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The hernia in the postoperative scar – can it be avoided?

Michał Tobiasz[1], Agnieszka Turkosz[1], Mateusz Smorąg[1], Maciej Tobiasz [2], Paweł Polski[3]

[1] Student of Medical University of Lublin
[2] Department of Plastic Surgery. Eastern Center of Burns Treatment and Reconstructive Surgery of Łęczna
[3] Department of General and Transplant Surgery and Nutritional Treatment, Medical University of Lublin.

Adderss fot correspondence: Paweł Polski, Department of General and Transplant Surgery and Nutritional Treatment, Medical University of Lublin, 8 Jaczewskiego St, 20-954 Lublin, Poland, phone: +48 514 746 457, e-mail: maestro532@wp.pl

ABSTRACT

The surgery of hernia is the most common surgical procedure performed around the world. It estimates that every year this problem affects about 20 million people including 30% of it is a abdominal hernia. Despite constant advances in surgical technique, imaging methods and the meaning of muscle biomechanics, the hernia still pose a serious challenge to physicians. The best chance of effective cure is the first repair surgery, however, postoperative hernias occur in approximately 15-20% of patients. The aim of this work is to show the problem of hernias appearing in a scar after a previously performed operation. This article contains basic information on factors that increase the risk of hernia recurrence, classification according to the recommendations of the European Hernia Society (EHS), the clinical picture and the recommended treatment for hernia.

Key words: hernia in the scar , postoperative complications , surgical treatment

Introduction

Hernia is a pathological displacement of the contents of the body cavity beyond its correct position. It is one of the most common pathologies that accompany people from the fetious period to late old age. In the present day, most cases can be detected in the prenatal period mainly by ultrasonography. In the postnatal period, the largest group is an abdominal hernia. It is with them especially often meet not only surgeons but also primary health care physicians. [1, 4, 9, 20]

The abdominal hernia is formed within the areas of reduced resistance, containing organs or parts of organs which in normal conditions, fill the abdominal cavity. There are many classifications, however, the primary division is taking into account the place. There are:

- inguinal hernia (*łac. hernia inguinalis*) - most common occur in men (7:1);
- femoral hernia (*łac. hernia femoralis*) - more frequently observed in women;
- umbilical hernia (*łac. hernia umbilicalis*) - is formed in the area of the navel, which is an anatomical place with lower strength;
- white line hernia (*łac. hernia lineae albae)* - formed in the middle line of the body, which is between the sternum and the pubic symphysis, usually above the navel;
- hernia in the post-operative scar (*łac. hernia ventralis (cicatricea*) -may occur anywhere in the abdominal wall within the scar after the operative procedurę;
- Spiegel hernia - is formed very rarely, in the area of the lateral margin of the rectus abdominis within so-called linea semilunaris.

There is no doubt that the only effective way to treat abdominal hernia is surgery. Among the currently used methods we distinguish: classical, laparoscopic and endoscopic preperitonetic surgery. Until now, the most frequently performed repair surgery in the world is the operation of the classical (open) method. [4, 9, 10, 18, 20]

Hernia in postoperative scars are common complications of abdominal surgeries using both classical as well as laparoscopic techniques. According to the definition of EHS (European Hernia Society), postoperative hernia is a defect in the scar of postoperative abdominal wall with or without the bulge, which is percepted or exposed in a physical or imaging study. [16.19]

It is estimated that they can occur in up to 10 to 20% of patients operated most commonly at the site of the middle laparotomy scar (20-30%). [5,7,8]

Risk factors

Postoperative hernias are an extremely important clinical problem, as they can be a source of life-threatening complications, worsen quality of life and the cost of treatment remains a heavy charge for public health systems. Despite the seriousness of the problem, the factors leading to their emergence are not fully established. We divide the factors predisposing to postoperative hernia into two groups:

1. Controllable, including:
    - obesity
    - location and type of surgical incision,
    - type and scope of operations performed,
    - type of suture,
    - type of suture material,
    - wound infection,
    - hematoma,

- drains in the wound,

2. Do not give control:
   - age (risk increases with age),
   - the gender of the patient,
   - general infections,
   - coexisting diseases (diabetes mellitus, chronic obstructive pulmonary disease (COPD) increased abdominal pressure)
   - smoking cigarette,
   - use of GKS,
   - exhilaration in an interview,
   - numerous births [1,6,13,15]

Clasiffication

The European Hernia Society recommends that the following parameters should be considered when classiting postoperative hernia:

1. location of the change (medial/straight; lateral/oblique; femoral),
2. the size of the ring of hernia,
3. recurrence information (primary/recurrent hernia) [12]

EHS Incisional Hernia Classification			
Midline	subxiphoidal	M1	
	epigastric	M2	
	umbilical	M3	
	infraumbilical	M4	
	suprapubic	M5	
Lateral	subcostal	L1	
	flank	L2	
	iliac	L3	
	lumbar	L4	
Recurrent incisional hernia?		Yes O	No O
length:	cm	width:	cm
Width cm	W1 < 4 cm O	W2 ≥ 4-10 cm O	W3 ≥ 10 cm O

Fig.1 European Hernia Society classification for incisional abdominal wall hernias [6]

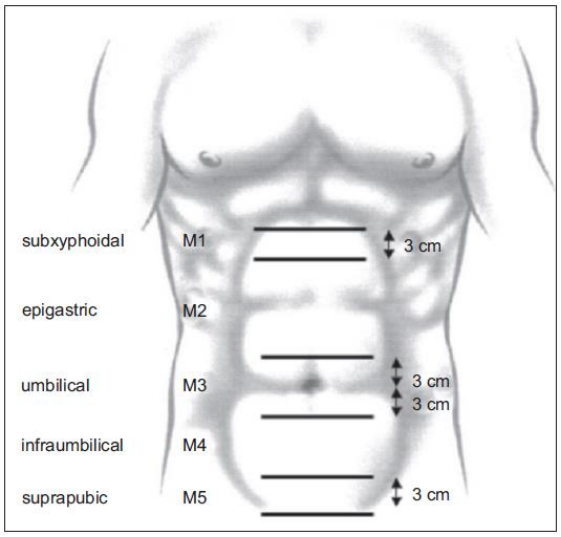

Fig. 2 To classify midline incisional hernias [12]

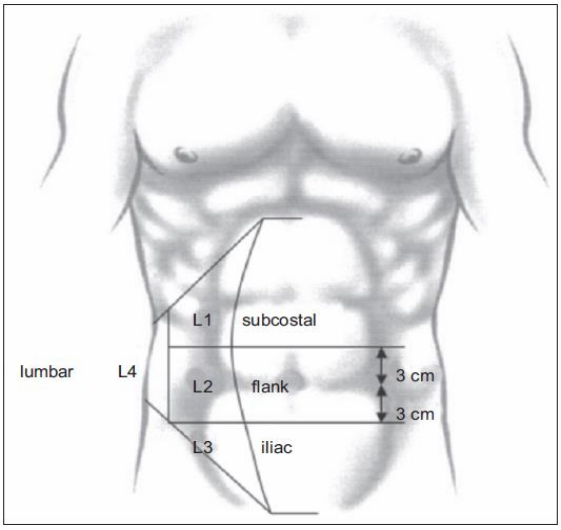

Fig. 3. To classify lateral incisional hernias, [12]

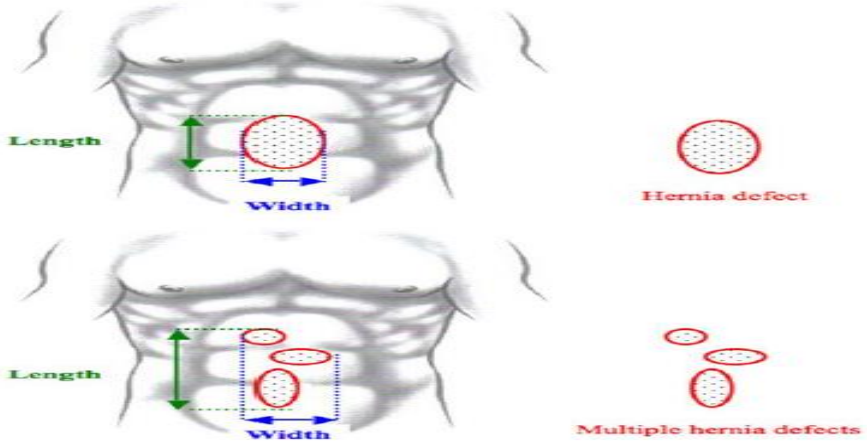

Fig. 4. Definition of the width and the length of incisional hernias [12]

Symptoms

Clinical diagnosis of postoperative hernia is not easy. The typical and most common symptom is palpable tumor under the skin, or bulge in the operating site. It appears during the increase of intra-abdominal pressure (e.g. during coughing, physical exertion) and disappears in the lying position. Other symptoms may include:

- sudden, intense pain (when lifting heavy objects, during coughing, urinating or stool),
- the impression of "pulling/tension in the area of the hernia
- pain radiation during exercise,
- discomfort in the abdomen,
- symptoms of ileus.

The postoperative hernia is confirmed after an accurate palpation examination. Among the ways of facilitating diagnosis, you can use: changing the patient's body (from lying on the back on lying on the side), standing examination or performing provocative tests – Valsalva, coughing, deep breathing. Sometimes even extensive hernias may not show clear symptoms, but they are palpable.

To confirm the diagnosis, one of the three available imaging methods should be used: ultrasound, computed tomography (CT) or magnetic resonance imaging (MRI). Confirmation of the presence of the postoperative hernia requires repeated surgical treatment. [6,13,18]

Treatment

The reconstruction surgery is the only effective and recommended way of treating the hernia in the postoperative scar. Conservative treatment involving the use of a non-hernia belt is inefficient and rarely recommended.The surgical treatment is based on two methods:

- abdominal autoplasty using the classical method - it includes dissecting the hernia's gates, draining the contents of the hernia sac into the body cavity, and then suturing the edges of the wound. However, the procedure is burdened with the highest risk of recurrence of approximately 63%.

  For this reason, classical methods have been completely displaced by more effective techniques using synthetic meshes (guidelines of the European Society). According to the research, this method reduces the risk of hernia recurrence to 32%. The Lichtenstein method is the most popular and referred to as the "golden standard" of treatment.

- laparoscopic method of hernia plasticity allows the placement of a mesh implant in the place of a tissue defect, through a small incision of the abdominal wall. [3,17]

The operation of the postoperative hernia requires the selection of the appropriate type of mesh (synthetic: polypropylene, polyester, made of polytetrafluoroethylene, biodegradable and biological mesh) as well as the choice of its position. While in the laparoscopic method the mesh is usually placed in the intraperitoneal position in the classical operation, we distinguish four basic ways of locating:

- Only (Overlay)
- Inlay
- Sublay
- Underly (IPOM) [1,6]

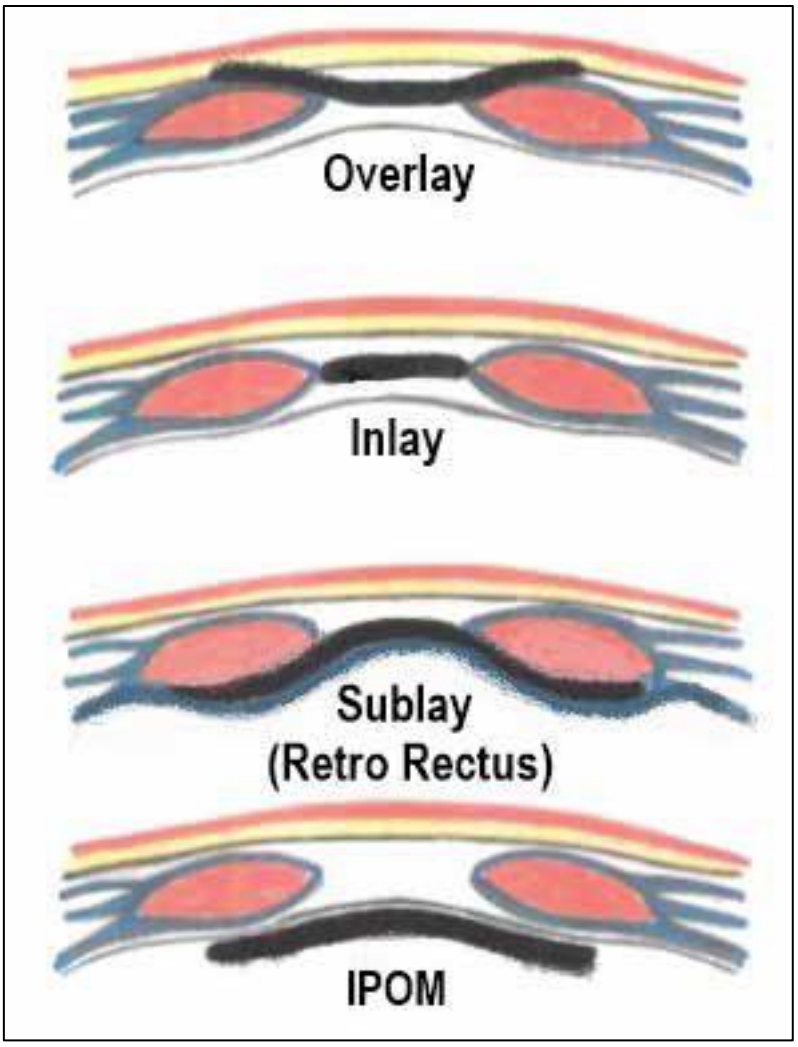

Fig.5. Nomenclature of mesh position [1]

The meshes placed in the position of Sublay and IPOM show the best effectiveness in terms of the frequency of relapses and the time of hospitalisation. In addition, both methods can be used in both classic and laparoscopic operations. [1,6]

Prevention

Prevention of the occurrence of a hernia in the postoperative scar includes several strategies in the care of the patient:

- preoperative preparation – resignation of cigarette smoking minimum 4 weeks before the surgery, optimization of glycaemic control, which aims to achieve HbA1c below 7%, recommendation of weight loss in obese patients with BMI > 35, treatment of any preoperative infections;
- implementation of all activities aimed at reducing yhe infection of the surgical site e.g.: prophylactic antibiotics, care packages, antibacterial suture
- if it's possible, avoid incisions of the midline of the abdominal wall and replace them with a lateral incision which is associated with a lower incidence of hernia;
- the selection of the appropriate treatment technique, the position of the mesh implant and the exact sewing of the abdominal wall are of great importance to reduce the risk of a hernia in the scar. [2,11,14]

The recovery period after surgery usually lasts 4-6 weeks. It depends on the size of the hernia, the location and the method used to reconstruction. In the period of 2 to 4 weeks, the patient is forced to reduce the effort, completely give up lifting heavy objects and hard physical work. The healing of tissues lasts for about 3 months, therefore patient should have a saving lifestyle by that time. [17]

Summary:

Postoperative hernias are still a big problem and challenge for modern surgery. Knowledge of risk factors, access to innovative operational and imaging methods and the experience of physicians allow to minimise the risk of postoperative complications. Nevertheless, it is still necessary to try to reduce the frequency of relapse of the hernia in the scars after surgery.

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