THE USA JOURNALS
THE AMERICAN JOURNAL OF MEDICAL SCIENCES AND PHARMACEUTICAL RESEARCH
(ISSN – 2689-1026)
VOLUME 06 ISSUE06

PUBLISHED DATE: - 30-06-2024
DOI: - https://doi.org/10.37547/TAJMSPR/Volume06Issue06-05 **PAGE NO.: - 26-30**

RESEARCH ARTICLE **Open Access**

RESULTS OF SURGICAL TREATMENT OF PATIENTS WITH PINCHED

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Abstract
The results of this study include a retrospective and prospective study of 242 patients who underwent surgery for incarcerated hernias of the anterior abdominal wall complicated by intestinal obstruction. The risk of compartment syndrome and hernia recurrence was reduced from 19.1% to 5.4% with onlay non-tension hernioalloplasty with U-shaped fixation sutures (W1-W2) and combined onlay+sublay (W3-W4). For patients with pinched hernia complicated by intestinal obstruction, the proposed treatment algorithm can reduce the incidence of abdominal complications from 20.7% to 4.4%, general postoperative complications from 28.3% to 11.3%, mortality from 5.2% to 1.5% and wound complications from 28.3% to 8.8%.

Keywords Pinched ventral hernia, intestinal obstruction.

INTRODUCTION

The results of surgical treatment of patients with pinched abdominal wall hernias are unsatisfactory, according to the statistics of the leading medical and research institutions of the country, despite the achievements. Postoperative complications are as high as 50% and mortality is 2-4%. This is due to the high rate of intestinal loop impingement, which leads to strangulation intestinal obstruction (more than 70%), as well as a large number of elderly patients (about 40%). Incorrect choice of the plasty method, significant tension of abdominal wall tissues, abdominal cavity volume reduction and development of abdominal compartment syndrome in 0.8%-12% of operated patients are the main reasons of unsatisfactory treatment results.

In the treatment of impingement hernia still more often used simple surgical methods of hernia gate closure with local tissues. However, these methods often lead to unfavourable results both in the early postoperative period and in the long term due to the high risk of recurrence. Until now, synthetic implants are not a mainstream technique in emergency surgery and there are still no clear

recommendations for their use. This is because the use of synthetic materials in an infected wound carries a risk of postoperative wound complications. This makes them less common.

Aim of the study

To improve the effectiveness of surgical treatment of patients with pinched ventral hernia through the development and implementation of tension-free hernioplasty methods.

METHODS

The study was based on the data of 242 patients who underwent surgical treatment in Navoi branch of RNCEMP from 2018 to 2023 due to pinched hernias of the anterior abdominal wall with a complication in the form of intestinal obstruction. Patients were divided into two groups depending on the type of surgery and volume. The main group of patients consisted of 136 patients who underwent surgical treatment using synthetic implants, also known as "non-tension" hernioplasty. This group included patients with various types of incarcerated hernias, including inguinal hernia 46 (33.8%), umbilical hernia 38 (27.9%), and postoperative ventral hernia 52 (38.2%).

In the control group there were 106 patients with pinched hernias of the anterior abdominal wall complicated by bowel obstruction. The surgery was performed using traditional autoplasty techniques known as "tension" hernioplasty. Patients in this group had different types of impingement hernias: inguinal 30 (28.3%), umbilical 34 (32.1%) and postoperative ventral 42 (39.6%).

In the main group, the mean age of the patients was 56.4 (plus or minus four years), ranging from 28 to 81 years. The proportion of males was 45.6 per cent and females 54.4 per cent. In the control group, the mean age was 57.6 (plus or minus 3.1) years, ranging from 27 to 78 years. The proportion of males was 47.2 per cent and the proportion of females was 52.8 per cent. Most of the older patients had serious comorbidities that affected treatment and outcome. Eighty-two per cent of patients in this age group had 2-3 comorbidities.

Various combinations of bowel impingement were found in the main group of patients with impinged anterior abdominal wall hernias: isolated small bowel impingement was in 42% of patients, small bowel impingement with omentum in 36% of patients, small bowel impingement with colon in 14% of patients and colon impingement in 8% of patients. In addition, various combinations of impingement were found in the control group, mainly small bowel, omentum or colon impingement.

In the main group, 18 patients received removal of non-viable omentum and small intestine, 28 patients received removal of necrotised small intestine, and 2 patients received removal of colon. The control group also underwent surgery to remove necrotic tissue: ten patients received resections of the omentum and small intestine, twenty-six patients received resections of the small intestine only, and two patients received resection of the colon. A total of 35.5% of patients underwent bowel resection due to impingement and necrosis. These operations were most common in patients with small bowel (82 cases) and large bowel (4 cases).

In the control group of patients with pinched hernias, conventional plastic surgery techniques were used, which differed according to the type of hernia. The Bassini and Postemski technique was used for pinched inguinal hernias, and the Meyo and Sapejko technique was used for pinched umbilical hernia and anterior abdominal wall hernia (PAHH). In addition, decompressive wound closure was performed in some cases with huge ventral hernias.

In the main group of patients who underwent surgery to repair pinched hernias, various methods of "non-tension" anterior abdominal wall plasty were used. These methods were well-tested and successfully used in traditional hernia surgeries.

RESULTS AND DISCUSSION

A study was conducted in 60 people who underwent surgery for a pinched postoperative ventral hernia with a complication of intestinal obstruction to investigate the changes in the level

of intra-abdominal pressure. 32 patients constituted the main group who underwent "non-tension" hernioplasty and 28 patients constituted the control group who underwent "tension" hernioplasty. Initially, all patients evaluated were found to have elevated intra-abdominal pressure. Grade II and III intra-abdominal hypertension was diagnosed in 86.7% of patients.

Pinched inguinal hernias were treated using the Lichtenstein method, which involved placement of a synthetic implant on the posterior wall of the inguinal canal in 46 patients. Ninety patients had pinched umbilical hernias and postoperative ventral hernias; forty used the onlay method, thirty-two used the onlay method with placement of a synthetic implant with U-shaped sutures, and eighteen used a combined onlay and onlay method without suturing the defect.

Various criteria were used to compare the early postoperative period. These criteria included duration of surgery, type and frequency of postoperative complications, duration of patient care, and number of deaths.

By analysing the duration of surgery, it became evident that the time required for surgery to repair intestinal obstruction depended on a number of variables, such as the technique of anterior abdominal wall plasty and the presence or absence of bowel resection.

The duration of surgery for inguinal hernias in patients with "tension hernioplasty" was 75.4 plus or minus 17.3 minutes, and 84.2 plus or minus 10.4 minutes in patients with the Lichtenstein technique. The mean operative time for pinched umbilical hernias using the Meyo and Sapezhko method of local tissue plasty was 104.4 ±17.8 minutes, and 106.3 ±24.0 minutes using a synthetic implant.

More complex hernioplasty techniques increased the operation time for postoperative ventral hernias, especially large and giant hernias. The average operative time using "tension" methods was 117.7 plus or minus 14.0 minutes, and 119.1 plus or minus 28.8 minutes using "non-tension" hernioplasty.

Postoperative ventral hernia repairs with hernioalloplastyoplay took an average of 111-43 minutes and with hernioalloplastyoplay+sublay 126-40.2 minutes.

Intestinal paresis was found in three patients (6%) from the main group and nine patients (12%) from the control group among the cases of abdominal complications. In some patients, this complication required prolonged nasoenteric intubation up to 6-7 days. In two patients from the control group intraoperative nasoenteric intubation was not performed. Thus, postoperative intestinal paresis was longer in patients who underwent surgery using "tension" plastic methods than in patients who underwent surgery using "non-tension" plastic methods.

In one case (1.3%) a patient from the control group after right-sided hemicolectomy and ileostomy had necrosis of the terminal ileum, which required reoperation. After umbilical hernia repair using the Meyo technique with abdominal drainage and absence of nasoenteral nutrition, early adhesive intestinal obstruction was observed in one patient (1.3%) from the same group.

A total of 15 patients (20%) from the control group had postoperative complications. Among them, the most common complications associated with prolonged ventilator stay were pneumonia in three patients (4%), bilateral hydrothorax in one patient (2.7%), and purulent tracheobronchitis in one patient (1.3%). Recurrent pulmonary embolism was recorded in one patient (2.7%). In addition, acute myocardial infarction was recorded in 2 (2.7%) cases, deep vein thrombosis in 1 (1.3%) case and thrombophlebitis in 2 (2.7%) cases respectively. The postoperative period in one patient with peptic ulcer disease was complicated by peptic ulcer exacerbation and gastrointestinal bleeding. In addition, acute urinary retention was diagnosed in three patients.

The overall spectrum of postoperative complications was 11.8 per cent in the main group, which was less diverse. One of the two per cent of patients in this group was diagnosed with acute cerebral circulatory failure. He was then

transferred to a specialised ward for further follow-up. Another patient (2%) was diagnosed with purulent tracheobronchitis and pneumonia. Two patients (4%) had deep vein thrombosis of the lower limbs. Three patients (2%) had prostate adenoma causing acute urinary retention that required epicistostomy.

Age and concomitant chronic diseases influence the development of common complications in patients. However, in the control group, the most common respiratory system problems were the consequences of prolonged ventilator stay due to increased intra-abdominal pressure, which led to the development of respiratory failure. It was found that the incidence and nature of postoperative wound complications differed in each group of patients. These differences were related to the type of hernias and methods of anterior abdominal wall plasty.

In the control group, in which autoplasty using local tissue was performed, 15 patients (28.3%) reported the development of wound complications. This included six patients (11.3%) who experienced secondary healing with necrotic tissue formation and suppuration of the postoperative wound. Five patients, or 9.4 per cent, were diagnosed with seroma requiring puncture and aspiration. Two patients (3.8 per cent) had marginal skin necrosis and one patient (1.9 per cent) had postoperative wound infiltrate. Two patients (3.8%) had euteration.

In the main group, where "non-tension" plastic techniques were used, six patients (8.8%) had local complications. Two patients, or 2.9 per cent, developed seroma. After resection of the intestinal site, two patients (2.9 per cent) had an infiltrate in the area of the postoperative wound and suppuration of the subcutaneous fatty tissue. In none of these cases was it necessary to remove the synthetic implant. No fistulas or abscesses were found.

In a study of postoperative complications in patients with pinched hernias of the anterior abdominal wall, it was found that the use of "non-tensioned" hernioalloplasty did not lead to an increase in wound complications. Patients in the control group spent an average of 6.5-6.9 bed-days in hospital after surgery for pinched inguinal hernias, 9.8-5.2 bed-days for pinched umbilical hernias and 11.8-2.8 bed-days for pinched ventral hernias after surgery. Patients in the main group spent an average of 5.4 ±2.8 bed-days in hospital for pinched inguinal hernias, 7.4 ±5.4 bed-days for pinched umbilical hernias and 11.7±6.5 bed-days for postoperative ventral hernias.

Thus, in case of impingement hernias complicated by bowel obstruction, the use of "non-tension" methods of hernioplasty does not lead to an increase in the time of hospital stay, and the differences in this respect between the groups were not statistically significant ($p > 0.05$).

Operated patients with pinched hernias of the anterior abdominal wall and complicated intestinal obstruction had an overall mortality of 3.3%. Postoperative mortality was 1.5% in the main group and 5.7% (3 patients) in the control group.

In the control group, one patient died due to pulmonary embolism, and in the other two cases, the cause of death was acute cardiorespiratory failure and bilateral pneumonia caused by prolonged ventilation due to increased intra-abdominal pressure. In the main group, one patient died of acute myocardial infarction.

All four fatal cases occurred in people over seventy years of age, in whom the impingement lasted for more than one day. We examined 42 (79.2%) patients out of 53 in the control group and 56 (82.3%) patients in the main group during 1-3 years after surgery. The total number of patients examined in the remote period was 98 out of 121, or 80.9% of the total number of patients.

Among the patients who underwent "non-tension hernioplasty", only 3 (5.4%) had a ventral hernia recurrence one year after surgery. No cases of fistula or ligature abscesses were reported. In the control group, where conventional plasty techniques were used, recurrences were found in 7 patients (19.1%).

CONCLUSIONS

Thus, according to data analysis, most cases of recurrences occur in the first year after surgery for postoperative ventral hernia, especially if the hernia gate size was W3-W4. Thus, our data confirm that for complex incarcerated hernias, non-tension hernioalloplasty techniques are better.

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