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COMPARISON BETWEEN LAPARATOMY AND LAPARASCOPY COLORECTAL CANCER FOR LENGTH OF HOSPITAL, SURGICAL SITE INFECTION AND INTRAPERITONEUM ADHESION

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ABSTRAK

Colorectal cancer (CRC) is the development of cancer from the colon or rectum. There are two kinds of surgery which are laparotomy and laparoscopy. This course of action had a significant effect on the length of stay, surgical site infection, and intraperitoneal adhesion. The purpose of this study is to find out the comparison between laparotomy and colorectal cancer laparoscopy with the length of stay, surgical site infection and intraperitoneal adhesion. The researcher used a cross sectional design. The sample for this study was taken from the medical record data of colorectal cancer patients in Dr. Kariadi Semarang from 2013 to 2018. The data were collected using purposive sampling technique. There were 57 samples that included inclusion and exclusion criteria with 28 details of laparoscopy and 29 samples of laparotomy. Numeric-scale data were tested for normality of data by Kolmogorov-Smirnov and found abnormal data using the Mann Whitney test. Nominal scale data were processed using the non-parametric Chi-Square test and it significant if $p<0.05$. There is a difference in length of stay and frequency of occurrence of surgical site infections and intraperitoneal adhesion between laparotomy and laparoscopy

Keywords: laparotomy, laparoscopy, length of stay, surgical site infections, intraperitoneal adhesion

INTRODUCTION

Cancer is a disease caused by the increase and growth of cells in the body that are not normal. Growth and an increase of cancer cells can be destructive or damage healthy cells by infiltrating other tissues through lymphatic vessels or blood vessels.[1] Colorectal cancer is one of the malignancies that often occur in sizeable intestinal tissue, including colon (the longest part of the large intestine) and / or rectum (the last small portion of the large intestine before the anus). [2,3] In the United States, colorectal cancer is the most significant contributor to death. Colorectal cancer ranks third after prostate cancer and lung cancer. [4]

Every year, 150,000 new cases of malignant colorectal tumors are found in the United States and are followed by a mortality rate of more than 52,000 annually. [4] Based on data obtained from the World Health Organization, the incidence of colorectal cancer is increasing in several Asian countries, one of them in the Southeast Asian region. In 2008 there were an estimated 1.6 million new cases and 1.1 million deaths from colorectal cancer. [5,6]

According to the study by Sjamsuhidajat et al. (1986), there were 1378 cases of cancer. Colorectal of 1.8 per 100,000 population in Indonesia.[7] This strengthened by the 2012 data showing an increase in new cases of colorectal cancer by 17.2% in Indonesia.[8]

Based on studies found about 20% of cases of colorectal cancer caused by genetic factors. Other factors can cause colorectal cancer include lack of physical activity, a diet that is high in fat and low in fiber, smoking, and consuming alcohol. [9] This colorectal cancer must be handled properly, so as not to be increasingly worsening and avoiding various

complications. Colorectal cancer healing can be done by removing the tumor.

Surgery that is often performed is laparoscopic and laparotomy techniques. Laparoscopy is a minimally invasive procedure that can be performed for colorectal cancer surgery, apart from that many of the benefits gained from this technique include using a small number of analgesics, slight bleeding and the risk of slight infection due to small surgical wounds. [10] Besides, there are also techniques Laparatomi / Open surgery is a surgical technique that was often used. This surgical technique is based on the location of colorectal cancer. To find out the location of the tumor can be done by ultrasonography (USG), Colonoscopy, Computerized Tomography Scan (CT-Scan) and X-Ray. [3]

The laparoscopic technique has more satisfying results compared to laparotomy. Previous studies have shown a significant reduction in hospital stays and a reduced risk of postoperative complications of colorectal cancer removal. [11]

The length of the postoperative hospital stay in the hospital is from the time of the surgery, being treated in the hospital to being allowed to go home by the doctor. The average length of stay of a post-laparoscopic patient is faster than that of a post-laparotomy patient.[12,13] Complications that can occur in laparoscopic and laparoscopic abdominal surgical techniques are infections in surgical site infection and intraperitoneal adhesion.[14]

Surgical site infection is a short-term complication that often found after laparotomy or laparoscopy. Infection that occurs in post-operative wounds marked by redness and purulent or seropurulent discharge in the wound. It can also influence by stress, blood sugar levels, as well as the mechanism or operation technique performed.[15]

One long-term complication of abdominal surgery is intraperitoneal adhesion, a complication most often found after abdominal surgery. This case can occur due to injury, irritation, and infection of the peritoneum, which disrupts the formation of the fibrin matrix with degradation.[16,17]

METHODOLOGY

Design Study and Variables

This study used a Crossectional Study study design with a purposive sampling technique. This research was conducted at the medical record installation RSUP Dr. Kariyadi, Semarang. The secondary data is the medical record of patients diagnosed with colorectal cancer and done laparotomy or laparoscopy surgery. The independent variables were laparoscopic and laparoscopic measures, while the dependent variables were the length of stay, surgical wound infection, and intraperitoneal adhesion.

Samples

The sample used secondary data, namely the medical records of patients with a diagnosis of colorectal cancer who performed laparoscopic or laparoscopic. The researcher took the sample that has fulfilled the inclusion criteria in the medical record. It must be a complete data including age, sex, date of operation, and doctor who operated. Also, integration sheet in the form of data (SSI / ILO and intraperitoneal adhesion), as well as the operating technique used and patients aged 15-80 years. The total sample needed is 57, according to the purposive sampling calculation.

Statistic Analysis

The data obtained will be analyzed by bivariate analysis (Kolmogorov-Smirnov normality test). Numerical-scale data such as length of stay, abnormal distribution of data is analyzed with the Mann Whitney test. While nominal-scale data such as surgical site infection and Intraperitoneal adhesion were

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analyzed using the non-parametric chi-square test.

ETHICAL CLEARANCE

The study protocol has received ethical approval from the Medical Research Ethics Committee of the Faculty of Medicine, Diponegoro University Semarang, with ethical permission No. 91 / EC / FK-UNDIP / IV / 2019 and Dr. Kariyadi Semarang Hospital with ethical permission No.197 / EC / KEPK-RSDK / 2019.

RESULT

All patients were characterized by age, sex, and type of surgery. The mean age of study subjects with laparotomy was 49.45 ± 13.14, and laparoscopic measures 51.64 ± 13.74. The description of the characteristics of the majority of gender data who carry out the act of Laparatomi is 15 men (51.7%) and the remaining 14 people (48.3%) women. In contrast, the distribution of the sexes who carried out the same laparoscopic action was 14 people (50%) men and 14 people (50%) women. Average peration duration was obtained in the Laparatomi procedure, which was 130.52 ± 39, 05, and the laparoscopic procedure during 288.04 ± 46.61 was calculated in units of minutes.

The description of the operation operator who performed the act of laparotomy (55.2%) by the doctor Sp.B-KBD (31.0%) by the doctor Sp.B and (13.8%) by the surgical resident. Whereas for laparoscopic measures were found (78.6%) by doctors of Sp.B-KBD (Specialist Surgery Consultant for Digestive Surgery), (21.4%) by doctors of Sp.B (Specialist Surgery) and (0%) by Resident surgeons.

Variable length of stay was performed Mann-Whitney test so that the median value obtained in the act of laparotomy was 17 days, with a minimum value of 14 days and a maximum of 21 days while the median value of laparoscopic measures is 11 days, with a minimum value of 9 days and a maximum of 15 days.

Variabel	Types of Surgery	
	Laparotomy	Laparoscopy
Sex		
Male	15 (51,7%)	14 (50,0%)
Female	14 (48,3%)	14 (50,0%)
Age	49,45 ± 13,14	51,64 ± 13,74
ILO		
Yes	22 (75,9%)	11 (39,3%)
No	7 (24,1%)	17 (60,7%)
Intraperitoneal adhesion		
Yes	15 (51,7%)	6 (21,4%)
No	14 (48,3%)	22 (78,6%)
Duration of Operation	130,52 ± 39 05 in minute	288,04 ± 46,61 in minute
Operation operator		
Dokter Sp.B-KBD	16 (55,2%)	22 (78,6%)
Dokter Sp.B	9(31,0%)	6 (21,4%)
Residen Bedah	4 (13,8%)	0 (0%)

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The frequency of surgical wound infections in Laparatomi was found in 22 cases (75.9%), and laparoscopic measures was found in 11 cases (39.3%) while the frequency of intraperitoneal adhesion events in laparotomy was found in 15 cases (51.7%) and in laparoscopic measures found in 6 cases (21.4%).

Based on the results of the Mann-Whitney test P-values <0.05 or significant. It can be conclude that the length of stay of the two types of surgery is significantly different.

Variabel	N=57	Type of surgery OS N=29	LS N=28	P	PR
Surgical site infection		33(57,9%)	22(75,9%)	0,005*	4,857
Intraperitoneal adhesion	21(36,8%)	15(51,7%)	6(21,4%)	0,018*	3,929
Length of hospital	14 ±3,4¥	16,7 ±2,2¥	11,1 ±1,9¥	<0,0 - 01	

Keterangan :
OS = laparotomy
LS = laparaskopi
*Signifikan P < 0,05
¥Median (maksimal – minimum)

Based on the results of the non-parametric chi-square test, the possibility of surgical site infection in the laparotomy procedure is 4.857 times greater than the laparoscopic procedure with a P-value of 0.005 or P <0.05 (statistically significant), it can be concluded the frequency of infection of the surgical wound from the two types of surgery are significantly different. Based on the results of the non-parametric chi-square test, the likelihood of intraperitoneal adhesion on laparotomy is 3,929 times greater than that of laparoscopic with a P-value of 0.018 which can be statistically significant and the frequency of intraperitoneal adhesion is significantly different.

DISCUSSION

The results of this study are similar to the results of previous studies, which show that the length of stay of patients with laparotomy is longer than that of laparoscopy, where the length of stay of patients with laparotomy is 25.8 ± 5.2. Patients with laparoscopic measures are 19.8 ± 3,8.[14] In addition, a study conducted by Kim in 2015 also showed that the length of stay of patients with laparotomy was longer than that of laparoscopy where the length of stay of patients with laparotomy was 17 days and length of stay of patients with laparoscopy that is for 13 days.[10]

The incidence of postoperative infection in this study showed significant results. Other studies have also shown a higher incidence of infection in post-laparotomy wounds compared with laparoscopy, with 68.9% of post-laparotomy patients and post-laparoscopic patients of 31.1%.[11] Laparotomy is more due to the width

of the open surgical wound that is made more extensive than the laparoscopic procedure, thus allowing the higher incidence of infection to occur. This is similar to previous studies that showed that the incidence of surgical site infections often occurs in the act of laparotomy compared with laparoscopy, which found cases of surgical wound infection after laparotomy by 16.1% and laparoscopic measures 9.5%.[18]

The low incidence of postoperative wound infections in laparoscopy, according to Lecy et al. (2002) in laparoscopic actions is associated with a lack of tumor contact during the extraction process, besides that the use of cameras in surgery helps this action to vascular vascularity with high precision and lymph node dissection. the clear lymph nodes so that the likelihood of tissue ischemia and infection is reduced.[11] Besides, the incidence of intraperitoneal adhesion in this study showed significant results. Previous studies that stated the difference between laparotomy and laparoscopy for the occurrence of intraperitoneal adhesion, which found the incidence of intra peritoneal adhesion in patients with laparotomy as many as 8 cases and 4 cases of laparoscopic patients.[11] Caused by a large wound width in the peritoneum, which will cause the formation of a fibrin matrix in the process of wound healing. The more extensive the wound, it will cause the formation of a lot of fibrin matrix so that in an abnormal condition will result in an imbalance between the formation of fibrin matrix degradation. This fibrin matrix will form fibrous connective tissue that causes adhesions between organs.[19]

The use of laparotomy cloth that is used continuously and the use of gloves containing talc allows the intraperitoneal adhesion to occur because, in this action, the talk from gloves and the remnants of the laparotomy cloth can be left behind during the operation. Therefore infection can occur on the inside of the abdominal cavity and allow adhesions between organs.[19,20]

The limitation of this study lies in the research design which is considered weak in showing correlations between variables. This study uses cross sectional design, this design was chosen due to time constraints. No further monitoring of factors that could potentially affect the results of the study can be carried out. Unable to observe the patient's condition directly because only using secondary data in the form of medical record.

CONCLUSION

There was a significant difference between laparotomy and laparoscopy on length of stay, surgical site infection, and intraperitoneal adhesion.

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