

The option of surgery for gastric stump cancer in patients who have previously undergone pancreaticoduodenectomy

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Abstract

Gastric stump cancer is a carcinoma which forms no earlier than 5 years after surgery for benign disease. The incidence ranges from 2.4 to 5% among patients with stomach cancer. Previous operations lead to the emergence of an adhesive process in the abdominal cavity, changes in the anatomy and topography of the abdominal organs, as well as the development of new ways of lymph outflow. These factors lead to the re-surgery becomes technically more complicated and requires high professional training from the surgeon. Of particular surgical interest is the issue of restoration of the digestive tract, which directly depends on the nature and volume of the previous surgery. In this paper, the authors describe cases of surgical treatment of gastric stump cancer in two patients, who had previously undergone pancreaticoduodenectomy.

Keywords: gastric cancer, gastric stump cancer, pancreaticoduodenectomy, gastrectomy, pancreatic cancer.

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Background. It is believed that gastric stump cancer is a carcinoma, which forms no earlier than 5 years after surgery for a benign disease. This pathology was first described by Balfour in 1922. The incidence ranges from 2.4% to 5% among patients with gastric cancer [1].

A history of surgeries leads to the emergence of an adhesive process in the abdominal cavity, changes in the anatomy and topography of the abdominal organs, as well as the development of new pathways of lymph efflux. These factors lead to the fact that re-surgery becomes technically more complicated and requires a surgeon with a high level of professional training [2–4]. The issue of restoring the digestive tract, which depends directly on the nature and volume of the previous surgery, is of particular surgical interest. In this paper, the authors cite cases of surgical treatment of gastric stump cancer in two patients with gastro-pancreaticoduodenectomy in their history.

This work aimed to familiarize specialists with the options for surgical interventions for gastric stump cancer following a history of gastro-pancreaticoduodenectomy.

Materials and methods. This paper presents clinical cases of surgical treatment of gastric stump cancer in the conditions of the Republican Clinical Oncological Dispensary of the Ministry of Health of the Republic of Tatarstan (RCOD MH RT). Two patients, who had previously undergone gastro-pancreaticoduodenectomy, were diagnosed with a tumor in the stomach stump, for which surgery was performed.

Clinical case 1. Patient A., 54 years old, was hospitalized in the RCOD MH RT with complaints of pain in the epigastric region.

Anamnesis. The patient had been ill since January 2015, when, according to the computed tomography of the abdominal organs, a volumetric lesion was diagnosed in the region of the pancreatic head, for which he was admitted to the hospital of the RCOD MH RT. The patient was diagnosed with cancer of the pancreatic head cT2NxM0, stage 1b. After preoperative preparation, laparotomy, pancreatoduodenal resection in combination with distal subtotal gastric resection and resection of the jejunum were performed (Fig. 1).

Figure 1 shows that the patient had end-to-side pancreatogastroanastomosis, end-to-end gastroen-

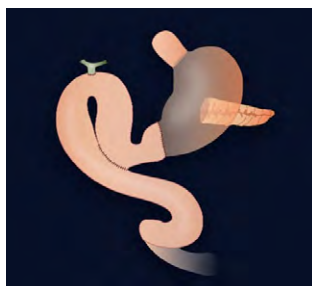


Fig. 1. Scheme of the recovery stage of gastro-pancreaticoduodenectomy in patient A.

teroanastomosis, end-to-side choledochoenteroanastomosis, and side-to-side interintestinal anastomosis.

Histopathological examination of the preparation. In the sample under study, signs of chronic indurative pancreatitis with fields of abscess formation were determined.

The postoperative period was uneventful; the patient was discharged from the hospital in a satisfactory condition.

During planned follow-up monitoring, according to the fibrogastroduodenoscopy, an exophytic tumor was revealed in the stomach stump, for which the patient was hospitalized in the RCOD MH RT in September 2019.

The following studies were performed in the RCOD MH RT.

General blood test. Hemoglobin 97 g/l., erythrocytes $4.08 \times 10^{12}/l$, leukocytes $6.7 \times 10^9/l$, platelets $291 \times 10^9/l$.

Tumor markers. Carcinoembryonic antigen 8.20 ng/ml, CA 19-9 antigen 10 IU/ml.

Fibrogastroduodenoscopy. The esophagus was freely passable; an exophytic tumor measuring approximately $2 \times 3 \times 1$ cm was determined immediately behind the cardiac sphincter along the posterior wall of the stomach. The biopsy procedure was extremely difficult, since the tumor easily bled when sampling was attempted.

X-ray of the stomach. The esophagus is freely passable for a liquid contrast agent, and the folds of the mucosal tunic could be traced. In the subcardial segment at the lesser curvature, an obscure additional shadow of 4×3 cm was found.

CT scan. Along the lesser curvature of the stomach stump, there was a site of local wall thickening with a total size of 56×28 mm. Right paracardial lymph nodes up to 18×22 mm were revealed.

Gastric stump cancer cT3N2M0, stage 3b, and mild post-hemorrhagic anemia were *diagnosed*.

Taking into account the endoscopic presentation and complicated course in the form of hemorrhage, following preoperative preparation, the first stage was extirpation of the gastric stump with plastic

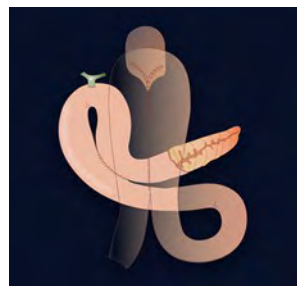


Fig. 2. Scheme of the recovery stage of extirpation of the gastric stump in patient A.

repair of the digestive tract according to variant 4 of Segal in the modification of Akhmetzyanov and Borisov (Fig. 2) [5].

Figure 2 shows that choledochoenteroanastomosis and interintestinal anastomosis were preserved, pancreatogastro- and gastroenteroanastomoses were corroded, “end-to-end” pancreatoenteroanastomosis and esophagojejunal anastomosis were formed according to variant 4 of Segal in the modification of Akhmetzyanov and Borisov. The duration of the surgery was 310 minutes. The volume of intraoperative blood loss was 300 ml.

Histopathological examination. Microscopic analysis of the preparation revealed moderately differentiated gastric adenocarcinoma with germination to fatty tissue along the lesser curvature. In 3 out of 16 lymph nodes, there were cancer metastases. There was no cancerous growth in the resection line.

The postoperative period was uneventful and amounted to 12 bed-days. The patient was discharged home in satisfactory condition. The follow-up period was 13 months, without signs of disease progression.

Clinical case 2. Patient K., 69 years old, was admitted to the RCOD MH RT with complaints of pain in the epigastric region and general asthenia.

Anamnesis. The patient had been ill since June 2014 and was hospitalized for emergency indications in one of the city clinics in Kazan with complaints of weight loss, heartburn, asthenia, ochrodermia of the skin, and visible mucous membranes. In that clinic, the patient underwent cholecystostomy for obstructive jaundice. Computed tomography of the abdominal organs revealed a tumor of the pancreatic head; therefore, after stabilization of the condition, the patient was transferred to the RCOD MH RT, where he was diagnosed with C25.0, pancreatic head cancer cT3N0M0, stage 3.

After preoperative preparation, the patient underwent laparotomy, pancreatoduodenal resection in combination with longitudinal resection of the inferior vena cava. The recovery stage was similar to clinical case No. 1 (Fig. 1).

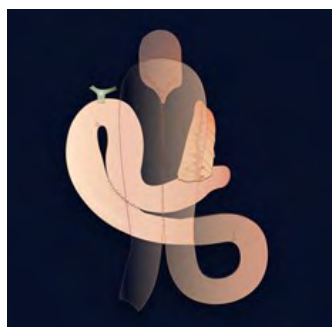


Fig. 3. Scheme of the recovery stage of the surgery of patient K.

Histopathological examination of the preparation revealed a moderately differentiated adenocarcinoma of the pancreas with invasion into the duodenum. No cancer metastases were found in the lymph nodes.

The postoperative period was uneventful, and the patient was discharged home in satisfactory condition.

Later he received one course of multiagent chemotherapy according to the scheme Gemzar + Carboplatin, then the therapy was canceled due to the patient's refusal to continue the treatment.

In 2016, the patient was diagnosed with cancer metastases in the liver, for which a medial resection of liver segments 2, 4, and 8 was performed.

Histopathological examination revealed duct-type adenocarcinoma with focal squamous cell metaplasia in the preparation under study.

Subsequently, the patient received eight courses of chemotherapy with capecitabine.

During a scheduled dispensary examination, according to the fibrogastroduodenoscopy, an exophytic tumor was detected in the gastric stump, for which the patient was hospitalized in the RCOD MH RT in September 2019.

The following studies were conducted.

General blood test. Hemoglobin 144 g/l, erythrocytes $4.79 \times 10^{12}/l$, leukocytes $7.8 \times 10^9/l$, platelets $315 \times 10^9/l$.

Tumor markers. Carcinoembryonic antigen 2.34 ng/ml, CA 19-9 antigen 4.10 IU/ml.

Fibrogastroduodenoscopy. The esophagus was freely passable, the mucous membrane was pink throughout. The gastric mucosa was edematous and hyperemic. In the area of the cardiac sphincter and the cardiac part of the stomach, there was an area of hyperplasia approximately 1.5 cm in diameter with ulceration of approximately 7 mm along the posterior wall of the cardiac part of the stomach. Gastroenteroanastomosis was freely passable and moderately edematous.

Histopathological examination of the preparation revealed high-grade adenocarcinoma.

Gastric stump cancer was diagnosed, as well as condition after gastropancreatoduodenal resection in 2014 for pancreatic head cancer pT3N0M0.

Considering the endoscopic presentation and complicated course of the tumor in the form of hemorrhage, after preoperative preparation, surgical intervention was performed in the volume of the gastric stump extirpation with plastic surgery according to option 5 of Segal in a modification of Akhmetzyanov and Borisov (Fig. 3).

Figure 3 shows that choledochointeroanastomosis and interintestinal anastomosis were preserved, pancreatogastroanastomosis was separated, "end-to-side" pancreatoenteroanastomosis, and esophagojejunal anastomosis were formed according to variant 5 of Segal in the modification of Akhmetzyanov and Borisov. The duration of the surgery was 280 minutes. The volume of intraoperative blood loss was 200 ml.

Histopathological examination of the preparation revealed low-grade adenocarcinoma (endocrine nature of the tumor was ruled out). There was no tumor growth along the upper resection line and in the lymph nodes.

The postoperative period was uneventful and amounted to 14 bed-days. The patient was discharged home. The follow-up period was 13 months, and during this period, there were no signs of disease progression.

Results and discussion. An increase in life expectancy, as well as in the number of patients with stomach surgery, has contributed to an increase in the incidence of gastric stump cancer [1,3,6]. The cicatricial adhesive process in the abdominal cavity, changes in the anatomy and topography of the abdominal organs, as well as the development of new lymphatic drainage pathways lead to the fact that surgical interventions for cancer of the gastric stump are becoming technically complex and require a high level of professional training from the surgeon [4,7–9]. The complexity and options for the recovery stage depend directly on the volume of the surgery performed previously. The two cases of successful treatment of gastric stump cancer after previous pancreatoduodenal resection, presented in this work, can help specialists in performing surgical interventions in this category of patients.

Author contributions. F.Sh.A. performed surgical treatment, created the study concept and design, and edit the text; N.A.V. performed surgery; V.I.E. collected and processed the materials, conducted diagnostic studies; M.I.Sh. wrote the text, reviewed the literature.

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