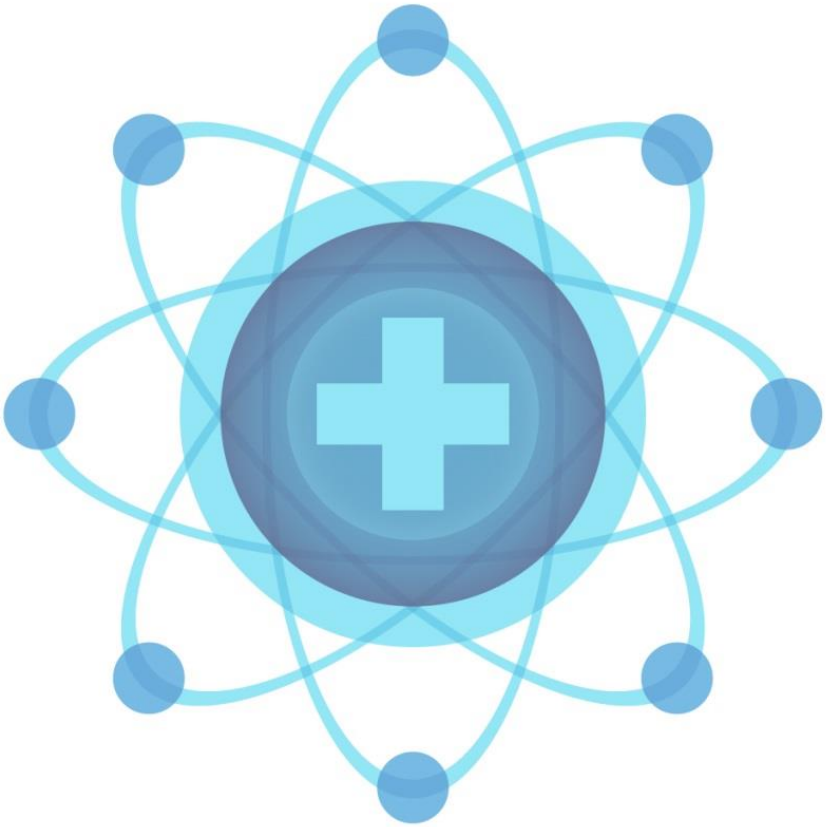

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METHODS AND PRINCIPLES OF EXCISION OF PERFORATED DUODENAL ULCERS

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Abstract. The authors have developed and implemented techniques and techniques for excision of perforated duodenal ulcers (PDU) with pylorus-preserving pyloroduodenoplasty (PDP) by preserving the integrity of the multifaceted function of the pyloric pulp (patents No. 2262 and No. 0128 IPA RUz were obtained).

The subject of the study was patients who underwent excision PDU with pylorus-sparing PDP (main group) and 98 (20.5%) patients who underwent excision of PDU with PDP accompanied by destruction of the pyloric pulp (comparison group).

By optimizing the surgical tactics, along with improved techniques and techniques for excision of PDU with pylorus-sparing PDP, the authors improved excellent and good results by 23.1% (in the control group - 64.4%, in the main group - 87.7%), reduced the frequency of satisfactory results by 16.0% (in the control group - 24.4%, in the main group - 8.4%) and unsatisfactory - by 7.1% (in the control group - 11.0%, in the main group - 3.9%)

Keywords. Perforated duodenal ulcer, duodenoplasty, pyloroduodenoplasty, gastric motor evacuation function, duodenogastric reflux, selective proximal vagotomy.

Introduction

Perforated duodenal ulcer (PDU) continues to occupy a leading place in the structure of frequency (10-20%) and mortality (2.0-20%) to this day. At the same time, the results of surgical treatment are not completely satisfactory [3; 4; 5; 9; 10].

The main integral link of the gastroduodenal complex is the pyloric pulp and the

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mechanisms that control its activity [6; 7]. Clinicians are more and more convinced that the destruction of the pyloric pulp by draining operation due to the perversion of the mechanisms of evacuation and secretion, sharply increases the frequency of duodenogastric reflux (DGR), dumping syndrome, diarrhea, alkaline reflux gastritis, non-healing or recurrence of ulcers, gastric ulcers and cancer [1; 2; 6; 8; 13].

Most surgeons refrain from isolated low-traumatic operations, in particular from excision of the PDU with pylorus-sparing duodenoplasty (PDP), fearing a high risk of recurrent duodenal ulcer (DU), despite the high efficiency of antisecretory and anti-Helicobacter pylori therapy, which was the subject of this study.

Purpose of the study

Improving the results of surgical treatment through the development and widespread use of improved techniques and techniques for excision of PDU with pylorus-sparing PPD.

Materials and methods

The subject of our study were 381 (79.5%) patients who underwent excision of the PDU with pylorus-sparing PDP (main group) and 98 (20.5%) patients who underwent excision of the PDU with PDP accompanied by the destruction of the pyloric pulp (comparison group).

All patients with PDU, upon admission to the admission department of the clinic, underwent general clinical blood and urine tests, coagulogram, blood tests for the presence of hepatitis viruses, syphilis, ECG, fluorography, plain radiography of the abdominal cavity, ultrasound, and, if indicated, diagnostic laparoscopy. In the postoperative period, up to 1 year or more, the functional state of the gastroduodenal complex was studied using conventional research methods.

Research results

When choosing the method of surgery, we take into account many factors, the most important of which is: localization of the PDU and its complications; the time elapsed from the moment of perforation, the degree of risk of surgery, which depends on the age, concomitant therapeutic and concomitant surgical diseases, the general

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condition of the patient and the type of surgery, especially the pathological changes detected during the operation. Despite the success of the surgical treatment of PDU, the incidence of postoperative complications and mortality in the immediate postoperative period remain high.

All patients underwent excision of the PDU, however, pyloric and duodenoplasty after excision of the PDU was performed in various modifications.

It is known that gastric drainage operations improve the motor-evacuation function of the stomach (MEFS) and reduce the contact of food with the mucous membrane of the antrum, which leads to a decrease in the gastrin mechanism.

In the initial period of our work, during excision of duodenal ulcers, we used PDP according to Finney, Heineck-Mikulich and Judd-Tanaka.

Type of the surgical interventions performed by us for PDU is presented in Table 1.

Table 1.

Type of the performed surgical interventions for PDU.

Operation type – excision of PDU with:	Number of patients		Difference statistics by t criterion (P)
	abs	%	
- PDP for Judd-Tanaka	64	13,4	P<0,05
- PDP for Geineke-Mikulich	14	2,9	P>0,05
- PDP for Finney	20	4,2	P>0,05
- duodenoplasty	387	79,5	P<0,001
Total	479	100	

As can be seen from table No. 1, in the case of PDP by Geyneke-Mikulich - 14 (2.9%), a longitudinal incision was used along the axis of the stomach and duodenum, i.e. a wide pyloroduodenotomy was performed. The wound was sutured with a two-row suture after excision of the perforated ulcer. In this type of draining stomach of the operation, the integrity of the pylorus sphincter is completely violated, which is often the cause of DGR, dumping syndrome and other disorders of the MEFS.

When the PDU was excised and an ulcer was diagnosed on the posterior wall of the duodenum, Finney pyloroduodenoplasty was performed on 20 (4.2%). In this

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case, a wider outlet from the stomach is formed, adequate drainage and elimination of the pathological substrate is ensured, i.e. PDU. But this is due to the destruction of the integrity of the pylorus sphincter.

At the same time, pronounced cicatricial changes in the pyloric canal and the presence of a large inflammatory infiltrate around the ulcer often make it difficult to perform this type of plastic surgery and conditions arise for the occurrence of DGR, dumping syndrome and other disorders of the MEFS. Performing an operation directly in the area of scar tissue can, in addition, lead to secondary scarring, deformity in the area of pyloroplasty and disruption of the MEFS, as a result of the destruction of the multifaceted function of the pyloric sphincter. In addition, this type of plasty is feasible in the absence of obstacles to the free mobilization of the descending duodenum and comparing it with the pyloric sphincter.

During excision of the PDU with PDP by Judd-Tanaka - 64 (13.4%), the ulcer of the anterior wall of the duodenum was excised with a rhomboid incision. In this case, along with the ulcer, the anterior semicircle of the pyloric sphincter was excised (hemipilorectomy). Plastic surgery was performed by stitching the stomach wall and duodenum with double-row sutures.

With this method of excision, along with a violation of the integrity of the pyloric sphincter, the circular muscles of the duodenum are destroyed to a greater extent, which also leads to the development of DGR, dumping syndrome and other disorders of the MEFS.

However, in the process of further work and studying the immediate and distant results, we abandoned these operations.

The goal of radical gastric surgery for ulcer is to influence 3 factors:

- a decrease in gastric secretion (acidity and pepsin) at a sufficient level;

- removal of an ulcer as a source of complications and a focus of pathological impulses, as well as a pathomorphologically altered section of the duodenal wall;

- normalization of MEFS and duodenum, as well as influence on the second

gastric secretion (a decrease in the contact of food with the mucous membrane of the antrum, removal of the last section leads to a sharp decrease in gastric secretion in the II phase). With vagotomy, the 1st phase of gastric secretion decreases.

In our practice, we used the classification of V.I. Onopriev [6], which, although to some extent conventional, nevertheless, as a working scheme, it is simple and convenient for a practical surgeon to use. With regard to our material and using this classification by the localization of the DU, we distinguish between ulcers located on the anterior, posterior, lateral lesser curvature, lateral greater curvature; "mirror" or "kissing" ulcers.

In recent years, during surgery for PDU, we have widely used an improved method of excision of PDU with PDP (Patent No. 2262 IPA RUz, 2017) [11].

A method of forming a double-row intestinal suture.

After performing the upper midline laparotomy, an intraoperative study of the surgical macromorphology of the PDU is performed. Thorough toilet and abdominal sanitation.

The adhesive "mantle" covering the contours of the gastroduodenal complex is removed, the level and size of the perforated ulcer of the anterior wall of the duodenal bulb is specified. Within the limits of healthy tissues, the edges of the ulcerative infiltrate are taken on holders from the lateral edges.

Distal and proximal to the ulcerative infiltrate, two semicircular bordering incisions are made in the transverse direction with a sharp scalpel, cutting only the serous membrane. In the future, using an electric knife, the distal edge of the ulcer is first dissected. Through the defect, the ulcer is additionally lifted with a dissector and after finger checking of the intactness of the pyloric sphincter, a perforated ulcer is excised with a proximal incision with an electric knife within healthy tissues. By this, the circular muscles of the duodenum are injured to a lesser extent, the integrity of the pyloric sphincter and the lateral walls of the duodenal bulb is preserved.

An additional revision of the posterior wall, proximal and distal parts of the duodenum is performed.

When diagnosing an ulcer of the posterior wall of the duodenum, the edges of the ulcer of the posterior wall are excised through the duodenal defect to the bottom of its crater (often penetrating into the head of the pancreas), retreating 5 mm. This technique avoids injury to the pancreas. The defect on the posterior wall of the bulb is sutured with muco-submucosomuscular interrupted sutures using silk threads, the edges of the posterior intestinal wall are aligned and adapted. At the same time, the sutures are tied after their complete imposition, having previously tightened and brought together the edges of the intestine. Thus, the bottom of the ulcer crater remains outside the intestinal tube, i.e. extraduodenization is performed without using a strand of the gland.

V.I. Onopriev [6] recommends: to apply the method of "tunneling", in which there is a high probability of damage to the gastroduodenal artery, terminal sections of the common bile duct and pancreatoduodenal arteries. The defect of the posterior intestinal wall is sutured with single-row interrupted sutures. By a similar technique, penetrating and bleeding "mirror" ulcers are excised. When suturing a defect in the posterior intestinal wall according to the method of V.I. Onopriev, the edge of the omentum strand on the vascular pedicle is drawn into the suture line. The area of duodenoplasty looks like a broken curve.

In cases of detection of functional stenosis before the operation, expressed during the operation in the form of spasm of the pyloric pulp due to perifocal inflammation, pylorodilation is performed, while the diameter of the pyloric pulp is brought to 22-24 mm. After pylorodilation, the pyloric pulp remains in an expanded state, which is associated with the atony of its muscles.

In all cases, leave the nasoesophago-gastruodenal tube from the single-use system for intravenous drip transfusions of blood and other fluids. Before surgery, a thick gastric tube is inserted into the stomach. Before plastic surgery of the anterior wall, the distal end of the sterile probe with lateral holes up to 20 cm in length is held

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in the direction of Treitz's ligament, and the proximal end is tied to a gastric tube previously inserted into the stomach. The gastric tube is removed together with the proximal end of the decompression tube at the desired distance for us and fixed to the patient's nose for 2-3 days with the expectation that the microperforated holes are located simultaneously in the lumen of the stomach and duodenum.

Duodenoplasty. In the initial period of our work, the defect on the anterior wall of the duodenum was sutured with separate intra-nodular catgut sutures in the transverse direction, over which "P" -shaped nylon sutures were applied.

Control of the tightness and patency of duodenoplasty is carried out by introducing and subsequent aspiration of 400 ml of furacillin solution through a nasogastroduodenal tube.

In recent years, with the localization of PDJ on the anterior-lateral walls of the duodenal bulb, we began to use the methods of excision of the PDJ with pylorus-preserving PD (patent No. 0128. IPA RUz, 2021) [12].

Method for surgical treatment of PDU.

Usage: medicine, namely surgical gastroenterology, and can be used in urgent surgery of DU.

Objective: to reduce trauma and increase the efficiency of the operation by preserving the integrity of the "multifaceted" function of the pyloric sphincter of the stomach, as well as maximizing the conservation of the circular muscles and crypts of the duodenal mucosa.

The essence of the invention: with the method of pylorus-preserving duodenoplasty, there is no need to mobilize the duodenum according to Kocher, but only in an acute way a limited thorough dissection of the periulcerous adhesive "mantle" is performed, which excludes traumatization of its walls. In addition, damage to the right gastroepiploic and pancreatoduodenal arteries is excluded, depending on the localization of the ulcer. The integrity and intactness of the pylorus sphincter with its "multifaceted" functions is preserved and the circular duodenal muscles and crypts of the mucous membrane are preserved as much as possible. This

is achieved by bordering cuts parallel to the gastric axis around the perforated ulcer. After, the ulcer of the anterior lateral wall of the duodenum is excised with an electric knife within healthy tissues, then a gastric tube is removed through the duodenal defect, to which a nasogastroduodenal probe is fixed for decompression; its proximal end is removed through the patient's nose. The integrity of the intestinal wall is restored by duodenoplasty with single-row, pre-licensed, adapting sero-muscular-submucosal interrupted sutures with nodules outward. In this case, the distance between the stitches should be 0.5 cm, and the indentation from the edge of the incision should be 0.5 cm from the proximal side of the wound without grasping the tissues of the pyloric pulp and up to 0.8-1.0 cm from the distal edge of the wound, which ensures the density of contact fabrics. When tightening the knots of single-row serous-muscular submucosal sutures above the decompression probe, the physiological tightness and mechanical strength of duodenoplasty are ensured.

So, the method allows you to radically excise the PDU of the anterior and anterior-lateral walls and excise the edges of the ulcer of the posterior wall (i.e., the pathological focus is removed) with subsequent extraduodenization (the bottom of the ulcerative crater is removed outside the intestinal tube) while maintaining the continuity of the side walls and the integrity of the sphincter gatekeeper. The operation is low-traumatic, the neurovascular connections are preserved, ensuring the vital activity of the preserved parts of the stomach with its multifaceted relationships with other organs of the digestive system. Preservation of the integrity of the pylorus sphincter provides portioned evacuation of gastric contents and prevents an increase in the number of DGR, and is also the prevention of dumping syndrome. Leaving the PVC probe provides decompression, thereby preventing suture failure, and the intestinal suture technique allows you to restore the duodenum lumen without disturbing its drainage function.

Thus, the developed techniques ensured the safety of the surgical intervention. In no case, after the operation, such complications as anastomotic suture failure,

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peritonitis, traumatic pancreatitis, damage to adjacent organs (liver, bile ducts, pancreas) were not observed.

Discussion of research results

In recent years, PDP has been completed with separate serous-muscular-submucosal silk sutures in the transverse direction with nodules outward. In this case, the injection of the needle is carried out at a distance of 6-7 mm from the upper edge of the intestinal incision, and the injection is carried out at a distance of 4-5 mm from the lower edge of the incision. The distance between the nodes should be 6-8 mm.

This method of surgery, being a type of bridging DP, has the following advantages: 1) allows you to preserve the integrity of the stomach and the pyloric sphincter as a whole, with their neurovascular interrelationships, which ensures portioned evacuation of food while maintaining the natural passage through the gastrointestinal tract; 2) after excision of the ulcer with DP without vagotomy, digestion is restored early after the operation, however, there is a high risk of ulcer recurrence, which in the studied patients requires planned SPV. We, however, successfully applied the method of "drug vagotomy" according to the scheme; 3) pylorodilation leads to expansion of the inner wall and restoration of the lumen of the pyloric sphincter, which expands the indications for this technique; 4) the abandonment of the PVC probe ensures the decompression of the area and DP, thereby being a measure for the prevention of inconsistency of the seams; 5) the technique of imposing an intestinal suture allows you to restore the lumen of the duodenum without disturbing its drainage function.

Due to the high risk of complications associated with trauma to the pancreas and terminal sections of the common bile duct, we, in contrast to V.I. Onopriev [6], segmental DP was not used.

Conclusions

Improved techniques and techniques for excision of PDU with pylorus-preserving PDP (patents No. 2262 and No. 0128 IPA RUz were obtained), by preserving the integrity of the multifaceted function of the pyloric pulp, reduce the

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frequency of DGR and dumping syndrome. Optimization of surgical tactics, along with the techniques and techniques for excision of PDU with pylorus-sparing PDP, made it possible to improve excellent and good results by 23.1% (in the control group - 64.4%, in the main group - 87.7%), to reduce the frequency of satisfactory results by 16.0% (in the control group - 24.4%, in the main group - 8.4%) and unsatisfactory - by 7.1% (in the control group - 11.0%, in the main group - 3.9%).

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