

Modified Appleby Operation in a Regional Oncological Dispensary

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Abstract

Surgical intervention in diseases of the pancreas is a significant problem in modern oncology. When the tumor spreads to the celiac trunk, patients are usually recognized as unresectable. In the early 50s of the 20th century, an operation was developed in the United States, which includes resection of the celiac trunk, followed by anastomosing of the hepatic artery with the aorta (Appleby operation); later, its modification was developed, which allows not performing complex reconstructive interventions, due to adequate collateral blood flow from the basin of the superior mesenteric artery. In the conditions of our clinic, for the first time, a modified Appleby operation for malignant neoplasm of the pancreatic body was performed with satisfactory immediate results.

Keywords: Pancreatic Cancer; Hemipancreatectomy; Appleby Operation

Introduction

Pancreatic cancer is currently a serious medical and social problem. According to GLOBOCAN 2018, the advanced stage occurs in 80 - 90% of whom radical surgery cannot be performed [1]. The most common histological structure is ductal adenocarcinoma, characterized by aggressive growth and a tendency to early metastasis [2]. Surgical intervention for pancreatic cancer is one of the most difficult sections of abdominal surgery, characterized by a high incidence of postoperative complications and mortality. Especially high rates are in clinics with little experience in performing these interventions [3]. The classical type of surgery for malignant neoplasms in the head and isthmus of the pancreas is gastropancreatoduodenal resection (Whipple operation) and if the tumor is localized in the body and tail, distal resection of the pancreas is performed [4]. In the 50s of the last century in the United States, it was developed by Dr. Appleby L.H. surgery for unresectable gastric cancer with invasion into the celiac trunk, including resection of the celiac trunk with subsequent reconstruction of the hepatic artery into the aorta. Later, this operation found its application in malignant diseases of the pancreas body [5]. In the 1970s, a modification of the Appleby operation was developed and applied in practice, in which the celiac trunk is resected without a reconstructive component. Arterial blood flow is ensured by adequate antegrade blood flow from the superior mesenteric artery through the gastroduodenal artery [6]. Subsequent studies have shown an increase in survival in patients who underwent this operation in comparison with those patients who failed to perform radical intervention and who received conservative treatment (chemotherapy) [7]. In the domestic literature, there are quite a few publications devoted to this surgical problem, so we decided to provide our successful experience in performing a modified Appleby operation.

Clinical Case

Patient K., 65 years old, was admitted to the surgical department No. 1 of the GUZ OKOD on July 5, 2019 with a diagnosis of a tumor of the pancreatic body of unclear histogenesis. The tumor was discovered by chance during a medical examination. The patient was ex-

amined at the outpatient stage, examined at a multidisciplinary consultation of doctors of the State Healthcare Institution of the Okrug of Ulyanovsk, where it was decided that the patient should perform surgery at the first stage.

According to MSCT of the abdominal organs with contrast enhancement from 06/06/2019, the pancreas is of normal size, not homogeneous in structure, with clear uneven contours. In the body of the gland in the area of the isthmus, a formation with indistinct contours of 37 x 29 x 27 mm, with intravenous contrasting, accumulates contrast up to 68 HU, distal to the Visnung duct is expanded to 5m. In the parapancreatic tissue, l/nodes are changed up to 14 mm. There was no other pathology in the abdominal cavity (Figure 1).

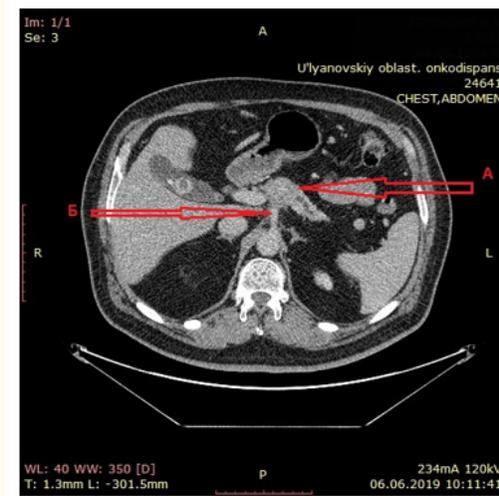


Figure 1: CT scan of the abdomen. A - tumor of the pancreas, B - celiac trunk.

Concomitant pathology is represented by type 2 diabetes mellitus, on insulin, stage 2 arterial hypertension, grade 2, risk 2.

The data of functional tests and general clinical analyzes showed no deviation from the norm. Indicators of tumor markers C19-9 - 82 U/ml, CEA - 21 U/ml. On 10 July 2019, the operation was planned: combined distal hemipancreatectomy with resection of the celiac trunk (modified Appleby operation). Intraoperatively, the following was revealed: in the body with the transition to the tail of the pancreas, a tumor of dense consistency, about 4 cm, inactive, bumpy. There is an infiltration of the surrounding tissue. A trial mobilization of the pancreas was performed. Revision of the omental bursa revealed tumor infiltration of the celiac trunk and proximal hepatic and splenic arteries. Further, the superior mesenteric artery was mobilized, in the area of the isthmus of the pancreas it was free from a tumor, during its revision it was also revealed that the gastroduodenal artery was about 4 - 5 mm. A decision was made to perform a hemipancreatectomy with resection of the celiac trunk. The body and tail of the pancreas were resected in combination with the celiac trunk and the inferior mesenteric vein and spleen were resected (Figure 2).



Figure 2: Celiac trunk area. The arrow indicates the stump of the common hepatic artery.

At revision after resection, there is adequate collateral blood flow to the liver through the gastroduodenal artery.

The postoperative period was uneventful, and there were no signs of liver failure. According to the biochemical blood test from 24.07.2019 (14 days of the postoperative period) ALT-13 U/L, AST 22.8 U/L, alkaline phosphatase 109.3 U/L, total bilirubin 11.9 mmol/L.

Planned histological report No. 63448/2019 - highly differentiated (ductal) adenocarcinoma of the pancreas, in the lymph nodes (10 pcs.) Without metastases. Microscopic examination revealed tumor infiltration of the celiac trunk wall. The resection line was without tumor growth.

Clinical diagnosis:

- Primary: Pancreatic cancer pT4N0M0 stage III.
- Complication: invasion into the celiac trunk.

The patient was discharged from the hospital on the 15th day of the postoperative period in satisfactory condition.

Discussion

Malignant neoplasms of the pancreas is an extremely urgent and complex problem in modern oncology. This is due primarily to the fact that in 70 - 80% of cases, the tumor process is detected at advanced stages [8]. The surgical method remains the only adequate method of treating these patients to achieve adequate overall and unprecedented survival rates [9]. Due to advances in modern chemotherapy, surgical techniques and anesthetic management, indications for surgery have expanded significantly [10].

Okada., *et al.* in his study showed that the survival rate of patients with advanced cancer of the distal pancreas who underwent modified Appleby surgery was similar to patients with less common process who underwent standard distal pancreatic resection. The Appleby operation itself is quite complex in execution, laborious and can cause fatal complications in the postoperative period. At the same time, the modified Appleby operation avoids laborious reconstructions, since hepatic blood flow is provided through the gastroduodenal artery from the superior mesenteric artery basin [11]. Sperti., *et al.* and Kondo., *et al.* in their studies showed acceptable results of postoperative complications and mortality, they were 2.1% and 40.6% in Sperti and 0% and 62% in the Kondo study [12,13]. According to the literature, the leading complications in the postoperative period are the following: pancreatic fistula, diarrhea. However, there may be more formidable complications in the form of liver abscess, gallbladder necrosis. Hirano., *et al.* reported in their study that 1 and 5 survival rates in patients undergoing modified Appleby surgery in patients with malignant process in the distal pancreas were 71% and 42%, respectively, with a median survival of 21 months. An important problem after these operations is the frequency of local recurrence and the occurrence of distant metastases [14]. According to a study by Shen., *et al.* this indicator was 22.9%, 58.9%, 72.6% and 72.6% after 1, 2, 3 and 5 years, respectively. Thus, adjuvant chemotherapy can be used in these patients to improve survival rates, but this requires randomized clinical trials [15]. In our case, the patient refused neoadjuvant treatment, he was warned of possible complications and consequences.

Conclusion

Pancreatic cancer is a high mortality disease and is usually detected in advanced cases. Surgical resection of the pancreas allows for satisfactory short and long-term results. In some clinical cases, tumor invasion into the celiac trunk should not be the reason for the patient's refusal to undergo radical surgical treatment. The modified Appleby operation allows to achieve satisfactory results in patients with advanced pancreatic cancer with invasion into the celiac trunk.

Conflicts of Interest

The authors declare no conflicts of interest.

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