

## Early Laparoscopic Management in the Setting of Non-Complicated Obstructive Abdomen. Case Report

Xavier Guarderas C<sup>1\*</sup>, Juan C Santillán A<sup>2</sup>, Stefany A Santamaría S<sup>2</sup>,  
Fernando Huilca L<sup>3</sup>, Edwin Caiza S<sup>3</sup>, Cristian Merino L<sup>3</sup>, David Narváez  
S<sup>3</sup> and Claudia Delgado G<sup>4\*</sup>

<sup>1</sup>Hospital Vozandes Quito, General Surgery Attending, Quito, Ecuador

<sup>2</sup>Hospital Vozandes Quito, PGY-4 General Surgery, Quito, Ecuador

<sup>3</sup>Hospital Vozandes Quito, PGY-3 General Surgery, Quito, Ecuador

<sup>4</sup>Hospital Vozandes Quito, Medical Resident, Quito, Ecuador

**\*Corresponding Author:** Claudia Delgado G, Medical Doctor from Universidad Internacional del Ecuador, Facultad de Ciencias Médicas de la Salud y la Vida, Escuela de Medicina, Quito, Ecuador.

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### Abstract

**Importance:** The adhesive small bowel obstruction (ASBO) is one of the most common causes for hospital admission to surgical service. About one of every six surgical emergencies is caused by ASBO. This pathology can cause high morbidity, generating long-stay hospitalizations, (an average of 8 days when conservative treatment is started), and between 20 - 30% of them will require surgical management. We present the early use of laparoscopy and adhesiolysis for ASBO in a 63-year-old patient who came to the emergency department with several abdominal surgical history.

There is much controversy regarding the management in patients with the diagnosis of ASBO. Extensive bibliography advocates an initial clinical management due to its high-resolution rates (65 - 80%), however, ideal criteria for surgical management in these patients have not been defined, above all, the role of laparoscopy and the reduction of days of hospitalization related to this last procedure when is applied.

**Conclusion and Relevance:** The laparoscopic approach for ASBO is associated with better postoperative results, early oral feeding and a better quality of life in a short and long term. However, a correct patient selection for this procedure must be strict, because bowel manipulation and adhesiolysis can cause inadvertent injuries, increasing patient morbidity and mortality.

**Keywords:** Intestinal Obstruction; Laparoscopy; Tissue Adhesions

### Abbreviation

ASBO: Adhesive Small Bowel Obstruction

### Introduction

The adhesive small bowel obstruction (ASBO) is one of the most common cause of admission in the surgery ward in developed countries. About 1 of every 6 surgical emergencies can be attributed to acute obstructive abdomen [1].

Around 75% of acute obstructive abdomen is attributed to post-surgical peritoneal adhesions [2]. These adhesions are formed from connective tissue after peritoneal manipulation during surgery as part of normal healing, there by producing an extra luminal mechanic compression to the small bowel, leading to ASBO. The risk for this pathology to develop is greater with surgery especially colorectal, gynecological, oncological and pediatric surgeries. For example, 1 of every 10 patients will present with ASBO after a colectomy [3].

The majority of ASBO resolve without surgery (65 - 80%), with an average of resolution of 48 - 72 hours. Strict surveillance and clinical evaluations are necessary to evaluate the appearance of signs and symptoms (signs of peritonism, perforation or sepsis) indicating the need to change management. The clinical management consist on: nil per os, gastric decompression (nasogastric tube) and imaging with intestinal transit with water soluble contrast.

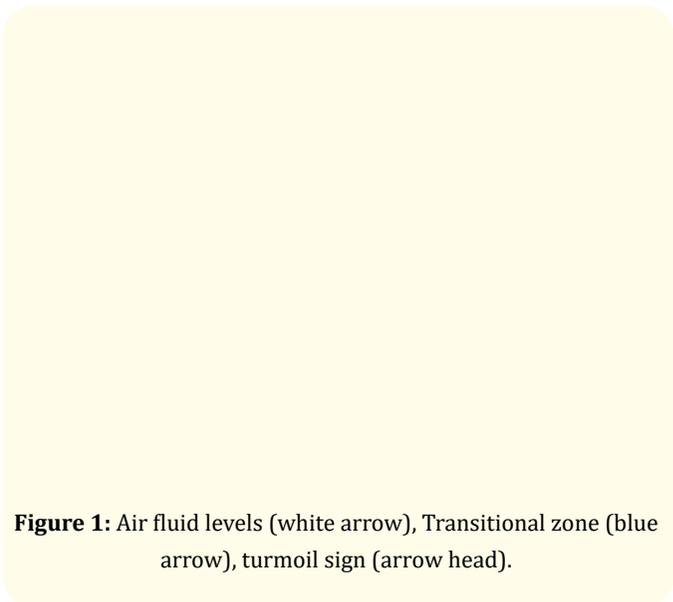
In the last two decades, the use of minimal invasive surgery has grown, generating numerous advantages (reduce surgical site infection, severe complications and reduce hospital stay) [5], therefore this approach can be used safely in selected ASBO patients with optimal results.

### Case Report

A 63-year-old female, with past medical history significant of laparoscopic cholecystectomy two years ago and hysterectomy 20 years ago, arrives to the emergency department with a 24-hour abdominal colicky pain localized in the mesogastrium, VAS 6/10, with nausea and vomit for 4 times of gastric content, she as well informs that hasn't have any flatus and had 4 bowel movements prior arriving to the emergency department that had normal characteristics. Se self-medicates anti spasmodic medicine without any relive of the pain. Hence she decides to come for evaluation to the hospital.

Physical examination reveals: blood pressure: 154/88 mmhg; heart rate: 81 beats/minute, respiratory rate: 20 breaths/minute; blood oxygen level: 93% without oxygen. Awake, alert and oriented. Hydrated and capillary refill is less than 3 seconds in all extremities. Abdomen: evidence of surgical scars, slightly distended, bowel sounds are diminished, soft, and painful to palpations on the right hemi abdomen, no signs of peritonism. Laboratory findings: CRP 1.29, WBC 14.150, NEU 88.3%, Hb 16.6, Hto 37.5, Platelets 309, Na 139, k 4.0, creatinine 0.6, urea 36.

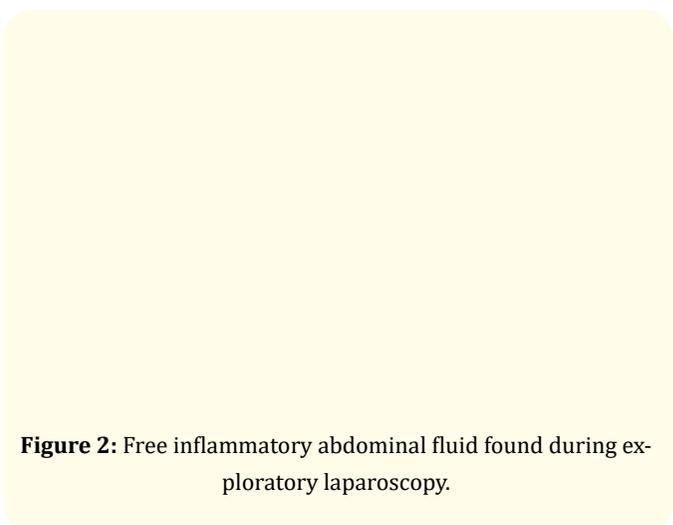
Abdominal and pelvic contrasted CT scan revealed the presence of peri-hepatic laminar fluid that extends to the parietocolic gutter, contracted stomach, diffuse dilatations of the small bowel with air-fluid levels (Figure 1). At the same plane, at the right pelvic cavity there is a slight thickening of the bowel wall with a thickness of 0.6 cm, with enhancement of the mucosa post contrast, diminishment of the wall light of a 60%, modest opacity of the mesentery, colonic frame with moderate fecal material, visible appendix with air fluid bubbles of normal appearance.



**Figure 1:** Air fluid levels (white arrow), Transitional zone (blue arrow), turmoil sign (arrow head).

Due to the CT scan findings (diminishment of the wall light of a 60% at the level of the distal ileum associated with an extra luminal peritoneal adhesion) laparoscopic surgical treatment is offered.

A diagnostic laparoscopy is performed, which shows 200 ml free inflammatory fluid (Figure 2), dilated bowel loops with adequate perfusion. Through exploration of the abdominal cavity was possible to identify the transitional zone (Figure 3) due to a peritoneal adhesion in the terminal ileum 10 cm away from the ileocecal valve, the procedure finishes with adhesiolysis.



**Figure 2:** Free inflammatory abdominal fluid found during exploratory laparoscopy.

**Figure 3:** Transitional zone due to peritoneal adhesion (white arrow), Adhesiolysis with laparoscopic scissor and ultrasonic energy (black arrows).

Immediate post operatory recovery was favorable, patient remained asymptomatic, hemodynamically stable, no signs of systemic inflammatory response, no signs of intestinal hypoperfusion. Physical examination revealed a soft abdomen, not distended, intestinal sounds presents, and no signs of peritoneal irritation. Early diet was started at 5 hours with adequate tolerance, which allowed diet progression. Patient was discharged 24 hours later. Follow up was done 8 days later patient was in proper conditions and didn't report eventualities.

### Discussion

Minimal invasive surgery is evolving at a very high speed, being the standard of care in many pathologies and saving money in the health system. In developed countries about surgeries are being performed related to ASBO, accounting for 960.00 hospital stay and 2.4 billion dollars in expenses [1].

The case presented corresponds to a very common scenario surgeons encountered in a daily basis, were an adequate stratification is key to define the therapeutic conduct.

**Figure 4:** ASBO stratification.

When there is no indication for emergent surgical intervention in ASBO patients, conservative clinical management is the first line treatment by several authors, with good outcomes. This management consists on nil per os, IV fluids, electrolyte correction, frequent clinical evaluation looking for signs of peritonism, oral water-soluble contrast (diagnostic- therapeutic), radiologist interpretation of the radiographic study to determine if diet can be started [4]. According to the Bologna Guidelines, patients with ASBO should be follow up for at least 48 - 72 hours to determine if conservative treatment is working or of urgent surgical treatment is needed.

There are different parameters used to establish if ASBO patients require surgical management. Bologna Guidelines suggest that surgical treatment should be consider in patients in which conservative clinical management has failed (obstruction persists > 72 hours, nasogastric tube production of > 500 ml at third day, indirect signs of intestinal ischemia, like increase pain, CRP > 75 mg/dl, WBC > 10,000/mm<sup>3</sup>, or presence of free fluid); nonetheless O'Leary, *et al.* [7] states that a sodium > 134 mEq/L and tomographic findings of thickening of intestinal wall can predict intestinal ischemia.

To determine which patients should undergo emergent surgery is not a difficult task, physical examination, laboratory findings and imaging supports the surgeon decision when opting for this management. The problem emerges when the decision to make is between selecting the patients who are to be consider for early

non-emergent surgical management vs. conservative clinical management. It has to be considered that patients that are selected for conservative management and this one fails after 48-96 hours, it can worsen pathology evolution with more complications and probably a more complicated surgery, which is going to have a bigger morbi-mortality rate, more hospital costs, need of an ICU unit and a probability of surgical re interventions.

It is hard to predict the type of intervention each patient needs, throughout the years there have been several works that try to solve this enigma, therefore we propose that in presence of obstruction, lack of sign of stool or feces in the small intestine and mesenteric edema surgical intervention should be performed within the first 12 hours. On the other hand, Bologna Guidelines proposes the use of another tool, the Peritoneal Adhesion Index to stage obstructive abdomen. The American Association for the Surgery of Trauma (AAST) [11] have their own scale with statistical significance results with direct association of the degree of obstruction with the development of complications and hospital stay.

Schraufnagel, *et al.* [6] showed that delay on surgical intervention is associated with increase in hospital stay and mortality. Previous studies have showed that conservative clinical management in ASBO could be associated with an increase rate of recurrence (12% in a year and 20% in 5 years), therefore Behman, *et al.* [1] suggest that surgical treatment in the first episode of ASBO is associated with recurrence reduction. Valverde, *et al.* [2] states that a laparoscopic approach in the management of this pathology is related with better outcomes, less morbidity, early feeding and reduce hospital stay; this can be supported as the case report presented.

Adequate patient selection should be done in every patient who needs an early surgical treatment. Farinella, *et al.* [9] states that the factors to be taken into consideration for a successful laparoscopic approach in ASBO should be: previous clinical history of > 2 laparotomies, appendectomy, no evidence of midline laparotomy and a simple adhesion band. Surgeon expertise has to be taken into consideration because it is directly associated with the patient outcome [2].

ASBO laparoscopic surgical technique key points are going to be described:

1. Establish the surgery strategy: Correct patient selection, determine risks-benefits. Never underestimate an obstructive abdomen: perform the surgery with surgeons with expertise and have all the necessary equipment. Ask for support of other surgeons if necessary.
2. Careful exploration of the abdominal cavity: Evaluate the available space. Open technique; avoid the use of closed technique. Preferable use of optic trocar with a round end. Entry through Palmer's point if possible.
3. Systematic evaluation: Don't look immediately for the transitional point. First, identify the cecum and ileocecal valve.
4. Cautiously manipulate the intestines: Mandatory use of intestinal clamps. Manipulate collapsed distal intestine. During exploration avoid contact with dilated bowel, preferable perform exploration through the mesentery.
5. Neat adhesiolysis: Isolate the peritoneal adhesion with suction or a grasper. Fine cuts (laparoscopic scissor). Limit the use of ultrasonic energy. Avoid thermal lesion: don't use bipolar or monopolar energy. Don't do aggressive adhesiolysis.

## Conclusion

ASBO is a complex pathology because it is difficult to stage every patient in the adequate category so a correct therapeutic conduct can be chosen. Laparoscopic surgical approach is associated with better postoperative outcomes, related with early feeding and better short and long-term life quality. Nonetheless, patient selection for this procedure, careful intestinal manipulation and identify when the patient is not candidate for laparoscopy treatment are essential to avoid unnoticed lesions that can increase morbidity and mortality.

## Conflict of Interest

Authors state no conflict of interest.

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