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SURGICAL TREATMENT OF COMPLICATED DUODENAL ULCERS WITH DIFFERENT VARIANTS OF THEIR LOCALIZATION

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Abstract

Purpose: To analyze and highlight the most effective methods of surgical treatment of complicated duodenal ulcer (DU) depending on its location. **Material and methods.** 86 patients underwent surgery for complicated combined pyloroduodenal ulcers. All patients with signs of gastrointestinal bleeding and perforation were examined according to clinical protocols. Patients were operated on by various surgical techniques depending on the location of DU. Further the analysis of different methods of surgical treatment of the pathology under study at its various localizations was carried out. **Results.** It has been established that in complicated combined pyloroduodenal ulcers with localization in the pyloric canal antrumectomy is the method of priority. If duodenum ulcer is complicated by bleeding, excision with pyloroplasty is the method of priority. Suture ulceration with pyloroplasty can be considered as an alternative method of treatment. It has been verified that in complicated duodenal ulcers, exteriorization and suturing of the ulcer have the lowest efficiency. The most frequently used method of duodenal ulcers of any localization treatment was excision of the ulcer with pyloroplasty. 6 (41.8 ± 0.053%).patients had been operated on by this method. In the second place in terms of universality was ulcer's suturing with pyloroplasty - 22 patients

or ($25.5 \pm 0.047\%$). The third was the method of exteriorization and suturing of ulcers, which accounted for 10 patients ($11.6 \pm 0.034\%$).

Key words: pyloroduodenal ulcer; localization of ulcer; surgical treatment; postoperative complications.

Urgency. Currently, the problem of choosing a method of surgical treatment of complicated duodenal ulcer is of priority for health systems [3, 7, 14]. The choice of surgery at complications of peptic ulcer disease, namely bleeding, ulcer's perforation or penetration, or their possible combination in different variations, provokes a lively discussion about the most effective method of DU surgery [10, 12, 13]. To effectively provide care for ulcerative hemorrhage, it is extremely necessary and important to identify its localization [2, 5, 9].

But a doctor is extremely limited in time and this is the main difficulty in identifying the source of bleeding. Endoscopy today is the main method of diagnosis of ulcerative hemorrhage, as well as ultrasound examination of the abdominal organs, both are endowed with great diagnostic value [1, 4, 6]. The following prerequisites play a crucial role in determining the algorithm of medical care rendering to a profuse bleeding patient: 1) to obtain maximum of diagnostic information using as few endoscopic and ultrasound examinations as possible; 2) method with the greatest diagnostic sensitivity should be used first; 3) individualized method of surgery based on the objective and subjective clinical situation should be chosen; 4) the crucial role of time factor and its impact on the outcome of the operation should be taken into account [8, 11, 15].

Thus, the problem of surgical treatment of complicated DU in different variants of its localization is an important issue of emergency surgery. At the same time, this issue is insufficiently studied, data on severe complications of peptic ulcer disease, such as gastroduodenal bleeding and perforation, need further analysis. All the above aspects are topical issues of gastroenterology and surgery.

Purpose: To analyze and identify the most effective methods of surgical treatment of complicated DUs depending on their location.

Materials and methods.

The results of 86 patients surgery with profuse gastrointestinal bleeding of ulcerative origin have been analyzed. The materials of the surgical department of the Chornobayev Multidisciplinary Hospital (Cherkasky Region, Ukraine) from 2010 to 2020 were used. There were 64 men (74.4%) and 22 women (25.5%). Patients were conditionally divided into groups

by age and localization of pyloroduodenal ulcer. The mean age of patients was 52.5 ± 15.7 years.

All 86 patients with perforated pyloroduodenal ulcer complicated by bleeding were operated on mainly within the first two hours after hospitalization. 16 (18.6%) patients with severe intoxication, unstable hemodynamics, manifestations of widespread peritonitis, infectious-toxic shock required short-term preoperative preparation.

The target indicators of these patients preparation were considered to be the achievement of central venous pressure up to 8-12 mm Hg; average arterial pressure > 65 mm Hg, $SvO_2 > 70\%$, diuresis > 0.5 ml / (kg * h). All patients were examined according to the standard scheme: clinical examination, instrumental examination (X-ray, ultrasound diagnosis of the abdominal cavity, electrocardiography), laboratory tests (general analysis of blood and urine, biochemical analysis of blood: bilirubin, ALT, AST, glucose, total protein, hepatitis B and C diagnosis).

All patients (n = 86) underwent upper median laparotomy, followed by determination of the bleeding localization and its cessation by stitching, coagulation or embolization of the vessel, with duodenum mandatory partial mobilization.

When decision was made on urgent indications, surgery was used for the combined complications of pyloroduodenal ulcer.

For statistical analysis of the results obtained a package of general purpose data processing programs Statistics for Windows version 10.0 (Stat Soft inc., USA) was used. Quantitative indicators with a normal distribution are presented as mean \pm standard deviation. Discrete values are presented in the form of frequencies (percentage of observations to the total number of subjects). Pearson's criterion χ^2 was used to compare discrete quantities in independent groups. At $p < 0.05$ discrepancies were considered statistically significant.

Results and discussion. Combined complications by ulcer localization and type of surgery were analyzed:

1) pyloric canal - 18 patients ($20.9 \pm 0.044\%$), of which 5 patients underwent ulcer excision with pyloroplasty ($5.8 \pm 0.025\%$); 7 patients underwent antrumectomy ($8.1 \pm 0.029\%$), 6 patients underwent gastrectomy ($6.9 \pm \%$);

2) anterior wall - 11 ($12.7 \pm 0.036\%$) patients, of which 10 patients underwent excision of the ulcer with pyloroplasty ($11.6 \pm 0.034\%$), one patient underwent suturing of the ulcer with pyloroplasty ($1.1 \pm 0.011\%$);

3) medial wall - 14 patients ($16.3 \pm 0.04\%$), of which 6 persons underwent exteriorization and suturing of the ulcer ($6.9 \pm 0.027\%$), in 5 patients - suturing of the ulcer

with pyloroplasty ($5.8 \pm 0.025\%$) was made, 3 patients underwent ulcer excision with pyloroplasty ($3.4 \pm 0.019\%$);

4) lateral wall - 15 patients ($17.4 \pm 0.041\%$), of which 7 persons underwent excision of the ulcer with pyloroplasty ($8.1 \pm 0.029\%$), 4 patients had suturing of the ulcer with pyloroplasty ($4.6 \pm 0.022\%$), 4 - exteriorization and suturing of the ulcer ($4.6 \pm 0.022\%$);

5) posterior wall - 17 patients ($19.8 \pm 0.043\%$), 9 of them underwent suturing of the ulcer with pyloroplasty ($10.4 \pm 0.033\%$), 5 patients underwent excision of the ulcer with pyloroplasty ($5.8 \pm 0.025\%$), 3 patients underwent suturing of the ulcer with a part of greater omentum tamponade ($3.4 \pm 0.019\%$);

6) postbulbar ulcer - 11 ($12.8 \pm 0.036\%$) patients, of which 6 patients underwent excision of the ulcer with pyloroplasty ($6.9 \pm 0.027\%$), 3 patients - suturing ulcers with pyloroplasty ($3.4 \pm 0.019\%$), 2 patients - suturing ulcers and gastrectomy ($2.3 \pm 0.016\%$).

When the ulcer was localized in the duodenum, except pyloric canal, 22 patients underwent suturing of the ulcer with pyloroplasty ($25.5 \pm 0.047\%$) and excision of the ulcer with pyloroplasty underwent 36 patients ($41.8 \pm 0.053\%$). Exteriorization and suturing of the ulcer on the medial and lateral wall of the duodenum was performed in 10 patients ($11.6 \pm 0.034\%$). Suturing of the ulcer with a greater omentum tamponade at ulcer's different localization was made in 3 patients ($3.4 \pm 0.019\%$).

Data about surgery used at complicated duodenal ulcers are shown in Table 1

Table 1 - Types of surgery used at complicated duodenal ulcers

Localization of ulcer	Types of surgical treatment of complicated duodenal ulcer													
	Ulcer's Suturing + pyloroplasty		Ulcer's excision + pyloroplasty		Exteriorization and suturing of the ulcer		Suturing of the ulcer with tamponade with a part of greater omentum		Suturing of the ulcer and gastrectomy with exclusion		Antrumectomy		Gastric resection	
	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%
Pyloric canal	-	-	5	$5,8 \pm 0,025$			-				7	$8,1 \pm 0,029$	6	$6,9 \pm 0,027$
Anterior wall of duodenum	1	$1,1 \pm 0,011$	10	$11,6 \pm 0,034$	-		-		-		-		-	
Medial wall of duodenum	5	$5,8 \pm 0,025$	3	$3,4 \pm 0,019$	6	$6,9 \pm 0,027$	-		-		-		-	

Lateral wall of duodenum	4	4,6± 0,02	7	8,1± 0,029	4	4,6± 0,02	-	-	-	-	-	-	-
Posterior wall of duodenum	9	10,4± 0,03	5	5,8± 0,025	-	-	3	3,4± 0,019	-	-	-	-	-
Postbulbar ulcer	3	3,4± 0,019	6	6,9± 0,027	-	-	-	-	2	2,3± 0,016	-	-	-
Patients, total	22	25,5± 0,047	36	41,8± 0,053	10	11,6± 0,034	3	3,4± 0,019	2	2,3± 0,016	7	8,1± 0,029	6,9± 0,027

Suturing of the ulcer and stomach resection at postbulbar localization of the ulcer was performed in 2 patients ($2.3 \pm 0.016\%$). Antrumectomy with ulcer localization in the pyloric canal underwent 7 patients ($8.1 \pm 0.029\%$). Gastric resection at ulcer's localization in the pyloric canal underwent 6 patients ($6.9 \pm 0.027\%$; Table 1).

There were 84 ($97.7 \pm 0.17\%$) patients with acute gastric bleeding of ulcerative etiology. Significant technical complications during the operation occurred in 48 ($55.8 \pm 0.53\%$) patients. 35 ($40.7 \pm 0.053\%$) of them were older than 60 years and 13 ($15.2 \pm 0.038\%$) patients were older than 70 years. Severe comorbidities were detected in 33 ($38.4 \pm 0.053\%$) patients. Large callous ulcers diametered 3 - 5 cm caused bleeding in 44 ($51.2 \pm 0.054\%$) patients, they penetrated the pancreas and hepatoduodenal ligament and were localized on the posterior and lateral walls of the duodenal ampoule. In 5 ($5, 81 \pm 0.025\%$) patients low postampullary ulcers located near the large papilla of the duodenum.

Technical difficulties in these patients were stitching, or excision of ulcers complicated by acute bleeding.

Massive severe bleeding was observed in 42 ($48.8 \pm 0.054\%$) patients, moderate ones were in 27 ($31.4 \pm 0.05\%$) patients. 12 ($13.4 \pm 0.037\%$) patients had been operated on at the height of bleeding (Table 2).

Table 2 - Operational risk factors in the patients under observation

Risk factor	Absolute	%
Elderly and senile age:		
* over 60 years	35	40.7 ± 0.053
* over 70 years	13	15.1 ± 0.038
Comorbid pathology	33	38.4 ± 0.053
Penetrating callous ulcers	44	51.2 ± 0.054
Low postampullary ulcer	5	5.8 ± 0.025
Severe bleeding	42	48.8 ± 0.054
Bleeding of moderate severity	27	31.4 ± 0.05
Posthemorrhagic shock	12	13.9 ± 0.037

After analyzing the combined complications according to duodenal ulcer localization and type of surgery used, we obtained the following results.

Antrumectomy was the most effective method with ulcer's localization in the pyloric canal - 7 patients or ($8.1 \pm 0.29\%$) underwent such type of surgery. When the ulcer was located on the anterior wall of the duodenum, the most effective method of surgical treatment was excision of the ulcer + pyloroplasty. 10 patients had been operated on, which amounted to ($11.6 \pm 0.034\%$). With ulcer's localization on the medial wall of the duodenum, the most effective method of surgical treatment was exteriorization and suturing of the ulcer - 6 patients or ($6.9 \pm 0.027\%$) underwent this surgery. When the ulcer was localized on the lateral wall of the duodenum, the most effective method of surgical treatment was excision of the ulcer with pyloroplasty. 7 ($8.1 \pm 0.029\%$) patients had been operated on this way. If the ulcer was located on the posterior wall of the duodenum, suturing of the ulcer with pyloroplasty turned out to be most effective - 9 patients underwent surgery, which amounted to ($10.4 \pm 0.033\%$). When postbulbar duodenal ulcer was diagnosed excision of the ulcer with pyloroplasty was the most effective. We have operated on 6 patients or ($6.9 \pm 0.027\%$).

Analyzing the methods of surgical treatment of duodenal ulcers of different localization, we found that the most frequently used technique was excision of the ulcer with pyloroplasty. This method was applied in 36 ($41.8 \pm 0.053\%$) patients. In the second place in terms of universality was suturing ulcers with pyloroplasty - 22 patients underwent such surgery, which amounted to ($25.5 \pm 0.047\%$). The third was the method of exteriorization and suturing of ulcers, which was used in 10 patients ($11.6 \pm 0.034\%$).

Conclusions:

1. In complicated combined pyloroduodenal ulcers with localization in the pyloric canal, antrumectomy is the method of priority.
2. At the complicated combined pyloroduodenal ulcers of any localization the excision of an ulcer with pyloroplasty appeared as priority treatment method.
3. The next line of surgical treatment was ulcers' suturing with pyloroplasty.
4. Exteriorization and suturing of the ulcer has the lowest priority.

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