

# Modern Methods of Surgical Treatment of Gastric Ulcer and Duodenal Ulcer

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**Annotation:** More than a century has passed since the production of the first perforating ulcer suturing operation in world practice. During this period, many researchers have put a lot of work into finding ways to reduce mortality and postoperative complications in perforated ulcers of the stomach and duodenum.

**Key words:** modern methods, surgical treatment, gastric ulcer, duodenal ulcer, patient, operation, gastroenterology.

Despite certain successes in the diagnosis and surgical treatment of gastric and duodenal ulcer (duodenal ulcer), the relevance of this problem is explained by the following literature data.

Peptic ulcer of the stomach and duodenum is a widespread disease and occurs in 5-15% of the population during their lifetime. These diseases often affect people of the most active, working age, which determines the social significance of this problem.

One of the formidable complications of peptic ulcer disease is the perforation of the ulcer, the frequency of which is 4%-30%. Mortality in perforated ulcers remains high and reaches 5-15%.

In recent years, despite the modern achievements of surgical gastroenterology, resuscitation and conservative therapy with the use of modern anti-ulcer drugs, the number of operations performed for emergency and urgent indications for perforated gastric and duodenal ulcers has increased 2.5-3 times, which is associated with unjustified and unjustified refusal of planned surgical treatment of gastric and duodenal ulcer.

Everywhere there is a certain reorientation of surgeons towards urgent surgery of peptic ulcer disease with the onset of severe complications in the form of perforation, bleeding and ulcerative scar stenosis. At the same time, there is a significant increase in the number of young patients with gross morphological changes and large sizes of the ulcerative process in perforated gastroduodenal ulcers.

The suturing of a perforated ulcer attracts many surgeons with its low trauma, simplicity and accessibility to surgeons on duty, the short duration of surgery and the low frequency of early postoperative complications.

Over 100 years of using this surgical intervention, its advantages and disadvantages have become quite obvious. It is the only justifiable surgical intervention in patients with diffuse purulent peritonitis and in elderly and senile people with severe concomitant diseases. But, this type of surgical intervention does not in any way affect the etiological and pathological mechanisms of the development of the disease. Therefore, the percentage of postoperative recurrence of ulcers reaches from 40-80% with repeated threatening complications in the form of perforation, bleeding and ulcerative scar stenosis requiring emergency surgery.

But is it possible, given the recent achievements of conservative therapy of peptic ulcer disease, to use these data as arguments in favor of suturing a perforated duodenal ulcer? Researchers associate such unfavorable long-term results of suturing perforated duodenal ulcers with the continued high aggressiveness of the acid-peptic factor in these patients, their resistance to traditional peptic ulcer therapy, and underestimation of the role in the occurrence of peptic ulcer relapses.

One of the unresolved and controversial problems in the surgery of perforated gastroduodenal ulcers is the question of the tactics of surgical treatment in favor of palliative and radical operations in young people. The data of many authors tilt the "scales" in the direction of suturing perforated ulcers in this category of patients, arguing that their ulcers have an "acute" character and after a simple suturing it is possible to achieve a complete cure from peptic ulcer disease and its complications.

Nevertheless, surgical objectivity forces us to say that when choosing a method of treatment for a perforated ulcer, one cannot adhere dogmatically to one method of treatment. Most likely, it should be recognized that there is a need for a flexible individual approach when choosing a treatment method, depending on the conditions, type and size of perforation, changes in the abdominal cavity, the patient's condition and the qualifications of the surgeon.

Vagotomy is a major scientific contribution to the development of peptic ulcer surgery of the late twentieth century. Many authors currently consider organ-preserving operations based on various types of vagotomy to be the method of choice for duodenal ulcer.

However, as clinical experience has accumulated, it has become clear that vagotomy and gastric drainage operations combined with it are also not without drawbacks, including the risk of developing long-term complications caused by vagotomy proper - the so-called post-vagotomy syndromes, which are observed in 10-40% of patients. This should be understood as a group of disorders of the functions of various digestive organs inherent only in vagotomy, developing shortly after surgery and continuing for a more or less long period of time in the distant postoperative period. These patients subsequently require corrective or reconstructive resection of the stomach.

Revagotomy in patients with recurrent duodenal ulcer after selective proximal vagotomy (SPV) is considered unpromising, due to the scarring process around the esophagus and cardia. In addition, the technical difficulties of revagotomy are associated with the presence of a pronounced scar-adhesive process in the upper floor of the abdominal cavity. In all observations, an increment of the anterior wall and small curvature of the stomach to the lower surface of the left lobe of the liver, the presence of scars and adhesions in the region of the pylorus and duodenum were noted.

The widespread introduction of organ-preserving operations for duodenal ulcers did not solve the problems of diseases of the operated stomach, but on the contrary, significantly increased their varieties due to post-vagotomy syndromes.

It should be noted that in the surgery of perforated duodenal ulcers, this surgical intervention is used by a limited number of surgeons. In addition, the reasons limiting the performance of SPV in this group of patients are considered obesity, edema and inflammatory infiltration of the small omentum against the background of peritonitis, the adhesive process that made it difficult to detect the Latarge nerve.

Currently, according to the consent of most surgeons, even the most advanced, until recently, technique of organ-preserving surgery for duodenal ulcer, along with a pronounced therapeutic effect, is vulnerable to the main indicator - a high frequency of postoperative relapses. Along with SPV, the whole concept of savings surgery of duodenal ulcer is losing its position in clinical practice. This is especially true for the surgery of "difficult" duodenal ulcers complicated by perforation.

Proponents of a restrained attitude to SPV in perforated duodenal ulcers complicated by penetration and stenosis rightly express concern about its not always favorable long-term results, due to the frequent occurrence of pathological syndromes, the treatment of which is often unsuccessful. While agreeing with this argument, we still believe that there are no grounds for refusing gastric resection for such ulcers.

"Difficult" duodenal ulcers are, as a rule, large and giant ulcers with a low location, the presence of stenosis and penetration into neighboring organs with pronounced periulcerous infiltration. It is with such ulcers that the greatest number of severe complications of gastric resection are observed: damage to the elements of the hepatoduodenal ligament, postoperative pancreatitis, failure of gastrointestinal anastomosis, failure of the sutures of the duodenal stump.

These ulcers are large in size, have an irregular shape, with undercut edges and a pronounced perifocal inflammatory shaft around the ulcerative niche, especially when localized in the duodenum, when an intraoperative revision in the pyloroduodenal zone determines a large cicatricial inflammatory conglomerate with pronounced deformation of the duodenal bulb. Ulcers of the posterior wall of the DPC most often penetrates into the head of the pancreas. During the operation, it is often found that the posterior wall of the bulb as such is absent due to the destruction of the wall, and an ulcerative crater remains on the pancreas.

In addition, the need to separate into a separate group of "difficult" duodenal ulcers requiring special techniques and methods of operations is due to two main reasons: the danger of ulceration, since the scarring process can displace, distort, hide neighboring formations, and the difficulty of closing the duodenal stump in conditions of tissue shortage. In addition, the technical complexity of the operation for a "difficult" duodenal

ulcer determines the desire to remove the ulcer, since one of the basic principles of gastric resection in peptic ulcer disease is precisely the removal of the ulcer from the lumen of the intestine, its extraterritorialization.

In the surgery of perforated duodenal ulcers, a significant number of patients show signs of impaired gastric evacuation caused by gross ulcerative scarring changes around the ulcerative defect and often poses a very difficult task for the surgeon: to remove an inconveniently located, often penetrating ulcer from the gastrointestinal tract, to eliminate the violation of the patency of the outlet of the stomach or duodenum, to restore the integrity of the gastrointestinal tract. All this suggests that duodenal ulcer, complicated by penetration and ulcerative scar stenosis, is an irreversible process, accompanied by profound metabolic and morphological changes in the ulcer area; this gives grounds for revising existing views on the management tactics of such patients in favor of radical surgery as the only treatment method. Conservative therapy for penetrating ulcers almost always had no effect, since ulcers of this localization are constantly under the negative influence of chemical (bile, gastric and pancreatic secretion products) and mechanical (food masses) factors that prevent the healing of ulcers.

At the same time, the problem of further improving the technique of gastric resection in such duodenal ulcers becomes especially relevant, i.e., performing a radical, pathogenetically justified operation at the same time, which allows achieving a lasting recovery.

Some researchers believe that organ-preserving operations do not allow to simultaneously "turn off" a low-lying duodenal ulcer, eliminate stenosis, stop bleeding and at the same time preserve the natural passage of food.

In these cases, the use of vagotomy is limited due to more frequent recurrences or non-healing of the ulcer. Other surgeons are supporters of gastric resection for perforated duodenal ulcers combined with penetration and stenosis.

They consider the presence of a large callous penetrating ulcer with decompensated ulcerative scar stenosis and hypersecretion to be indications for gastric resection even in young patients.

A number of authors reasonably believe that with so-called "difficult" duodenal ulcers, the most radical operation remains gastric resection according to Billroth II with suturing of the duodenal stump when it is impossible to perform the operation according to Billroth I with the formation of direct gastroduodenoanastomosis due to technical difficulties.

But it is with such ulcers that the most formidable complication is observed, the failure of the sutures of the duodenal stump. Mortality in this complication reaches from 50-70%.

In surgical practice, there are more than 200 ways of suturing the duodenal stump, but none of them guarantees against the failure of sutures in "difficult" ulcers, and the authors mainly use the developed methods. The main difficulty of gastric resection in such a situation is associated with suturing the stump of the duodenum in one modification or another, since there is no free part of the posterior or lateral walls of the intestine. Surgical treatment of such ulcers is a very difficult problem, especially with its perforation in urgent surgery.

In view of the above, a number of authors consider the method of choice for "difficult" duodenal ulcer to be gastric resection using the Billroth I method with the formation of a gastroduodenoanastomosis end-to-end, which allows avoiding the failure of the sutures of the duodenal stump, which allowed the authors to achieve a significant reduction in mortality. The number of such reports is small, therefore, solving the problem of choosing the method of surgery in conditions of a "difficult" duodenal ulcer requires further promising developments in this direction.

According to some authors, vagotomy with pyloroplasty for "difficult" duodenal ulcers does not solve the problem. On the one hand, a large number of relapses, reaching 30% or more, on the other hand, the technical complexity of pyloroplasty in conditions of scar deformation and ulcer penetration, comparable to the complexity of suturing the duodenal stump during gastric resection.

They consider operations of choice to be gastric resection according to Billrot-1 with the formation of a direct gastroduodenoanastomosis end to end. Performing gastric resection according to Billrot-1 with a "difficult" duodenal ulcer is dictated not so much by the desire to create a physiological passage of food masses through the duodenum, which ensures a low frequency of postgastroresection syndromes in the long term, as by the advantages of end-to-end gastroduodenoanastomosis compared to any method of suturing the duodenal stump, which allowed the authors to achieve significant to reduce mortality and to state the almost complete

absence of anastomosis failure. The number of such reports is small, so solving the problem of choosing the method of surgery in conditions of a "difficult" duodenal ulcer requires further work in this direction.

The main argument is that there is no need for extensive mobilization of the duodenal stump, which would be required for its suturing with a classic double-row suture. As a result, the risk of damage to the bile and pancreatic ducts decreases. The blood supply to the duodenal stump during suturing is worse, since during the formation of flaps, their mobilization is carried out for 15-20 mm. In addition, when suturing the stump in difficult situations, a large tension of the stitched tissues is created.

The presence of gastroduodenoanastomosis makes it possible to drain the duodenum in the postoperative period, which helps to reduce intraduodenal pressure, and consequently, prevent the failure of sutures.

Despite the widespread introduction of organ-sparing operations for duodenal ulcer, gastric resection has not lost its relevance to the present day. First of all, this applies to perforated duodenal ulcers complicated, especially such as stenosis of the pyloroduodenal canal, the presence of extensive infiltrates, penetration into neighboring organs, in particular into the hepatic-duodenal ligament.

The low rate of radical operations for perforated ulcers is explained by the fact that emergency surgeons are not sufficiently prepared to perform gastric resection in the case of a perforated ulcer. In addition, primary resection should be performed only by a surgeon who is proficient in gastric surgery techniques and has sufficient experience in performing standard and non-standard gastric resections in emergency surgery.

Gastric resection prevents not only the development of peritonitis, but also cures patients from peptic ulcer disease. One of the prominent propagandists of primary gastric resection. He has proved on thousands of operations that the danger of primary resections is exaggerated. Thanks to his work, this operation has become firmly established in the practice of emergency surgery. Contraindications to this operation in patients with perforated ulcers, he considered only technical difficulties and little experience of the surgeon.

Laparoscopic surgical interventions and mini-laparotomy operations for abdominal pathologies have developed rapidly in recent years. There are isolated reports of laparoscopic and minilaparotomic operations for perforated duodenal ulcers.

Minimally invasive operations for suturing a perforated ulcer have obvious advantages, but are not widely used, since there are a number of problems associated with the procedure of surgery and sanitation of the abdominal cavity. Technical problems are primarily associated with suturing, especially with the "inconvenient" localization of the perforation, which determines the duration of endoscopic surgery, which can only be performed by a surgeon with extensive experience in laparoscopic operations.

Errors in the technique of suturing can cause their eruption during surgery, the development of insolvency in the postoperative period. Deformation of the duodenal wall after suturing a perforated hole can cause a violation of patency in the pyloroduodenal zone and are the most common cause of emergency laparotomy conversions and repeated operations in the early postoperative period.

The main contraindications to laparoscopic suturing of a perforated ulcer are:

- the presence of diffuse fibrinous-purulent peritonitis with massive dense fibrin overlays, pronounced intestinal paresis, the need for gastrointestinal intubation;
- combination of perforation with other complications of peptic ulcer disease;
- severe cardiopulmonary insufficiency.

Thus, it is now recognized that it is possible to perform both palliative and radical surgical interventions for perforated gastroduodenal ulcers by laparoscopic method. The question of the expediency of its use is debated. Due to the relatively small experience of using this method in our country, the long-term results of laparoscopic operations in patients with perforated gastroduodenal ulcers have not been practically studied.

In conclusion, I would like to say that to date, in the surgery of perforated gastroduodenal ulcers, there is no "ideal" surgical intervention that would meet all the requirements of clinicians in this pathology, therefore, the issues of surgical tactics continue to be actively discussed on the forums of surgeons and in the periodical medical press, remaining until now one of the urgent tasks in emergency abdominal surgery.

Taking into account the above, there is an urgent need for further research and promising developments to improve the methods and techniques of radical surgical interventions, especially for perforating "difficult" duodenal ulcers in order to improve the results of surgical treatment of this group of patients.

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