

Incisional hernia in Day Surgery: our personal experience

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SUMMARY: **Incisional hernia in Day Surgery: our personal experience.**

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Incisional hernia is one of the most common complications of laparotomy. Its repair with prosthesis has enabled a considerable improvement in the outcome, significantly reducing recurrences. This study analyses the results of open hernioplasty with mesh performed as a Day Surgery procedure in 42 patients between November 2008 and October 2010. The results were good, with low postoperative morbidity and recurrences (2.4%).

RIASSUNTO: **Laparocele in day surgery: nostra esperienza.**

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Il laparocele o ernia incisionale rappresenta una delle più frequenti complicanze degli interventi laparotomici. La riparazione con materiale protesico ha permesso di migliorarne notevolmente l'outcome, con una importante riduzione delle recidive. In questo studio analizziamo i risultati da noi ottenuti nella plastica di laparoceli con mesh realizzata in regime di one-day-surgery. Lo studio comprende 42 pazienti trattati con tecnica open, dal novembre 2008 all'ottobre 2010. I risultati sono stati buoni, sia in termini di morbilità post-operatoria sia in termini di recidiva di malattia (2,4%).

KEY WORDS: Incisional hernia - Open hernioplasty - Day Surgery.
Laparocele - Plastica open - Day Surgery.

Introduction

Recent prospective studies with long-term follow-up suggest that the incidence of incisional hernia is 11-20% (1, 2), arising within three years of surgery in 90% of cases. Incarceration-related morbidity ranges from 6% to 15%, with 2% of these cases resulting in intestinal strangulation (3).

Recurrence after a first repair attempt varies from 24% to 54% (4). Repair by prosthesis is more successful, but recurrence is still high (up to 36%) (5). Recurrence after open hernioplasty of recurring incisional hernias can reach up to 48% (6). A nationwide study in Italy revealed that most surgeons currently use prosthesis in 60% of initial incisional hernias and 85% of recurrences (9).

Incisional hernia is classified on the basis of three essential criteria, deriving from precise anatomic and clinical knowledge of the abdominal wall: location, size, and *any loss of tissue*. They are thus classified as: median or paramedian; small (<5 cm: type 1), medium (<10 cm: type 2), or large (>10 cm: type 3); trocar site (type 4); and hernias involving major loss of tissue and function of the abdominal wall (type 5), described as incisional hernia disease (7,8).

There are numerous causes of incisional hernia, which can be classified in three main categories: mechanical; related to the patient's general condition; and related to the technique. The first group includes all postoperative conditions causing an increase in intra-abdominal pressure, such as paralytic ileus and delayed return of normal bowel function. Other situations that can help create permanent or repetitive tension on the abdominal wall include chronic cough, impaired respiratory function (typical in patients with chronic obstructive pulmonary disease [COPD]), frequent vomiting, and excessive physical exertion (10). Factors related to the patient include malnutrition, diabetes mellitus, infection, and obesity. Malnutrition can impair the healing

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process, due to a lack of protein or energy, while diabetes affects the healing of the wound due to impaired white blood cell function, resulting in a higher risk of infection (11). Most authors agree that the technique used to close the surgical wound is a key point with respect to the development of incisional hernia (12). Some studies demonstrate that use of a continuous non-resorbable suture reduces the incidence of incisional hernia (32% risk reduction) in comparison with the use of resorbable material or individual stitches (13-14).

Size, rather than location, is the factor determining whether or not the hernia can be repaired in day surgery or requires hospital admission. The authors believe that types 1, 2 and 4 can be repaired in day surgery, regardless of location, without any additional risk (15).

Patients and methods

Between November 2008 and October 2010, repair of incisional hernia by open hernioplasty at the Institute of General Surgery, University of Catania, was carried out on 42 patients aged 55 to 67. Patients included 25 women and 17 men. The hernias were classified as follows: type 2 (medium): 25 (59.5%); type 1 (small): 10 (23.8%); and type 4 (small trocar site): 7 (16.6%). All patients underwent thrombosis and embolism prophylaxis and short-term antibiotic prophylaxis with cephalosporin. The hernia was repaired by mesh implantation under local anesthetic in all cases, except in type 2 hernias requiring use of general anesthetic. In any case, this did not preclude discharge on postoperative day one.

Patients are selected in line with the procedures used for other conditions treated under Day Surgery. An ECG is performed, along with only those blood chemical tests and instrumental procedures indicated by the clinical picture or any existing diseases. The exclusion criteria were ASA >3, BMI >40, and low patient compliance. The size of the hernias in consideration do not normally affect respiratory or abdominal dynamics, and so spirometry, blood gas analysis and diagnostic imaging are not necessary, unless indicated by the clinical picture. Ultrasound or CT of the abdominal wall may be indicated, especially in overweight patients, to better establish the size of the hernia; these procedures may also reveal the presence of other herniations which are not clinically evident (14).

The first step is to use a skin marking pen to mark the exact site of the hernia and the length of the incision. Local anesthesia using spinal needle is then carried out. The most commonly used mesh in our department are Composix® for type 1 and 2 hernias and Ventralex® for type 4 (trocar site hernias).

Type 1 hernia

An incision a little longer than the hernia is made and the hernia sac carefully isolated. The preperitoneal plane is then prepared for implantation of the mesh. The overlayer is cut to match the hernia and the mesh is attached with four stitches.

Type 2 hernia

A Composix® mesh is placed in the peritoneal cavity in direct contact with the intestinal loops. The patient is placed in the lithotomy position and a surgical incision is performed under general anesthetic at the site of the old wound, which is often removed. The fascial plane is isolated only in the close vicinity of the defect. The sac is isolated and opened (16) and lysis of adhesions between the abdominal wall and contents of the abdomen is performed to a minimum of 5-

6 cm all around the port. The sac is then resected at the base. The implant size must be that of the port plus 2-3 cm each side. After positioning, the implant will thus cover 4-5 cm of the abdominal wall around the port (17).

Four polypropylene sutures are passed through the polypropylene mesh (which remains in contact with the peritoneum) and under the outermost polyester ring at the cardinal points. The mesh is then inserted in the abdominal cavity and positioned in such a way that it remains flat, with the intestinal loops underneath it. The sutures prepared at the cardinal points are passed under the peritoneum and the posterior fascia of the rectus muscles, taking care not to distort the implant.

For implants up to 15 cm, 4 stitches at the cardinal points are sufficient. For larger implants, metal tags should be used along the perimeter of the mesh, 2 cm apart, to ensure it is adequately fixed to the abdominal wall. This procedure is facilitated by the presence of holes in the polypropylene mesh through which the stapler can be passed. Finally, the edges of the port are sutured to the polypropylene mesh using non-resorbable stitches, taking care not to create tension in the abdominal wall. A subcutaneous suction drain is generally inserted and removed on the first day.

The use of the Composix® implant in type 2 hernias has numerous benefits. Its insertion in direct contact with the intestine makes the procedure simpler and much quicker than the classic Rives technique, as it is no longer necessary to prepare the muscle fascia planes - isolation of the port edge is sufficient. The risk of bleeding and the incidence of serosis are thus both reduced. All this contributes to greater postoperative comfort, reduced pain and faster return to normal everyday activities. This type of implant can also be used in laparoscopic hernioplasty.

Type 4 hernia

After the incision and isolation of the hernia, a Ventralex® mesh is inserted and sutured to the fascia with a few polypropylene stitches.

Results

No transfer was necessary from the Day Surgery Department to the inpatients ward. Patients had returned to their normal activities by postoperative day 4 for types 1 and 4 and by day 8 for type 2. There were no mortalities and no intestinal complications (postoperative adhesions, obstructions).

Follow-up (10-32 months) involved a check-up at week 1, month 3, and every 6 months thereafter. After discharge, 2 patients operated for type 2 presented modest bleeding from the wound, treated in the outpatients department without the need for further surgery. To date there has been just one recurrence (2.4%), in a patient fitted with an intraperitoneal implant which had to be removed due to the formation of a seroma which became infected.

Discussion

Incisional hernias can develop for a number of reasons, including an imbalance between intra-abdominal pressure and the myofascial tension induced by the surgical scar or by a gap in the tissues (18). The results reported herein,

while referring to a relatively small caseload, demonstrate that the validity and reliability of day surgery treatment of these hernias can be satisfactory. Naturally, patients must be carefully selected (age, obesity, malnutrition, and important comorbidities such as anemia, diabetes mellitus, cancer, and renal, cardiac or respiratory diseases).

Another important factor with respect to surgical technique is the tension induced by the suture, which can have an impact on the possible development of tissue necrosis, one of the factors implicated in wall infections (19). The right timing of the procedure also seems to be fundamental for both the results of the procedure itself and the prevention of complications requiring the patient to be admitted to the inpatients ward. Although incisional hernias generally worsen with time, careful and sometimes prolonged preoperative preparation may be indicated, as well as important postoperative measures.

The main points of pre- and postoperative treatment are as follows:

- 1) preoperative evaluation of respiratory function through static and dynamic spirometry and blood gas analysis and, if necessary, respiratory kinesitherapy;
- 2) local preparation to achieve meticulous skin disinfection; any skin folds, which are often present - especially in the groin area - and can cause extensive intertrigo, must be spread, treated with antibiotics and antimycotics and kept dry at all times;
- 3) weight loss in obese patients, with the aims of both

facilitating general and local preoperative preparation and improving the results, especially with respect to postoperative morbidity;

- 4) antibiotic prophylaxis, to be administered in a single bolus during the induction of anesthesia;
- 5) respect of asepsis during surgery and dressing of the wound;
- 6) careful hemostasis and insertion of a continuous suction drain to prevent blood and serum build-up, which could lead to infection and thus compromise the success of the procedure.

Conclusions

The search for fast, simple, complication-free techniques that can be performed under local anesthetic and minimize postoperative pain has led to a large number of incisional hernias being treated in day surgery. The benefits for patients include greater convenience and reduced waiting lists. The authors do not believe in a "one size fits all" approach to these hernias. Instead, the best practice must be established for each type. The objective is a rapid, easy, complication-free procedure guaranteeing the best results (8). We prefer polypropylene implants for their biophysical properties and low incidence of postoperative infections, which thus contribute to reduce complications affecting the intestine and abdominal wall.

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