Postoperative Adhesions in Routine Practice of Digestive Surgery in Madagascar

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ABSTRACT

Background

Postoperative flanges and adhesions are common in digestive surgery. Their etiopathogenesis and prevention are also still unknown in the literature. The objective of our study is to evaluate the frequency and impact of postoperative adhesions in digestive surgery in our hospital in Madagascar in order to improve prevention measures.

Methods

Our prospective, monocentric study reported a series of cases of postoperative adhesions discovered during digestive surgery at the Joseph Ravoahangy Andrianavalona Hospital Center in Madagascar over a period of 6 months. The variables studied included: age, gender, nature of the initial operation, duration of the operation, operating technique, location of the flanges and adhesions, and postoperative evolution. The Epiinfo statistical test analyzed the data. A p-value of less than 0.05 was considered significant.

Results

Out of a total of 70 patients, the average number of previous interventions in history is 1.2 +/- 0.16.Appendectomies accounted for 45.71% of the surgical history. The duration of the operation was extended by more than 2 hours due to the presence of adhesions during laparotomies. Ileoparietal adhesions accounted for 74.29% of the population. No deaths occurred during the study**.**

Conclusion

Submesocolic surgery is a predisposing factor for intraperitoneal flanges and adhesions. Adhesions in digestive surgery had an impact on the duration of the operation, however the morbidity and mortality remained lower.

Keywords: Adhesion ; Madagascar ; Intestinal occlusion

Background

A flange is defined as a firm, cylindrical-shaped connective tissue membrane or cord of variable length that connects two serous surfaces after an inflammatory process [1]. 1] An adhesion is the joining of two organs or two contiguous surfaces that are normally separated. They may be thin and

loose or fleshy or even firm. Flanges and postoperative intraperitoneal adhesions (BAIP) are common in surgical settings [1]. They are the primary cause of postoperative bowel obstruction.

Morphological and histological classifications established in the literature are not systematically used in operative reports. Their etiopathogenesis and prevention are also still poorly understood in the literature [2]. The risk of postoperative adhesions differs according to the initial surgery and they can cause significant direct or indirect morbidity when they become complicated by occlusion [3]. The objective of our study is to evaluate the frequency and impact of postoperative adhesions in digestive surgery in our hospital in Madagascar in order to improve prevention measures.

Methods

Our case series was prospective, monocentric, non-randomized, based on a randomized, colligated of patients with postoperative adhesions in digestive surgery over a period of six months. Our study did not include postoperative adhesions after non-digestive surgery. Primitive clamps were also excluded. Data were collected from an anonymous and confidential questionnaire sheet with closed and pre-designed questions on patients hospitalized in the surgical emergency, surgical resuscitation and visceral surgery departments. Clinical data included: age, gender. For subsequent surgeries, the number of procedures, indications, use of electric scalpel, use of gloves with talcum powder, nature of peritoneal lavage solutions used was sought. The current surgical indication was noted, the nature of the operation (urgent or scheduled), the types of adhesions, the adhesion score, the procedures performed, the intraoperative bleeding, the number of blood bags transfused, the duration of the operation, the frequency of viscerolysis during adhesiolysis, the average length of stay in the intensive care unit and in the sector, the postoperative evolution with the morbi-mortality rate. The epi.info was the statistical test to calculate the p-value (significant if less than 0.005) as well as the Odds Ratio (significant if the confidence interval does not include [-1; 1]). Participants were not listed during the study.

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International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-8, August 2020
ISSN: 2395-3470
www.ijseas.com

the frequency of viscerolysis during adhesiolysis, the average length of stay in the intensive care unit and in the sector, the postoperative evolution with the morbi-mortality rate. The epi.info was the statistical test to calculate the p-value (significant if less than 0.005) as well as the Odds Ratio (significant if the confidence interval does not include [-1; 1]). Participants were not listed during the study.

The median length of stay for patients was 3.4 days with extremes of two to ten days with no difference from the average length of stay for digestive surgery patients in our centre (median 3.7 days). Re-feeding was early in the first twenty-four hours if there was no anastomosis, and on return from transit if there was a digestive suture. The average duration of abdominal drainage was of 2.5 days. The main postoperative complications were represented by a parietal suppuration (n=5), and a digestive fistula (n=2). There were no deaths in our study.

Discussion

The first peritoneal adhesions were described in 1836 during an autopsy of a patient with peritoneal tuberculosis. The first procedure for a flange occlusion was performed by Sydney Jones in 1882 at St. Thomas Hospital. In recent studies, the risk of developing BAIP after abdominal surgery has been estimated to be between 90 and 95% [2, 3] with a risk of recurrence of 33 to 53% over a 10-year period despite a surgical course of adhesiolysis. This is why the different strategies for preventing these BAIPs are still a hot topic. The exhaustive pathogenesis of peritoneal adhesions has not yet been elucidated.

Catel et al had found an average age of 61 years while Miller et al had found an average age of 46 years [4]. Our median age was 51 years, which can be explained by the youthfulness of the Malagasy population.

Gender varied across studies and no association was found between gender and the occurrence of BAIP [1].

The number and type of previous interventions remain the most identified risk factors in the literature. Although these elements are not significant in our study. Patients who had previously undergone surgery for appendicitis and peritonitis accounted for the majority of our study population. In the literature, postoperative complications, especially of a septic nature, the presence of hematoma, fistula, and the existence of prior braces, as well as untreated inflammatory diseases, also predispose to the occurrence of BAIP [4]. Numerous studies had shown that submesocolic surgery was most prone to postoperative adhesions. Borie, Malik, Ya Zhang, and Arung.W also found that appendectomy was the most successful procedure for flange occlusion in their study [5,6]. For S.Sarraf Yazidi and M.Ouaissi, colorectal surgery was the most incriminated. A study conducted by Velbel et al. had mentioned the presence of foreign bodies, peritoneal closure, the use of prostheses, and irradiation [7].

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-8, August 2020
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In Madagascar, the effectiveness of BAIP's preventive strategies could only be assessed during reinterventions. In our study, it was also difficult to evaluate adhesion prevention measures since our methodology was purely observational and cross-sectional. Therefore, the operating room habits had not been changed. The use of prosthetic materials was reserved for scheduled parietal reconstructive surgery. The electric scalpel was systematically used, as well as talcum gloves in all operations. Our hospital did not have the use of non- talcum gloves. Heated isotonic saline was the main intraoperative peritoneal lavage. The literature recommends the use of Ringer, Dextran, Icodextrin as peritoneal lavage fluid [9]. According to Haney et al, among the solid barriers, Seprafilm would also be more effective in digestive surgery and Interceed for gynaecological surgery but nevertheless there was no evidence of efficacy on operated occlusions.

In a study conducted by Parecoxib on the effectiveness of postoperative adhesions, this molecule would have significantly reduced the quantity (p less than 0.5) and severity (p less than 0.01) [10,11]. More than half of our population had a procedure duration of more than two hours. The presence of intraoperative PILB causes technical difficulties and an extension of the duration of the procedure [1]. Laparotomy is preferred when there are several straps, or when there is a risk of bowel resection. Debridement remain the most common surgical procedures, followed by adhesiolysis in the literature. Intestinal resection is indicated in cases of intestinal ischemia, most often following strangulation of a loop on a sling. Laparoscopy nevertheless had a place in the exploration of adhesiolysis syndromes [3].

According to a series of cases conducted by K. Ouider, postoperative morbidity and mortality was mainly related to the age of the patients, the presence of comorbidity, the occurrence of intraoperative incidents and irreversible ischaemia due to operative delay of more than 24 hours. In our study, Complications were septic with infection of the operating site and fistula of the digestive sutures [7,12].

Conclusion

Digestive emergencies are the most common source of BAIP, including appendectomy and peritonitis in our study. Adhesions in digestive surgery had an impact on the duration of the procedure, however, the morbidity and mortality was lower in our study. No preventive measures had been carried out in our hospital during the study, due to the lack of technical facilities, although there was no evidence of its effectiveness in the literature at the time of the study.

Conflict of interest :

The authors contributed equally to the study.

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-8, August 2020
ISSN: 2395-3470
www.ijseas.com

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Table I: Association between the previous intervention and the classification of adhesions

	Minimal adhesions	Moderate Adhesion	Strong adhesion	Very strong vascular adhesions	TOTAL
Appendectomy	8 (25%)	-	24 (75%)	-	32 (100%)
Gastrorraphy	12 (54,5%)	-	8 (36,4%)	2 (9,1%)	22 (100%)
Splenectomy	-	-	4 (100%)	-	4 (100%)
Hysterectomy	6 (50%)		6 (50%)	-	12 (100%)

$p = 0,1$

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-8, August 2020
ISSN: 2395-3470
www.ijseas.com

Table II: Association between the number of previous surgeries and lesions found

Number of previous surgery	No lesions	Deperitonisation	Necrosis	Intraoperative bleeding	Viscerolysis	TOTAL
N=1	24 (42,9%)	10 (17,9%)	8 (14,3%)	4 (7,1%)	10 (17,9%)	56 (100%
N more than 1	8 (57,1%)	-	-	-	6 (42,9%)	14 (100%)

p = 0,33

III: Association between types of adhesions and duration of intervention

Duration of the intervention	Colo-parietal adhesion	Ileocolic Adhesion	Ileo-ileal adhesion	Ileoparietal adhesion	TOTAL
Less than 120 min	-	-	-	14 (100%)	14 (100%)
120-179 min	4 (11,1%)	2 (5,6%)	2 (5,6%)	28 (77,8%)	36 (100%)
More than 180 min	4 (20%)	6 (30%)	-	10 (50%)	20 (100%)

p = 0,22

Table IV: Distribution of adhesion types

Adhesion seat	N	Rate (%)
Colo-parietal	26	37,14
Ileo-colic	18	25,71
Ileo-ileal	36	51,43
Ileo-parietal	52	74,29
Epiploo-parietal	16	22,86
Colo-colic	2	2,86
Others	6	8,57

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