

SURGICAL TREATMENT OF ACUTE COMPLICATED DUODENAL ULCER

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Abstract

The aim. To analyze treatment approaches and tactics and improve acutely complicated duodenal ulcers (DU) treatment results.

Materials and methods. The results of the analysis of the surgical treatment of acutely complicated duodenal ulcers (a combination of 3 and/or 4 combined complications) are presented for 2 periods: the 1st (2000–2014) years (group A) – 47 patients, the 2nd (2015–2021) years (group B) – 34 patients.

Results. 81 (100 %) patients were operated on for acutely complicated duodenal ulcers, of which 68 (84.3 %) patients had a combination of three complications, and 13 (15.7 %) had four complications. Out of 81 patients, 72 had bleeding complications, which is 89.3 %. Complications of ulcer perforation – in 36 patients, 44.7 % of all other complications.

Based on the obtained analysis data, there is a steady trend towards an increase in the share of organ-sparing operations (OSO) by 1.6 times (from 50.9 % to 81.4 %), a decrease in the number of gastric resections (GR) by 2.9 times (from 14.9 % to 4.9 %) and palliative operations (PO) by 3.2 times (from 15.8 % to 4.9 %) with a relatively stable number of performed organ-preserving operations (OPO): in group A – 17 (24.6 %) interventions, in group B – 4 (21.1 %).

Conclusions. The use of modern measures of endoscopic hemostasis made it possible to adequately prepare and operate on patients in the delayed period, and their share from the first period to the second increased by 2.9 times.

The number of patients who underwent emergency surgery with ulcer perforation and bleeding as combined complications decreased in the second period compared to the first by 2.5 times, which is associated with the widespread use of modern proton pump inhibitors (PPIs) in the conservative treatment of DU.

The number of complications and mortality of this cohort of patients also significantly decreased due to the use of endoscopic hemostasis methods, making it possible to stabilize and prepare patients on the operating table.

According to the analysis results, it became known that the chosen active-individualized tactics and the use of developed algorithms for choosing the type of surgical intervention made it possible to achieve a stable level of postoperative mortality at 8.1 %.

Keywords: complicated duodenal ulcer, perforation, bleeding, stenosis, penetration, vagotomy, gastric resection.

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1. Introduction

Due to the significant incidence of gastroduodenal ulcers [1–3], surgical treatment of gastric and duodenal ulcers (DU) with a combination of complications [4, 5] is extremely relevant. This is evidenced by the increase in the number of complications themselves [6, 7] and by different views on the surgical tactics for their treatment [1, 8, 9]. In the available literature, both in the world and in the domestic literature, information on tactical approaches and results of surgical treatment of patients with acutely complicated duodenal ulcers is practically not found [10–12]. Taking into account the global trend towards a slight increase in the incidence of duodenal ulcers, there remains a small number of patients with life-threatening simultaneous combined complications [7, 11, 13]. This category of patients is extremely difficult, which is why it is necessary to improve surgical treatment tactics and its results. Therefore, postoperative mortality rates remain quite high [14, 15]. That is why this is

a complex category of patients that requires analysis and improvement of surgical treatment tactics to achieve better results [16, 17].

The aim of the study. To analyze treatment approaches and tactics and improve acutely complicated duodenal ulcers (DU) treatment results.

2. Materials and methods

The analysis of the results of surgical treatment of patients with acutely complicated DU for more than 20 years was performed based on the Communal Non-Commercial Enterprise “Kyiv City Clinical Hospital No. 12” of the city of Kyiv (SHC Center of Kyiv), is presented. The period was from 2000 to 2021.

Fisher's test was used to compare variance in the studied groups, and mean values were calculated using Student's test. The method of comparing two proportions was also used. Each patient received and signed informed consent of the state standard for processing personal data.

A total of 81 patients were included in the analysis, which was divided by time into 2 periods: 1st (2000 – 2014) years (group A) – 47 patients, 2nd (2015 – 2021) years (group B) – 34 patients. The performed operations were divided into 4 groups: 1. Organ-preserving operations based on vagotomy (OPO); 2. Organ-sparing operations (OSO) – antrectomy with vagotomy; 3. Gastric resections (GR); 4. Palliative operations (PO) – isolated duodenal, pyloroplasty, or hemipelvectomy (without vagotomy).

A total of 81 (100 %) patients underwent surgery for acutely complicated DU, of which 68 (84.3 %) patients had a combination of three complications, and 13 (15.7 %) had four complications. Bleeding complications were noted in 72 (89.3 %) of 81 patients, and ulcer perforation in 36 (44.7 %) patients. The analysis of the frequency of use of various types of operative interventions revealed a tendency to increase the OSO indicator: in group A – 24 (50.9 %) operations, with a clear statistically significant increase in the indicator in group B – 28 (81.4 %), ($p=0,0044$, $\chi^2=8.119$). The number of performed OPOs was relatively stable: in group A – 10 (21.1 %), in group B – 5 (14.3 %) ($p=0.4371$, $\chi^2=0.604$). Indications for using GR were significantly limited in group B – 2 (5.8 %) patients. This group of operative interventions was performed 3.1 times less than in group A – 7 (14.9 %) patients ($p=0.2006$, $\chi^2=1.638$). Palliative operations in group A were performed in 7 (15.8 %) patients, with a decrease of this indicator by 3.3 times in group B to 2 (4.9 %) patients ($p=0.3447$, $\chi^2=0.893$).

All patients voluntarily filled out an individual informed consent (form No. 003-6/o following the Order of the Ministry of Health No. 2837 dated 09.12.2020), which was included in the medical history.

The use of modern measures of endoscopic hemostasis made it possible to implement a system of preparing patients for surgery and operating on patients in a delayed period. Their share from the first period to the second increased by 2.8 times (from 5.9 % to 16.6 %) and performed radical operations (organ-sparing) in most cases. This can explain the increase in the percentage of radical operations in the second period compared to the first.

However, this did not include patients who underwent emergency surgery with ulcer perforation as one of the complications, the relative number of which decreased in the second period (group B) compared to the first (group A) by 2.6 times. This is due to the widespread use of modern PPIs in the conservative treatment of DU.

The operation was urgent because of the combination of such complications as bleeding and perforation. It should be noted that in the second period (group B), almost all patients of this cohort were treated with endoscopic hemostasis, which made it possible to stabilize the patient faster and better prepare him for surgery.

3. Results

It can be noted that the number of patients with a combination of complications (bleeding, penetration and stenosis (B+P+St)) in the first period (group A) was 68.8 % (32 out of 47) and was 2.6 times more than in the second period (group B) – 26.3 % (9 out of 34) ($p=0.0002$, $\chi^2=14.083$).

The rate of patients with a combination of complications (bleeding, perforation and penetration (B+Per+P)) was the lowest in the first period – 5.8 % (3), then increased in the second period (group B) by 4.5 times – 26.1 % (9) ($p=0.0105$, $\chi^2=6.544$).

The combination of three complications (bleeding, perforation and stenosis (B+Per+St)) was 11.6 % (9 out of 81) and occurred with approximately the same frequency in the first period (group A) – 17.5 % (8 out of 47) and in the second period (group B) – 16.8 % (6 out of 34).

Only palliative pyloroplasty was performed when combining four complications (B+Per+P+St) of duodenal ulcer in patients with spilt peritonitis. In the case of diffuse peritonitis and young and middle-aged patients, selective vagotomy with antrectomy is performed. In the case of local peritonitis, a selective vagotomy with one of the drainage operations was performed.

The highest rate of the combination of four complications (B+Per+P+St) was observed in the second period (group B) – 69.2 % (9), which is 2.2 times higher than in the first period (group A) ($p=0.02144$, $\chi^2=1.541$).

Combined hemostasis (argon plasma or monopolar coagulation and injection methods) was used in Forrest Ia and IV degrees of hemostasis patients. After stopping the bleeding, further endoscopic monitoring after 2–4 hours.

Patients with Forrest's degree of hemostasis IIa and IIb mainly used injection methods of endoscopic hemostasis in combination with the application of film-forming substances with further endoscopic monitoring after 6-8 hours. In patients with spontaneously stopped bleeding (Forrest IIc and III), film-forming substances were applied with further endoscopic monitoring after 12–24 hours or as needed.

4. Discussion of research results

Analyzing the absolute number of cases of acutely complicated DU by year and by observation period, it should be noted the increase in the indicator in 1 period, which may be due to many socio-economic factors operating in the specified period, followed by a significant decrease in the indicator as a result of the widespread introduction of effective PPIs and the use eradication therapy for DU in the practice of therapists and gastroenterologists.

In the first period (group A), there were 47 patients with duodenal ulcers: with 3 complications – 43, with 4 ones – 4, in the second period (group B) with duodenal ulcers with 3 complications – 25, with 4 ones – 9 patients. With duodenal ulcers, the absolute number of patients slightly decreased from the first (group A) to the second period (group B) from 47 cases to 34 by 1.4 times. However, it should be noted that the combination of 4 complications had a higher rate in the second period (group B) – 9 patients, against 4 patients in the first period (group A) by 2.3 times, which can be explained by the wide implementation of anti-ulcer and eradication therapy with the appointment of powerful modern PPIs in the practice of gastroenterologists and therapists who treat uncomplicated ulcers of the gastroduodenal tract. The relative number of patients with three or four complications varied in the groups. In the second period, with acutely complicated DU, modern methods of endoscopic hemostasis and active-individualized tactics were used, a system for predicting the risk of early recurrence of bleeding and performing emergency operations in the first 6–12 hours after hospitalization of a patient with unstable hemostasis in an ulcer was used. Such a system allows for reducing the number of patients who were operated on at the height of early recurrence of bleeding (emergency operations at the height of recurrence of bleeding); in addition, effective measures of primary endoscopic hemostasis made it possible to prepare the patient for surgery and shift the emphasis to the use of operations in the delayed period after compensation of anaemia. Examination and preparation of the patient. At the same time, it should be noted a significant decrease in the percentage of operations at the height of bleeding (including at the height of early recurrent bleeding (ERB)) in the second period (group B) compared to the first period group A) by 3.7 times, which confirms the meaning of using modern methods of endoscopic hemostasis and developed active-individualized tactics in the combination of complications, when the risk of ERB is most often high.

Study limitations. 81 surgical patients with acutely complicated duodenal ulcers (with three and four combined complications) are included in this analysis. Patients with one or two combined complications were not included in the analysis. The time span from 2000 to 2021.

Prospects for further research. Based on the results of the analysis, an active and individualized management strategy for patients of this cohort was developed and implemented, which in the long run, will reduce both the number of complications and overall mortality.

5. Conclusions

1. The most common complication was bleeding, which was noted in 89.3 % of all patients, and the second most common complication was ulcer perforation, found in 44.7 % of all other complications.

2. The use of modern measures of endoscopic hemostasis made it possible to adequately prepare and operate on patients in the delayed period and to significantly reduce the number of postoperative complications and mortality rates.

3. In patients who require urgent surgical treatment (with a combination of complications such as bleeding and perforation), using (one or more) endoscopic hemostasis tools allows the patient to stabilize right on the operating table and better prepare him for surgery.

4. Currently, the surgical treatment of patients with multiple combined complications of duodenal ulcers should be actively individualized, based on the implementation of a developed rational algorithm for the selection of surgical intervention, or other compensations were not paid.

Conflict of interests

The authors declare that there is no conflict of interest in relation to this paper, as well as the published research results, including the financial aspects of conducting the research, obtaining and using its results, as well as any non-financial personal relationships.

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