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Wound dehiscence in surgical procedures and its relationship to increased mortality (a cross-sectional study)

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Abstract— *This study aims to determine outcomes for Wound dehiscence in surgical procedures and its relationship to increased mortality. Twenty-five patients were collected from different hospitals in Iraq with intestinal obstruction, and they were distributed into two groups according to gender (15 males, ten females), and the average age ranged between 25-50 years. This retrospective study included those patients who were after bowel surgery at different hospitals in Iraq between January 6, 2020, and May 27, 2021, where information was obtained by reviewing clinical records.The statistical analysis program IBM SPSS SOFT 18 was also relied upon for the purpose of knowing the true value and standard regression in addition to the percentage of healthy variables to patients. Microsoft Excel 2013 was used for the purpose of describing and analysing demographic data. the results which found of this study collected 25 patients, and MEAN VALUE with slandered div of age patients was 39.4800 ± 6.8, and the type of anaesthesia used in this study was general anaesthesia. Causes of the bowel surgery according to the sex of the patients were (Mesenteric Ischaemia for one female patient and three male patients and Blunt trauma was one patient for both sexes. Bowel surgery, according to emergency basis and elective basis, was the emergency basis for 19 patients and elective for six patients. Association between Surgery * sex * presence of leaks Cross-tabulation were nine patients for an emergency basis and one patient for Elective. In this study, the mortality rate was higher for males than for females (1.4 patients), respectively and we concluded that there is a statistical relationship between the death rate and its prevalence among men*

Keywords— ***Wound, Dehiscence, Surgical, Anastomosis, Anastomotic Leak.***

I. INTRODUCTION

Anastomotic leak (AF) is one of the most feared complication of GI surgery. Despite advances in anastomotic techniques, postoperative monitoring, and diagnosis, their incidence and consequences have not changed over the past 50 years. Atrial fibrillation can have ramifications for patients in terms of mortality and morbidity in the short and long term. Many surgeons consider atrial fibrillation to be the biggest challenge in gastrointestinal surgery [1,2].

The incidence of atrial fibrillation is variable (1-24%) depending on the type of anastomosis performed and at what level of the digestive system. [3]

In pathophysiology, decreased blood flow is frequently found, as it causes intestinal ischemia, although this has not been proven because detection of insufficient perfusion during surgery is complex [4]

The incidence of anastomotic leak varies according to the anatomical site and is attributed to differences in bacterial load, vascular supply, tension to which the anastomosis is exposed, and patient-specific factors such as the history of

radiotherapy, type 2 diabetes, chronic use of steroids and others. [5]

In other studies, 2237 patients with anastomotic leak were included; The clinical aspects associated with the sample were studied in terms of prevalence and mortality, and an increase in the days of hospital stay in patients (13 vs. five days), the frequency of re-surgery (45.8% vs. 4%), and more often in men than in women (6.2) were observed vs. 3.9%). [6,7]

according to previous studies in assessing the mortality rate of patients who underwent bowel and anastomotic resections for Card Owen in Scotland 2008, 110 patients were collected and distributed according to sex, males 66 patients and females 44 patients. In this study, a statistical correlation was found between the prevalence of mortality in females for six patients and males for two patients, and the statistical value was estimated with a p-value of 0.01

The most common postoperative complication is associated with higher morbidity and mortality than an anastomotic leak, which occurs in up to 53% of cases [8,9]. According to the UK Surgical Infection Study Group, from previous studies, complications had been fever, per ostomy clusters (hematomas, or abscesses), sepsis, Postoperative pain, which is one of the most common symptoms, which negatively affects patients' lives, changes in bowel function, the appearance of adhesions on the intestines [10,11]

In order to reduce morbidity, early detection and treatment of anastomotic leaks is essential. In many hospitals, a routine contrast study is performed in the first week after surgery in order to detect subclinical anastomotic leaks. Low sensitivity of the contrast study has been reported, and the gold standard for detecting anastomotic leaks has not yet been established. [12]

The aim of our work was to find out Wound dehiscence in surgical procedures and its relationship to increased mortality and to evaluate the risk factors that determine in patients.

II. MATERIAL AND METHOD

Twenty-five patients were collected from different hospitals in Iraq with intestinal obstruction, and they were distributed into two groups according to gender (15 males, ten females), and the average age ranged between 25-50 years.

This retrospective study included those patients who were after bowel surgery at different hospitals in Iraq between January 6, 2020, and May 27, 2021, where information was obtained by reviewing clinical records.

Inclusion criterion was defined as the patient who underwent bowel surgery for any indication, with a complete clinical history.

As exclusion criteria, those surgical techniques that included an intervention and patients who did not meet the complete clinical information were established.

The variables studied were age, sex, indication for surgery and comorbidities, clinical stage in cases of malignant lesions, neoadjuvant therapy, surgical technique and complications, time of operation, bleeding, presence of an anastomotic leak, and detection of the leak by contrast study.

Although there are a group of techniques used for bowel obstruction surgery, and one of the most important steps that have been taken into account, some steps have been taken into account, which was The surgery is performed under general anaesthesia.

The operation can be performed in two ways; Open surgery, where the surgeon makes an incision in the abdomen to be able to see the intestines, or using a laparoscope

In this study, the types of Malignancy were classified into four types(Ca caecum, Ca sigmoid, Ca colon), Rectum

The statistical analysis program IBM SPSS SOFT 18 was also relied upon for the purpose of knowing the true value and standard regression in addition to the percentage of healthy variables to patients. Microsoft Excel 2013 was used for the purpose of describing and analysing demographic data.

To compare categorical variables, the person correlation test was used, and an odds ratio (OR) was estimated with a 95% confidence interval. The p-value test was used for the numerical variables.

Data were analyzed using the SPSS 18 statistical package, and a p-value < 0.05 was considered statistically significant.

III. RESULTS

Table 1- Demographic results of patient

Variable	Value
Age	**39.4800±6.8**
BMI	**30.8±2.9**
ASA	
I	**8**
II	**10**
III	**7**
TYPE OF Anaesthesia	
General	**25**

comorbidities	
Arterial hypertension	**7**
Diabetes	**10**
Heart disease	**8**
Operation History	
Yes	**4**
No	**21**
Smoking	
Yes	**9**
No	**16**

Table 2- Mean±SD and Statistics Kurtosis of patients

Statistics Kurtosis		
Age		
N	Valid	25
	Missing	0
Mean		39.4800
Std. Error of Mean		1.37976
Median		41.0000
Std. Deviation		6.89879
Variance		47.593
Skewness		-.234
Std. Error of Skewness		.464
Kurtosis		-1.093
Std. Error of		.902
Range		25.00
Minimum		25.00
Maximum		50.00
Percentiles	25	33.5000
	50	41.0000
	75	45.5000

Table 3- Distribution of patients according to sex

Sex					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	10	40.0	40.0	40.0
	male	15	60.0	60.0	100.0
	Total	25	100.0	100.0	

Table 4- Distribution of patients according to Types of Malignancy

sex * Types of Malignancy Cross-tabulation				
Count				
		sex		Total
		female	male	
Types of Malignancy	Ca caecum	3	0	3
	Ca sigmoid	2	8	10
	Ca colon	3	3	6
	Rectum	2	4	6
Total		10	15	25

Table 5- Distribution of patient according to intestinal obstruction

Types of Malignancy * intestinal obstruction Cross-tabulation								
		intestinal obstruction						Total
			bands	ileal stricture	Intestinal gangrene	Intussusceptions	Sigmoid volvulus	
type	Ca caecum	0	0	1	2	0	0	3
	Ca sigmoid	0	2	0	6	0	2	10
	Ca colon	0	0	1	0	4	1	6
	Rectum	1	1	2	0	1	1	6
Total		1	3	4	8	5	4	25

Table 6- Described the results of the causes of the anastomosis according to the sex of the patients

sex * causes of the anastomosis Cross-tabulation				
Count				
		sex		Total
		female	male	
cause	Blunt trauma	1	1	2
	Inflammatory bowel disease	1	0	1
	Meckel's Diverticulum.	1	0	1
	Mesentric Ischaemia	1	3	4
	not	5	11	16
	penetrating Trauma abdomen	1	0	1
Total		10	15	25

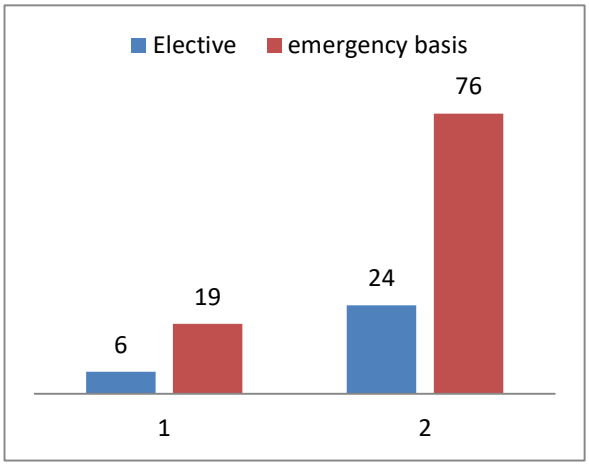

Fig 1 - Results related of anastomosis according to emergency basis and the elective basis

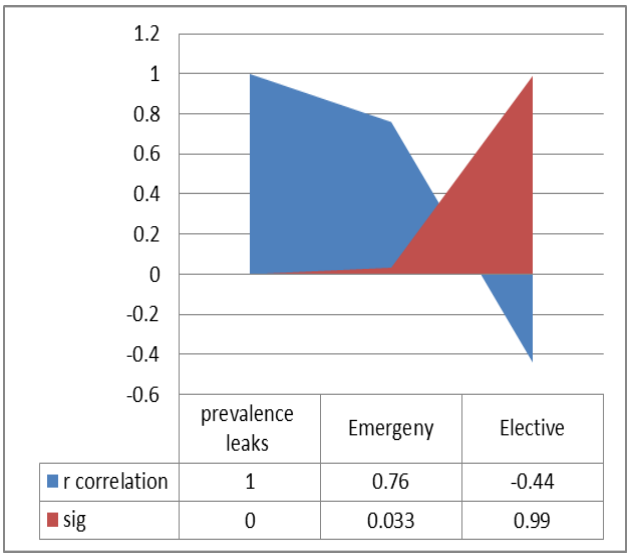

Fig 2- Pearson correlation of prevalence leaks related with Surgery

*Table 7- Describe the association between Surgery * sex * presence of leaks Cross-tabulation*

Surgery * sex * presence of leaks Cross-tabulation					
Count					
					Total
			female	male	
leaks	Surgery	Elective	1	0	1
		emergency basis	4	5	9
	Total		5	5	10
not	Surgery	Elective	1	4	5
		emergency basis	4	6	10
	Total		5	10	15
Total	Surgery	Elective	2	4	6
		emergency basis	8	11	19
	Total		10	15	25

Table 8 - Outcomes of the patient according to Small Bowel Anastomosis

sex * Small Bowel Anastomosis Cross-tabulation				
		sex		Total
		female	male	
Small Bowel Anastomosis		8	6	14
	Ileal Anastomoses	0	5	5
	Jejunal Anastomoses	0	4	4
	Jejunoileal Anastomoses	2	0	2
Total		10	15	25

Table 9- Assessment risk factor of the study

Statistic				Std. Error
Anaemia	Mean		38.6000	2.00666
	95% Confidence Interval for Mean	Lower Bound	34.0606	
		Upper Bound	43.1394	
	Std. Deviation		6.34560	
	Minimum		31.00	
	Maximum		48.00	
Hypoproteinaemia	Mean		41.4286	3.60461
	95% Confidence Interval for Mean	Lower Bound	32.6084	
		Upper Bound	50.2487	
	Std. Deviation		9.53690	
	Minimum		25.00	
	Maximum		50.00	
Peritonitis	Mean		34.2500	.85391
	95% Confidence Interval for Mean	Lower Bound	31.5325	
		Upper Bound	36.9675	

	Std. Deviation		1.70783	
	Minimum		32.00	
	Maximum		36.00	
Septicemia	Mean		45.5000	.50000
	95% Confidence Interval for Mean	Lower Bound	39.1469	
		Upper Bound	51.8531	
	Std. Deviation		.70711	
	Minimum		45.00	
	Maximum		46.00	
	Range		1.00	
Uraemia	Mean		41.5000	.50000
	95% Confidence Interval for Mean	Lower Bound	35.1469	
		Upper Bound	47.8531	
	Std. Deviation		.70711	
	Minimum		41.00	
	Maximum		42.00	

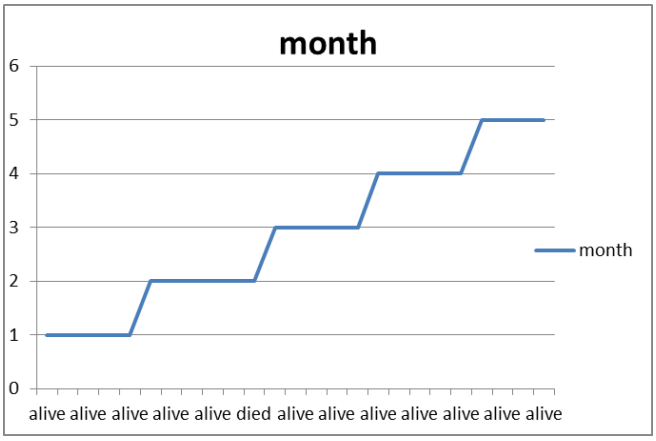

Fig 3- Overall survival for patients undergoing for wound dehiscence

Table 10- Person correlation to explain difference statistical relationships according to sex

Variable	Mortality	Male	Female
R correlation	1:0	+0.32*	-0.467
s-sig		0.001	0.09
N	25		

IV. DISCUSSION

In this study, 25 patients were collected from different hospitals in Iraq where they were distributed into two groups (25 male and ten female patients), where the average age ranged from 25 to 50 years, and the data were analysed using the program IBM SPSS SOFT 18 It was MEAN VALUE AND slandered div of age patients was 39.4800 ± 6.8, and the type of anaesthesia used in this study was general anaesthesia.

As for the diseases associated with patients, they were the most prevalent in this study Diabetes for ten patients, arterial hypertension for seven patients, and heart disease for eight patients. In this study, 9 out of 25 patients were smokers.

In this study, patients were distributed according to Types of Malignancy, and Casigmoid was the most prevalent in this study for two female patients and ten male patients, Ca caecum for three female patients, Ca colon for three female patients, and three male patients, Rectum for two female patients and four male patients.

For the intestinal anastomosis to be successful, three basic conditions must exist lack of tension, adequate blood flow, and an inverted anastomosis (mucosal layer). [13,14]

Some of the factors affecting the outcome of the intestinal anastomosis are inherent to the patient, such as nutritional status, underlying disease, and age, or they depend on the surgical technique, such as the anastomosis tension, the type of anastomosis, and the technique used. Given that patient-dependent factors are largely immutable, the surgical technique is one aspect in which

surgeons can have the greatest impact in reducing the incidence of complications from anastomotic failure. [15]

The incidence of anastomosis leakage ranges between 2% and 5% in various previous studies, and it is variable in patients suffering from trauma, cancer, or benign diseases, as well as in colon surgeries, where the percentage can be higher than 30%, which leads to high rates of morbidity and mortality for patients in addition to the apparent cost overruns of the health system. [16,17]

The technique of performing bowel anastomosis has been a topic of debate among general surgeons for decades. There are currently a number of techniques for performing the anastomotic suture, with well-known such as Lembert and Gambee [18].

Nowadays, thanks to the development of new technologies, modern methods of surgical intervention have appeared, and In this case, we are talking about laparoscopic resection of the colon and rectum, which is performed through small incisions. [19,20]

Thus, colectomy today is performed in two ways: through laparotomy and laparoscopy. Operations through a wide incision in the abdominal wall are obviously more traumatic, although they provide sufficient visualization and access to the lesion.

Laparoscopic surgeries are less risky but require expensive tools and equipment. In addition, such operations are very specific and can only be performed by highly trained and qualified professionals.

Segment resections begin with the junction of the interested vessels. After the bowel is isolated (mobilization stage), the affected intestine is removed through a small incision in the anterior abdominal wall. Resection and anastomosis are performed outside the abdominal cavity (extracorporeally).

Left segment resection includes the same stages of vascular removal and mobilization, and the anastomosis is formed depending on the anatomical conditions. If the length of the loop is sufficient, the affected area is removed through a small incision in the anterior abdominal wall, and excision and extraperitoneal anastomosis are performed.

Previous studies convincingly demonstrate that the results of laparoscopic surgery do not differ from those of open surgery.

V. CONCLUSION

In this study, higher leakage was found in the anastomosis of the large intestine, and no statistical differences were found between the anastomotic leakage rate and the surgical technique that was used in this study. Males to females, and through the Pearson correlation, we found that the study revealed a statistical relationship between the death rate and its prevalence among men.

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