AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

WAYS TO INCREASE THE EFFECTIVENESS OF SURGICAL TREATMENT OF HIASPHAEGIAL HERNIAS

Ismailov U.S., Yakhubov I.Y., Ismailov M.U., Atajanov T.Sh.
Department of General Surgery, Tashkent State Medical University, Tashkent, Uzbekistan.

Annotation: The OBJECTIVE of the study is to consider the main problems and to define the ways to improve the efficiency
of surgical treatment of hiatal herniae. MATERIAL AND METHODS. 518 patients were operated, the plasty of hiatal
hernia – posterior crurorаphy – was carried out in 191 (26.9%) of patients, the prosthetic materials via the method
«mesh-reinforced» were used in 327 (63.1%) of patients. RESULTS. The general surgical complications were noted
in 43 (8.3 %) patients, the delayed side effects were in 118 (22.8 %) patients, relapse of hiatal hernia were in 27
(5.9 %) patients. CONCLUSION. The high frequency of relapses remains the main problem in surgery of hiatal hernia.

Keywords: hiatal herniae, types I–IV hiatal herniae, antireflux surgery

Introduction

Introduction. Hiatal hernias (HH) are among the most common types of visceral anatomical abnormalities. It is believed that in people under 30 years of age, such anatomical changes occur in 10–15% of cases, while in individuals over 50 years of age, the incidence is 60% [1–6].
There are four types of anatomical changes. Axial hernias (type I) are characterized by the axial displacement of the gastroesophageal junction and part of the stomach into the chest. In paraesophageal hernias (type II), the gastroesophageal junction is located in the abdominal cavity, while the stomach is displaced through the hiatal opening into the mediastinum. Mixed hernias (type III) combine the anatomical changes of the first two types. Hiatal hernias (type IV) are the displacement of any abdominal organ other than the stomach into the thoracic cavity [1, 4, 5, 7].
The clinical manifestation of axial hiatal hernias of the diaphragm is gastroesophageal reflux. The indication for surgical treatment of type I hiatal hernias is gastroesophageal reflux disease that is refractory to medical therapy [1, 5, 7–9].
Hiatal hernias of types II–IV often impair food passage due to deformation, kinking, or volvulus of the esophagus, stomach, or other hollow abdominal organs. These
changes determine the clinical manifestations and indications for surgical treatment [4, 10–26].

Materials and Methods

Materials and methods. From 2023 to 2025, 518 patients with GERD underwent surgical treatment at the Twins Medical Center in Tashkent.
Axial hiatal hernias were the most common, occurring in 445 patients (85.9%), and paraesophageal hernias (types II-III) in 73 (14.1%) cases. There were no patients with type IV

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

anatomical changes. Recurrent hernias of the esophageal orifice of the diaphragm occurred in 31 (6%) of 518 patients. In cases of repeated stomach displacement into the mediastinum, changes were characteristic of type I in 11 patients (2.1%), and of types II-III in 20 (3.9%).

The basis for surgical treatment of axial (type I) hernias was gastroesophageal reflux resistant to medical therapy. For paraesophageal (types II-III) hernias, the indication for surgical intervention was the presence of clinical manifestations of stomach dislocation into the thoracic cavity. All surgical interventions were initially performed laparoscopically. Conversion was necessary in 2 (0.4%) patients due to splenic injury, necessitating splenectomy. In another 2 patients with recurrent hiatal hernias, repeat intervention through the abdominal cavity was not possible, and the surgery was performed through a thoracotomy approach.

A mandatory requirement for surgical interventions was complete mobilization of the diaphragmatic crura, the lower thoracic and abdominal esophagus, the gastroesophageal junction, and the fundus of the stomach.

For paraesophageal hernias, all 73 patients underwent complete mobilization of the hernial sac in the mediastinum and complete or partial excision of its abdominal portion. Adherence to this principle reduced the risk of hiatal hernia recurrence due to repeated migration of abdominal organs into the mediastinum through the channel formed by the peritoneum.

The basis for using prostheses to close the hiatal orifice was a size greater than 5 cm or mechanical weakness (hypotrophy, atony, fibrosis) of the muscular crura of the diaphragm. These criteria are most often considered in the literature as indications for their use. Shortened esophagus length was considered a contraindication to the use of implants. This anatomical situation creates additional conditions for contact between the edge of the prosthesis and the wall of the abdominal esophagus, gastroesophageal jun ction, or cardiac portion of the stomach if they are re-displaced into the mediastinum.

From this perspective, for each surgical intervention, the safety of using prosthetic materials was assessed after completing the mobilization of all necessary structures (esophagus, gastroesophageal junction, cardiac and fundic sections of the stomach). Normal esophageal length was defined as the free position of the gastroesophageal junction at least 2 cm below the crura of the diaphragm. In all other cases, shortening of the esophagus was observed. This situation was observed in 19 (3.7%) patients. Two (10.5%) of these patients had a recurrent hernia.

The need and feasibility of using prosthetic materials to strengthen the esophageal opening of the diaphragm were demonstrated in 327 (63.1%) of 518 patients.

The diaphragmatic crura were sutured with non-absorbable, atraumatic suture on a 60 Fr probe. To strengthen the crurorаphy, heavy-duty polypropylene prostheses (Prolen, Ethicon, and Esfil from Lintex) were used. The choice of implant material was determined not only by their strength but also by their high adhesive properties. For hiatal openings ranging from 5 to 8 cm in size, U-shaped or linear prostheses were used.

They were placed on the diaphragmatic crura sutured behind the esophagus, overlapping the suture area by 2.5–3 cm. When the esophageal opening of the diaphragm exceeded 8 cm, anterior and posterior grafting of the muscular crura was performed with separate sutures to reduce tissue stress. The anterior and posterior crurorаphy areas were covered with linear implants 5–6 cm wide.

The prosthetic material was always placed no closer than 2–3 mm from the edge of the esophageal opening of the diaphragm and secured with a hernia stapler. There was no need to secure the implants with ligature sutures. To further reduce the risk of complications associated

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

with the use of prostheses, fundoplication was always performed, and the cuff (or part of it) was placed between the dorsal surface of the esophagus and the implant fixed in the posterior crurorraphy area.

Results.

Hiatal orifice reconstruction using native tissue was performed in 191 (26.9%) of 518 patients. All patients underwent posterior crurorraphy with non-absorbable material on a caliper tube to prevent mechanical dysphagia due to compression of the esophagus by the crura of the diaphragm.

To reduce tissue stress and the risk of ligature protrusion, 12 (63.1%) of 19 patients underwent posterior and anterior (lateral) crurorraphy to shorten the esophagus.

In the remaining 7 patients, it was not possible to perform a complete reconstruction without tensioning the muscular crura, so the size of the esophageal orifice was only reduced to the maximum possible size.

Antireflux reconstruction was a mandatory step in the surgical intervention. For axial hernias and gastroesophageal reflux, the choice of reconstruction technique was based on esophageal manometry data. In the presence of any esophageal kinetic abnormalities, preference was given to soft reconstructions: A. Toupet or R. Nissen's "short floppy." In patients with normal esophageal motility and gastroesophageal reflux, surgeries were performed that allowed for maximum control, using the original R. Nissen technique or the R. Nissen-M. Rossetti technique. For paraesophageal hiatal hernias (including type III), a partial posterior fundoplication according to A. Toupet was used. In cases of esophageal shortness, a circular "short floppy" reconstruction according to R. Nissen was always performed, as it is more resistant to failure during recurrence and can function even in the thoracic cavity. Delayed side effects occurred in 118 cases (some patients experienced multiple adverse effects simultaneously). The most common were flatulence, observed in 93 (17.9%) patients, and transient dysphagia, observed in 62 (11.9%) patients. Both types of functional disorders resolved spontaneously over time.

Persistent dysphagia occurred in 6 patients.

In 3 patients, this complication was resolved by endoscopic balloon dilation of the circular fundoplication cuff, and in 3 patients, by repeat surgery.

Long-term results of surgical treatment for hiatal hernia (HH) were monitored for a period of 1 to 7 years in 453 (87.4%) of 518 patients. Hiatal orifice repair using only native tissue was performed in 17 (63%) of the 27 patients with recurrent hiatal hernias, and a prosthetic was used in 10 (37%).

All 19 patients with diagnosed esophageal shortening also had an intrathoracic placement of the fundoplication cuff. However, this situation was not considered a true recurrence of hiatal hernia.

No complications associated with the use of prosthetic materials for correcting the size of the hiatal orifice were observed during the specified observation periods.

Side effects of surgical treatment of hiatal hernias (flatulence and bloating) persisted in the late follow-up period in 18 patients, but significantly regressed compared to the early postoperative period. A total of 426 (94%) patients reported a subjectively positive effect from the surgical treatment. Complete recurrence of all initial symptoms of the disease occurred in only 27 patients with recurrent hiatal hernia.

Conclusions.

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

1. Many issues in the surgical treatment of hiatal hernias remain unresolved. The key problem in this area of surgery is the high rate of recurrent gastric displacement into the thoracic cavity. The main reasons for surgical failure are shortened esophageal length, large hiatal openings, and mechanical weakness of the tissues that form them.
2. An analysis of surgical treatment outcomes for 518 patients with hiatal hernias, types I–III, reflects the main theoretical concepts of the problem and illustrates current approaches to treating this condition.

L I T E R A T U R A:

1. Kubyshkin V. A., Kornyak B. S. Gastroesophageal reflux disease. Moscow: SPROS, 1999. 208 p. [Kubyshkin V. A., Kornyak B. S. Gastroesophageal reflux disease. Moscow: SPROS. 1999. 208 p. (In Russ.)].
2. Puchkov K. V., Filimonov V. B. Hernias of the esophageal opening of the diaphragm. Moscow: Medpraktika, 2003. 171 p. [Puchkov K. V., Filimonov V. B. Hernias of the esophageal opening of the diaphragm. Moscow: Medpraktika. 2003. 171 p. (In Russ.)].
3. Dean C., Etienne D., Carpentier B. et al. Hiatal hernias // Surg. Radiol. Anat. 2012. Vol. 34. P. 291–299.
4. Farhangmehr N., Liakakos T., Charalabopoulos A. Paraoesophageal hernias: a surgical perspective // Gastrointest. Dig. Syst. 2017. Vol. 7. P. 520–523.
5. Granderath F., Kamolz T., Pointner R. Gastroesophageal reflux disease. Wien: Springer-Verlag, 2006. 320 p.
6. Kohn G. P., Price R. R., Demeester S. R. et al. Guidelines for the management of hiatal hernia // Society of American Gastrointestinal and Endoscopic Surgeons, CA, 2013. 42 p. URL: https://www.sages.org/ publications/guidelines/guidelinesforthemanagementofhiatalhernia/ (accessed November 19, 2018).
7. Stefanidis D., Hope W. W., Kohn G. et al. Guidelines for surgical treatment of gastroesophageal reflux disease // Surg. Endosc. 2010. Vol. 24. P. 2647–2669.
8. Vasilevsky D. I., Kulagin V. I. Surgical treatment of gastroesophageal reflux disease / edited by S. F. Bagnenko. Moscow, 2015. 216 p. [Vasilevskij D. I., Kulagin V. I. Surgical treatment of gastroesophageal reflux disease / edited by S. F. Bagnenko. M., 2015. 216 p. (In Russ.)].
9. Fuchs K. H., Babic B., Breithaupt W. et al. EAES recommendations for the management of gastroesophageal reflux disease // Surg. Endosc. 2014. Vol. 28. P. 1753–1773.
10. Grubnik V. V., Malinovsky A. V. Complications and unsatisfactory results of laparoscopic repair of hiatal hernias: analysis of long-term results and repeat operations // Kharkiv Surg. Shk. 2013. No. 1. P. 106–111. [Grubnik V. V., Malinovsky A. V. Complications and unsatisfactory results of laparoscopic repair of esophageal hernias: analysis of long-term results and repeat operations. Kharkiv surgical school. 2013. No. 1. P. 106–111].
11. Chernousov A. F., Bogopolsky P. M., Kurbanov F. S. Esophageal surgery. Moscow: Meditsina, 2000, 352 p. [CHERNUSOV A. F., BOGOPOLSKIY P. M., Kurbanov F. S. Esophageal surgery. M.: Meditsina, 2000. 352 p. (In Russ.)].
12. Arévalo C., Luna R. D., Luna-Jaspe C. A. et al. Literature review: a surgeon's view of recurrent hiatal hernia // Rev. Col. Gastroenterol. 2015. Vol. 30. P. 443 – 451.
13. Furnée E., Hazebroek E. Mesh in laparoscopic large hiatal hernia repair: a systematic review of the literature // Surg. Endosc. 2013. Vol. 27. P. 3998–4008.
14. Imperatorea K., Olivierib B., Vincentelli C. Acute gastric volvulus: a deadly but commonly forgotten complications of hiatal hernia // Autopsy and Case Reports. 2016. Vol. 6. P. 21–26.

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

15. Jeul A. Review of literature on laparoscopic prosthetic repair of giant hiatal hernia than pure anatomical repair of crura // W. J. Laparosc. Surg. 2010. Vol. 3. P. 85–90.
16. Kahrilas P., Kim H., Pandolfino J. Approaches to the diagnosis and grading of hiatal hernia // Best Practice. Res. Clin. Gastroenterol. 2008. Vol. 22. P. 601–616.
17. Koch O., Kaindlstorfer A., Antoniou S. Influence of the size of the hiatus on the rate of reherniation after laparoscopic fundoplication and refundopilication with mesh hiatoplasty // Surg. Endosc. 2011. Vol. 25. P. 1024–1030.
18. Le Page P. A., Furtado R., Hayward M. et al. Durability of giant hiatus hernia repair in 455 patients over 20 years // Ann. R. Col. Surg. Engl. 2015. Vol. 97. P. 188–193.
19. Lidor A. O., Steele K. E., Stem M. et al. Long-term quality of life and risk factors for recurrence after laparoscopic repair of paraesophageal hernia // J.A.M.A. Surg. 2015. Vol. 150. P. 424–431.
20. Lugaresia M., Mattiolia S., Araminib B. et al. The frequency of true short oesophagus in type II–IV hiatal hernia // Eur. J. Cardio-Thoracic Surg. 2013. Vol. 43. P. 30–36.
21. Luketich J. D., Nason K. S., Christie N. A. et al. Outcomes after a decade of laparoscopic giant paraesophageal hernia repair // J. Thorac. Cardiovasc. Surg. 2010. Vol. 139. P. 395–404.
22. Mittal S. K., Bikhchandani J., Gurney O. et al. Outcomes after repair of the intrathoracic stomach: objective follow-up of up to 5 years // Surg. Endosc. 2011. Vol. 25. P. 556–566.
23. Pointner R., Granderath F. Hiatus hernia and recurrence: the Achilles heel of antireflux surgery? // Chirurg. 2008. Vol. 79. P. 974–981.
24. Shamiyeh A., Szabo K., Granderath F. A. et al. The esophageal hiatus: what is the normal size? // Surg. Endosc. 2010. Vol. 4. P. 988–991.
25. Stadlhuber R. J., Sherif A. E., Mittal S. K. et al. Mesh complications after prosthetic reinforcement of hiatal closure: a 28-case series // Surg. Endosc. 2009. Vol. 23. P. 1219–1226.
26. Watson D. I., Thompson S. K., Devitt P. G. et al. Laparoscopic repair of very large hiatus hernia with sutures versus absorbable mesh versus nonabsorbable mesh. A randomized controlled trial // Ann. Surg. 2015. Vol. 261. P. 282–289