

POSTOPERATIVE HERNIA IN THE CONTEXT OF LAPAROSCOPIC SURGERY IN CHILD AND ADULT

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Abstract: Laparoscopic surgery represents, today, an important field in surgical interventions being useful in adults as much as in paediatric surgery. Occurrence rate of eventrations after laparoscopic surgery is incomparably lower than in open surgery and laparoscopic parietal defects recovery has now become comparable with the results of the conventional surgery. This study aims at analyzing this type of surgery in the context of laparoscopic surgery in adults and children.

Cuvinte cheie: eventrații postoperatorii, chirurgie laparoscopică

Rezumat: Chirurgia laparoscopică reprezintă astăzi un important domeniu al intervențiilor chirurgicale, fiind utilizată atât în chirurgia adultului, cât și în chirurgia copilului. Rata de apariție a eventrațiilor postoperatorii după chirurgia laparoscopică este incomparabil mai mică decât cea înregistrată în chirurgia deschisă, iar refacerea laparoscopică a defectelor parietale a devenit astăzi comparabilă ca rezultate cu cea din chirurgia convențională. Lucrarea de față se dorește o analiză a acestui tip de chirurgie în contextul chirurgiei laparoscopice la adult și copil.

Laparoscopic surgery represents a significant improvement regarding the size of the abdominal surgical wound and, as a result, the incidence of the abdominal wall defects after this type of surgery is situated between 0.1% and 3.6%, according to different authors.(1,2) Nevertheless, a series of studies brings up the problem of a diagnosis of post laparoscopic hernia only in the moment of secondary complications, incarceration and strangulation. Usually, the parietal defect appears where the big trocars (10mm or more) are inserted, especially in the umbilicus, but it can also happen in lesions produced by trocars of 5mm.

Literature review

Among the causes of post laparoscopic abdominal wall defects, the following factors were highlighted: size of the wound, male sex, post operative infection of the wound, preexistent umbilical defects, post operative respiratory infection or associated systemic diseases like diabetes mellitus or tissue healing disorders. The most important factor involved in the development of the parietal lesion is the inadequate suture of the abdominal fascia at the place of the trocar insertion, therefore the risk is proportional to the size of the trocar.(3)

This does not eliminate the possibility for a hernia to appear in lesions produced by trocars of 5mm, being associated with extensive manipulation of the system of suction-irrigation in advanced laparoscopic surgery. Therefore, suture of the peritoneum and abdominal fascia is recommended for small trocar parietal wounds, as well.(1) In case of tissue healing disorders, post operative hernias are quoted to appear in lesions induced by trocars of 3mm (4). Hernia developed in trocar insertion places occurs in 3 possibilities, as follows. **Early type**, immediately after intervention, with intestinal occlusion (Richter hernia) is the most common. **Late type**, a few months after operation, with parietal defect but without visceral protrusion. **Special type**, with the hernia sac occupied by intestines or epiploon, usually in case of trocars of 10mm or larger.(5)

In pediatric surgery, the risk for Richter hernia is real in case of 5mm trocars, because of the small diameter of the intestines, that can incarcerate in a minimal parietal defect, with a difficult suture due to the small exposure space. Therefore, in children, the suture of a defect produced by a trocar of 5mm is mandatory.(6)

The constant progress in laparoscopic surgery made this to be applied in an increasing number of interventions for malignant or benign pathology. In 1993, LeBlanc and Booth published the first series on parietal repair using prosthetic mesh, without the closing of the fascia at the place of parietal defect.

Even though there is no standardized method at the moment laparoscopic surgery in post operative hernia is a clear alternative to open surgery, more and more adopted in experienced services.(7)

The minimal invasive surgery, which requires prosthetic material, benefits from multiple references that show better results for the substitution mesh versus primary suture, in the case of post operative hernia.

The rebuilding of the abdominal wall defect by laparoscopic substitution mesh appears today as an ideal procedure, especially with the introduction of the prosthetic biomaterials. The incisions used in laparoscopic surgery do not overlap the preexistent ones, avoiding thus the infected wounds (thread granuloma).

Regarding the application of laparoscopy specific trocars, visceral and intestinal adhesions to the abdominal wall require preoperative ultrasound explorations. Most of the times, the first trocar is inserted after a small incision specific to open surgery. The trocar is inserted laterally of the hernia sac, where intestinal adhesions to the abdominal wall are less likely to occur. The other trocars are inserted under optical control, and the lysis of intraabdominal adhesions with release of the hernia sac content is the next operatory step.

The third operatory step is the measurement of the

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CLINICAL ASPECTS

parietal defect, for the application of the proper prosthetic mesh. Once the peritoneal sac is freed and the intraparietal defect measured, the substitution mesh is inserted. It is recommended to overlap the aponeurosis margins of the parietal defect with at least 3-4cm.(8,9) The mesh is fixed with a few non-resorbable transabdominal sutures, securing its position until complete tissular incorporation, in 3 to 4 weeks.(10) This technique eliminates the extensive dissection necessary in classical open surgery, and the smaller surgical wounds have a reduced postoperative pain, with lesser complications. The most frequent complications of minimal invasive post operative hernia surgery are wound seromas, with an incidence of approximately 2%.(11)

The occurrence of the wound seroma must not be considered, according to some authors, as a complication unless it is not symptomatic or it does not reabsorb in 4 to 6 weeks after the intervention (McGreevy). Furthermore, evacuation by puncture is not indicated, being associated with a risk of infection and delay in parietal healing. The wound infection in postoperative hernia minimal invasive surgery is very rare and only a few patients need replacing the mesh following this complication.(12,13) The recurrence rate is significantly lower, in comparison with the conventional open surgery, being of 2,9-7,5% according to some authors.

For post operative results, Parker and colab (13) published a study on 50 patients with laparoscopic approach for postoperative and ventral hernia, between June 1995 and September 2001. The majority of the patients were obese, with a BMI of 35,8 kg/m².

The substitution meshes used was Gore-Tex DualMesh and Bord Composite Mesh (84% and 16% respectively), for large parietal defects, of 206,1 cm² on average.

The interventions had a mean time of 97 minutes, with zero operative mortality. 6 patients (12%) had 2 intraoperative intestinal lesions that needed sutures, a symptomatic seroma and a reaction to the mesh that required short antibiotherapy; 2 more patients accused significant pain at the place of insertion of the trocars. Follow-up took place for a period of 3 to 74 months (41 months on average), with zero recurrence. An interesting analysis was presented by Wolter and colab (14), studying comparatively 2 groups of patients (82 vs. 41) with open and laparoscopic surgery, respectively. The two groups presented similar characteristics, including age, size of defect and associated pathology.

Postoperatively, the complication rate was of 23% in open surgery group and of 20% in minimal invasive one, while the recurrence after 2 years was of 23% for open surgery group and of only 9% in the laparoscopic surgery.

Laparoscopic surgery can represent a future approach for postoperative hernia after abdominal organ transplant. It appears promising, a few studies showing results comparable to open surgery.

A report by Barclay (15) on a group of 35 transplant patients, operated for parietal defects between July 2004 and October 2005, showed a relapse rate of 23% on an average period of follow-up of 589 days (22-953 days). In this group, 13 patients (72%) presented wound seromas, out of 18 patients with post operative complications.

The author concludes that laparoscopic treatment of post transplant hernia is associated with a high rate of wound seroma, but with minimal long term morbidity. Regarding the relapse rate, it is comparable to open surgery.

DISCUSSIONS

1. Laparoscopic surgery is a well-known treatment for multiple illnesses in both children and adults, with a postoperative hernia rate much smaller than in open

surgery.

2. Even though abdominal wall incisions are small, postoperative hernia is possible anytime, strangulation or incarceration being frequent in children.
3. Laparoscopic rebuilding of the abdominal wall requires substitution material, thus rising the costs, but with the advantage of small incisions that do not overlap old surgical incisions.
4. In time, postoperative results regarding complications and relapse rate are comparable to the open surgery, meaning that laparoscopic surgery is a serious option to consider for the parietal rebuilding.

CONCLUSIONS

Laparoscopic surgery represents, today, a reliable surgical treatment for postoperative hernia in children and adults, with similar results to open surgery concerning the disease without inflammatory signs in the hernia sac.

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