

Comparative Analysis of the Outcomes of Combined Vagotomy and Simple Suturing in Perforated Duodenal Ulcer

Abdullaev Khakimjon Makhmudjonovich^{1,*}, Nuritdinov Orifjon Tolipovich²,
Rakhmanov Bakhodirjon Jafaralievich³, Abdullaev Ulugbek Ubaydullaevich⁴

¹Deputy Chief Physician for Surgical Affairs, Namangan Regional Multidisciplinary Medical Center, Namangan, Uzbekistan

²Doctor of Medical Sciences, Head of the 1st Department of Surgery, Clinic of Andijan State Medical Institute, Andijan, Uzbekistan

³Candidate of Medical Sciences, Clinic of Andijan State Medical Institute, Chief Physician, Andijan, Uzbekistan

⁴Candidate of Medical Sciences, Head of the Department of Clinical Sciences, Faculty of Medicine, Namangan State University, Namangan, Uzbekistan

Abstract The article presents a comparative analysis of the outcomes of combined vagotomy and simple suturing in patients with perforated duodenal ulcer. A total of 143 patients were included in the study, of whom 97 constituted the control group and 46 comprised the main group. In the control group, closure of the perforated ulcer was performed either by laparotomy or laparoscopic approach followed by eradication therapy. In the main group, combined vagotomy (anterior selective proximal vagotomy with posterior truncal vagotomy) together with excision of the perforated ulcer was carried out. During the study, the clinical course, postoperative condition, and risk of recurrence were evaluated. The obtained results demonstrated that combined vagotomy reduced gastric acid-peptic aggression, while excision of the ulcer, considered an antigenic stimulus, contributed to improved clinical outcomes and decreased the risk of recurrence. Combined vagotomy in perforated duodenal ulcer represents a pathogenetically substantiated and effective surgical treatment method.

Keywords Perforated duodenal ulcer, Combined vagotomy, Simple ulcer suturing, Acid-peptic aggression, Ulcer recurrence

1. Introduction

Perforated duodenal ulcer remains one of the most severe emergency conditions in abdominal surgery and is characterized by a high incidence of complications, peritonitis, and disease recurrence. The simple suturing technique, which is widely used in surgical practice, does not completely eliminate the ulcer regarded as an antigenic provoking factor, nor does it adequately address the pathogenetic mechanisms of the disease [12]. In recent years, combined vagotomy has been considered an effective surgical approach aimed at reducing gastric acid secretion and lowering the risk of ulcer recurrence [7].

Severe destructive changes associated with perforated duodenal ulcers, including perforation, penetration, hemorrhage, and pancreatic complications, considerably complicate the choice of surgical tactics [11]. In particular, delayed hospitalization has been associated with a significant increase

in the risk of peritonitis and postoperative complications [9]. Furthermore, early postoperative infectious complications and functional disorders adversely affect treatment outcomes [10].

Although laparoscopic and minimally invasive surgical techniques are increasingly being implemented in modern abdominal surgery, comparative evaluation of the clinical effectiveness of various surgical approaches from the standpoint of evidence-based medicine remains highly relevant [6,13]. Some authors have also proposed conservative treatment strategies; however, the risks of infectious-inflammatory complications and recurrence remain high in cases of perforation [8].

In this regard, a comparative analysis of the outcomes of combined vagotomy and simple suturing in perforated duodenal ulcer is of considerable scientific and practical importance, particularly in terms of reducing postoperative complications and preventing disease recurrence.

Aim of the Study. To comparatively evaluate the outcomes of combined vagotomy and simple suturing in patients with perforated duodenal ulcer and to determine their effectiveness in reducing postoperative complications and disease recurrence.

* Corresponding author:

xakimjon9987@gmail.com (Abdullaev Khakimjon Makhmudjonovich)

Received: May 8, 2026; Accepted: May 25, 2026; Published: May 28, 2026

Published online at <http://journal.sapub.org/ajmms>

2. Materials and Methods

The study was conducted based on the data of patients treated for perforated duodenal ulcer between 2020 and 2026. A total of 143 patients were analyzed. Of these, 97 patients comprised the control group, while 46 patients constituted the main group (Table 1).

In the control group, 78 patients were male and 19 were female. Among them, 85 patients underwent open suturing of the perforated duodenal ulcer via laparotomy followed by eradication therapy, whereas 12 patients underwent laparoscopic closure of the perforated ulcer with eradication therapy. The age of patients ranged from 19 to 92 years.

The main group consisted of 46 patients, including 38 males and 8 females. These patients underwent combined vagotomy together with excision of the perforated duodenal ulcer. The patients' age ranged from 16 to 69 years.

All patients underwent general clinical, laboratory, and instrumental examinations. During the evaluation process, medical history, the time interval between ulcer perforation and hospital admission, clinical diagnosis, type of surgical intervention, and duration of surgery were assessed.

Additionally, gastric acidity, autonomic status, Aschner test results, *Helicobacter pylori* infection, and immunological

parameters (IgA, IgM, and IgG) were investigated. Hyperacidic condition, vagotonic autonomic background, and positive *Helicobacter pylori* status were considered important criteria for selecting combined vagotomy.

The mean operative time in the control group was 30–40 minutes, whereas combined vagotomy with ulcer excision in the main group required 40–50 minutes (Table 2).

The study results were comparatively analyzed, and postoperative complications, clinical course, and recurrence rates were evaluated.

3. Results

During the study, the outcomes of surgical treatment in 143 patients with perforated duodenal ulcer were analyzed. In the control group, 97 patients underwent conventional ulcer suturing, whereas 46 patients in the main group underwent combined vagotomy with excision of the perforated ulcer.

In the control group, inflammatory signs in the abdominal cavity, prolonged pain syndrome, and dyspeptic disorders were observed more frequently during the early postoperative period. In several patients, recurrent ulcer manifestations were recorded due to the persistence of a hyperacidic condition.

Table 1. Distribution of Patients by Study Groups

Parameters	Control Group	Main Group
Total number of patients	97	46
Male	78	38
Female	19	8
Open repair of perforated ulcer via laparotomy	85	–
Laparoscopic suturing	12	–
Combined vagotomy with ulcer excision	–	46
Eradication therapy	97	46

Table 2. Comparative Characteristics of Surgical Methods Used in the Study

Parameters	Simple Suturing Procedure	Combined Vagotomy
Purpose of surgery	Elimination of perforation	Elimination of perforation and reduction of acid-peptic aggression
Extent of surgery	Limited	Extended
Duration of surgery	30–40 minutes	40–50 minutes
Pathogenetic effect	Partial	More complete
Risk of recurrence	Relatively high	Relatively low
Clinical recovery	Satisfactory	Better

Table 3. Comparative Evaluation of the Clinical Effectiveness of Surgical Methods

Parameters	Control Group	Main Group
Postoperative pain syndrome	More frequent	Less frequent
Dyspeptic disorders	Relatively higher	Lower
Persistence of hyperacidic condition	Observed	Reduced
Risk of recurrence	Higher	Lower
Functional recovery	Slower	Faster
Pathogenetic substantiation	Limited	High

In the main group, patients who underwent combined vagotomy demonstrated decreased gastric secretion, more rapid relief of pain syndrome, and earlier postoperative functional recovery. In patients with a vagotonic autonomic background, combined vagotomy proved to be an effective pathogenetically substantiated method.

In patients with positive *Helicobacter pylori* status, combined vagotomy performed together with eradication therapy had a favorable effect on reducing the risk of ulcer recurrence.

The average duration of surgery in the control group was 30–40 minutes, whereas in the main group it lasted 40–50 minutes due to the extended operative volume. Nevertheless, despite the relatively longer operative time, the main group demonstrated better clinical outcomes.

The obtained results indicate that combined vagotomy with excision of the perforated ulcer is a pathogenetically justified and clinically effective surgical method for the treatment of perforated duodenal ulcer.

4. Discussion

Appropriate selection of surgical tactics in perforated duodenal ulcer is one of the key determinants of postoperative outcomes. In the present study, treatment outcomes of 143 patients were analyzed. The control group consisted of 97 patients, among whom 85 underwent open repair of perforated duodenal ulcer via laparotomy followed by eradication therapy, while 12 patients underwent laparoscopic closure with eradication therapy. The main group included 46 patients who underwent combined vagotomy together with excision of the perforated duodenal ulcer. Of these, 38 were males and 8 were females.

The analysis demonstrated that although the conventional suturing procedure is technically simpler and can be performed within a shorter time, it is primarily aimed at eliminating perforation and does not fully affect the pathogenetic mechanisms of peptic ulcer disease. In particular, persistent hypersecretion of gastric acid, hyperfunction of the vagus nerve, and continued *Helicobacter pylori* infection increase the risk of recurrent ulcer formation. This issue is especially important in young and working-age patients when evaluating long-term outcomes.

Although laparoscopic suturing has the advantage of being minimally invasive, this technique is mainly effective in patients admitted early and presenting with localized peritonitis. In cases of diffuse peritonitis, infiltrative changes, or severe inflammatory alterations around the ulcer, the laparoscopic approach may be technically limited.

Combined vagotomy with excision of the perforated ulcer, applied in the main group, represents a pathogenetically substantiated surgical approach. Reduction of gastric secretion through vagotomy decreases acid-peptic aggression and thereby lowers the risk of ulcer recurrence. At the same time, excision of the ulcer area removes inflamed and morphologically altered tissues, creating favorable conditions for improved reparative processes in the postoperative period.

The predominance of male patients in the main group confirms that perforated duodenal ulcer occurs more frequently in men. This may be explained by stress-related factors, dietary disturbances, smoking, and increased acid-peptic aggression.

The obtained findings demonstrated that combined vagotomy with excision of the perforated ulcer is not only an effective emergency surgical intervention but also a pathogenetically justified procedure aimed at reducing disease recurrence (Table 3).

Therefore, wider application of this surgical method in appropriately selected patients appears justified.

5. Conclusions

Combined vagotomy with excision of the ulcer in perforated duodenal ulcer is a pathogenetically substantiated surgical approach. This method reduces gastric acid-peptic aggression, improves postoperative clinical outcomes, and decreases the risk of disease recurrence.

REFERENCES

- [1] Bekmuradova M. S. "The effectiveness of laparoscopic surgery for perforated ulcers based on evidence-based medicine methodology." // *Economy and Society*. – 2025. – No. 4-1 (131). – P. 772–777.
- [2] Gushchik D. G. and Boshq. Tactics for ulcerative and non-ulcer gastrointestinal bleeding. // *Current issues in modern medicine and pharmacy*. – 2025.
- [3] Linchenko A. A. and Boshq. Modern approaches to assessing the effectiveness of laparoscopic surgery for perforated ulcers based on evidence-based medicine methodology.
- [4] Panin S. I. and Boshq. Treatment of perforated ulcers of the stomach and duodenum in late hospitalization. // *Volgograd Scientific Medical Journal*. – 2025. – № 1. – B. 47–51.
- [5] Smirnov A. A. Rationale for the tactics of minimally invasive removal of submucosal neoplasms of the stomach.
- [6] Styazhkina S. N. and Boshq. A case of complicated duodenal ulcer accompanied by perforation, penetration, bleeding with extensive infiltrate of the common hepatic duct and the development of pancreatic necrosis // *Experimental and clinical gastroenterology*. – 2025. – № 2(234). – B. 250–254.
- [7] Teshayev O. R., Murodov A. S., Kurbanov Sh. R. Nitrogen oxide (NO) and its effects on the liver // *Bulletin of the Association of Pulmonologists of Central Asia*. – 2025. – Vol. 12. – No. 7. – P. 148–155.
- [8] Shcheglov E. A., Alontseva N. N., Filippova E. V. New is well forgotten old. Conservative treatment of gastric and duodenal perforation using the Taylor method // *Continuous Medical Education and Science*. – 2025. – Vol. 20. – No. 1. – P. 11–17.
- [9] Ishii K. et al. Novel factors associated with surgical conversion for duodenal perforation: case control study //

Annals of Medicine and Surgery. – 2026. – Vol. 88. – No. 5. – P. 2738–2742.

- [10] Kukhtenko Y. V. et al. Combined acute surgical pathology of the hepatopancreatoduodenal zone: gastric resection or stem vagotomy with gastric drainage surgery? A clinical case // Russian Surgical Journal. – 2025. – Vol. 1. – No. 1. – P. 79–83.
- [11] Monica O. M. A. et al. Emergency Management of Perforated Gastro-Duodenal Ulcers: Surgical Strategies, Outcomes, and Prognostic Determinants in a Tertiary Eastern European

Center // Medicina. – 2025. – Vol. 61. – No. 11. – P. 2029.

- [12] Puthiyakunnel Saji A. et al. Outcomes of bailout tube duodenostomy in the management of hostile nonsalvageable perforated duodenal ulcer: a systematic review and meta-analysis // The Annals of The Royal College of Surgeons of England. – 2026.
- [13] Sarker M. et al. Early Postoperative Complications of Duodenal Ulcer Perforation: Study in a Tertiary Care Hospital in Bangladesh // Jalalabad Medical Journal. – 2025. – Vol. 22. – No. 1. – P. 23–27.