

LEARNING CURVE IN LAPAROSCOPIC ANTIREFLUX SURGERY

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Abstract: Introduction. In recent decades, laparoscopic surgery has been unanimously accepted as the gold standard in the treatment of many diseases of the abdominal cavity. In some operations, potential complications are severe and dangerous and require both good technical equipment and good theoretical and practical training of the surgeon. Such is the problem with diaphragmatic hernia surgeries and gastroesophageal reflux disease.

Purpose. To determine criteria for reaching an optimal level of training curve in antireflux surgery.

Material and methods: This is a single-center prospective study of 330 operated patients with diaphragmatic hernia.

Criteria analyzed compared to the sequence of the operation:

1. Operative time; 2. Intraoperative blood loss; 3. Conversion; 4. Postoperative stay; 5. Complications; 6. Quality of life after surgery; 7. Recurrence rate; 8. Mortality.

Results: The operative time and the cases of recurrence were statistically significantly affected after the 60th consecutive operation and remained plateau-like until 160 cases, after which they decreased again. A single case of conversion cannot be interpreted. We do not have a case of intraoperative mortality. The other analyzed criteria do not show a statistically significant difference.

Discussion. Laparoscopic antireflux surgery, in addition to good technical support, also requires technical skills of the surgeon. It should be performed by surgeons who know other laparoscopic techniques (cholecystectomy, diagnostic laparoscopy, treatment of abdominal hernias, etc.) and the first 20 cases need to be under the supervision of a more experienced laparoscopic surgeon.

Keywords: learning curve, laparoscopic surgery, hiatus hernia

1. INTRODUCTION

In recent decades, laparoscopic surgery has been unanimously accepted as the gold standard in the treatment of many diseases of the abdominal cavity. In some operations, potential complications are severe and dangerous and require both good technical equipment and good theoretical and practical training of the surgeon. Such is the problem with diaphragmatic hernia surgeries and gastroesophageal reflux disease.

The purpose of this study is to determine criteria for reaching an optimal level of training curve in antireflux surgery.

2. MATERIAL AND METHODS

This is a single-center prospective study of 330 operated patients with diaphragmatic hernia.

Criteria analyzed compared to the sequence of the operation:

1. Operative time;
2. Intraoperative blood loss;
3. Conversion;
4. Postoperative stay;
5. Complications;
6. Quality of life after surgery (solid food dysphagia);
7. Recurrence rate;
8. Mortality.

3. RESULTS

The operative time and the cases of recurrence were statistically significantly affected after the 60th consecutive operation and remained plateau-like until 160 cases, after which they decreased again.

We have not analyzed the other criterion reported in the literature studies - operative blood loss, because we have not had cases requiring intraoperative or postoperative blood transfusion. Blood transfusion was performed only in the preoperative period in patients with serum hemoglobin below 100 g / l.

The only case of conversion is due to high anesthesiological and cardiac risk of pneumoperitoneum and carboxemia and due to massive bleeding from the phrenic venous plexus in recurrent hiatal hernia and inability to laparoscopically control. A single case of conversion cannot be interpreted.

Patients were discharged on average on 3.9 postoperative days (postoperative stay 1 - 16.8 days). Cases with a longer postoperative hospital stay are those with postoperative complications. The standard discharge in patients from the group after the hundredth operation is on the second postoperative day.

Postoperative complications in the early postoperative period were observed in 22 patients (6.66%). In the group of the first hundred operations the number of complications is 16 (16%), and in the next 230 operations - 6 (2.6%). We show the distribution of complications (more than one complication has been observed in some patients):

- Postoperative pneumonia - 6 cases (1.82%);
- Bleeding from GIT (hematemesis and melena) - 12 cases (3.64%);
- Subcutaneous emphysema - 8 cases (2.42%);
- Urinary tract infection - 2 cases - (0.6%);
- Infection of the port - 2 cases (0.6%);
- Thrombophlebitis - 1 case (0.3%).

Postoperative pneumonia developed between the 2nd and 4th postoperative day. We believe that predisposing factors are the duration of the surgical intervention, the age of the patients and the available concomitant pleuro-pulmonary chronic diseases (pulmonary emphysema, pulmofibrosis, long-term smokers, etc.). Four of the six cases of postoperative pneumonia required treatment in the intensive care unit, and in no case did artificial lung ventilation be required. The other two cases were reported as mild and the treatment was performed in the surgical clinic.

Bleeding from the GIT in the postoperative period occurred immediately after surgery until the second postoperative day as hematemesis and melena. In all cases, emergency fibrogastroscopy was performed - in six erosive gastroduodenitis was found, and in two - acute duodenal ulcer. In four cases, no source of bleeding was detected. All were treated with proton pump inhibitors and fresh frozen plasma transfusions. Blood transfusion was not required.

Of the eight cases of subcutaneous emphysema, only one required evacuation by fine-needle aspiration, and the remaining 7 were resorbed spontaneously by the third postoperative day. In all cases, control radiography was performed to rule out pneumothorax. Cases of portal infection, urinary tract infection and thrombophlebitis were treated on an outpatient basis and no rehospitalization was required. The frequency of the last complications does not show a statistical dependence on the learning curve - the first hundred operations or subsequent ones.

Solid food dysphagia was determined using a visual analogue scale from 0 to 10 (0 = no dysphagia, 10 = severe dysphagia). The observed cases of dysphagia are 8 and all are observed in the first 50 cases and are most likely due to tactical and technical imperfections, mostly to the wrong choice of method of fundoplication depending on the hiatal hernia. Only one case involved severe dysphagia (gr. 8) and longer medication was required. No cases of dysphagia have been analyzed since the fiftieth operation.

Patients were followed in the postoperative period from 30 days to 6 years. We observe 16 cases of recurrence (4.84%). We attribute this relatively low frequency to the following facts:

- Not all cases of recurrence seek medical help in the same surgical unit. Eg of the six recurrent hernias previously operated on in another ward, only two had sought examination by the operating surgeon;
- At the follow-up period or as James M Tatum et al. from the University of California, Los Angeles, USA, in the first 20 months of follow-up recurrences are below 10%, and at 120 months follow-up in some centers reach a level of more than 60%.

We do not have a case of intraoperative mortality. The other analyzed criteria do not show a statistically significant difference.

4. DISCUSSION

Laparoscopic antireflux surgery, in addition to good technical support, also requires technical skills of the surgeon. Since the first report of laparoscopic Nissen fundoplication in 1991, this procedure has been rapidly adopted by surgeons interested in the management of gastroesophageal reflux disease. Various factors can affect the duration of the learning curve in antireflux surgery, the consequences for the quality of life of patients. Individual learning experience can be shortened through observation by experienced surgeons and shared institutional experience and all this can reduce the training time of individual surgeons. It is accepted that experience in training in laparoscopic antireflux surgery is associated with an increased incidence of intraoperative bleeding, pleural lesion and postoperative dysphagia. This risk seems to be highest within the former 20 to 30 cases from the experience of each surgeon. The European Association of Endoscopic Surgery (EAES) specifies the criteria for the adequacy of training in laparoscopic surgery. They did not specify numerical requirements for any particular procedure. The training requirements are broad and essentially offer little more than a sound approach. They specifically recommend either residency training in laparoscopic surgery for surgical trainees or special training programs for established surgeons. Recent programs include attending courses, assistance, or monitoring procedures performed by experienced surgeons and the performance of initial clinical procedures under the supervision of an experienced receptor.

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Laparoscopic antireflux surgery should be performed by surgeons who know other laparoscopic techniques (cholecystectomy, diagnostic laparoscopy, treatment of abdominal hernias, etc.) and the first 20 cases need to be under the supervision of a more experienced laparoscopic surgeon.

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