the lymph nodes. S. Mine et al. [8] examined the results of surgeries of 140 patients, 120 of whom underwent a total gastrectomy. Two patients had a positive resection margin, and another two patients had a relapse in the anastomosis site. Among patients with T2-4N0-3M0, who underwent gastrectomy through transhiatal approach, higher survival rates were noted when the size of the proximal resection margin was more than 2 cm. Indentation of less than 2 cm was a risk factor for relapse, based on which the authors recommend an indentation of more than 2 cm for EGJ adenocarcinomas of the II and III type.

In a study by A. Casson et al. [9], an indentation from the distal margin of 3 cm was made, while in 12% of cases (12 out of 100 patients), a positive resection margin was found in case of primary esophageal adenocarcinoma, and in 28% (11 of 39 patients), it was found in gastric cardia adenocarcinoma. The authors propose to consider 5 cm to be the optimal indentation from the distal resection margin.

D. Avella et al. [10], in their study, considered the survival results of patients with severe stages of EGJ cancer, who underwent surgeries of total esophagectomy or total gastrectomy, depending on the tumor location. The authors stated that this surgical approach is satisfactory, but the study group is only six patients. J. Butte et al. [11] also analyzed the long-term results of total gastrectomy and esophagectomy with colon interpolation in nine patients. Researchers feel certain that patients who did not undergo a radical resection have a worse prognosis, but more aggressive surgical approach is associated with increased mortality.

In addition to the surgery extent and the width of the resection margin, lymphodissection is important in the surgery consequences. The depth of invasion, as shown in the above study, is significant in assessing lymph node lesions. In their study, N. Yamashita et al. [12] analyzed clinical records of 2,807 patients with EGJ cancer without preoperative therapy and assessed the condition of the lymph nodes. Most often, in this situation, the right and left cardiac lymph nodes and nodes of lesser curvature were affected, while metastases of lymph nodes of the stomach distal region were much less common. Therefore, lymphatic dissection of the latter, according to the authors, is not very significant. Removal of the lymph nodes of the inferior mediastinum can provide higher survival rates for patients with EGJ cancer operated. A. Shiozaki et al. [13] analyzed the treatment results for 52 patients with distal esophageal and cardiac carcinoma of the stomach, who underwent esophagectomy with lymphatic dissection in three areas. 16 of these patients had positive and 36 patients had negative margins of the resection,

as well as metastases to the lymph nodes of the middle and superior mediastinum and neck. The analysis showed that the indentation from the resection margin toward the esophagus was greater in the group of patients with metastatic lesions of the lymph nodes. Thus, the authors noted the primary role of the indentation of the proximal resection margin over the distance from the esophagogastric junction to the deepest part of the tumor.

Y. Ueda et al. [14] compared the prevalence of the tumor toward the esophagus or stomach and the localization of the affected lymph nodes. The authors concluded that the predictor of metastatic lesions in the lymph nodes of the neck, superior and middle mediastinum is the indicator of the tumor proximal margin, and the predictor of the metastatic lesion of the abdominal lymph nodes is the indicator of the tumor distal margin, and the longer the margins in one direction or another, the greater is the probability of lesion in the lymph nodes of the corresponding zones.

K. Koyanagi et al. reported that the Siewert II type cancer with an invasion length of more than 25 mm into the esophagus had a higher frequency of metastasis to the lymph nodes of the superior and middle mediastinum [15]. Y. Kurokawa et al. demonstrated that a length of esophageal invasion of 30 mm is the boundary of the presence or absence of metastases in the lymph nodes of the superior and middle mediastinum [16]. Y. Yonemura et al. reported similar results earlier than other researchers [17]. Thus, if the degree of invasion into the esophagus is more than 30 mm, the lymph nodes of the superior and middle mediastinum are necessary to be removed, and the tumor itself should be operated as cancer of the esophagus. S. Mine et al. noted more rare cases of lymphogenous tumor lesions in the lower stomach with a section length from the EGJ to the distal margin of the tumor less than 30 mm [18]. Y. Sato et al. revealed that the length of invasion toward the stomach of more than 40 mm is a significant risk factor for metastasis to the lymph nodes of the lesser curvature of the stomach along the right gastric artery [19], therefore, it is proposed to perform proximal resection when the length of invasion into the stomach is less than 40 mm, while the distal part stomach can be retained.

Another factor that contributes to the choice of patient management approach is the assessment of postoperative quality of life. The fundamental criterion here is the size of the stomach stump. T. Inada et al. [20] evaluate the symptoms of patients and their relationship with surgical treatment. The authors analyzed the indicators of the conditions of 193 patients after proximal gastrectomy, 115 of them underwent proximal gastrectomy with esophagectomy. So, most often esophageal reflux and adverse events after eating were found in patients whose surgical treatment complex did not include ant reflux procedure. In most cases, the residual stump of the stomach was 2/3 of the size of the organ before surgery. Comparing two groups of patients whose stump size was 2/3 and 3/4 of the preoperative organ size, respectively, the diarrhea and the need for additional meals were lower in the sec-

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ond group. The indices of digestive disorders, constipation, and abdominal pain were higher in patients who did not undergo pyloric bougieurage. The works by W. Shan et al. [21] and M. Takahashi et al. [22] confirmed that the period of recovery for physical and social activity after total radical surgery is more difficult and longer in some patients. This is in terms of nutritional disorders due to the complete absence of the stomach and limiting the amount of food received. According to M. Takahashi et al. [22], weight loss after surgery during the first year was 13.8% in the group of total gastrectomy, and 8.9% in the group of partial resection of the stomach. The authors point to the positive effect of maintaining the gastroesophageal sphincter and gastric cardia to reduce the risk of reflux syndrome. Thus, it is necessary to bear in mind the postoperative consequences for the patient and to avoid total gastrectomy to achieve a negative resection margin in cases where this is possible.

CONCLUSION

Despite the increase in the incidence of EGJ cancer, there is no consensus on standard surgery for its treatment, depending on the tumor location. There are also no specific figures regarding the indentation of the proximal and distal margins of the resection, the localization of lymph node dissection and the optimal length of the stomach stump. In the Yasuyuki Seto study, the authors argue that the minimum resection margin does not entail an increased risk of relapse after surgery (indentation of the proximal margin of 13 mm, distal margin of 65 mm), with a length of tumor invasion into the esophagus of more than 30 mm, the upper and middle lymph nodes of the mediastinum must be removed and when the site of invasion into the stomach is less than 40 mm, proximal resection of the stomach can be applied and its distal part can be preserved. In addition, when the size of the stomach stump is more than 12 cm in small curvature and 25 cm in large curvature, proximal resection of the stomach is used.

Studying and analyzing the results of these major studies, we can conclude that the indentation of more than 20 mm is the optimal solution when choosing the resection margin. Also a necessary study is the analysis of the slice in each individual case. Gastrectomy and esophagectomy are not the surgeries of choice, since they affect significantly the postoperative quality of life of the patients

According to the results of many studies, the invasion length toward the esophagus, more than 30 mm represents an unfavorable prognosis in terms of metastatic lesion of the lymph nodes of the superior and middle mediastinum. A length of invasion into the stomach of more than 40 mm bears the same unfavorable prognosis, therefore, in this case, it is necessary to choose a more radical volume of surgery with dissection corresponding to the lymph nodes. The size of the stomach stump also affects the postoperative quality of life of the patients. Most studies indicate a more severe and longer period of recovery of physical and social activity after total radical surgery. This is caused by nutritional disorders

due to a complete absence of the stomach. The positive effect of preserving the gastro-esophageal sphincter and gastric cardia has been revealed to reduce the risk of reflux syndrome.

Surgical approach for cancer of the esophagogastric junction requires further study and more serious analysis.

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CONFLICT OF INTERESTS

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