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Epigastrium: unusual site of incisional hernia from a 5 mm trocar

The observation of an unusual case of incisional hernia, found in the epigastric zone at the site of a 5 mm trocar incision for a cholecystectomy, has caused us to describe it and to review the literature.
C.A. is a male aged 59 and He came to our attention in 2014, complaining about the presence, for about three months, a swelling in the epigastric area, without occlusive symptoms. An objective examination showed an epigastric mass at the scar of the insertion site of a 5mm trocar during the cholecystectomy operation. The patient was hospitalized and underwent traditional surgery: incision at the scar; isolation of the extruded fatty tissue, which had no sac, identified as part of the round ligament, herniated through the residual incision of the previous operation. Based on experience acquired it is useful to make careful sutures of 5 mm incisions repairing peritoneal laceration.

KEY WORDS: Epigastrium, General surgery, Incisional hernia, Laparoscopy, Trocar

Introduction

The increase of laparoscopy techniques has led to an increase of incisional hernias at the trocar insertion sites. The incidence ranges between 0.2 and 3%; this percentage is proportional to the diameter of the trocar used; in fact Kadar reports 0.23% for the 10mm one to 3% for the 12mm [1].
Boike reports a rate of 1% for trocars ≥ 10 mm observing 19 cases [2]. The incisional hernias of 5mm trocars have a low incidence around 0.1% [3-4], this is also highlighted in the literature from a larger number of works on insertion sites of trocars ≥ 10 mm, while there are few relating to 5mm trocars.
The observation of an unusual case of incisional hernia, found in the epigastric zone at the site of a 5 mm trocar incision for a cholecystectomy, has caused us to describe it and to review the literature.

Case Report

C.A. is a male aged 59, height 169 cm, weight 71 kg. The patient's past medical anamnesis refers only to arterial hypertension under pharmaceutical treatment; there are no heart conditions, diabetes or other diseases. In 2001 a left groin hernia operation and in December of 2010 a laparoscopic cholecystectomy were performed in another hospital.
The patient came to our attention in 2014, complaining about the presence, for about three months, a swelling in the epigastric area, without occlusive symptoms, experiencing only a mild sense of tension and a

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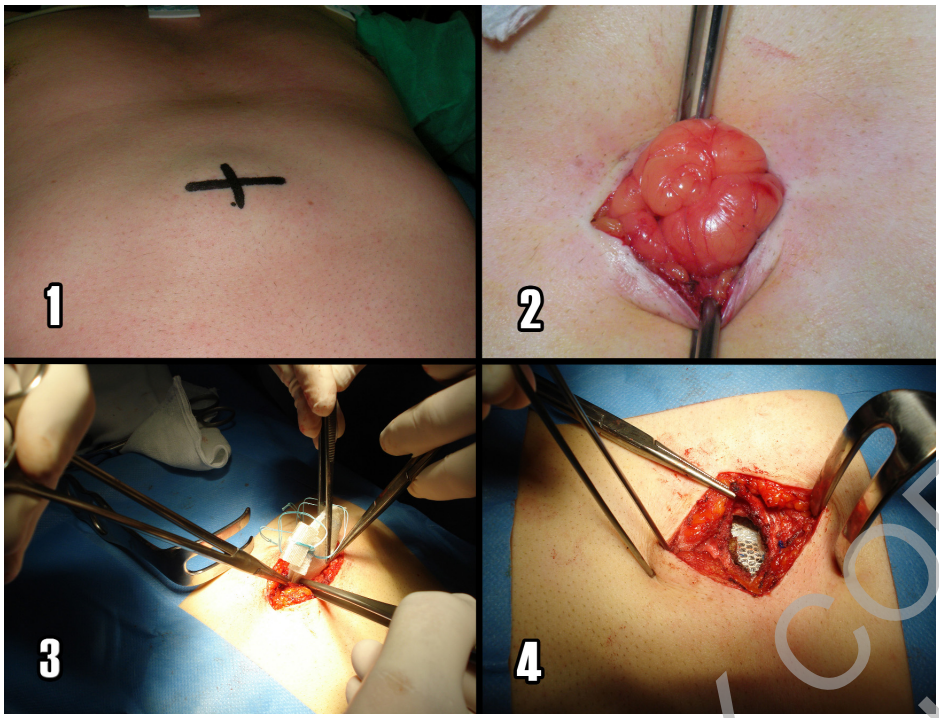

Fig. 1: 1) Epigastric swelling; 2) Hernia exposed; 3) application of Ventral Patch; 4) Completed work.

sense of unease inside due to the alteration. An objective examination showed an epigastric mass at the scar of the insertion site of a 5mm trocar during the cholecystectomy operation.
The patient was hospitalized and underwent traditional surgery: incision at the scar; isolation of the extruded fatty tissue, which had no sac, identified as part of the round ligament, herniated through the residual incision of the previous operation. The peritoneal incision was about 2.5 cm in diameter and was extended by another cm to insert a finger inside the abdominal cavity, allowing us to find that the incision was found about 4-5 cm to the left of the round ligament, and that there were adhesions.
The round ligament was replaced in the peritoneal cavity: adhesions around the parietal gap for about 4-5 cm were removed. Then a Vetral PROCEED (TM) patch 4.3cm x 4.3 cm in size was fixed and the incision sutured. The patient was discharged the day after the procedure.
Follow-up at 1 year showed the subject in a good state of health with no evidence of alterations in the abdominal wall (Fig. 1).

Discussion

The incisional hernia, by its nature, must be considered a progressive disease that is affected both by the intra-abdominal pressure that the tension of the parietal muscles. Factors favouring the occurrence of incisional hernias are diabetes, obesity, wound infection, coughing, and the experience of the surgeon [5,6]. Other factors favouring this pathology can be the possible ischemia of the incision margin linked to the fixing of the trocar; repeated manipulation; the length of the operation; trauma related to the extraction of the surgical instruments, which sometimes even require a widening of the incision larger than the dimension of the trocar itself [7].
Although infections are considered a risk factor in reality their frequency is lower in laparoscopic surgery than in laparotomy [8].
Obesity has a noticeable role in the onset of hernias, in fact Pilone, analyzing a case study of 624 obese patients with an average BMI of 46.0 ± 4.6 kg / m², reported a prevalence of 1.6% [9].
The incisional hernia can occur 3-5 days after the operation and these early cases do not have a hernia sac, while later ones, months after surgery, tend to have a hernia sac, confirmed by the classification published by Tonouchi [10,11]. The same author has also found a percentage of early onset of hernia in the trocar site between 0.65 and 2.8% [11].
The site of the insertion of the trocar has an important role with a prevalence of 75% for an umbilical hernia incisional site compared to those which are not [12-13]. This high frequency is to be referred to the anatomy of the periumbilical abdominal wall as well as the possible weakness of the whole region [11,14].
Some authors, in order to reduce the risk of hernias, make a para-median incision followed by two incisions: one frontal with lateral displacement of the rectus muscle and one to the rear fascia [11, 12].
In the literature a correlation was also found between

the type of trocar used and the occurrence of incisional hernias, it was observed that the blade trocars increase the incidence compared to conical expansion trocars [15-16]. Leibl notes a reduction from 2 to 0.2% in the onset of hernia on the trocar site, when using a conical trocar instead of a blade trocar [17]. This is because, the tapered tip allows a separation of the musculo-fascial fibers, which return spontaneously in position after removal of the trocar, sealing the wound; in contrast to ones equipped with blades, those severing the muscle fibers, createing a wound which increases the probability of incisional hernia formation.

In 5mm trocar incisions, the organ most frequently herniated is the small intestine, followed omentum, and this typically occurs 2 weeks after surgery and the symptoms are a typical intestinal obstruction [17]. Huang argues that it is important to make an accurate closure of the trocar [18] site, since is not common to repair the 5mm incisions or to simply affix adhesive strips. In our experience, we believe that the observation by the patient of the epigastric mass, which took place after 3 months from the beginning of a low-calorie diet for overweight, it is highlighted for weight loss.

In the pediatric subjects the frequent occurrence of hernias at incisions of 3-5mm are described [19-22] demonstrating the need for meticulous suture in young patients beyond the extent of the incision of the trocar [23,24]. Topcu has reported a case of hernia on a 5mm trocar in which a part the intestine was trapped after a laparoscopic hysterectomy [25].

In the case of incisional hernias on 5mm lateral trocars after cholecystectomy, it was noted that the onset may occur later [26]. A hypothesis on the incisional hernia formation on 5mm sites is that the positive pressure in the abdomen from CO_2 evacuated from these incision during desufflation, which would push the peritoneum and small bowel to wedge itself into the wound, especially if the desufflation is not done in a slow and careful way [27]. Furthermore it is recommended to avoid to spill drainage through the 5 mm breach, as has been reported several cases of hernia after the tube has been removed [27]. Finally there is also the possibility that through the discontinuity of the wall left by the insertion of the trocar can herniate the Spigelian fascia, in fact a case of Spigelian hernia after laparoscopic hysterectomy is reported in the literature [28].

As for the repair of post-laparoscopy incisional hernias, there are both laparoscopic and laparotomical methods, the latter are preferred [15]. For cases of late-onset hernias, which are not complicated laparoscopy is indicated[29,30]; in voluminous cases laparotomy is preferred [31]. Certainly in obese patients more attention must be paid in the repair of the incision, it is always preferable to incorporate the peritoneum along with the muscle fascia at the time of the suture [13,32].

The case we reported it seems unusual, both for the place and its content; we believe that this happened because of the presence of a loose round ligament which was particularly fatty.

In fact, we are proponents of including bandages at stitching of the incision site and the peritoneum paying the utmost attention to the latter. Furthermore we avoid rapid desufflation to minimize the probability of occurrence of the hernia.

Laparoscopic surgery has definitely lead to less invasive procedures, but this should not lead us to consider possible occurrence of incisional hernias unlikely at the trocar insertion site. In fact all the sites may experience future incisional hernias.

Several hypotheses were formulated about what is the etiopathogenetic cause of the onset of these incisional hernias but none of these seem to be decisive.

So it is important to always be very careful in the repair of the incision. Also during surgery to avoid excessive handling or possible enlargement of the incision.

Based on experience acquired we can conclude that it is useful to make careful sutures of 5 mm incisions repairing peritoneal laceration.

Riassunto

L'osservazione di un insolito caso di ernia incisionale epigastrica nel sito d'inserzione del trocar da 5 mm per una colecistectomia, ci ha spinti a descriverlo ed a rivedere la letteratura.

C.A. paziente maschio di 59 anni, arrivato alla nostra attenzione nel 2014, lamentando la presenza, per circa tre mesi, di un gonfiore nella zona epigastrica, senza sintomi occlusivi. L'esame obiettivo mostrava una massa epigastrica sulla cicatrice residuata dall'inserimento di un trocar 5 millimetri durante l'operazione colecistectomia. Il paziente è stato ricoverato in ospedale e sottoposto ad intervento chirurgico tradizionale: incisione sulla cicatrice; isolamento del tessuto adiposo estruso, che non presentava sacco erniario, tale tessuto è stato identificato come parte del legamento rotondo erniato attraverso l'incisione residua dell'operazione precedente. Sulla base dell'esperienza acquisita, è utile suturare attentamente le incisioni di 5 mm riparando la lacerazione peritoneale.

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