NEW TECHNOLOGY IN THE SURGERY OF GASTRIC CANCER

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ABSTRACT

Objective: To prevent the possible functional complications after gastrectomy, to improve the quality of life and the process of early rehabilitation.

Material and Methods: The study included 165 patients with gastric cancer of stage III (T3N1-2M0), which, depending on the method of recovery divided into 2 groups: Group 1 - n = 80 patients who, after an extensive gastrectomy had reservoir formed, II group - n = 85 patients who had gastrectomy performed without forming a reservoir.

Results: There were no incidence of reflux esophagitis and dumping syndrome observed in the main group, while in the control group, these complications were respectively 61.2% and 25.8%. Weight gain in the main group was observed in 83.7% of patients, in the control group in 4.7%. Assessment of physical activity on the Karnovsky scale in the study group was 85.0%, while 62.0% in the control group.

Within 3 months, physical rehabilitation was observed in 90.0% of patients of the main group, while in the control group it was 25.7%.

Three-year survival rate in the main group was 71.4±0.4%, while in the control group, 57.2±0.3% (P> 0.05).

Conclusions: Creation of a stomach replacing reservoir after gastrectomy is adequate way in ridding patients from possible complications.

Method improves the quality of life, the process of early recovery and significantly increases the indices of 3-year survival.

UDC Code & KEYWORDS

■ 616-006 ■ SURGERY ■ STOMACH CANCER ■

INTRODUCTION

Stomach cancer remains one of the most common forms of human cancer. One million people in the world become sick with stomach cancer annually (Chissov VI, 2006). In the structure of cancer incidence in Russian Federation stomach cancer takes the third place after lung and skin cancers. Most gastric cancer patients are those aged 50 to 60 years, up to 25% are aged 40 to 50 years; men are 2 times more affected than women [1].

According to the National Cancer Research Center, Ministry of Health of the Republic of Uzbekistan for 2007, out of 26 million living in our country, 1860 patients are reported with gastric cancer initially. According to materials of statistical reporting of 2005, stomach cancer took second place after skin cancer in the structure of malignant diseases, and in 2007 it came out on top place.

The gold standard in the treatment of gastric cancer has been and remains surgery. The most common operation for gastric cancer is gastrectomy [4.6].

However, like any other surgery gastrectomy leads to violations of various body functions. Almost all the authors

[3,5] are inclined to believe that over time postgastrectomic disturbances are detected with increasing frequency. The most severe disorders are diagnosed in later stages after the operation - after 3-5 months.

According to the literature [2,4], the postoperative period is accompanied by the appearance of such complications as reflux-esophagitis, anastomosisitis, dumping syndrome in 45-65% of cases, and according to some publications [5,7], these complications occur in 80-88 % of operated patients.

In the last decade, there were new technologies widely introduced into practice, notably extensive, combined and extensive-combined operations the purpose of which is an improvement of the long-term results of surgical treatment of locally invasive stomach cancer. But due to the removal of the stomach, adjacent organs, and a large number of lymph nodes the process of rehabilitation, physical and physiological recovery of the body is slowed down, which has a decisive influence on early and late results of surgical treatment. The operation itself reduces the quality of life of patients and the development of several functional complications such as dumping syndrome, reflux esophagitis, agastric anemia, discomfort, etc., which are known as postgastrectomic syndrome.

In this regard, the Department of Abdominal Surgery of Republican Cancer Research Center (Republican Scientific Center of Oncology) in 2004 has developed an original method for forming a reservoir, the goal of which, first of all is the elimination of possible functional complications, improvement of quality of life and provision of an early rehabilitation of patients.

MATERIAL AND METHODS

In 2004-2010 in the Department of Abdominal Surgery of the National Cancer Research Center 80 patients with gastric cancer in stage T3N1-2M0 underwent to extensive gastrectomy with the formation of a reservoir from the loops of the small intestine. The control group consisted of 85 patients in stage T3N1-2M0, which underwent to extensive gastrectomy without the formation of the reservoir. The ages of patients ranged from 13 to 60 years. Men – 107, women – 58. The diagnosis established on the basis of comprehensive data was then verified histologically. Tumor of antrum with the transition to the body of stomach was diagnosed in 55 patients, tumor of the body of the stomach - in 48, tumor of the body with the transition to proximal part - in 62. Exophytic type was observed in 53 patients, endophytic - in 56, and infiltrative - in 56. The indications for the formation of the reservoir were the stage T2-3N1-2M0, age younger than 60 and the absence of serious concomitant disease.

The operation consists of two stages. The first stage involves gastrectomy with extended lymph node dissection in the extent of D2-2, 5, which is then followed by the reconstruction-restoration stage with the creation of the reservoir formed from the lumen of the small intestine. The

content of operation involves consecutive implementation of four types of anastomoses: end-to-side esophago-jejuno-anastomosis; end-to-end jejuno-duodenoanastomosis, creating a reservoir by 18-20 cm long side-to-side enteroenteroanastomosis; end-to-end jejunojejunoanastomosis.

In our observations esophagojejunoanastomosis was carried out by connecting the end of the esophagus to the side of the intestine with the use of elements by Gilyarovich.

The efficacy of treatment of patients in two groups was evaluated using the following criteria:

- 1) Immediate and long-term results after reconstructive surgery with the creation of the reservoir and after extensive gastrectomy;
- 2) The frequency of agastric syndromes in the two compared groups;
- 3) The state of the motor-evacuation function after gastrectomy with the creation of the reservoir and without it;
- 4) The effect of stomach replacing reservoir on the quality of life of patients and the process of early rehabilitation.

From the moment the operation and before discharge, and 3-4 weeks after the operation clinical, instrumental and laboratory tests were carried out. The postoperative course and immediate results of operations were carefully studied.

On day 8, patients received X-rays of the stomach with a contrast agent to determine the motor-evacuation function of the stomach. On day 9, fibrogastroscopy was done to observe esophagojejunoanastomosis, reservoir and jejuno-duodenoanastomosis to examine the state of anastomosis and motor activity of reservoir.

For the purpose of determination of the volume of the reservoir, radionuclide scintigraphy was implemented on the 9th day. These studies were repeated in the dynamics after 3-4 weeks and up to 3 months.

DISCUSSION OF RESULTS

Postoperative complications developed in 15 (18.7%) patients from main and in 16 (18.8%) patients of the control group ($P > 0.05$). (see Table 1).

Table 1: Types of postoperative complications

Complication	Main group n=80	Control group n=85	Total n=165
Exudative pleurisy	5	4	9
Hemorrhage	1	0	1
Lymphorrhea	2	3	5
OCCH	1	1	2
Bronchopneumonia	2	2	4
Pulmonary embolism	0	1	1
Seroma	4	5	9
Total	15 (18,7%)	16 (18,8%)	31 (18,8%)

Four patients died after surgery. Lethality comprised 3,3%.

The causes of lethality in the study group were erosive hemorrhage due to pancreatic necrosis and acute myocardial infarction and pulmonary embolism in control group. One-year survival rate was respectively 96.7% and 100.0% ($P < 0.05$, the difference is not statistically significant).

Three-year survival in the two groups was studied by the method of Kaplan Meyer $S(t) = P1-d1(n1)$ [2,4] with the construction of life tables. According to these statistics, three-year survival rate in the study group was 71.4 0.4% in the control 57.2 0.3% ($P > 0.05$, the difference is statistically significant).

One of the most dangerous symptoms after gastrectomy influencing the course and outcome of disease are reflux esophagitis, dumping syndrome, and dyspepsia.

As seen from Table 2, reflux esophagitis, in the control group, was observed in 52 (61.2%) patients.

This complication is not observed among the study group patients, since regurgitation of bile from the duodenum occurs into the lumen created by the reservoir for the mucous membrane of which the presence of bile is a normal phenomenon. Dumping syndrome in this group was also absent, while this complication occurred in 22 (25.8%) patients of the control group.

Another major problem after surgery is the presence of uncomfortable and dyspeptic condition of patients. Thus, in the postoperative period, a sense of heaviness and fullness after eating, heartburn, belching, drooling, loss of appetite, occasional diarrhea, and others were noted by more than 60% of patients in the control group. These complaints were hardly observed in the presence of the reservoir, except for 7 (8,7%) of patients who had noted a decreased appetite.

The data on the functional complications in the two compared groups of patients are shown in Table 2.

Table 2: The frequency of agastric syndromes in the two groups, abs. (%)

Agastric syndrome	Main group n=80	Control group n=85	p-value
Reflux esophagitis	0	52 (61,2)	$p > 0,05$
Dumping syndrome	0	22 (25,8)	$p > 0,05$
Drooling	9 (8,7)	51 (60,0)	$p > 0,05$
Hiccups during the meal	0	18 (21,2)	$p > 0,05$
Loss of appetite	7 (8,7)	48 (56,5)	$p > 0,05$
Fullness in the epigastrium after meals	0	52 (61,2)	$p > 0,05$
Weight loss	5 (6,2)	68 (80,0)	$p > 0,05$
Reduced physical activity	11 (13,7)	79 (93,0)	$p > 0,05$
Agastric anemia	14 (17,5)	76 (89,4)	$p > 0,05$

The study of the reservoir and the motor-evacuation function of the reservoir showed that the reservoir volume averaged 650-700 ml. Filling contrast material was being evacuated into duodenum within 75-80 minutes on average (70-90 min in norm).

The study of the rehabilitation process, which took place within 3 months after surgery by conventional methods showed that, in general, due to the presence of a stomach replacing tank and due to the fact that food was admitting into duodenum by portions, the rehabilitation of the patients from the main group was taking place 3.5 times faster than that in the patients of the control group.

One of the negative occurrences after gastrectomy is a continued alimentary cachexia associated with the absence of stomach and appearing as a result of this as functional complications.

Due to the reservoir created in 68 (85.0%) of 80 patients who were under observation in the period from 1 to 6 months, weight gain ranged from 3 to 11 kg. In the control

group, weight gain was recorded in only 4 (4.7%) patients (see Table 3).

Table 3: Evaluation of general condition and the process of early rehabilitation of patients after 3 months from surgery, abs. (%)

Symptom	Main group, n=80	Control group, n=75	p-value
Weight gain	75 (93,7)	4 (4,7)	p>0,05
Improved appetite	7 (91,2)	16 (18,8)	p>0,05
Increased physical activity	69 (86,3)	9 (10,6)	p>0,05
Restoration of labor activity	51 (63,8)	5 (5,8)	p>0,05
Assessment life quality by Karnovsky,%	85	62	p>0,05
Normalization of the pattern of peripheral blood	73 (91,2)	10 (11,8)	p>0,05
Normalization of the immune system	53 (66,3)	9 (10,6)	p>0,05

One of the criteria for assessment of patients is the quality of life. Prior to surgery, the status of all patients in the study and control groups was estimated to be 60% on average. 3 months after surgery, the quality of life of the patients from the study group was estimated averaging 85%, while this value made up - 62% (P> 0.05) in the control group.

In general, the rehabilitation within 3 months by the mentioned criteria was achieved in 90% patients of the main group. This figure in the control group was 25.7%, i.e. it was 3.5 times less.

The study of the immediate results in patients of main and control group showed, that despite the increase in volume and duration of surgery in the later, the immediate results were not significantly different.

CONCLUSION

The creation of a stomach replacing reservoir after gastrectomy is an adequate way in ridding patients from the possible agastric syndromes.

The proposed method does not impair the immediate results of surgical treatment and, according to the available preliminary data even improves long-term results.

The study of the rehabilitation process and quality of life of patients within 6 months following surgery showed that, more than 90% of study group patients achieved a complete physical rehabilitation and improvement of quality of life. In the control group this figure was 3 times less – 25.7%.

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