

Optimized Surgical Tactics for Ulcerative Gastroduodenal Bleeding in the Elderly

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Abstract The authors report that in the present study, optimization of surgical tactics reduced overall mortality in gastroduodenal ulcerative bleeding in a prospective group of patients to 2.4% versus 5.9% in a retrospective group. The authors conclude that improved treatment results were achieved by reducing surgical activity from 44 to 21%, reducing emergency surgical interventions, and also by reducing postoperative mortality after delayed operations from 5.9 to 2.4% through adequate preoperative preparation and reducing the rate of recurrent bleeding from 19.6 to 4.8%.

Keywords Ulcerative gastroduodenal bleeding, Old age, Diagnostic and treatment algorithm

1. Relevance of the Problem

Over the past decades, surgical tactics for ulcerative gastroduodenal bleeding have undergone changes associated with the introduction of modern equipment and new means for endoscopic hemostasis and a revision of approaches to performing surgical procedures. However, in most cases, surgeons with ongoing bleeding, in the event of ineffective endoscopic hemostasis or technical difficulties in treating recurrent ulcerative gastroduodenal bleeding, resort to emergency surgical interventions. At the same time, in elderly people, some typological features (including chronic ulcer or acute drug ulcer) ulcerative gastroduodenal bleeding are often not taken into account, which is often the cause of tactical and technical omissions, and, accordingly, a high incidence of general and postoperative mortality and complications [1-3].

The aim of this research was to improve the results of surgical treatment of Ulcerative gastroduodenal bleeding in the elderly by determining the characteristics of the clinical course and optimizing surgical tactics.

2. Material and Methods

The work is based on an analysis of the results of treatment of 326 patients subject to inpatient treatment at the Department of Surgical Diseases in the clinic of the Andijan

State Medical Institute named after Otabekov Yu.O and in the Andijan branch of the Republican Scientific Center for Emergency Medical Care for the period from 2019 to 2023. At the same time, patients with Ulcerative gastroduodenal bleeding are conditionally divided into two groups:

- control group (234 patients), under the age of 60 years (average age was 35.3 ± 0.5 ; $p < 0.001$);
- the study group (92 patients), in old age (average age was 67.2 ± 0.5 ($p < 0.001$)).

To solve the assigned problems, general clinical, laboratory, instrumental and statistical research methods were used in accordance with protocols approved by the Ministry of Health of the Republic of Uzbekistan.

3. Results and Their Discussion

In all patients, bleeding was diagnosed based on clinical signs such as the presence of melena (88.4%); and vomiting "coffee grounds" (71.5%). Other signs were not expressed sufficiently. In most cases, the diagnosis of bleeding was late. Often the presence of tarry stools was associated with taking iron supplements, and patients were examined by a surgeon 2-3 days after the onset of bleeding. This situation was identified in 12 patients. This circumstance worsens the results of treatment of bleeding in this group of patients; in addition, ongoing bleeding contributes to an increase in ischemia of internal organs, including the myocardium and brain. A vicious circle develops.

To objectively assess the severity of the condition and predict the outcome of the disease, we used the integrated original simplified SAPS scale (Original Simplified Acute

Physiology Score). Data were obtained for the first 24 hours of patients' stay in the intensive care unit. As the SAPS value increases, the probability of an unfavorable (fatal) outcome of the disease increases.

A retrospective analysis of the results of surgical treatment in the comparison group (2016-2019) showed that the severity of the physiological condition of patients with ongoing bleeding, the degree of blood loss, and the risk of relapse in case of unstable hemostasis and existing bleeding were underestimated with due objectivity. As a result, we performed a large number of urgent operations at the height of bleeding, and time was lost for thorough preoperative preparation.

Underestimation of the severity of the condition in 14 (10.9%) patients led to insufficient replenishment of blood volume, in 8 (6.3%) - a late decision to operate, as a result of which it was not possible to compensate for the changes that occurred as a result of blood loss.

Identified omissions in previously used treatment tactics for elderly patients with Ulcerative gastroduodenal bleeding contributed to the development of an improved treatment and diagnostic algorithm, taking into account some typological features, which made it possible to optimize surgical tactics by predicting recurrent bleeding and achieving improved results of surgical treatment.

Based on the results of treatment of patients in the control group, seven of the most informative diagnostic signs were selected according to risk factors: 1) age of the patient; 2) a history of coffee-ground vomiting and/or melena more than 2 times a day; 3) the number of red blood cells is below $2.5 \cdot 10^{12}/l$, hemoglobin is below 100 g/l; 4) hypotension of blood pressure below 80/40 mm Hg and pulse above 100 beats./min; 5) localization of the ulcer; 6) size of the ulcerative defect; 7) endoscopic picture according to Forrest.

Emergency fibroesophagogastrroduodenoscopy was performed in 80 (86.9%) patients, including 41 patients of the main group with Ulcerative gastroduodenal bleeding. There were 38 (41.3%) patients with acute ulcers, 54 (58.7%) with chronic ulcers. According to our data, patients with chronic ulcers predominated. During fibroesophagogastrroduodenoscopy, ongoing bleeding was detected in 38 (41.2%) (Forrest I), ongoing bleeding in 45 (49.0%) (Forrest II), and anamnestic gastrointestinal bleeding in 9 (9.8) (Forrest III) patients in groups of patients. Mild blood loss was diagnosed in 9 (9.8%) patients, moderate in 45 (49.0%), severe in 23 (25.0%), and extremely severe in 15 (16.2%). According to our data, average and severe blood loss was 73.9%.

More often, an ulcerative defect was found in the stomach - 35 (38.0%) patients, duodenal ulcers in 57 (62.05%). Acute ulcers were multiple and small in size. Chronic ulcerative defects were more often single and large in size. According to our data, almost 30 (32.6%) ulcerative defects had sizes from 0.2 to 1 cm, 36 (39.1%) from 1 cm to 2 and 26 (28.3%) from 2.5-3 cm and more. From the anamnesis it was established that due to the presence of various (49)

concomitant pathologies, 27 patients periodically took NSAIDs, and 22 patients took anticoagulants.

Indications for endoscopic hemostasis were: ongoing bleeding (F-Ia, F-Ib). In case of unstable hemostasis (F-IIa, F-IIb and F-IIc), endoscopic hemostasis was also performed. In cases of stopped bleeding, control endoscopy was performed on the 7th and 14th days. To assess the source of bleeding, the most convenient classification is J. Forrest (1987). The use of endoscopic hemostasis and complex antiulcer therapy, including proton pump inhibitors, cytoprotectors, and Helicobacter agents, made it possible to achieve reliable hemostasis and accelerate reparative processes.

In the diagnosis of acute ulcerative gastroduodenal bleeding, the following tasks are solved: 1) establish the fact of bleeding; 2) identify the nature and location of the source of bleeding; 3) find out whether the bleeding continues or has stopped; 4) in case of stopped bleeding, assess the degree of stability of hemostasis; 5) determine the amount of blood loss; 6) assess the severity of concomitant diseases.

Clinical signs of unstable hemostasis are: a recorded collaptoid state during bleeding, the presence of laboratory signs of severe blood loss, repeated hemorrhagic attacks recorded on the basis of obvious signs of bleeding.

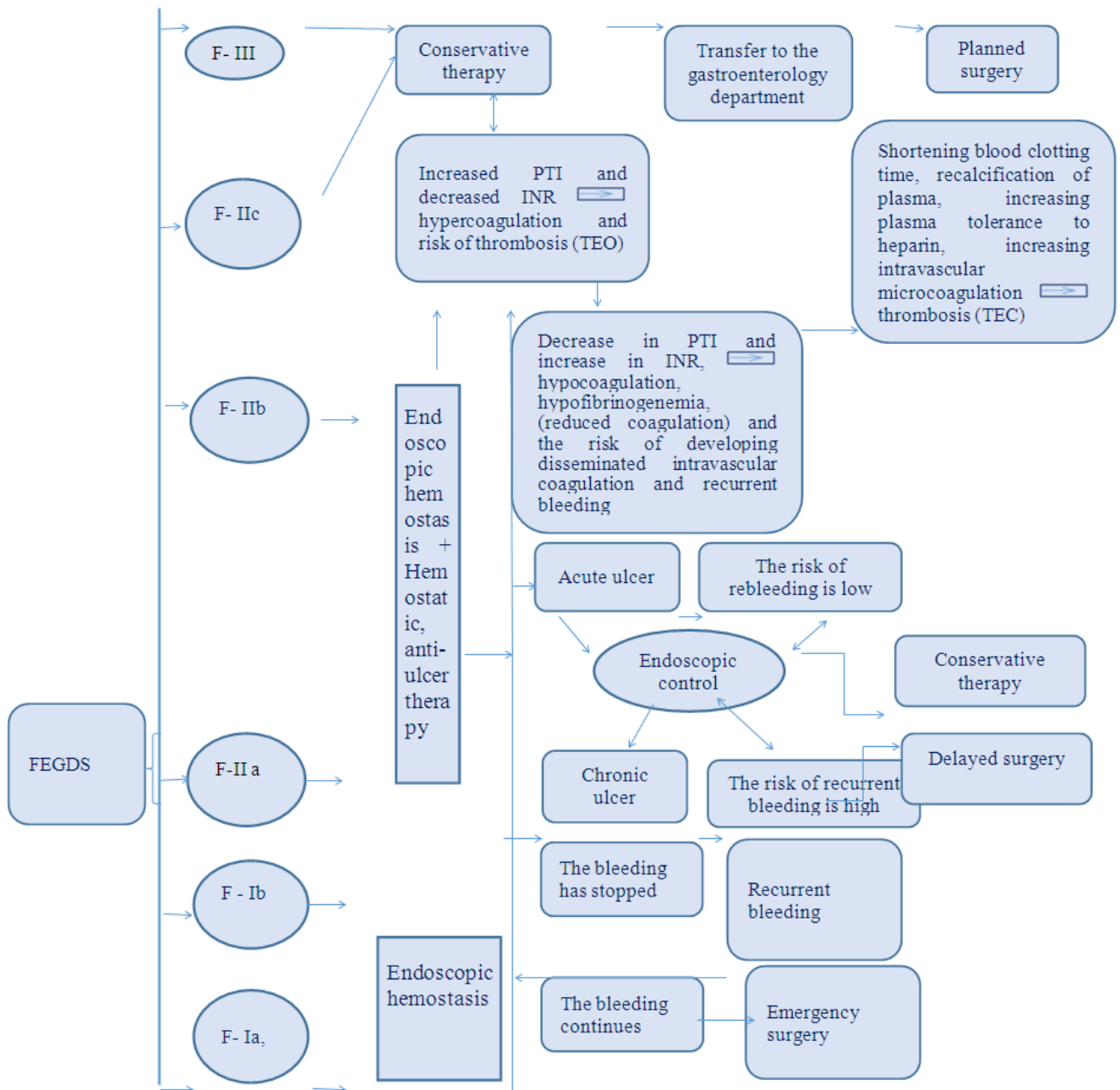
In this regard, for Ulcerative gastroduodenal bleeding in elderly people, we have proposed an improved treatment and diagnostic algorithm, which is presented in picture 1.

Endoscopic signs of unstable hemostasis include: the presence of fresh or slightly changed blood in the stomach or duodenum, the presence of a visible vessel in the ulcer crater, in the lumen of which there is a red or yellow-brown thrombus, as well as the presence of a loose red or cherry-colored clot. The presence of any of the clinical or endoscopic signs of unstable hemostasis, as well as their combination, serves as the basis for a general conclusion about the instability of hemostasis [4].

Conservative hemostatic therapy was aimed at restoring the volume of circulating blood, preventing the lysis of a blood clot, normalizing the oxygen capacity of the blood and correcting post-hemorrhagic dysfunctions of organs and systems. It should be noted that we abandoned the use of traditionally used drugs for Ulcerative gastroduodenal bleeding, such as vikasol, calcium chloride and aminocaproic acid, due to the fact that in elderly patients these drugs increase the risk of developing thromboembolic complications.

Антисекреторная терапия нами проводилась 41 больным основной группы с ЯГДК, и она в значительной степени оказывала влияние на возникновение рецидива кровотечения.

Thus, when antisecretory drugs were included in complex conservative therapy, recurrent bleeding was observed in 14 (27.4%) patients out of 51 patients, while without the use of proton pump inhibitors (PPIs) - in 16 (37.4%) out of 51 ($p < 0.05$). It has been established that in elderly patients the effectiveness of anti-relapse therapy depends on the severity of bleeding, the stability of hemostasis and the location of ulcers.



Picture 1. Improved treatment and diagnostic algorithm

With stable hemostasis, recurrent bleeding occurred in 7 out of 50 patients without the use of PPIs and H2 blockers. Consequently, the administration of antisecretory drugs for bleeding F IIa - F IIb prevents the development of recurrent bleeding in most cases. With active bleeding (F Ia, F Ib) in the main group of patients using PPIs, the number of relapses was 2.3%, in contrast to the comparison group without the use of PPIs - 25%. Prescribing antisecretory drugs for severe blood loss with hemostasis grade F IIa - F IIb statistically significantly ($p < 0.05$) reduces the development of recurrent bleeding from 25.0% to 2.3%, but to a lesser extent than for mild and moderate degrees blood loss.

A complex and completely unstudied issue is the disturbance in the hemostasis system in elderly patients. Pulmonary

embolism, according to our data, was the cause of death in 5.9% (3 out of 51), while all of them received drugs such as aminocaproic acid, Vicasol, and calcium chloride as hemostatic therapy. Often these patients at autopsy reveal signs of disseminated intravascular coagulation syndrome, against the background of a widespread atherosclerotic process.

Taking these data into account, in order to normalize the state of the hemostatic system, patients with Ulcerative gastroduodenal bleeding are transfused with FFP in a volume of 300-700 ml per day, in addition, from the first day of intensive therapy, protease inhibitors are prescribed (contrical up to 50,000 units per day). To relieve acidosis, antihypoxants (Reamberin) were administered. All therapy was carried out

under the control of APTT (activated partial thromboplastin time).

Endoscopic methods of hemostasis were performed in 29 (70.7%) patients out of 41 patients. To stop bleeding, both isolated and combined methods of endohemostasis were used.

With ongoing bleeding and instability of hemostasis, the combined method was most often used, both for chronic and acute ulcers. Superficial hemostasis in the form of applications and injections was used in 39 patients and was mostly used for unstable hemostasis.

It was found that bleeding most often recurred in patients with ulcers localized in the cardia and subcardia of the stomach, as well as along the medial wall of the duodenum. According to our data, with active bleeding (Forrest Ia, Ib), relapse occurred in 1 (2.4%) patients, with existing bleeding (Forrest IIa, IIb, IIc) in 1 (2.4%). Relapse most often arose from chronic gastric ulcers localized along the lesser curvature or posterior wall and having a large size. Recurrent bleeding usually occurred on days 1 and 3.

Indications only for endoscopic hemostasis and complex conservative therapy are the high risk of surgery when assessing the severity of the patient's condition on the SAPS scale of 9-21 points and the intensity of bleeding F - Ia, F - Ib and in case of bleeding (F - IIa, F - IIb, F - IIc).

Indications for emergency surgery (within 2 hours after the patient's admission) are ongoing bleeding F - Ia, F - Ib, including relapse of ulcerative bleeding in the hospital if endoscopic stop is impossible, with an assessment of the patient's condition on the SAPS scale of 5 - 8 points and localization of an ulcerative defect along the posterior wall of the duodenum or along the lesser curvature of the stomach with dimensions greater than 2 cm.

Indications for urgent surgical treatment (within 24 hours after admission) are patients with a high risk of recurrent bleeding without positive dynamics according to endoscopic examination and bleeding that has occurred (F IIa), with satisfactory and moderate condition of patients (5-12 points on the SAPS scale).

The issue of elective surgery is decided individually after correction of post-hemorrhagic dysfunctions of organs and systems.

The basis of anti-relapse drug therapy is drugs that block the production of hydrochloric acid and pepsin in the gastric mucosa. Currently, for Ulcerative gastroduodenal bleeding, the following PPI administration regimen is recommended: for a high risk of recurrent bleeding - Omeprazole bolus 80 mg, followed by continuous infusion at a rate of 8 mg/hour for 72 hours. With a low risk of recurrent bleeding - Omeprazole IV 40 mg 2 times a day for three days. Then switch to oral administration of 20 mg/day for 8 weeks.

The scope of surgical intervention consisted of suturing the ulcer (24), suturing the ulcer with pyloroplasty (10), excision of the ulcer with pyloroplasty (8), resection of % of the stomach (6), subtotal resection of the stomach (1), gastric extirpation (1).

The main risk factors for recurrent bleeding were: age over 60 years, hemorrhagic shock upon admission, severe concomitant pathology. The location of the ulcer also has prognostic significance. In areas where large vessels are located (lesser curvature of the stomach or posterior wall of the duodenum), bleeding resumes more often and quickly leads to refractory shock.

Evaluation of therapeutic endoscopy made it possible to formulate the following principles for its use in ulcerative gastroduodenal bleeding.

1. Continued diffuse bleeding is an indication for immediate endoscopic hemostasis. Repeated attempts to stop bleeding, especially arterial bleeding from chronic callous ulcers located in the cardiac region and in the body of the stomach, as well as on the posterior wall of the duodenum, lead to a delay in surgical intervention. Unstable hemostasis is also an indication for therapeutic endoscopy.
2. To stop ongoing bleeding and prevent its recurrence, it is advisable to use injection techniques and diathermocoagulation.
3. Control endoscopy should be carried out within 6-12 hours after the first examination.

The results of this work allow us to identify additional criteria for the risk of relapse, which include: localization of ulcers in the body and cardiac part of the stomach along the lesser curvature and on the posterior wall of the duodenal bulb; the size of a stomach ulcer is more than 2 cm and more than 1 cm for a duodenal ulcer; laboratory signs of DIC syndrome. The highest frequency of recurrent bleeding is observed from ulcers located on the posterior wall of the cardia and body of the stomach, as well as on the posterior wall of the duodenum. As a rule, arrosion of large arterial vessels occurs, which causes severe bleeding.

4. Summary

Thus, in the present study, optimized surgical tactics made it possible to reduce the overall mortality rate for Ulcerative gastroduodenal bleeding in a prospective group of patients to 2.4% versus 5.9% in a retrospective group. Improved treatment results were achieved by reducing surgical activity from 44 to 21%, reducing emergency surgical interventions, as well as by reducing postoperative mortality after delayed operations from 5.9 to 2.4% through adequate preoperative preparation and reducing the frequency of recurrent bleeding from 19.6 to 4.8%.

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