



LAPAROSCOPIC ADHESIOLYSIS-METHOD OF CHOICE IN SELECTED PATIENTS

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SUMMARY

Purpose: The aim of the study is to analyze and estimate the advantages of laparoscopic adhesiolysis in selected patients undergoing laparoscopic adhesiolysis for bowel obstruction in UMHATEM "N.I.Pirogov".

Material and Methods: For a three-year period from 01. 01. 2016 to 01. 01. 2019 in the Department of General, Visceral and Emergency surgery in UMHATEM "Pirogov", 42 patients with postoperative intestinal adhesions were operated laparoscopically. Out of the 25 (59.52%) were female.

In our research, parameters - age, gender, clinical symptoms, mode of treatment, morbidity and mortality were analyzed. Age in this retrospective analysis varied from 18 to 61 years (average 43.7 years).

Patients below 18 years of age, and those with tumor data, Crohn's disease and radiation enteritis, were excluded from the study.

Results: Age in this research varied from 18 to 61 (average 43.7). Eleven patients (26.19 %) underwent conversion. The causes were dense fibrous adhesions in six of them, iatrogenic lesions in three, and haemorrhage in two cases. In two patients, surgery was performed mini-invasive with an intracorporal suture. The hospital stays varied from 4 to 10 days (on average, 6.3 days). The operating time was from 29 to 121 min (an average 57.3 min). Surgical morbidity was 28.57 %, and mortality was not registered.

Conclusion: Laparoscopic debridement is an excellent and accurate procedure in selected patients with postoperative abdominal adhesions. The last decade has become a method of choice because of its incontrovertible advantages.

Keywords: ileus, postoperative adhesions, laparoscopy, adhesiolysis, conversion,

INTRODUCTION

Postoperative adhesions following abdominal surgery are more common nowadays, with a range between 12-17 % [1]. They can cause abdominal pain, nausea, vomiting as a result of intestinal obstruction. By increasing the number of laparotomies, as a result, the formation of adhesions increases too. Many patients with postoperative adhesions overcome this condition with conservative treatment, but there are others that require emergency surgery [2, 3, 4].

Until recent years, laparotomy was the gold standard for emergency surgery, which was chased with the risk of new adhesions, ventral hernia, postoperative pain and ileus [4, 5]. In the first steps of laparoscopic surgery, a prior abdominal intervention was considered a contraindication. Afterward, with increased experience, currently, excellent results were performed in selected patients [5, 6].

Nowadays, laparoscopy has been shown to be associated with fewer intraperitoneal adhesions. This method includes minimal incision of the parietal peritoneum and, as a result - minimum tissue trauma without lesions to adjacent tissues. Advantages induce laparoscopy as a method of choice for adhesiolysis in selected patients.

The spectrum of potential features of laparoscopic adhesiolysis can be wider. Patients should be carefully systemized and evaluated for laparoscopic surgery intervention. An important tool is the lysis of minor adhesions, which can lead to new pathological ones.

The goal is an accurate preoperative diagnosis of pathological adhesions. This first stage in performing laparoscopic adhesiolysis [2].

Advanced technology with high-definition imaging, smaller cameras, and better instrumentation have allowed for an increasing number of adhesiolysis to be performed laparoscopically with good outcomes. Compared with the open approach to adhesiolysis, the laparoscopic approach offers shorter hospital stay, less postoperative pain, decreased incidence of ventral hernia, and reduced recovery time with the earlier return of bowel function [2,3].

Surgical examinations are incomplete in determining chronic recurrent cases. Verification of the diagnosis also includes an enteroclysis-contrast examination of the small bowel loops [6]. It could separate intestinal adhesions from radiation enteritis, Crohn's disease, tumor recurrence. For emergency cases of acute obstruction, a CT scan should be done. Identification of the transition area with dilated and collapsed small bowel loops is the key to laparoscopic exploration [2,3, 4].

Most important for laparoscopic adhesiolysis in selected cases requires detailed preoperative examination and careful laparoscopic maneuvers.

According to the EAES (European Association of Endoscopic Surgery) recommendations, in cases of clinical and radiological evidence of small bowel obstruction not reacting to conservative management, laparoscopy

could be performed with the open access technique. If adhesions are found at laparoscopy, cautious laparoscopic adhesiolysis can be performed for the release of small bowel obstruction [3, 4].

Laparoscopic adhesiolysis in an emergency is not a routine procedure because of the limited visualization of the abdominal cavity due to the distended bowel and because of the risk of iatrogenic intestinal injury.

The high conversion rate in laparoscopic debridement is well known. Optimal cases for the laparoscopic approach are patients with moderate abdominal distension (proximal obstruction), a bowel diameter not exceeding 5 cm, a few adhesions and a limited number of previous scars. Laparoscopy is useful, safe and efficient in all forms of intestinal obstruction, from early, acute and chronic obstruction.

Another feature is as a diagnostic tool in rare cases of intestinal obstruction like internal herniation, mesenteric vein thrombosis. In most of the cases, surgical intervention can be practiced laparoscopically either completely or hand-assisted, which is still minimally invasive, and complications are comparable to conventional procedure. The conversion rate often is high, and it is not a failure if it is in the interest of the patient's health. Laparoscopy for adhesiolysis in selective patients is limited by concern about subsequent scar tissue formation following major laparotomy [5, 6].

The present study was designed to estimate the advantages of laparoscopic adhesiolysis in acute or recurrent bowel obstruction, including selected patients. The surgical strategy was to undertake a detailed preoperative diagnosis and careful adhesiolysis.

MATERIAL AND METHODS

For a period of three years, from 01. 01. 2016 to 01. 01. 2019 in the Department of General, Visceral and Emergency surgery in UMHATEM "Pirogov", 42 patients with postoperative intestinal adhesions were operated on laparoscopically. Conventional surgery was performed in 75 cases.

Table 1. Mode of surgery

Mode of surgery	117 (100%)
conventional adhesiolysis	75 (64.1%)
laparoscopic adhesiolysis	42 (35.9%)

Twenty-five of them (59.52 %) were female, 17 were male (40.48 %).

Table 2. Gender distribution

gender distribution	42 (100%)
women	25 (59.52%)
men	17 (40.48%)

In this study, the parameters - age, gender, clinical symptoms, treatment, morbidity and mortality were analyzed. Age in this retrospective analysis ranged from 18 to 61 years (average 43.7 years).

Patients below 18 years of age, as well as those with tumor data, Crohn's disease and radiation enteritis, were excluded from the study.

The disease was identified by anamnesis, clinical examinations, and imaging.

Initially, treatment was conservative. If no relief was observed, laparoscopic adhesiolysis was performed. Even if the conservative approach proved to be successful, patients were followed up, and laparoscopic treatment was offered after the normalization of the intestinal passage.

Laparoscopic Technique

For laparoscopy, access to the peritoneal cavity was obtained under direct visual control using the Hasson open technique. Most commonly, the chosen point of entry was just above or below the umbilicus. After insufflating the peritoneal cavity with CO₂ gas up to 12mmHg, additional trocars were placed under direct visual control as necessary.

As soon as the first trocar is positioned, the aim is to deliver suitable visualization and working space to permit the insertion of the remaining trocars. At least three and as many as five trocars are used. Depending on the available laparoscopes, one can use three 5-mm trocars or one 11-mm trocar for the camera and two 5-mm trocars for the laparoscopic instruments. Good triangulation should be planned on the basis of the planned site of dissection. Further trocars ought to be placed as needed.

If the site and cause of obstruction were not apparent on general inspection, the ileocecal junction was identified, and the small bowel was followed orally until the point and cause of obstruction could be identified. Most commonly, division of adhesions was performed using cold scissors.

The data from the patient group admitted to the hospital with postoperative abdominal adhesions were analyzed. Patients were followed up for 30 days following discharge.

RESULTS

Age in this retrospective analysis varies from 18 to 61 (average 43,7).

Eleven patients (26.19 %) underwent conversion. The causes were dense fibrous adhesions in six of them, iatrogenic lesions in three, and haemorrhage in two cases. A total of 5 iatrogenic lesions were recorded in 5 patients. Three of them underwent conversion. In two cases, surgery was performed mini-invasive with an intracorporeal suture. Suture with conventional surgery was performed in patients with haemorrhage. Conventional debridement was used for cases with dense fibrous adhesions.

Table 3. Reasons for conversion

Reasons for conversion	11 (26.19%)
Fibrous adhesions	6 (14.29%)
Iatrogenic bowel lesions	3 (7.14%)
Haemorrhage	2 (4.76%)

Hospital stay varied from 4 to 10 days (on average 6.3 days).

The operating interval was registered from 29 to 121 min (average of 57.3 min).

Surgical morbidity (28.57 %), in addition to the five patients with iatrogenic lesions, includes six more-three patients with clinical symptoms of subileus (resolved with conservative management) and other four- with surgical wound suppuration (treated with VAC-dressing).

Table 4. Surgical morbidity

Surgical morbidity	12 (28.57%)
Iatrogenic lesions	5 (11.9%)
Subileus	3 (7.14%)
Wound suppuration	4 (9.52%)

Table 5. Mode of surgery of iatrogenic bowel lesions

Mode of surgery of iatrogenic bowel lesions	5 (100%)
conventional suture	3 (60%)
laparoscopic suture	2 (40%)

There were no cases of the death-mortality rate of 0%.

DISCUSSION

The results of this research demonstrate that laparoscopic adhesiolysis is a successful and safe procedure for acute and chronic bowel obstruction. Accurate preoperative diagnosis and selection of the patients lead to lower conversion rate. Laparoscopic debridement contributes to good results, in most cases much better than open surgery [6].

The role of laparoscopy has an important aspect related to the treatment of postoperative adhesions. Ziprinet al. showed that laparoscopic surgery reduces the risk of recidivating adhesions. Tittel et al. noted that the risk of recurrent adhesions after laparoscopic debridement was reduced. Garrard et al. expressed that after mini-invasive surgery, adhesions were lower compared to open surgery. The formation of adhesions after adhesiolysis is the most important key in patients with this disease. There is enough evidence to demonstrate the benefits of mini-invasive surgery and its value as a gold standard for the treatment of postoperative adhesions [7].

Otherworld series have shown promising results for the role of laparoscopic surgery in the treatment of post-operative abdominal adhesions. The mortality rates are from 0 to 3%, and the method is advantageous in 80-100% of cases. In the manner of the other series, a conversion rate of iatrogenic intestinal lesions was 6,7-43% as a result [3, 4].

Preoperative identification was diagnosed by a conventional X-ray, abdominal CT and enteroclysis. But it is not possible to perform the acute phase with enteroclysis because patients cannot tolerate oral intake. This diagnosing tool of the small intestine is effective in chronic recurrent abdominal adhesions as it determinates the obstruction's location, extent, and nature. Preoperative differential diagnosis is made between postoperative adhesions and Crohn's disease, tumors, enterocolitis. An abdominal CT scan is another appropriate tool for imaging the extent and location of the obstruction [8].

The first trocar insertion of laparoscopic adhesiolysis is another matter of debate. The technique of first trocar insertion is important since intra-abdominal adhesions are known to be present inside the abdominal cavity. Bowel injury at this phase was reported to be 3.7%. Some surgeons suggest left upper quadrant blind cannulation with a Veress needle, and they claim that adhesions are rare in this area. This hypothetical belief is not based on evidence, and adhesions may be present in the left upper quadrant even if the patient had undergone surgery in the pelvis. Therefore, the most considerable decision is to perform open insertion of the first trocar in an area which is supposed to be adhesion free, according to previous scars and the results of CT and enteroclysis studies [9].

The extent of adhesiolysis is a critical issue, and there is still no consensus about this decision. Some of the studies demonstrated total adhesiolysis of the ligament of Treitz to the ileocecal valve. Large adhesiolysis increases the risk of recidive adhesion. Laparoscopic surgery requires the identification of pathological adhesions. It is manageable in acute obstruction by a determinate transitional zone between the collapsed intestinal segment and dilated one. But this key tool is not manifested in chronic recurrent conditions. In these cases, diagnosis performed by enteroclysis.

Postoperative adhesive intestinal obstruction is a complication following laparoscopic as well as open surgeries. Laparoscopy is an effective and useful mode of treatment in these patients. In other cases, even though laparotomy is associated with increased chances of further adhesion formation and recurrent small bowel obstruction, conversion to open surgeries, if needed, must be done and should not be considered a failure.

CONCLUSION

Laparoscopic debridement is an excellent and accurate procedure in selected patients with postoperative abdominal adhesions. The last decade has become a method of choice because of its incontrovertible advantages.

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