

Factors associated with dehiscence of intestinal anastomosis

Factores asociados a dehiscencia de anastomosis intestinal

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Abstract

Objective: To identify the factors associated with dehiscence of anastomosis of the small and large intestine. **Method:** 92 anastomoses of the small and large intestine were included in patients over 18 years of age, performed in 2012-2016. Associated factors were evaluated in pre, trans and postoperative. **Results:** Anastomosis dehiscence was presented in 13%. A significant association was found for previous medication intake ($p = 0.05$; odds ratio [OR]: 1.17; 1.024-1.33) and primary anastomosis ($p = 0.05$, OR: 3.6; 0.92-14.5). In patients with dehiscence, the hospital stay was increased. **Conclusion:** The presence of dehiscence of anastomosis was similar to that reported in the literature. The associated factors were previous medication intake, and primary anastomosis.

Keywords: Intestinal anastomosis. Dehiscence. Anastomotic leak.

Resumen

Objetivo: Identificar los factores asociados a dehiscencia de anastomosis de intestino delgado y grueso. **Método:** Se incluyeron 92 anastomosis de intestino delgado y grueso, en mayores de 18 años, realizadas en 2012-2016. Se evaluaron factores asociados en el preoperatorio, el transoperatorio y el posoperatorio. **Resultados:** Se presentó dehiscencia de anastomosis en el 13% de los casos. Se encontró una asociación significativa con ingesta previa de medicamentos ($p = 0.05$; odds ratio [OR]: 1.17; IC 95%) y con anastomosis primaria ($p = 0.05$; OR: 3.6; 0.92-14.5). En los pacientes con dehiscencia se incrementó la estancia intrahospitalaria. **Conclusión:** La presencia de dehiscencia de anastomosis fue similar a lo reportado en la literatura. Los factores asociados fueron la ingesta previa de medicamentos y la anastomosis primaria.

Palabras clave: Anastomosis intestinal. Dehiscencia. Fuga anastomótica.

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Introduction

Anastomosis dehiscence is one of the most feared surgical complications in the field of gastrointestinal (GI) surgery¹⁻⁸, and is associated with an increase in morbidity and mortality and hospital length of stay⁹. The frequency and severity of complications vary according to the anatomical site where they occur. Currently, it is considered an indicator of the quality of surgical attention and care, which in turn serves as a cutoff point for the evaluation of protocols and standards of different hospital units, which can be compared with each other¹⁰⁻¹².

Numerous risk factors have been identified that can determine the occurrence of dehiscence of intestinal anastomosis. For study purposes, we might group them into three types: those fully identified, some still under study and, finally, those that were considered to have a deleterious or protective effect and that in recent studies have shown an opposite effect. The percentages of dehiscence vary according to the series from 0.3 to 5.5% in the small intestine to 21% in the large intestine¹².

In recent years, various studies concur in the search for factors related to the presence of dehiscence and highlight clinical findings, nutritional history and laboratory or imaging tests that guide early detection of this complication, since the presence of three or more factors can increase the probability of dehiscence by up to 50%^{4,5,13}. Mortality in patients with anastomosis dehiscence ranges from 0.5 to 15%¹³.

Morse et al.¹² determined the most common risk factors for dehiscence in 682 anastomoses: lung disease (29%), previous albumin < 3.0 mg/dL (37%), preoperative peritonitis (34%), anastomotic tension (5%), preoperative transfusions (15.8%), presence of cancer (19.4%) and placement of drains (3%); and as predictive factors, in the multivariate analysis, only anastomotic tension (odds ratio [OR]: 10.1; 95% confidence interval [CI]: 1.4-75.9), use of drains (OR: 8.9; 95% CI: 4.4-18.4) and blood transfusion (OR: 4.2; 95% CI: 1.4-12.3).

The difficulty for predicting the occurrence of dehiscence lies in identifying the factors associated with this complication. In clinical practice, dehiscence is observed even in young, well-nourished patients, without comorbid conditions and despite a satisfactory surgical technique, which is why it is important for the factors associated with anastomosis dehiscence to be established for each population¹³.

The Juan María de Salvatierra General Hospital is a referral hospital center located in the State of Baja California Sur, which serves patients of low socioeconomic status and without social security, with various abdominal pathologies, among which at least 25 cases per year will require resection and anastomosis, which is why the purpose of this study was to identify the presence of factors associated with small and large intestine anastomosis dehiscence in our hospital, with the purpose to implement preventive measures for avoiding the occurrence of this event.

Method

A descriptive, observational study was carried out, in which 92 patients who underwent small and large intestine anastomosis between 2012 and 2016 were included by non-probability sampling of consecutive cases. Patients older than 18 years who underwent manual or mechanical, intraperitoneal or extraperitoneal, elective or emergency anastomosis of the small or large intestine, and with ASA I-III preoperative physical status were included. The main source of data collection were medical records that had standardized diagnoses according to international classification of diseases (ICD-10) codes such as Z933 (colostomy), Z433 (encounter for attention to colostomy), K914 (colostomy and enterostomy malfunction), Z432 (encounter for attention to ileostomy), Z932 (ileostomy), Z465 (encounter for fitting and adjustment of ileostomy or other gastrointestinal appliance and device), Z980 (intestinal bypass and anastomosis status), Y832 (surgical operation with anastomosis, bypass or graft [...]) or Y652 (failure in suture or ligature during surgical operation).

Variables were classified into:

- Preoperative: gender, age, drug addictions, previous intake of medications, comorbidity, nutritional status according to body mass index (BMI, < 18, malnourished; 18.1-24.9, normal weight; 25-29.9, overweight; > 30, obesity), serum albumin (mg/dL), antibiotic prophylaxis, intestinal preparation, physical state of the loop and type of surgery.
- Intraoperative: preoperative abdominal sepsis, surgery duration (minutes), placement of drains, intraoperative transfusion, cause of surgery, primary anastomosis, type of anastomosis and protective or prophylactic stoma.
- Postoperative: dehiscence of intestinal anastomosis, enteral feeding initiation (routes), use of

total parenteral nutrition, intensive care unit stay, hospital stay and mortality.

Descriptive statistics were calculated with averages and standard deviations, frequencies and percentages. Inferential analysis of qualitative variables was carried out using the chi-square test or with Fisher's exact test; for quantitative variables, Student's t-test or Mann-Whitney's U-test were used. Calculations were performed for risk factors (OR). The SPSS v21 statistical package was used.

The study was approved by the research committee of the hospital unit with registration number 004-004-2016.

Results

Ninety-two patients with a mean age of 45.5 ± 16.3 years were included in the study. Seventy (76%) anastomosis procedures were carried out in male patients. Twenty-eight patients (30.4%) had some comorbidity, and more than 50% had overweight and obesity. Performed surgeries were elective in 67 cases (72.8%) (Table 1).

Average time of the surgical event was 175.5 minutes. Evidence of abdominal sepsis was found in 25 (27.2%) patients. Transfusion of blood products was required by 19 patients (21%). Colonic anastomosis showed predominance over ileal anastomosis (64 [69.6%]). Only in 25% of cases was drainage placed. In 67 patients (72.8%), anastomoses were performed for a benign diagnosis (intestinal transit restitution due to previous stomata, intestinal occlusion, etc.). The most commonly used technique was manual, in 88 cases (95.7%) (Table 2). Average time elapsed between the first surgery and intestinal transit restitution in cases with prior colostomy or ileostomy was 5 months.

In total, 13% of anastomoses had leaks, with an average of 6 days until the event was identified (6.5 ± 3.5). Median hospital stay was 13.6 ± 15.8 days. Nine patients (9.8%) were admitted to the intensive care unit. Twenty-one patients (23%) required total parenteral nutrition implementation. Overall mortality was 7 cases (7.6%). Associated mortality in patients without anastomotic leakage was due to severe traumatic brain injury, acute myocardial infarction and pulmonary thromboembolism. In those patients with dehiscence, only one death occurred (Table 3).

For the previous medication intake variable, the most common drugs were nonsteroidal anti-inflammatory drugs (NSAIDs), metformin, enalapril and

Table 1. Frequencies and general characteristics of patients in the preoperative period (n = 92)

Variable	Frequency (n)	Percentage (%)	Mean	SD
Age			45.5	± 16.3
Serum albumin levels			3.8	± 0.91
Gender				
Males	70	76.1		
Females	22	23.9		
Drug addiction				
Yes	61	66.3		
No	31	33.7		
Previous medication intake				
Yes	29	31.5		
No	63	68.5		
Comorbidities				
Yes	28	30.4		
No	64	69.6		
BMI				
Undernourished	4	4.3		
Normal	37	40.2		
Overweight	32	34.8		
Obesity	19	20.7		
Intestinal preparation				
Yes	33	35.9		
No	59	64.1		
Antibiotic prophylaxis				
Yes	40	43.5		
No	52	56.5		
Physical state of the loop				
I	29	31.5		
II	43	46.7		
III	20	21.7		
Type of surgery				
Elective	67	72.8		
Emergency	25	27.2		

BMI: body mass index; SD: standard deviation.

*Eating attitudes test.

pravastatin, in that order. A statistically significant association was found between the presence or not of anastomosis dehiscence and previous medication intake ($p = 0.05$; OR: 1.17; 95% CI: 1.024-1.33); the rest of preoperative variables showed no differences (gender, smoking, comorbidity, BMI, intestinal preparation, antibiotic prophylaxis, ASA physical status and type of surgery). For intraoperative variables, a significant association was found in the performance of primary anastomosis ($p = 0.05$; OR: 3.6; 95% CI: 0.92-14.5), but in the remaining variables there were no significant differences (abdominal sepsis, transfusions, anastomosis anatomical site, drainage placement,

Table 2. Frequencies and general characteristics of patients in the intraoperative period (n = 92)

Variable	Frequency	Percentage	Mean	SD
Surgery duration (minutes)			175.5	65
Abdominal sepsis				
Yes	25	27.2		
No	67	72.8		
Intraoperative transfusions				
No transfusion	79	79.3		
1	10	10.9		
2	7	7.6		
3	1	1.1		
5	1	1.1		
Anastomosis anatomical site				
Small intestine	28	30.4		
Large intestine	64	69.6		
Placement of drains				
Yes	69	75%		
No	23	25%		
Cause of surgery				
Benign	67	72.8		
Malignant	16	17.4		
Trauma	9	9.8		
Primary anastomosis				
Yes	45	48.9		
No	47	51.1		
Type of anastomosis				
Manual	88	95.7		
Mechanical	4	4.3		
Protective or prophylactic stoma				
Yes	12	13		
No	80	87		

SD: standard deviation.

cause of surgery, type of anastomosis and protective stoma). In the case of postoperative variables, such as total parenteral nutrition use, referral to the intensive care unit or mortality associated with the procedure, no significant differences were found (Table 4). The days of hospital stay increased in patients with dehiscence ($p = 0.000$; 8.8-26.9). No difference was found in albumin figures, age, surgery duration, enteral nutrition initiation (Table 5).

When analyzing the same order of variables, preoperative, intraoperative and postoperative, but according to anastomosis anatomical site (small or large intestine), the variables that showed significant difference in the preoperative period were previous medication intake ($p = 0.005$; OR: 1.3; 95% CI: 1.05-1.67), type of surgery, and elective vs. emergency surgery

Table 3. Frequencies and general characteristics of patients in the postoperative period (n = 92)

Variables	Frequency (n)	Percentage (%)	Mean	SD
Hospital stay (days)			13.6	15.8
**Start of enteral nutrition			3.7	2.2
**Leak identification			6.5	3.5
Intestinal anastomosis dehiscence				
Yes	12	13		
No	80	87		
Use of TPN				
Yes	21	22.8		
No	71	77.2		
Referral to intensive care unit				
Yes	9	9.8		
No	83	90.2		
Overall mortality				
Yes	7	7.6		
No	85	92.4		
Mortality associated with the procedure				
Yes	1	8.3		
No	11	91.7		

SD: standard deviation; TPN: total parenteral nutrition.

($p = 0.006$; OR: 1.6; 95% CI: 1.05-2.48); in the intraoperative period, presence of abdominal sepsis ($p = 0.006$; OR: 3.7; 95% CI: 1.42-9.93). In the case of postoperative variables, a significant association was found for the use of total parenteral nutrition ($p = 0.04$; OR: 2.6; 95% CI: 0.97-7.3) (Table 6).

Surgical management of dehiscence was carried out in 50% of patients; the rest received conservative treatment.

Discussion

Dehiscence of anastomosis in this series was 13% of total cases; although within the reported figures, incidence in other centers is lower than 6%¹⁴.

Matsuda et al.¹, in a controlled clinical trial, compared antiperistaltic small bowel anastomoses against isoperistaltic anastomoses, with no evidence of dehiscence attributable to either technique being found, and in those patients who developed it, it was attributed to localized sepsis, anastomosis inflammation or loop pressure changes, in addition to each patient's response to the surgical event.

Table 4. Univariate analysis associated with the presence of anastomosis dehiscence (n = 92)

Qualitative variables	Anastomosis dehiscence		p* (OR; 95% CI)
	Yes (n = 12)	No (n = 80)	
Preoperative			
Gender			
Males	9 (9.8%)	61 (66.3%)	0.58
Females	3 (3.3%)	19 (20.7%)	(0.934; 0.022-3.80)
Smoking			
Yes	9 (9.8%)	52 (56.5%)	0.37
No	3 (3.3%)	28 (30.4%)	(1.6; 0.40-6.45)
Previous medication intake [†]			
Yes	1 (1.1%)	28 (30.4%)	0.05
No	11 (12.0%)	52 (56.5%)	(1.17; 1.024-1.33)
Comorbidity			
Yes	1 (1.1%)	27 (29.3%)	0.06
No	11 (12.0%)	53 (57.6%)	(0.178; 0.022-1.45)
BMI			
Undernourished	1 (1.1%)	3 (3.3%)	0.511
Normal	4 (4.3%)	33 (35.9%)	(1.21; 0.40-0.61)
Overweight	4 (4.3%)	28 (30.4%)	
Obesity	3 (3.3%)	16 (17.4%)	
Intestinal preparation			
Yes	3 (3.3%)	30 (32.6%)	0.30
No	9 (9.8%)	50 (50.4%)	(0.55; 0.139-2.21)
Antibiotic prophylaxis			
Yes	5 (5.4%)	35 (38.0%)	0.57
No	7 (7.6%)	45 (48.9%)	(0.918; 0.26-3.14)
ASA physical status			
I	6 (6.5%)	23 (25.0%)	
II	4 (4.3%)	39 (42.4%)	0.152
III	2 (2.2%)	18 (19.6%)	(0.11; 0.07-0.22)
Type of surgery			
Elective	7 (7.6%)	60 (65.2%)	0.19
Emergency	5 (5.4%)	20 (21.7%)	(0.467; 0.133-1.63)
Intraoperative			
Abdominal sepsis			
Yes	5 (5.4%)	20 (21.7%)	0.12
No	7 (7.6%)	60 (65.2%)	(2.1; 0.611-7.5)
Intraoperative transfusions			
None	10 (10.8%)	63 (68.4%)	0.42
1	1 (1.1%)	9 (9.7%)	(2.1; 0.30-0.50)
2	1 (1.1%)	6 (6.5%)	
3	0 (0%)	1 (1.1%)	
5	0 (0%)	1 (1.1%)	
Anastomosis anatomical site			
Small intestine	1 (1.1%)	27 (29.3%)	0.06
Large intestine	11 (12%)	53 (57.6%)	(0.17; 0.22-1.45)
Drains			
Yes	10 (10.9%)	59 (64.1%)	0.23
No	2 (2.2%)	21 (22.8%)	(1.78; 0.36-8.79)
Cause of surgery			
Benign	10 (10.9%)	57 (62%)	0.39
Malignant	1 (10.1%)	15 (16.3%)	(1.1; 0.29-0.49)
Trauma	1 (1.1%)	8 (8.7%)	
Primary anastomosis			
Yes	9 (9.8%)	36 (39.1%)	0.05
No	3 (3.3%)	44 (47.8%)	(3.6; 0.92-14.5)
Anastomosis type			
Manual	12 (13%)	76 (82.6%)	0.60
Mechanical	0 (0%)	4 (4.3%)	(0.86; 0.79-0.93)
Protective or prophylactic stoma			
Yes	3 (3.3%)	12 (13.0%)	0.30
No	9 (9.8%)	68 (73.9%)	(1.8; 0.44-8.0)

(Continues)

Table 4. Univariate analysis associated with the presence of anastomosis dehiscence (n = 92) (continued)

Qualitative variables	Anastomosis dehiscence		p* (OR; 95% CI)
	Yes (n = 12)	No (n = 80)	
Postoperative			
TPN			
Yes	5 (5.4%)	16 (17.3%)	0.10 (2.8; 0.80-10.1)
No	7 (7.6%)	64 (69.5%)	
Transfer to ICU			
Yes	1 (1.1%)	8 (8.7%)	0.66 (0.81; 0.93-7.1)
No	11 (12.0%)	72 (78.3%)	
Mortality associated with the procedure			
Yes	1 (1.1%)	6 (6.5%)	0.41 (1.2; 0.12-10.2)
No	11 (12.9%)	74 (80.4%)	

ASA: American Anesthesiology Association classification; BMI: body mass index; CI: confidence interval; ICU: intensive care unit; OR: odds ratio; TPN: total parenteral nutrition.

*Chi-square test.

†Nonsteroidal anti-inflammatory drugs, metformin, enalapril, pravastatin.

Table 5. Quantitative variables analysis according to the presence of anastomosis dehiscence (n = 92)

Quantitative variables	Anastomosis dehiscence		p* (95% CI)
	Yes (n = 12)	No (n = 80)	
Age	39.0 ± 9.8	43.9 ± 16.9	0.194 (-15.15-4.9)
Serum albumin	3.3 ± 1.0	3.4 ± 0.8	0.709 (-8.19-0.6)
Surgery duration (minutes)	152.6 ± 43	179.0 ± 67.3	0.089 (-57.1-4.3)
Days of hospital stay	29.1 ± 8.4	11.3 ± 1.2	0.000 (8.8-26.9)
Enteral nutrition initiation (days)	3.9 ± 2.7	3.6 ± 2.1	0.23 (-1.15-1.6)

CI: confidence interval.

*Student's t-test.

Alves et al.¹¹ identified the presence of preoperative leukocytosis > 10,000/mm³ (OR: 2.3), preoperative intra-abdominal sepsis (OR: 4.9), difficulties encountered during anastomosis (OR: 10.3), colocolic anastomosis (OR: 6.24) and postoperative blood transfusions (OR: 4.59) to be independent risk factors.

Morse et al.¹² analyzed 682 patients who underwent intestinal anastomosis and found 38 with dehiscence, among whom they identified an association with the following factors: history of lung disease (due to probable related hypoperfusion), undernourishment, perioperative blood transfusions, intraoperative bleeding, intra-abdominal infection, anastomotic leakage site, anastomotic tension and use of drains.

In a study carried out by Muñoz et al.¹⁴ in Chile with 748 patients, a strong association of hypoalbuminemia and transfusions was found as risk factors for the

development of dehiscence. In our case series, primary anastomosis performance and previous intake of medications, such as NSAIDs, chemotherapy, steroids, and anticoagulants, were shown to be likely to significantly determine the occurrence of dehiscence. There are interventional studies in which clinical decision-making influences the reduction of anastomotic dehiscence from 10% to 4.5%, with said decisions including reducing the use of NSAIDs for the previous 5 days and up to 7 days after surgery, management of intravenous fluids and primary anastomoses avoidance in emergency resections¹⁵.

One factor that could not be compared with findings reported in the literature was the use of staplers, given that, in this series, said technique was only possible in four patients, due to limited access to supplies available in the hospital unit. Even when there is no standard method for the manual or stapled intestinal

Table 6. Univariate analysis associated with anastomosis anatomical site (n = 92)

Qualitative variables	Anatomical site		p* (OR; 95% CI)
	Small intestine (n = 28)	Large intestine (n = 64)	
Preoperative			
Gender			
Males	23 (25.0%)	47 (51.1%)	0.43
Females	5 (5.4%)	17 (18.5%)	(1.66; 0.54-5.0)
Smoking			
Yes	17 (18.5%)	44 (47.8%)	0.48
No	11 (12.0%)	20 (21.7%)	(0.72; 0.27-1.77)
Previous medication intake [†]			
Yes	5 (5.4%)	24 (26.1%)	0.050
No	23 (25.0%)	40 (43.5%)	(1.3; 1.05-1.67)
Comorbidity			
Yes	6 (6.5%)	22 (23.9%)	0.16
No	22 (23.9%)	42 (45.7%)	(0.52; 0.18-1.4)
BMI			
Undernourished	2 (2.2%)	2 (2.2%)	0.13
Normal	11 (12.0%)	26 (28.3%)	(1.3; 0.62-0.19)
Overweight	6 (6.5%)	26 (28.3%)	
Obesity	9 (9.8%)	26 (28.3%)	
Intestinal preparation			
Yes	7 (7.6%)	26 (28.3%)	0.11
No	21 (22.8%)	38 (41.3%)	(0.48; 0.18-1.3)
Antibiotic prophylaxis			
Yes	11 (12.0%)	29 (31.5%)	0.38
No	17 (18.5%)	35 (38.5%)	(0.78; 0.31-1.9)
ASA physical status			
I	7 (7.6%)	22 (23.9%)	0.33
II	11 (12.0%)	32 (34.8%)	(0.66; 0.00-0.69)
III	10 (10.9%)	10 (10.9%)	
Type of surgery			0.006
Elective	15 (16.3%)	52 (56.5%)	(1.6; 1.05-2.48)
Emergency	13 (14.1%)	12 (13.0%)	
Intraoperative			
Abdominal sepsis			
Yes	13 (14.1%)	12 (13.0%)	0.006
No	15 (16.3%)	52 (56.5%)	(3.7; 1.42-9.93)
Intraoperative transfusions			
None	20 (21.7%)	53 (57.6%)	0.65
1	3 (3.3%)	7 (7.6%)	(0.81; 0.015-0.116)
2	3 (3.3%)	4 (4.3%)	
3	1	0	
5			
Drains	1	0	0.20
Yes	21 (22.8%)	48 (52.2%)	(1.0; 0.35-2.78)
No	7 (7.6%)	16 (17.4%)	
Cause of surgery			
Benign	18 (19.6%)	49 (53.3%)	0.163
Malignant	6 (6.5%)	10 (10.9%)	(1.2; 0.88-0.23)
Trauma	4 (4.3%)	5 (5.4%)	
Primary anastomosis			
Yes	16 (17.4%)	29 (31.5%)	0.20
No	12 (13.0%)	35 (38.5%)	(0.86; 0.65-3.94)
Type of anastomosis			
Manual	28 (30.4%)	60 (65.2%)	0.22
Mechanical	0 (0%)	4 (4.3%)	(0.68; 0.59-0.78)
Protective or prophylactic stoma			
Yes	4 (4.3%)	11 (12.0%)	0.49
No	24 (26.1%)	53 (57.6%)	(0.80; 0.23-2.78)

(Continues)

Table 6. Univariate analysis associated with anastomosis anatomical site (n = 92) (continued)

Qualitative variables	Anatomical site		p* (OR; 95% CI)
	Small intestine (n = 28)	Large intestine (n = 64)	
Postoperative			
TPN			
Yes	10 (10.9%)	11 (12.0%)	0.049 (2.6; 0.97-7.34)
No	18 (19.6%)	53 (57.6%)	
Dehiscence			
Yes	4 (4.3%)	8 (8.7%)	0.52 (0.92; 0.623-1.45)
No	24 (26.1%)	56 (60.9%)	
Transfer to ICU			
Yes	4 (4.3%)	5 (5.4%)	0.27 (0.78; 0.42-1.42)
No	24 (26.1%)	59 (64.1%)	
Mortality associated with the procedure			
Yes	2 (2.2%)	5 (5.4%)	0.64 (0.90; 0.165-4.98)
No	26 (28.3%)	59 (64.1%)	

ASA: American Anesthesiology Association classification; BMI: body mass index; CI: confidence interval; ICU: intensive care unit; OR: odds ratio; TPN, total parenteral nutrition.

*Chi-square test.

†Nonsteroidal anti-inflammatory drugs, metformin, enalapril, pravastatin.

anastomosis technique, there are studies, such as the one carried out by Kosuge et al.¹⁶ with 684 intestinal anastomoses in Japan, describing that the safest technique for performing an anastomosis in colonic surgery, with evidence of a lower incidence of leakage, is end-to-end anastomosis with intestinal stapler (triangulating anastomosis).

Intestinal preparation was carried out in less than half the patients who underwent colorectal surgery, and the type of anastomosis that was used was only mechanical. There are controversies between protocols for colonic mechanical preparation reported since 2000, since they issue different opinions about implementation or not of this procedure, with its contraindication being more predominant; however, these assertions have gradually been refuted with new evidence that, although postulated with low-moderate level, refers the benefits granted to the patient with mechanical preparation of the colon and oral antibiotics administration in colorectal surgery, especially for the prevention of surgical site infection, and low incidence in prevention of anastomotic leaks¹⁷.

Although no association was found between dehiscence and the presence of drains, these were placed in 83% of patients who had anastomosis dehiscence. A meta-analysis carried out in 2018 based on four clinical trials (with a total of 766 patients) demonstrated a low effectiveness of intra-abdominal drains in the presence of intestinal anastomoses¹⁸, which is why caution should be exercised when making the decision to place them.

It has not been possible to demonstrate the relationship between the time elapsed since the first surgery and intestinal transit restoration as a risk factor for complications, mainly in relation to surgical site infections and anastomotic leaks. On the other hand, there is evidence that supports that prolonged hospital stay and previous smoking are predisposing factors.

In our series, average time to restitution was 5 months, while for Hallam et al.¹⁹, in the United Kingdom, in 288 surgeries, average was 11 months. According to the time of anastomotic leak signs or symptoms identification by the surgeon in the same hospitalization, i.e., in the immediate and mediate postoperative period, 50% of the patients included in our study received management with conservative treatment, decided by the treating physician with in-hospital surveillance and radiographic control, at an output rate of less than 100 mL per day; the rest required laparotomy for leakage and stoma control. This management continues to be the behavior of choice recommended by colonic and rectal surgery clinics, since despite multiple non-surgical alternatives for the management of this type of patients (percutaneous drainage, antibiotics, Vacuum-Assisted Closure [VAC] therapy, intestinal stents) reoperation plays a key role in leakage control, especially in those patients who do not improve with conservative treatment, as in the case of sepsis and persistent peritonitis, since it is necessary to control the source of infection, dismantle previous anastomosis and perform a diverting stoma²⁰.

Enteral nutrition initiation time was prolonged in patients with or without dehiscence, since, on average, it was 3.7 days, even though nutrition guidelines for surgery strongly recommend for enteral feeding not to be interrupted²¹. Among the causes of lack of adherence to nutritional therapy in various hospital centers, described by Robertson et al.²² in 2018, there is a systematic lack of method standardization and coordination between surgery and nutrition departments in hospitals to ensure for this practice to be implemented in those patients who require it.

The factors that are identified in the presence of an anastomosis dehiscence should be classified according to the times related to the surgical intervention (preoperative, intraoperative and postoperative periods), in order to obtain detailed information that allows critical points of risk to be identified, as well as for preventive measures to be implemented according to the characteristics of each patient.

Conclusions

Our study shows results that are comparable to those described in the literature. The risk factors for the development of dehiscence in our population were previous medication intake and primary anastomosis.

The management of intestinal anastomoses should be standardized according to available evidence, and protocols should be implemented for prior preparation of patients who will require intestinal anastomosis, both for elective and emergency surgery.

Conflicts of interest

The authors declare that there is no conflicts of interest relevant to this article.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this research.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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