

Incisional Ventral Hernia

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Received: November 08, 2021

Published: December 24, 2021

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Abstract

Ventral hernia is a bulge of tissues through an opening of weakness within abdominal wall muscles without surgery. Incisional hernia is defined as an abdominal wall defect at the site of abdominal wall closure and more than 10% of patients, who undergo laparotomy, experience the hernia. Although the incisional hernia may stay silent and asymptomatic for years, it may enlarge over time and can give rise to complications including pain, discomfort, bowel obstruction, incarceration, and strangulation. Also it may adversely affect an individual's quality of life. About 17% will lead to incarceration or strangulation with 0.3% mortality, so early surgical intervention is important once the incisional hernia has been diagnosed.

Keywords: Laparoscopic Surgery; Trocar Hernia; Morbid Obesity; Polypropylene Endoprosthesis

Introduction

The development of surgical specialties in recent decades has made it possible to reduce the invasiveness of surgical interventions, reduce the frequency and severity of complications, and improve the cosmetic effect of the procedure. The benefits of minimally invasive surgery are undeniable. Along with this, the emergence of high technologies has given rise to new types of surgical complications, unknown or little known to previous generations of doctors. Complications, their prevention and treatment are an integral part of any surgical specialty. Reducing the frequency and severity of undesirable consequences of surgical interventions, perhaps, primarily lies through the analysis of the causes, understanding the mechanism of their development. Endo-surgery, in contrast to operations performed in the traditional way, has a number of specific features that can potentially cause undesirable consequences. Considering the large number of laparoscopic operations performed in the world, the present complication rate seems insignificant. However, many authors believe that their number is underestimated, and complications of laparoscopy are

much more common.

The widespread introduction of laparoscopic operations is predetermined by their obvious advantages over laparotomic interventions and is primarily associated with minimizing trauma to the abdominal wall and early rehabilitation of patients. At the same time, the number of complications after laparoscopic operations remains significant [1-3]. One of the postoperative complications that significantly reduce the quality of life of patients is the formation of postoperative hernias. According to foreign literature, complications associated with the use of a trocar in patients occur in approximately 1-6% of cases [4,5].

Due to the use of the expander, especially in overweight patients, after removing the gallbladder during laparoscopic cholecystectomy, the peritoneum becomes more susceptible to stretching due to a violation of its integrity, and the wound, given the thickness of the subcutaneous tissue, is not always sutured layer by layer, and in the area of the wound the abdominal wall loses its strength, which leads to the appearance of trocar ventral hernias. According to lit-

erature data, trocar hernias occur in 0.23% of cases at the site of a 10 mm port, in 1.9% of cases at a 12 mm port and in 6.3% of cases at a 20 mm port. These figures increase markedly to 12% for obese patients with a body mass index greater than 30 kg/m^2 [1,3].

Surgical treatment of hernias refers to reconstructive surgery, which always requires a special constructive approach and the search for more advanced, different from the usual methods of operation.

Purpose of the study

To determine the factors influencing the formation of trocar hernias, to develop methods for their prevention.

Materials and Methods

Since 2017, at the clinical bases of the Department of Surgical Diseases and New Technologies, 14 patients with postoperative ventral hernias that have arisen after laparoscopic interventions have been operated. The overwhelming majority of patients were women - 11 (78.6%), there were 3 men (21.4%), all patients were between 33 and 70 years old. In the course of the retrospective analysis, it was found that the largest number of patients with postoperative ventral hernias is a group of patients - 10 people (71.4%), who had previously undergone laparoscopic cholecystectomy. 3 patients had a history of gynecological operations, 1 - diagnostic laparoscopy. The hernial defect, as a rule, was localized in the paraumbilical region (at the place of introduction of a 10 mm trocar, from where the gallbladder was removed). In 6 patients from this group in the postoperative period, various kinds of inflammatory complications from the access side were noted in the form of infiltration of the surgical wound or its suppuration. The appearance of a hernial protrusion was noted in the period from 2 to 12 months of the postoperative period. The dimensions of the hernia orifice ranged from 1.5x1.5 cm to 5.5x5.5 cm. Overweight and morbid obesity ($\text{BMI} > 30 \text{ kg/m}^2$) occurred in 9 patients (69.2%). 11 (78.6%) patients had reducible incisional ventral hernias, 3 (21.4%) patients had irreducible incisional ventral hernias. We did not observe any cases of infringement, and all patients with trocar hernias identified by us were operated on in a planned manner. Routine surgical interventions were performed under local infiltrative anesthesia (12) or combined endotracheal anesthesia (2).

All patients underwent routine surgery underwent hernia repair with plastic surgery of the anterior abdominal wall using a

mesh xenograft using the onlay technique. Polypropylene meshes were used with fixation of the endoprosthesis with a prolene thread with separate interrupted sutures. A follow-up examination of patients up to 5 years after surgery revealed no recurrence of hernias.

Having analyzed the frequency and causes of the formation of trocar after

laparoscopic hernias, we came to the conclusion that some factors predisposing to the appearance of hernias (old age, obesity, functional insufficiency of connective tissue) cannot be influenced by the surgeon, but they must be remembered and taken into account when choosing operational tactics. When using large-diameter instruments during laparoscopic interventions (trocars, evacuators, retractors, etc.), wound infection in the trocar insertion zone and removal of the removed organ or tissue, as well as unsatisfactory suturing of the aponeurosis at the site of the access made, prevention of herniation is necessary. For the prevention of surgical wound suppuration, we consider it necessary: to exclude contact of the removed organ with the subcutaneous tissue of the wound canal, as well as adequate antibiotic therapy in patients operated on for acute surgical diseases.

Much attention should be paid to the method of closure of the trocar wound. We paid attention to the fact that the majority of patients (69.2%) with trocar hernias were overweight and morbid obesity. When using the standard technique of suturing trocar wounds in obese patients, one of the most important conditions is often not observed - the comparison of homogeneous tissues, as a result of which the maximum strength of the connection is absent. This is due to the inconvenience of manipulation in the wound during its suturing: a small area and a large depth of the wound, inadequate visual control from the side of the wound. Since 2005, we have been using a method of preventing trocar hernias in patients with overweight when performing laparoscopic cholecystectomy. The essence of the method is as follows. Trocar laparocentesis and cholecystectomy are performed. Taking into account the high risk of infectious complications in obese patients from the operating approaches, during evacuation of the gallbladder, in order to exclude contact with the wound canal, a 20 mm dilator is used (RF patent for utility model No. 58893, 2006), which is installed at the trans umbilical point. Then the expander is removed to remove the gallbladder. A round explant with a diameter of 2.5-3 cm is cut out of a polypropylene mesh, which is placed over the aponeurosis

and fixed to it with 2-3 sutures. After that, the skin is sutured. The method was applied in 69 patients with excessive and deep subcutaneous tissue.

Conclusion

The early postoperative period in all patients was uneventful. Postoperative wounds in all patients healed by primary intention. Examination in the long-term period (up to 4 years after the surgical intervention) did not reveal the formation of a trocar hernia in any case.

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