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Recurrent Bowel Obstruction: Is it a Disease? Or a Sign? What is its Treatment?

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ABSTRACT

Introduction: The "disease" called "Intestinal Obstruction" is a sign that evolves into a syndrome or even a diagnosis, when in fact it is a consequence of another

pathology/etiological diagnosis. Objective: experience of the Surgery and Colon and Rectal Surgery services in patients with recurrent bowel obstruction. Method: retrospective, longitudinal, observational and descriptive study. The records and files of patients treated surgically for recurrent, multicenter intestinal obstruction in three hospitals were reviewed. Results: 183 patients with recurrent intestinal occlusion, of these 19 were included, 16 women (84.21 %) / 3 men (15.79 %), mean of 46 years, range 32 to 71 years. Childs' intestinal plication was modified by the Mexican surgeon Dr. Roberto Blanco Benavidez, which was successful and without recurrence of intestinal obstruction. Discussion: Many patients with intestinal obstruction are secondary to adhesions due to surgical history being 60%, and being the cause of internal hernia, intestinal torsion, stenosis, intestinal ischemia, necrosis, perforation and peritonitis; it is then to carry out an exploratory laparotomy that fortuitously the surgical lysis of the adhesions, with an imminent recurrence of obstruction. Conclusion: Surgery today is the definitive resolving hope of recurrent intestinal obstruction, and *Blanco's intestinal plication* is to date the only certain, simple, safe and promising option, which meets the objective, not of avoiding adhesion but of forming them in an orderly and functional way, preventing the recurrence of intestinal obstruction.

Keywords: Intestinal obstruction, Intestinal occlusion, Hernia, Intestinal perforation, Peritonitis, Intestinal plication, Adhesions.

INTRODUCTION

The "disease" called "Intestinal Obstruction" **(OI)** is a sign that evolves into a syndrome or even a diagnosis, but it is a consequence of another etiological pathology/diagnosis. **[1]** A definition of "Intestinal obstruction is a mechanical or functional blockage of intestinal contents that prevents their evacuation into the adjacent distal intestine or the external environment. It represents significant morbidity and mortality." **[2]** In the search for the correct term between the words occlusion and obstruction, the significant differences from their etymology are that occlusion comes from the Latin "occlusio", which in turn derives from the verb "occludere" (to close), which unlike the word "obstruction" comes from the Latin "obstructio", which means "action and effect of putting an obstacle". So, what is the correct term when it comes to the so-called disease? It is correctly intestinal obstruction as it focuses on blocking or preventing passage through the intestine. **[3, 4]** The historical antecedents date back to antiquity, where Praxagoras of Cox, 300 years B.C., already made an incision in the inguinal region in cases of strangulated hernia, performing the first **OI operation**. **[5, 6]** Pierre Franco in Switzerland in 1556 documented the first surgeries for **OI** already in shape and not anecdotal, due to the cause of strangulated hernias. But it was William Cheselden in 1750 who performed the first intestinal resection due to necrosis in England, for an **OI** secondary to a complicated umbilical hernia. **[7, 8]** In 1819, a case of OI was published with medical management with purgatives without response, despite remedies with tobacco leaves by infusion and evacuating enemas, and he died 3 days after admission; when an autopsy was performed, the diagnosis was intestinal necrosis due to adhesion/flange of the terminal ileum. **[9, 10] See image 1.**

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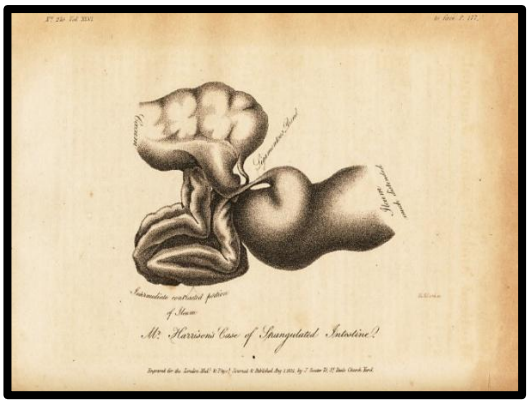

Image 1: Intestinal Obstruction Due to Internal Hernia of the Terminal Ileum
Image taken from the reference: Harrison J. Account of a Case of Obstruction of the Intestinal Canal. Lond Med Phys J. 1821; 46(270):177-178. PMID: 30494331

In 1842 Carl Joseph Rokitansky in his three-volume book entitled "*Handbuch der Pathologischen Anatomie"* it shows the anatomical findings of various diseases, including **OI. [11]** Paré and later surgeons of the level of Cooper, Nelaton, Kocher and others, made very notable contributions to the knowledge and/or treatment of **so-called OI. [12]** On the other hand, the advances that occurred in the twentieth century were the watershed for a certain level of response to this pathology and the beginning of a new era that to date presents controversy, inefficiency or even a degree of resilience. **[8]** The incidence in **OI** is unknown **,** epidemiologically it is so difficult since it is only a sign of another pathology, since its real diagnosis is so varied by its etiology and changed by its consequences or sequelae, that it becomes confusing, non-specific and often without transcendence in terms of its diagnosis/treatment. **[13, 14]**

During pregnancy, **OI** presents with a rare but potentially fatal incidence, maternal and fetal outcomes depend on timely diagnosis and management, as perforation, necrosis, and intestinal peritonitis can occur, which can result in fetal or maternal mortality or morbidity. **[15] OI** of the small intestine is one of the most common causes of emergency general surgery. The mortality rate at 30 days after surgery varies considerably, from 2 to 30%, depending on the patient's population. **[16]** In pediatric patients, intussusception is a predominant cause, whereas in adults, postoperative intestinal adhesions, hernias, and neoplastic growths are identified as primary etiologies of **OI. OIs** are more common in the small intestine than those in the large intestine, where the overall mortality rate remains substantial, with a documented figure of 2.1 deaths per 100,000 people per year. **[17]** It is then "a pathology" or really a very common sign in health services, both in admission to the Emergency Department and in the definitive treatment and/or complication of surgical practice in Surgery. Its definition is per se underestimated, since there are too many variations in its etiology and clinical presentation, but it is still highly prevalent and incidence. **[18]** Among all etiologies of colonic **OI**, colonic volvulus is the third worldwide, accounting for up to 15% of all large **OIs** in the United States, being located first in the sigmoid colon and in second place in the cecum, **[19]** with an incidence in sigmoid in 60-75% of cases and cecum in 25-40% of patients, transverse colon in 1-4% and splenic angle in 1% of cases. **[20]** In addition, sigmoid volvulus during pregnancy is very rare, presenting as an **OI**, and causes serious complications in the mother as well as the fetus if not diagnosed in a timely manner, so its incidence should be kept in mind. **[21]**

OBJECTIVE

To present the experience of the Surgery and Colon and Rectal Surgery services of patients who presented with recurrent or recurrent intestinal obstruction **(OIR)** during seven years of surgical practice, in a multicenter study.

METHOD

It is a study with a retrospective, longitudinal, observational and descriptive design. The records and files of all patients surgically treated for **OIR** in complicated elective surgery and non-traumatic surgical emergency during a seven-year period of surgical practice are reviewed, the current study and presentation of the results are carried out using descriptive statistical procedures.

In a multicenter study in three hospitals in Mexico City and the State of Mexico that are:

1. Specialty Hospital of Mexico City "Dr. Belisario Domínguez" of the Ministry of Health. Mexico City. Country: Mexico. 3rd Level of medical care.
2. "Dr. Rubén Leñero" General Hospital of the Ministry of Health. Mexico City. Country: Mexico. 2nd Level of medical care.
3. "Las Américas" General Hospital of Ecatepec. State of Mexico, of the Ministry of Health of the State of Mexico. Country: Mexico. 2nd Level of medical care.

In the study period that comprised from April 2018 to April 2025. Age, sex, etiological and surgical diagnosis, pathological history and associated factors, time of disease evolution or first surgical intervention, previous surgical treatments/number of surgeries/ complications/ sequelae, quantified bleeding, surgical time, days of hospital stay, morbidity and mortality were documented. With a follow-up of each patient at discharge from the hospital at one week, one month, two months, six months and sometimes up to a year, until their definitive discharge.

RESULTS

A total of 183 records of patients with **OIR** were reviewed, of which 19 cases were included in this study, where 16 were women (84.21 %) and 3 men (15.79 %), with an average age of 46 years, in a range of 32 and 71 years. From this study group, the surgical strategy of Childs' intestinal plication **[22]** was modified by the Mexican surgeon Dr. Roberto Blanco Benavidez. **[23]** With a diagnostic etiology as diverse as that of an elective surgery that becomes urgent due to its evolution, or in an emergency surgery of the first instance in a first or subsequent surgical time, due to non-traumatological emergency surgery and/or with open/closed abdominal trauma due to accident/aggression by third parties. The etiology of the previous diagnosis, the number of previous **OI** surgeries, specifying whether the previous surgery was scheduled or urgent. **See table and graph 1.**

Table and Graph 1: Previous Diagnostic Etiology of Surgery/Number of Surgeries Per Intestinal Obstruction/in the Total Number of Patients Where the Mesenteric Plication of the Blanco is Performed. Expressed in Number/Percentage.

Diagnostic Etiology/Number of Previous Surgeries Per OI/Urgent or Not	Number/%
Acute Appendicis Stage IV Complicated/3-4/Yes	4/21.05
Abdominal Surgery for Blunt Trauma, Projectile and Knife Complicated/2-4/Yes	5/26.31
Colon and Rectal Cancer/2-5/No	2/10.52
Perforated Gastric and Duodenal Ulcer /2/Yes	3/15.72

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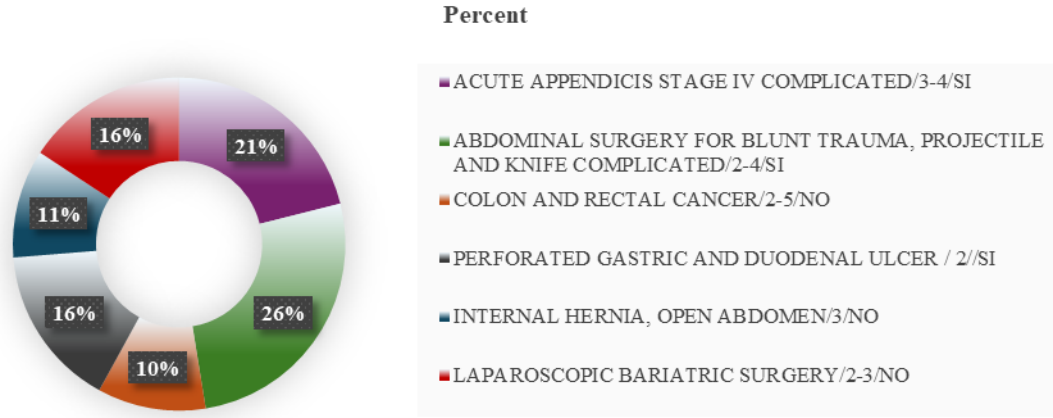
Internal Hernia, Open Abdomen/3/No	2/10.52
Laparoscopic Bariatric Surgery/2-3/No	3/15.72
Total Number of Patients	19/100



Analyzing the results of **table 1**, it should be noted that the most frequent **OIR** diagnosis is that of exploratory laparotomy of abdominal surgery due to blunt trauma, projectile and complicated knife, and the second place is occupied by complicated phase IV acute appendicitis; both diagnoses cover 47.36 % of this group under study. The number of **OI** surgeries averaged by a factor of 3.5 by the six diagnostic groups, adjusted to the highest value. 67 surgeries per **OI** in 19 patients gives an average OI-to-patient surgery ratio of 3.5 surgeries per patient. It is observed that the number of **OI** events increases in patients who undergo emergency surgery or in surgeries with a high degree of complexity and immunosuppression, and a second observation is that surgical interventions increase in patients with **OI** in cases with secondary infection or the so-called "septic".

In cases that occurred with **OIR,** the operational definition of two or more surgeries for **OI** is carried out independently of the primary surgery, exclusively in patients where the **OIR** was caused by adhesions between the tissues of the abdominal cavity with internal hernia or not, and/or with resection of the small intestine with anastomosis. even with intestinal perforation and secondary peritonitis. In the rest of the cases with other diagnoses or other conditions, they were excluded from this protocol. The complications or sequelae of suffering **OIR** are classified into two categories, surgical and non-surgical, since they directly impact the applicability or not of Childs' intestinal plication (**see image 2**) modified by Blanco or Blanco's intestinal plication **(PIB).** See **image 3.**

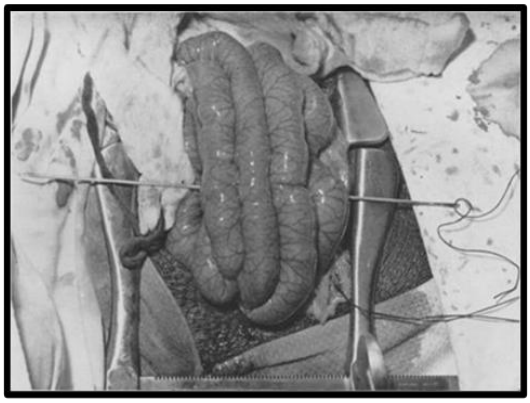


Image 2: Transmesenteric and Loop-of-the-Bowel Plication with Childs Silk Suture

Image taken from the reference: Childs WA, Phillips RB. Experience with intestinal plication and aproposed modification. Ann Surg 1960; 152: 258.

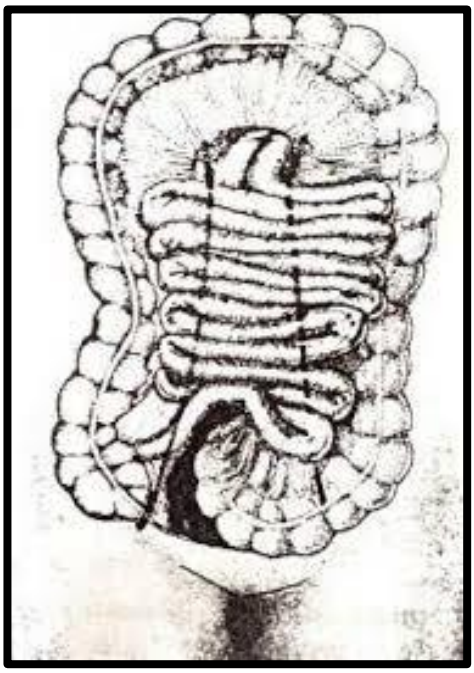


Image 3: Diagram of Transmesenteric Plication with Foley Probes.

Image taken from reference: Martínez-Hernández-Magro P. Martínez-Ordaz J.L. Blanco-Benavides R. Transmesenteric intestinal plication for intestinal occlusion secondary to disseminated adhesions. Experience of 12 years. Journal of Gastroenterology of Mexico.2001; 66(2):90-95. [24]

It is well known in surgery that there are factors that prevent intestinal anastomosis and therefore a stoma should be considered, if this is not possible because it is very close to the ligament of Treitz, then a damage control surgery strategy. These factors or conditions are:

1. Intestinal ischemia
2. State of Shock
3. Peritonitis fecal o purulent
4. Distal obstruction
5. Moderate to severe malnutrition
6. Immunosuppression/steroids

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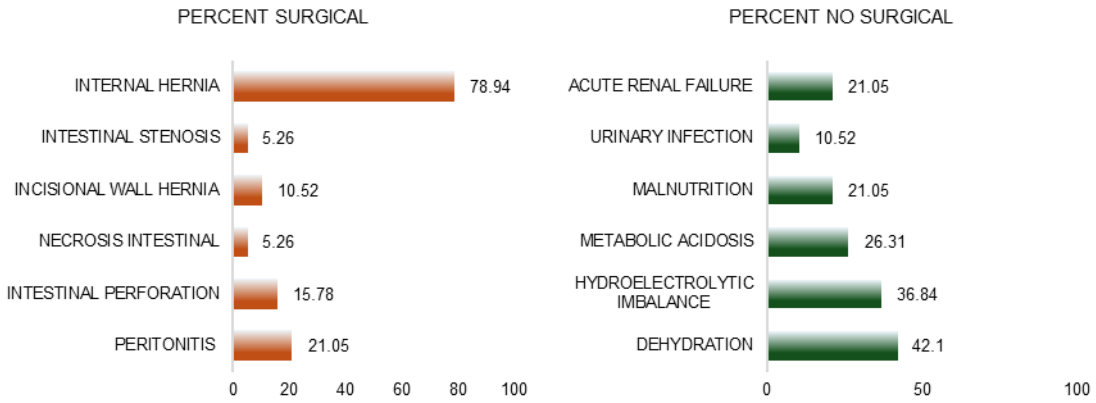
Principles referred to by *Dr. Harvey Cushing*, which emphasize the importance of gentle tissue manipulation, meticulous hemostasis, preservation of the blood supply, aseptic technique, minimal tissue tension, accurate apposition, and dead space obliteration. **[24]** With all the above, it must be considered when performing the **GDP** or not and in case of intestinal perforation with intestinal leakage, complete surgical lavage of the abdominal cavity is performed; in the case of necrosis or considerable perforation, intestinal resection and anastomosis are performed. The complications of patients who underwent **OIR** and in whom the **IBP** was performed are then tabulated. **See table and graph 2.**

Table and Graph 2: Complications in Patients with Recurrent Intestinal Obstruction: Surgical and Non-Surgical in the Study Group who Underwent White Intestinal Plication. Expressed in Number and Percentage.

Surgical	No / %	No Surgical	No / %
Peritonitis	4 /21.05	Dehydration	8/42.10
Intestinal Perforation	3 /15.78	Hydroelectrolytic Imbalance	7/36.84
Necrosis Intestinal	1/05.26	Metabolic Acidosis	5/26.31
Incisional Wall Hernia	2/10.52	Malnutrition	4/21.05
Intestinal Stenosis	1/05.26	Urinary Infection	2/10.52
Internal Hernia	15/78.94	Acute Renal Failure	4/21.05

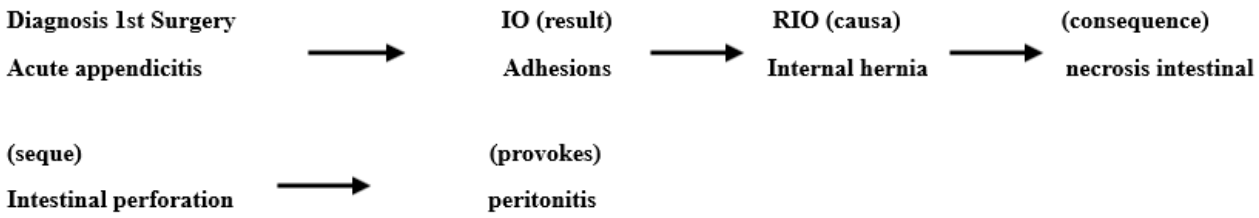


It is necessary to clarify that surgical and nonsurgical complications of patients with **OIR** who are If the **IBP** was carried out, they can present them in the same patient, one or more of them at the same time or with sequelae.

Five intestinal resections were performed with end-to-end entero-entire anastomosis in two planes, with Connell-Mayo points and Lembert points, there was no dehiscence or any complication, due to this surgical technique used. Four cases presented with generalized peritonitis, due to perforation of the small intestine and/or intestinal necrosis; the entire cavity was washed with a solution of preheated sterile water with a minimum of four to six liters and in two cases local antibiotic management was added at the end.

The real incidence of complications is complex, because they are *the result* of the *cause* of the *consequence* that leads to the *sequelae* and ultimately causes. However, it is evident that all

patients presented **OI** secondary to adhesions due to previous surgical interventions in a continuous "loop". Therefore, the **OIR** process is determined as follows:



Bleeding in the surgical intervention was very varied, ranging from 50 ml to 480 milliliters, with an average of 190 milliliters. Regarding surgical time, it was tabulated in a range of 125 to 220 minutes with an average of 176 minutes. The average number of days of hospital stay is 11 days with a range of 7 to 27 days, without complications and without the need for intensive care support.

Morbidity was only documented in five patients: with healthcare-associated pneumonia, urinary tract infection, surgical wound infection, upper gastrointestinal bleeding due to erosive gastropathy, and surgical wound seroma. **See table 3**.

Table 3: Morbidity in Patients with Recurrent Intestinal Obstruction Who Underwent White Intestinal Plication.

Morbidity	Number/%
Healthcare-Associated Pneumonia	2 /18
Urinary Tract Infection	3 /12
Seroma	1 /04
Surgical Wound Infection	4 /04
Upper Gastrointestinal Bleeding	1 /20

It is observed that the same patient may have one or more morbidities. The appropriate therapy was carried out. All complications are resolved and without a sequel. Patients are discharged at home and are followed in the medical consultation as outpatients for up to one year, without reporting sequelae, recurrence or complication. until its definitive discharge. No mortality was reported. At follow-up, there was no recurrence or recurrence of **OI** to date.

DISCUSSION

The causes of **OI** are multiple and varied, sometimes as rare or extremely anecdotal, for example, an etiology of idiopathic mesenteric phlebosclerosis is cited that chronic intestinal ischemia evoking a false obstruction. **[25]** It is inherent to mention what is "fashionable" which are the colonic stenosis that develops during Crohn's disease in 75% of cases, characterized by a sub-occlusive syndrome and acute **OI**, with a report of anatomopathological examination of colon biopsies that revealed chronic inflammatory lesions. **[26]** It is convenient to differentiate several pathologies that present as the same sign of **OI,** among them the following are mentioned:

- *Postoperative ileus:* it is produced by intestinal manipulation and impacts gastrointestinal motility and inflammation 24 hours later with cytokine expression,

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leukocyte infiltration, and macrophage polarization, slowing down the transit of the intestine or even stopping it completely. **[27]**

- *Metabolic ileus:* is a neuroimmune interaction consisting of two phases: the early neurogenic phase and the inflammatory phase; treatment of infection, electrolyte abnormalities, and decreased opioid use can reduce the duration of ileus. **[28]**
- *Paralytic ileus:* some authors consider it a synonym for postoperative ileus, which consists of a transient state of **OI** due to failure in the normal propulsive activity of all or part of the digestive tract, and is an adaptive mechanism that helps recovery from surgical aggression. **[29]**
- *Colonic pseudo-obstruction or Ogilvie syndrome:* it is an anomaly of motility characterized by a rapid and progressive dilation of the large intestine. For its diagnosis, it is essential to rule out mechanical obstruction by means of imaging studies. **[30]**
- *Outlet obstruction syndrome:* This occurs when the stomach or intestine muscle does not contract properly to move the contents forward. **[31]**
- *Descending perineum syndrome* is a rare but complex clinical entity of pelvic floor dysfunction that presents mainly dysfunction in the act of evacuation, which to a lesser extent, can cause avoiding dysfunctions. **[32]**
- *Colonic inertia:* is the dysmotility of the colon and is believed to be a neuromuscular disorder of the organ. with the reduction of contractions, delay in emptying and with the reduction of the number of interstitial cells of Cajal in histology, as well as the decrease in the number of excitatory neurotransmitters within the myenteric plexuses; its underlying etiology is uncertain, but hypotheses have been put forward about autoimmune and hormonal mechanisms. **[33]**
- *Paradoxical puborectal contraction:* it is associated with a set of symptoms that include repeated and prolonged effort when evacuating the bowel, sensations of incomplete evacuation, pain and the need for digital manipulation. **[34]**
- *Pelvic floor dyssynergia:* paradoxical contraction of the puborectalis muscle and anismus. This syndrome is characterized by being a functional disorder that affects patients who suffer from constipation and a sensation of incomplete defecation, secondary to a frustrated evacuation due to involuntary, inappropriate and paradoxical contraction of the striated muscles of the pelvic floor, particularly the puborectalis muscle. **[35]**
- *Hirschsprung's disease:* it is a cause of constipation and even **OI,** which is caused by the absence of ganglion cells in the submucosal and myenteric plexuses of the large intestine, which therefore produces paralysis of the affected colonic segment. **[36]**
- *Obstructed defecation syndrome*: it is associated with an anatomical alteration of the pelvic floor (rectocele, posterior perineal hernia, enterocele and sigmoidocele, internal rectal intussusception, hidden mucosal prolapse, solitary rectal ulcer and descending perineum syndrome) or obstructive defecation without the existence of anatomical alteration. [**35]**
- *Fecal impaction:* it can be considered extreme constipation and simulate a picture of **OI,** with a fecal "plug", which obstructs the exit of fecal matter, so it is essential to perform a rectal examination. **[37]**

Biliary ileus is a rare cause of mechanical **OI** resulting from the migration of a gallstone into the gastrointestinal tract through a biliodigestive fistula, with radiologic Rigler's triad: pneumobilia, **OI**, and an ectopic gallstone located in the intestine. **[38]** Sigmoid colon volvulus

is caused by torsion on itself, which causes OI and endangers the blood supply to the organ and represents a condition resulting from another underlying pathology that most of these cases is due to the excessive growth of the prostate in men. **[39]**

However, although there are many varied, rare (jejunal xanthomatosis associated with vitiligo as a cause of **OI)** or very common causes of **OI,** the most frequent are postoperative adhesions, hernias and tumors, in descending order. **[40] OI** is very common in surgical emergencies, accounting for about 20% of all causes of acute surgical abdomen, and it is again confirmed that the most common etiologies detected are: first, postoperative adhesions, second, hernias, and third, tumors. **[41]** For colon or thin **OI**, the presence of the obstruction, the severity of the obstruction, the transition point, the cause of the obstruction, and sequential complications, such as strangulation, intestinal gangrene, intestinal perforation, and peritonitis, should be evaluated. **[42]** The decision and timing of surgical exploration of **OI** depend on clinical findings and likely etiology. Patients with **OI** often present with intra-abdominal hypertension, which is an important predictor of the possibility of intestinal ischemia with gangrene, perforation, intra-abdominal sepsis, surgical site infections, prolonged hospitalization, and data of systemic inflammatory response and decompensated metabolic acidosis. In addition, knowing the cause of **OI** determines management or therapeutic conduct. **[43]** The etiologic diagnosis of **OI** is extremely difficult in most patients, its severity and/or prognosis is uncertain, so the support of laboratory and paraclinical studies is essential; it is clear that the picture of **OI** is only syndromatic (set of signs and symptoms; this is incomplete, non-specific, and vague, since in most cases, they present abdominal pain, distension of the abdomen, hyporexia, nausea and vomiting, in some cases they channel gas and in others there are even liquid to semi-liquid bowel movements or the so-called "despeñes" and even so, they occur with **OI**, in summary it is very complex. **[44]** Most patients with **OI** are diagnosed at the surgical event itself. **[45]** Regarding diagnostic support, plain abdominal x-rays are requested in standing and in the recumbent position and chest telegraph; **[46]** Other authors rely on abdominal ultrasounds, **[47]** however, a very valuable tool with high sensitivity and specificity is computed tomography, which allows most of them to correctly diagnose the causal diagnosis. **[48, 49, 50]** The treatment of **OI** is a decision of the surgeon based on the probable etiologic diagnosis, his or her expertise, and/or the patient's current clinical presentation or condition.

Referring to four behaviors:

- *Conservative treatment*: in patients where water and electrolyte supply are given, empirical antibiotic therapy due to bacterial translocation, bowel rest with fasting and use of gastric or ileal tube and ambulation, especially in patients who do not present a systemic inflammatory response that can be prolonged from 3 to 5 days or more with strict daily laboratory/radiological follow-up. **[51]**
- *Priority elective surgery:* if the clinical condition and/or hemodynamic stability of the patient with **OI** allows it, a study protocol should be carried out to find the etiological pathology and then a surgical event should be performed with high priority, for early and/or timely surgical management of a curative/palliative surgical treatment**. [52, 53]**
- *Emergency surgery:* it is indicated in patients with **OI** who are in imminent danger to the patient's life, with a state of shock/hemodynamic instability/data of systemic inflammatory response. Radiological evidence of hollow viscera perforation; peritonitis, etc. It is evident that the Surgeon is the protagonist of this criterion. **[54, 55, 56]**

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- *Endoscopic treatment:* it will depend on the etiological diagnosis or the specific disease, the resources and the competent/trained personnel. **[57]**

It is a fact that most patients with **OI** in up to 60% are secondary to adhesions due to the surgical history, associated or being a consequence of these, causing an internal hernia, intestinal torsion, stenosis and consequently intestinal ischemia with necrosis, perforation and peritonitis; so the treatment is surgical and it is then to carry out in a fortuitous way the surgical lysis of these adhesions. which is the procedure that is taken for granted to perform it consecutively and the resolution of the added pathologies it causes. **[58]**

And as has become customary in today's medicine, when you do not know what to contribute, various classifications or indices, or factors of poor prognosis, are formulated, which in terms of applicability or in reality do not make a difference or impact on the cognitive, and that contribute and increase an adequate quality in the diagnosis, treatment and prognosis of the patient, citing examples: the Mannheim index in mortality in abdominal sepsis. **[59, 60]** Or the Björck classification of open abdomen, which is a strategy for determining the degree of adhesions in the abdominal cavity. **[61]** Or Zühlke's classification of the year 1990 which divides according to the form or manner of surgical dissection:

Zühlke classification for intestinal adhesions: **[62]**

- Grade I Membranous and easy to separate with blunt dissection.
- Grade 2 Blunt dissection possible, partially necessary a shear dissection, onset of vascularization.
- Grade 3 Lysis possible only by cutting dissection, clear vascularization.
- Grade 4 Lysis possible only by cutting dissection, strongly bonded organs with severe adhesions, organ injury difficult to avoid.

For example: analyzing this classification, it is clear that it has no impact on knowing the type of dissection and involving a single patient in a single category when it can have all the characteristics from grade 1 to 4, since it does not contribute anything, does not impact the prognosis, and/or recovery or even avoid complications; a scenario already known to all surgeons who know it, know it and carry it out day by day. So it is obsolete and useless.

In the authors' view, surgical or traumatizing aggression or injury to the abdominal cavity, **[63]** such as excessive manipulation, the use of dry compresses in the abdominal cavity, impingement of the intestine even with "atraumatic" material, loss of or downtime or postponement of emergency surgery, prolonged time of visceral abdominal exposure due to exorbitant surgical time, lack of broad-spectrum antibiotics, lack of adequate sutures, as well as meshes or the vacuum aspiration system **(VAC)** among many other factors, affect the formation of adhesions, without neglecting the intrinsic elements or factors of the patient himself. **[64, 65]** Adhesions then arise from the sequence that begins with peritoneal damage, triggering a fibrotic response characterized by fibroblast proliferation and collagen deposition, culminating in the formation of fibrous tissue. **[66]** Obstructions due to their etiology are divided into extrinsic, intrinsic, intraluminal and functional. Extrinsic hernias are due to 60% of adhesions, whether congenital or acquired, while the other 40% is due to both internal and

external hernias, intestinal malrotation, volvulus and extraintestinal masses such as carcinomatosis, abscesses and inflammatory lesions. **[67]**

The only method available to treat adhesions that have already been formed is surgical adhesions, and this has a very high degree of complexity, since it is necessary to avoid at all costs making accidental perforations of the intestine and this is transcendental. **[68]** Surgical intervention is usually reserved for patients who have refractory responses to conservative treatment or who present with serious complications, such as ischemia, necrosis, or intestinal perforation. They involve an exploratory laparotomy during which the adhesive formations responsible for the obstruction are meticulously removed, either traditionally or laparoscopically, with no difference between the two different types of surgical approach. **[69, 70]** Complete adherenciolysis does not reduce the risk of redevelopment later, is not recommended in surgery and should only require removal of pathologic adhesions. **[71, 72]**

To date, non-surgical prophylaxis and/or conventional options, such as hyaluronic acid and carboxymethylcellulose-based films or gels, act as physical barriers by isolating injured tissues during healing, for the prevention of adhesions. **[73]** Recent advances have expanded this paradigm with electrospun nanofibrous arrays, which offer improved functionality through the incorporation of therapeutic agents, lecithin-based nanofibers exhibit stability and lubricity, significantly reducing abdominal adhesions. **[74]** Drug-eluting nanofibrous scaffolds inhibit collagen deposition and inflammation, minimizing tissue adhesions; **[74,75]** And at the end of the day looking ahead, the continued evolution of molecular biology and bioengineering promises the development of new therapeutic strategies. These strategies, which include immunomodulatory treatments and molecular interventions, seek to further mitigate adhesion formation and reduce the likelihood of OI recurrence. **[76, 77]**

CONCLUSIONS

OI today is a sign of another installed disease, however congenital fibrotic bands (flanges) or acquired (adhesions) secondary to another previous surgical procedure, are the most common cause of this diverse/multiple and recurrent condition; that despite all the technology and cognitive advances of this era, there is no way to avoid this phenomenon. It is when Surgery continues to become the definitive resolution hope of **OIR,** and **GDP** is to date the only certain, simple, effective, safe and promising option, which meets the objective, not of avoiding adhesions but of forming them in an orderly and functional way, preventing the recurrence of **OI.**

Conflict of Interest

The authors stated that they had no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

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