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Modern Aspects of Prevention of Hernias of the Linea Alba of the Abdomen After Laparotomy

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Abstract

Reducing the frequency of postoperative hernia formation in the most commonly used mid-laparotomy incisions in surgery. Materials and research methods. In the period from 2013 to 2023, in the Department of Abdominal Surgery of Khorezm Regional Multidisciplinary Medical Center, prospective studies were conducted on 461 patients who underwent emergency laparotomy along the white line of the abdomen and developed a hernia during one year. Results. Isolated upper-middle laparotomy was performed in 48 patients, middle-middle laparotomy in 116 patients, lower-middle laparotomy in 39 patients.

Complications of hernia formation after surgery were observed in 19 (40%) patients with upper-middle laparotomy, 30 (26%) patients with middle-middle laparotomy, and 9 (23%) patients with lower-middle laparotomy. Summary. When surgery is performed on the white line of the abdomen, in order to prevent subsequent hernia and eventration, it should be noted that the epimesogastric area of the white line of the abdomen is the weakest part in the formation of a hernia after the examination.

Keywords:

abdominal white line; ventral hernias; laparotomy; continuous seam.

I.INTRODUCTION

The problem of postoperative ventral hernias has not lost its relevance today [1-3]. Basically, they occur in 7-24% of cases after operations performed with mid-laparotomy incisions [4, 5]. The use of a continuous suture during allogeneoplasty reduces the frequency of postoperative hernia formation [6]. On the other hand, early local complications (hematoma, seroma, suppuration of the wound) after the operation of hernia cutting are also common (45%) [7]. In the first year after surgery, complications with hernia can occur up to 17% [8]. The only way to prevent this complication is to eliminate the anterior abdominal wall after laparotomy in a perfect way.

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In this case, one of the main requirements is to eliminate the hernia gate by suturing the wound edges without over-tightening, with minimal damage to the rectus muscles and the surrounding subcutaneous fat cells. The presence of intra-abdominal hypertension in the post-surgical period, especially after emergency operations, increases the tension of the muscles of the anterior abdominal wall, and this process continues until the formation of a scar in the surgical wound, further increases the demand for the strength of the sutures.

Therefore, in order for the treatment to be successful, we need to ensure that there is no hypertension in the abdominal cavity during the plastic surgery and that the weight of equal pressure falls on each of the sutures. Non-observance of these rules causes sutures to cut through tissue, disrupt microcirculation and tissue trophism, leading to postoperative hernia formation [9, 10]. At the same time, the main direction of herniology is a differentiated individual approach to the choice of the method of surgical operation [11].

The purpose of the study

Reducing the occurrence of postoperative hernias in the most commonly used mid-laparotomy incisions in emergency surgery.

Materials and Research methods

The study was carried out in two stages. In the first phase, a prospective study was conducted on 461 patients who underwent emergency laparotomy between 2013 and 2023 and who had recurrent hernias over a period of one year.

253 (55%) of them were men, 208 (45%) were women, and their age ranged from 23 to 89 years. In this case, the method of closing the laparotomy wound, the type of surgical incision and the part of the white line of the abdomen were evaluated. Pain in the scar area after surgery was given special attention because it is a predictor of hernia formation. Ultrasound examination or physical examination revealed the presence of a hernia gate in the aponeurosis. The presence of a hernia, its location, size, and its relation to the scar after surgery were clarified.

At the next stage, different parts of the white line of the abdomen and the strength of different types of sutures placed on the aponeurosis were clarified. If the patient died, these criteria were studied within 24 hours. A total of 18 corpses were studied. Their age ranged from 49 to 88 years. In 7 cadavers, the aponeurosis was not opened, and in 11, the aponeurosis was sutured. In order to determine in which part of the white line of the abdomen the incision was made, we based on the external anatomical landmarks.

It was divided into 2 groups depending on the suture of the aponeurosis. The first group was made up of patients who had individual knotted sutures with a suture spacing of 0.5 cm and a distance of 1.0 cm from the edge of the wound. The second group consisted of patients of the same size, but with a continuous suture. Tensiometric testing was then performed on each sutured fragment.

Results and Discussions

Isolated upper-middle laparotomy was performed in 48 patients, middle-middle laparotomy in 116 patients, lower-middle laparotomy in 39 patients. Complications of hernia formation after surgery were observed in 19 (40%) patients with upper-middle laparotomy, 30 (26%) patients with middle-middle laparotomy, and 9 (23%) patients with lower-middle laparotomy.

Thus, postoperative hernia occurred most often (40%) in patients who underwent upper-middle laparotomy.

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The method of suturing the aponeurosis affected the frequency of postoperative hernia formation. A hernia was formed in 101 patients, which was 22%, when applying conventional layer-layer knotted sutures (kapron). 32 (6.9%) patients performed a knotted suture, taking all layers of the abdominal wall together. On the other hand, post-examination hernia occurred in 12 cases, which was 37.5%. Continuous suturing with Prolene #0 suture was performed in 38 (8.2%) patients, of which 5 (13%) had postoperative herniation.

Thus, the most (37.5%) hernia formation after allohernioplasty was observed when all layers of the anterior abdominal wall were removed together and a knotted suture was placed. In the second place (22%), the most commonly used layer in surgery - the layer knot suture was found in patients. The least (13%) cases were recorded in patients with a continuous suture of the hernia after examination.

In the second stage, the length of each anatomical part of the white line of the abdomen was determined. The height of the epigastric part is from 11.8 cm to 14.2 cm (average 12±0.8 cm), the mesogastric area is from 11.3 to 13.6 cm (average 11.9±1.1 cm), the hypogastric area from 7.2 to 8.5 cm (average 8±0.5 cm).

Taking into account the average size, the white line of the abdomen was divided into 5 cm fragments. 3 fragments were distinguished in the epigastric area, 2 fragments in the mesogastric area and 1 fragment in the hypogastric area.

The strength of the upper fragment of the epigastric area is from 275.5 N to 313 N (average 296.6±16.4 N), the strength of the second fragment is from 251.4 N to 286.8 N (average 283.1±15 N), in the third fragment 287.6 N to 301.1 N (mean 287.7±13.2 N). So, the strength of the second fragment was lower than the first fragment.

The strength of the upper fragment of the mesogastric area is from 244.4 N to 272.6 N (average 258.6±12.4 N), in the second fragment from 275.5 N to 298.7 N (average 285.5±10 N). In the hypogastric area, the strength was from 323.5 N to 354.2 N (average 338.2±12.6 N), that is, the strength was higher than in the epigastric and mesogastric areas.

Thus, depending on the specificity of the structure of the white line of the abdomen, the weakest part is the middle part of the epigastric region (5-10 cm from the wedge-shaped tumor) and the part 5 cm above the navel, and the frequency of hernias in these areas is high.

Tensiometric examination of each 5 cm area showed that the strength of continuous sutures (from 187.5 N to 242.0 N, average 218.2 N ± 25.1 N) was higher than that of discrete sutures (138.1 N to 206, up to 9 N, on average 179.1 N±31.4 N) is high.

Conclusion

When surgery is performed on the white line of the abdomen, in order to prevent subsequent hernia and eventration, it should be noted that the epimesogastric area of the white line of the abdomen is the weakest part in the formation of a hernia after the examination

The use of continuous sutures when eliminating the defect of the anterior abdominal wall reduces the occurrence of hernias after surgery.

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References

1. Kuznetsov N.A., Schastlivtsev I.V., Tsaplin S.N. The role of surgical access in the development of postoperative ventral hernias.Surgery. The name of the magazine is N.I. Pirogova. 2011;7:62-67.
2. Zatsarinnyi A. V., Budarev V. N., Muravev S. Yu., Avdeev S. S., Vornachev S. A. [i dr.]. Results of functionally oriented operation and herniology. Nauka molodyx (Eruditio Juvenium). 2013;3: 34-43.
3. Dur A. H., den Hartog D., Tuinebreijer W. E. Low recurrence rate of a two layered closure repair for primary and recurrent midline incisional hernia without mesh. Hernia. 2009;13(4):421-426. https://doi.org/10.1007/s10029-009-0487-0
4. Sultangaziev R. A., Bebezov Kh. S., Nurmanbetov D. N., Abirov K. E., Togochuev A. A. Operative access and the method of expansion of the anterior abdominal wall in patients with portal hypertension. Vestnik KRSU. 2015;15(7):146-148.
5. Georgiev-Hristov T., Celdrán A. Comment to: A systematic review of the surgical treatment of large incisional hernia. Hernia. 2015;2:89-101. https://doi.org/10.1007/s10029-015-141
6. Fedoseev A.V., Rybachkov V.V., Inyutin A.S., Lebedev S.N., Muravev S.Yu. Prevention of postoperative hernias in median laparotomy. Medical Bulletin of the North Caucasus. 2019;14(1.1):16-18. DOI – https://doi.org/10.14300/mnnc.2019.14038
7. Babadjanov B.R., Yakubov F.R., Babadjanov M.B. Surgical treatment of postoperative ventral hernias in conditions of infection. Herniology. 2005. No. 2. S. 33-35.
8. Fedoseev A.V., Muravev S.Yu., Budarev V.N., Inyutin A.S., Zatsarinnyy V.VSome features of the white line of the abdomen as harbingers of postoperative fluid. Russian Medical and Biological Bulletin named after Academician I.P. Pavlov.2016;1:109-115.
9. Rahbari N.N., Knebel P., Diener M.K. Current practice of abdominal wall closure in elective surgery. Is there any consensus? BMC Surg. 2009;15(9):8. https://doi.org/10.1186/1471-2482-9-8
10. Yurasov A.V. The selection of the method of plastic post-operative ventral hernia. Annaly of Surgery. 2010;6:23-27.
11. Kuryazov B.N., Babadjanov A.R., Ruzmatov P.Y., Sapaev D.S., Ruzmetov B.A. Experience of surgical treatment of postoperative abdominal hernias with the use of endoprostheses. All-Russian surgical forum-2018 with international participation "Almanac of the Institute of Surgery named after A.V. Vishnevsky" No. 1, April 3-6, 2018. - Moscow, Russia. - S. 280-281.