

Original Article: Investigating the Causes of Re-Laparotomy Surgery in the Field of Gastrointestinal Cancer in Patients Referred to Rasul Akram (PBUH) Educational and Therapeutic Complex During the Years 2011-2016

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ABSTRACT

Introduction: By studying the morbidity of surgery conducted by surgery physicians' surgery ward at Rasool Akram hospital, we wanted to reduce morbidity cause and take a little step in improving the patient's health. **Method:** Medical records of patients operated in rasool akram hospital was investigated and information such as surgery, intraoperative and postoperative complication associated v variables were recorded in the check list. **Result:** Re-laparotomy possibility in Men was 3.5 times more than women Metastatic pathology likely increases the necessity of re-laparotomy to 1.2. The possibility of re-laparotomy in a patient who has a history of positive chemotherapy increase up to 2.9. The possibility of re-laparotomy in case of prolapse increases to 2.4 (1.8-3). **Conclusion:** The possibility of re-laparotomy increases with factors such as male gender, metastatic pathology, positive history of chemotherapy, the incidence of prolapse and incidence of adhesion. Although having GI anastomosis increases the risks of post op complications and being problem with the colostomy leading to its closure are such important issues in predicting relaparotomy chances.

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Introduction

The word intraoperative and postoperative complications is a good definition for morbidity. Morbidity in determining the type of surgery is a principle that surgeons never agreed upon [1-3]. Despite the positive effects of surgery on the health of society, surgery is risky. Estimates of morbidity in surgical operations have shown that many people will suffer from surgical complications, that about 15% of these people will die as a result of these complications [4] and nearly half of these complications are preventable [5]. In this study, by examining the morbidities of laparotomy surgeries performed by the doctors of the surgical department of the Rasul Akram (PBUH) research educational complex, as well as the causes of morbidities, we aim to reduce them and take a small step in improving the health of patients. Physical examination is still the most reliable diagnostic method in conscious patients, but diagnostic methods and facilities such as simple imaging, ultrasound, CT scan, and abdominal lavage can also be used. In general, cutting any part of the abdomen that leads to the opening of the abdominal cavity is called laparotomy. Various abdominal diseases and disorders can lead to laparotomy. Common incisions used in the exploration of the abdominal cavity include vertical, transverse, and transverse-oblique incisions. Vertical cut includes two types of midlines and paramedian. Among them, almost all surgical procedures in the abdomen or retroperitoneal space can be performed with a midline incision [6-8]. For this reason, this method is commonly used, so that the term laparotomy is equivalent to a midline cut, about 50% of those who refer to general surgeons are acute surgical emergencies, and about half of these cases are due to symptoms. Abdominal

pain is mainly abdominal, and half of them lead to abdominal surgery.

Laparotomy

It means making a large incision in the abdominal wall and entering the abdominal cavity for detection, diagnosis and possible treatment. Exploratory laparotomy is performed if the surgeon cannot make a definitive diagnosis about the patient's condition by other methods [9-11].

Indications for laparotomy

Some of the conditions that lead to laparotomy are:

- Cancer of abdominal organs.
- Peritonitis (inflammation of the peritoneum, the lining of the abdominal cavity).
- Appendicitis (inflammation of the appendix).
- Pancreatitis (inflammation of the pancreas).
- Abscess.
- Adhesion (after trauma or surgery).
- Diverticulitis (inflammation of sac-like structures in the intestinal wall).
- Intestinal perforation or obstruction.
- Ectopic pregnancy.
- Foreign bodies, for example, the presence of bullets in a bullet victim.
- Internal bleeding [12].

Considering the high prevalence of gastrointestinal cancers, especially in our country, and its mental and financial effects on people and the treatment system, as well as in order to investigate the problems and try to improve them, we decided to investigate the causes of re-laparotomy in cancer patients.

Let's help the digestive system to solve this problem [13]. By reducing the complications through investigating the causes, we can reduce the need for repeated laparotomy and avoid imposing additional cost and time on the patients and the treatment system [14].

Research objectives and assumptions

A) General purpose: To investigate the causes of re-laparotomy surgery in the field of gastrointestinal cancer in patients referred to Rasul Akram (PBUH) medical training complex during the years 2011-2016.

B) specific goals: Including

1- Investigating the complications of anastomosis in the gastrointestinal tract in laparotomy operations performed by the doctors of the general surgery department of the Rasul Akram (PBUH) medical training complex in the field of gastrointestinal cancer during the years 2011-2016.

2- Investigating the prolapse of the operative site in laparotomy operations performed by the doctors of the general surgery department of Rasul Akram Medical Training Complex (PBUH) in the field of gastrointestinal cancer during the years 2011-2016.

Type of study: Cross-sectional survey

Method and technique and how to conduct the study: Patients with a history of surgery in the field of gastrointestinal cancer will be studied as the target population, and patients with a history of repeated laparotomy in this field will be studied as the target population [15-17]. Also, a group called the control group with similar conditions and only one history of

laparotomy in the field of gastrointestinal cancer was also investigated in order to reduce confounding factors. Age, sex, anastomosis in the gastrointestinal tract, time of operation and work experience of the surgeon were investigated as independent variables, and prolapse of the operation site, leakage of the anastomosis site, wound infection, inappropriate scarring, hematoma formation as dependent variables. In this way, reading the files of the patients operated on in the surgery department of the educational and therapeutic complex of Hazrat Rasool Akram (PBUH), extracting information about the description of the operation and the description of the complications during and after the operation, as well as calling the patients through telephone calls and telephone or face-to-face interviews with them and checking possible factors affecting the development of morbidities through the file and interview with the attending physician and finally the analysis of the information collected through spss software.

Information collection tools and methods

Patients with a history of surgery in the field of gastrointestinal cancer are the study population and patients with a history of repeated laparotomy in this field are the target population. Collecting information in the form of reading the files of patients operated on in the surgery department of Hazrat Rasool Akram (PBUH) educational and therapeutic complex, extracting information on the description of the operation and the description of complications during and after the operation, as well as calling the patients through telephone calls and telephone or face-to-face interviews with them and investigating the possible factors

affecting the development of morbidities through the file and interview with the attending physician.

Sampling method and sample size calculation

Considering the prevalence of 10-15% of repeat laparotomy in patients with gastrointestinal cancer and assuming a confidence coefficient of 0.05 and an accuracy limit of 0.95, the minimum sample size for the study will be equal to 170 people.

$$n=(p \times (1-p) \times z^2)/d^2$$

$$P = 0.15, d = 0.05, a=0.05-Z=1.96$$

$$n = 170$$

Considering the lower prevalence in our country, this volume is not expected from the sample. Also, according to the inclusion of all the people who underwent repeated laparotomy in the field of gastrointestinal cancer during the years 2011-2016, all these people were examined as a sample size.

Data analysis methods

The results obtained for quantitative variables are expressed as mean and standard deviation (mean \pm SD) and for categorical qualitative variables as percentage. The comparison between quantitative variables is done by t-test or in case of non-normal distribution by Mann-Whitney test. Comparison between qualitative variables is also done using Chi-square test or fisher's exact test. Correlation between quantitative variables is checked using Pearson correlation coefficient and Pearman rank correlation test. SPSS version 22 and SAS version 9.1 will be used for statistical data

analysis. A significance level of less than 0.05 is considered.

Ethical considerations

The steps of this project have been informed to all patients and no cost is imposed on the patient. Carrying out this project depends on the patients' consent to use their information. The patient file information in this review is confidential and will not be discussed individually [18].

Project limitations, possible systematic errors and ways to deal with them

Incompleteness of files, lack of presence of mind of doctors and patients, non-cooperation of patients, unreliability of patients, efforts are being made to help the process of cooperation by attracting patients' confidence. An attempt is made to complete the information with high accuracy using the patient's file [19].

Results

Our studies were conducted in two groups, the first group included people who underwent laparotomy for gastrointestinal cancer and underwent laparotomy again (including 8 people) and the second group included control subjects who underwent laparotomy only once for cancer have been placed in the digestive system (including 50 people). The frequency of males in the first group was 79.2% and in the second group was 52%, which had a significant difference. Therefore, the probability of performing laparotomy again in men is 3.5 times that of women (Figure 1).

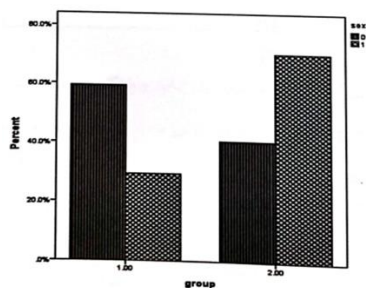


Figure 1. The probability of performing laparotomy again in men is 3.5 times that of women.

In the pathology samples that were determined, the frequency of adenocarcinoma was 25% in the first group and 52% in the second group, and signet ring cell pathology with a frequency of 8.3% in the first group and 4% in the second group, but metastatic pathology with a frequency of 12 It was 5% in the first group and 4% in the second group, which has a significant difference compared to other pathologies, which increases the probability of needing a repeat laparotomy by 1.2 times. The frequency of people who underwent chemotherapy was 58% in the first group and 32% in the second group, which had a significant difference. Therefore, the probability of repeat laparotomy increases by 2.9 times in case of a positive history of chemotherapy in patient (Figure 2).

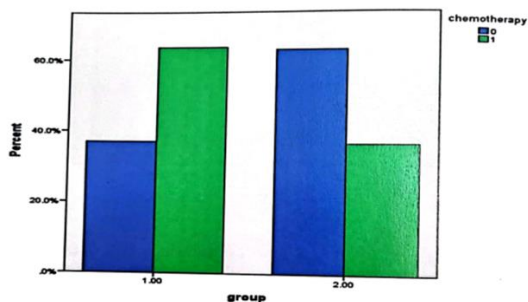


Figure 2. The probability of repeat laparotomy increases by 2.9 times in case of a positive history of chemotherapy in the patient.

The frequency of surgical site prolapse was 25% in the first group and 0% in the second group, which had a significant difference. Therefore, the possibility of repeated laparotomy increases 2.4 times in case of prolapse (Figure 3).

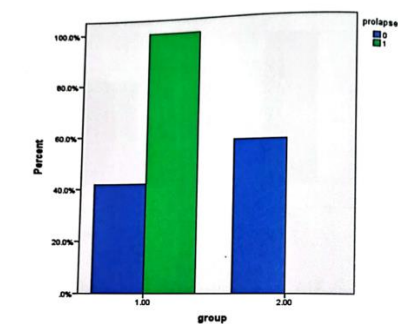


Figure 3. The possibility of repeated laparotomy increases 2.4 times in case of prolapse

The frequency of leakage from the anastomosis site was 25% in the first group and 0% in the second group, which had a significant difference (Figure 4). In this study, 25% of repeat laparotomies were due to anastomotic leak.

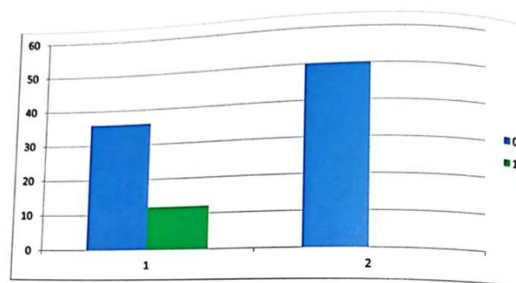


Figure 4. The frequency of leakage from the anastomosis site was 25% in the first group and 0% in the second group, which had a significant difference

The frequency of anastomosis in the gastrointestinal tract was 100% in the first group and 80% in the second group, which had

a significant difference. Therefore, if there is an anastomosis in the gastrointestinal tract and due to the possibility of complications, the possibility of needing a repeat laparotomy increases (Figure 5).

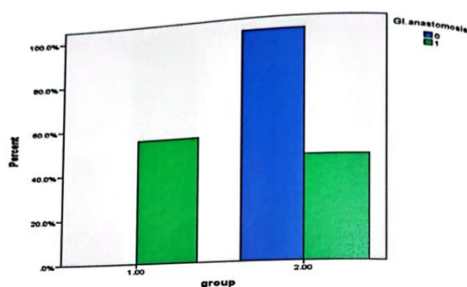


Figure 5. The possibility of needing a repeat laparotomy increases

The frequency of colostomy closure due to complications was 16.7% in the first group and 4% in the second group, which has a significant difference. Therefore, if the colostomy becomes complicated and it is closed, the possibility of complications after the operation and the need for a repeat laparotomy increases.

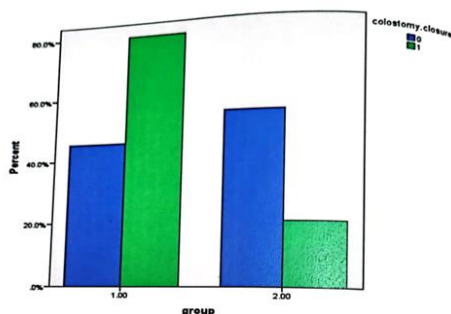


Figure 6. The possibility of complications after the operation and the need for a repeat laparotomy increases.

The frequency of adhesion in the first group was 41.7% and in the second group was 0%, which had a significant difference. Therefore, the occurrence of adhesion increases the

probability of repeat laparotomy up to 2.7 times (Figure 7).

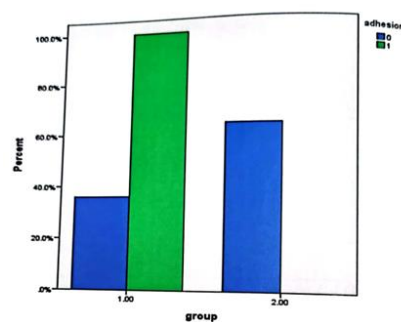


Figure 7. The probability of repeat laparotomy up to 2.7 times.

The average age in the first group was 57.54 with a standard deviation of 18,146 and in the second group it was 64.88 with a standard deviation of 15,307, which had a significant relationship. Therefore, at a younger age, the probability of needing a repeat laparotomy increases up to 1 time (Figure 8).

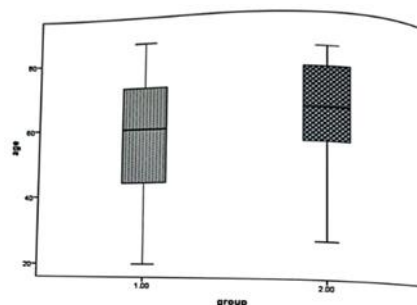


Figure 8. The probability of needing a repeat laparotomy increases up to 1 time.

However, in the context of the relationship between repeated laparotomy and the history of radiotherapy, wound infection, occurrence of hematoma, abdominal pain, intestinal obstruction, abdominal distension, peritonitis and also the relationship between the hours of operation and the possibility of needing repeated laparotomy and the location of cancer and its relationship with laparotomy. Again, no

significant correlation was found. Finally, due to the high interference between the variables, it is not possible to have them in a regular model, and due to the small sample size available, it was not possible to design a model, which was one of the limitations of the design.

Discuss

The possibility of repeat laparotomy in men is 3.5 times that of women. Metastatic pathology increases the probability of needing a repeat laparotomy up to 1.2 times [20-22]. The possibility of re-laparotomy increases up to 2.9 times in case of a positive history of chemotherapy in the patient [23-25]. Occurrence of adhesion increases the probability of repeat laparotomy up to 2.7 times. Leakage at the anastomosis site and colostomy closure also play a role in increasing the likelihood of repeat laparotomy. In a study by RG Dan about the complications of liver resection, liver failure was the most common postoperative complication, followed by biliary fistula bleeding, followed by abdominal abscess and intestinal fistula [26-28]. According to the study of Kang JC and his colleagues, intrasphincteric resection and coloanal anastomosis by laparoscopic method has a lower probability of leakage at the anastomosis site [29-31]. In our study, the type of anastomosis method was not investigated, which seems to be effective in creating a re-laparotomy [32-34]. Due to the fact that leakage at the anastomosis site definitely leads to re-laparotomy, it is better to conduct a study and investigate the effect of types of anastomoses on re-laparotomy [35]. Because increasing the possibility of repeat laparotomy causes more costs and complications for the patient. According to the study of Milras et al.,

second-year surgical residents can perform laparoscopic colectomy through a single incision under the supervision of their senior year [36]. In the study, the role of laparoscopy in colon cancer surgeries and the reduction of postoperative complications and increased comfort of the patient after surgery are clear. In the study of Yovchev et al., which was conducted with the aim of determining the clinical indices after surgery that have an effect on re-laparotomy surgery, it shows that re-laparotomy regardless of survival by the surgical team for each patient depends on the patient has that condition. The average of insufficient anastomosis in this study is 4.5 ± 1.7 days. No statistically significant relationship was observed between the use of empiric antibiotics and re-laparotomy [10]. There was no statistically significant difference between the people who underwent laparotomy once and the people who were re-operated due to insufficient anastomosis. In our study, the results show that the anastomosis in the two groups has a significant difference and it does not agree with the results of the said study [4].

This difference may depend on various factors, such as the skill of the surgeon, the type of anastomosis, and complications during the operation. According to these differences, the difference in these two studies shows that performing a repeat laparotomy has more factors than what has been investigated. It seems necessary to conduct a more comprehensive and prospective study and follow up more patients to know the factors affecting re-laparotomy. In Basol et al.'s study, which aims to determine the factors predicting mortality in re-laparotomy, it shows that the decision to do or not to do re-surgery, pre-operative preparation, the number of laparotomies, the amount of blood received and

the time elapsed since surgery Individual's past are important factors to determine mortality. Initial laparotomy was performed in 97.8% of the studied subjects. The mortality rate in early re-surgery is 13.8% and in delayed re-surgery is 80%. The mortality rate of people over 50 years old is 66.6% and people under 50 years old is 6%. It was not possible to investigate mortality in our study due to the incompleteness of the recorded data and lack of time. This factor, whether re-laparotomy increases the mortality rate, is one of the important factors for deciding to re-do this surgery. It is inevitable to recommend this type of study with the aim of investigating the mortality rate in people who undergo repeat laparotomy.

Conclusion

The probability of performing laparotomy again increases with factors such as male gender, metastatic pathology, positive history of chemotherapy, incidence of prolapse, closure of colostomy due to complications and occurrence of adhesions. Also, leakage at the anastomosis site, due to leading to re-laparotomy, preventing its occurrence plays an important role in not needing re-laparotomy. Meanwhile, history of radiotherapy, wound infection, occurrence of hematoma, abdominal pain, intestinal obstruction, abdominal distension, occurrence of peritonitis, operating hours and the possibility of needing a repeat laparotomy and the location of cancer and its relationship with repeat laparotomy were found to be significantly related. It didn't happen.

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