

Non-specific Ileal Perforation- The Place of Laparoscopy in the Surgical Management

Sorin Cimpean*, Luca Pau, Marie-Therese Marechal, Benjamin Cadiere and Guy Bernard Cadiere

Saint Pierre University Hospital, Brussels, Belgium

***Corresponding Author:** Sorin Cimpean, Saint Pierre University Hospital, Brussels, Belgium.

Received: November 08, 2019; **Published:** December 10, 2019

Abstract

Small bowel perforation is and its association with high mortality and morbidity due to the abdominal cavity contamination and to the secondary peritonitis. The ethiopathology is varied, and the anatomopathological exam and the blood serology can define the diagnostic. We present a case of a spontaneous perforation of the ileum that we managed by laparoscopy in a first step, but due to the generalized peritonitis and important alimentary contamination of the abdomen, we decide to convert to laparotomy.

Keywords: *Ileal Perforation; Laparoscopy; Small Bowel Perforations*

Introduction

Small bowel perforations can be classified into traumatic and spontaneous. Small bowel perforation is and its association with high mortality and morbidity due to the abdominal cavity contamination and to the secondary peritonitis. Non-specific perforations are non-unusual. The mechanism proposed is submucosa vascular embolism, chronic ischemia due to atheromatous vascular disease or arteritis, or drugs [1]. In case of perforation, the patients usually presents an exacerbation of abdominal pain associated with tenderness, rigidity and guarding, most pronounced over right iliac fossa. At arrival patients can already present signs of with sepsis and multiorgan failure with higher morbidity and mortality.

We present a case of a spontaneous perforation of the ileum that we managed by laparoscopy in a first step, but due to the generalized peritonitis and important alimentary contamination of the abdomen, we decide to convert to laparotomy.

Case Presentation

Patient, 36 years old was admitted by the Emergency Department for intense abdominal pain rated by the patient at 9/10 for few hours. The pain was located mostly on the hypogastric area and was accompanied by nausea without vomiting. The medical history revealed that the patient is a heavy smoker. At the arrival the vital signs reveal Blood Pressure - 14/7 mmHg and Heart Rate- 120 bpm. The laboratory count found abnormal only the White Blood Cells - $13.40 \times 10^3/\mu\text{L}$. The clinical exam found a general rebound and tenderness, more pronounced on the right flank. The abdominal CT-scan found a small bowel perforation localized on the right flank, proximally of a stenosis with an important quantity of intra-abdominal free air and free fluid (Figure 1 and 2).

We perform an exploratory laparoscopy. Intraoperatively we visualize a large perforation on the small bowel with an important alimentary contamination and a generalized peritonitis. During the operation the patient begin to presents signs of septic shock and we decide to convert to laparotomy to shorten the operative time and to be able to recover quickly all the alimentary parts. We perform a segmental resection of the bowel of the perforation and of the stenosis and a mechanical side-to-side anastomosis.

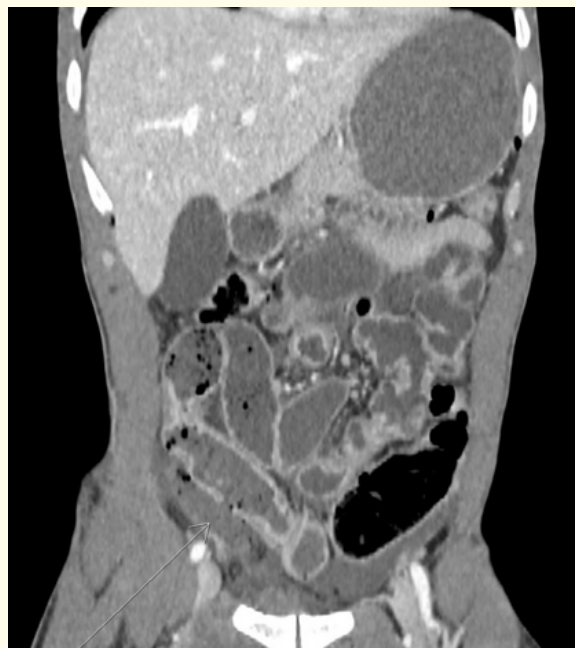


Figure 1: Abdominal CT scan, coronal view- large perforation of the small bowel.



Figure 2: Abdominal CT scan, axial view- large perforation of the small bowel.

The post-operative course was uneventful. The patient spends the first 3 postoperative days on Intensive Care Unit. The discharge was authorized on the 10th postoperative day. The anatomopathological exam reveals on the stenosis and perforation area a chronic non-specific ileum inflammation. The serology of syphilis, tuberculosis, CMV, Hepatitis, HIV and typhoid fever was negative.

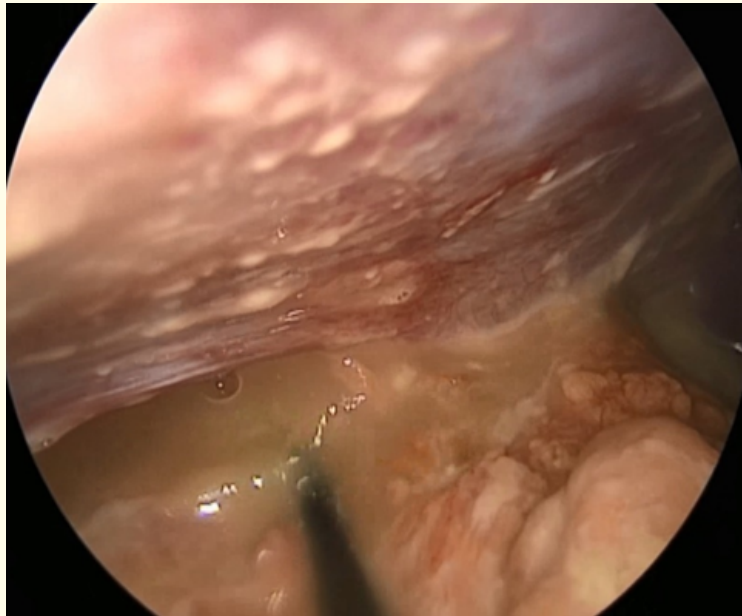


Figure 3: Intraoperative image- peritoneal contamination on the right flank.



Figure 4: Intraoperative image- visualization of the perforation and of the alimentary contamination.



Figure 5: Intraoperative image- visualization of the perforation.



Figure 6: Intraoperative image- visualization of the perforation and of the distal stenosis.

Discussions

The etiology of spontaneous bowel perforation is varied and varies in function of country and geographical region. Seth., *et al.* in a prospective study of 33 patients with small bowel perforation, 27 (81.8%) patients were males and 6 (18.2%) were females with ages ranging from 10 to 80 years. Abdominal pain and distension were the commonest presenting symptom in all 33 (100%) patients. 23 (70%) patients were of duodenal perforation, 3 (9%) of jejunal whereas 7 (21%) had a single ileal perforation [3].

Wani., *et al.* in an on 79 cases of non-traumatic terminal ileal perforation found that the causes for perforation were enteric fever (62%), nonspecific inflammation (26%), obstruction (6%), tuberculosis (4%) and radiation enteritis (1%) [2]. According to Madhu., *et al.* in a retrospective study on 60 patients with ileal perforation that the enteric fever, abdominal tuberculosis and helminthic infestations are

many a time responsible for perforation. Anemia, hypoproteinemia, avitaminosis and poor physical health because of poor dietary intake make the situation even worse [4]. Anam., *et al.* in prospective study on 119 patients with small bowel perforation, found the causes of ileal perforation as nonspecific 66 (55.5%), traumatic 34 (28.6%), typhoid 14 (11.8%), intestinal tuberculosis 3 (2.5%), and iatrogenic 2 (1.7%) [5].

Poornima., *et al.* in a prospective study found that the common pathology of ileal perforation is typhoid or enteric fever, non-specific ulcer, tuberculosis. Nonspecific inflammation of the terminal ileum was other predominant cause operative findings were similar to that of typhoid fever but no laboratory evidence of the disease was found. Intestinal tuberculosis can mimic many conditions [6]. Perforation of a typhoid ulcer usually occurs during the third week and is occasionally the first sign of the disease. The incidence of disease varies considerably in different parts of the world, 15 - 33% in West Africa and 1 - 3% in Egypt and Iran [7]. The most lethal complications of typhoid fever are intestinal bleeding and ileal perforations, both arising from necrosis of Payer's patches in the terminal ileum [8].

Kalaycı., *et al.* present a case report of a spontaneous ileal perforation due to direct invasion from diffuse malignant peritoneal mesothelioma [9]. Ascariasis is a common worm infestation in developing and under-developed countries. Darlington., *et al.* report a case of ileal perforation with volvulus due to *Ascaris Lumbricoides* in a 4-year old boy without any history of trauma or preexisting bowel disease [10]. The involuntary ingestion of foreign bodies is well described with thousands of case reports and series available in the literature. A significant risk factor for foreign body ingestion in adult patients without mental illness is the use of dentures as they cover the palate and can interfere with normal food sensation [11]. Cases with ileal intussusception and perforation associated with Cronkite-Canada syndrome are also described [12]. Sano., *et al.* reported a case of isolated ileal perforation due to CMV reactivation during the management of terbinafine hypersensitivity. Although the prognosis in bowel perforation related to CMV infection is extremely poor, emergency surgery saved our patient's life [13]. Giuliani., *et al.* propose a case of ileal lymphangiomatosis presenting with perforation, in which the diagnosis was made after the pathological analysis of the resected intestinal tract. Intestinal lymphangiomatosis could manifest itself with acute abdomen and could be a surgical urgency [14]. Chitkara., *et al.* report a case of perforation of the ileum secondary to abdominal tuberculosis [15]. Khalid., *et al.* in a descriptive case-series found that the causes for perforation were enteric fever in 82 cases (65.6%), tuberculosis in 38 cases (30.4%), adhesions and other causes in 5 cases (4%). The main presenting symptom in all patients were severe abdominal pain associated with fever and abdominal distension [16]. Lee., *et al.* reported an ileal perforation on poorly differentiated neuroendocrine carcinomas (NECs) which are originating from the gastrointestinal (GI) tract are rare and very highly malignant disease with a poor prognosis [16]. Vicente., *et al.* reported a case of terminal ileum perforation on Bechet syndrome (chronic, recurring, systemic disorder characterized by the histopathologic finding of nonspecific vasculitis in multiple organs) [17]. Ileal perforations secondary to children were also described due to enteric fever. High grade fever, dehydration and oliguria are the most important factors of risk. Incomplete and inappropriate treatment in early stages of enteric fever contribute to perforation [18].

The imagery plays a very important role in the diagnostic. The erect plain radiograph can find free gas under the diaphragm or the Rigler sign in case of intraabdominal air and suggest the diagnostic of digestive perforation. The ultrasonography can detect the presence of intraabdominal free gas and liquid but is no very feasible for this diagnostic and is operator dependent. The abdominal CT-scan with contrast injection is the exam of choice for the digestive perforations and can make the differential diagnostic with other pathologies.

Verma., *et al.* in prospective observational study propose a primary closure for the patient presenting within 24h of perforation with a localized peritonitis and a single perforation. The resection and anastomosis were proposed for perforation within 24h localized peritonitis and multiple perforations. Ileostomy should be reserved if the patient presents > 24h after perforation with generalized peritonitis, unstable and with multiple perforations [19].

Early presentation and diagnosis, adequate resuscitation, prompt surgery and vigorous post-operative management improved mortality rates. Clearly delays in presentation necessitating prolonged resuscitation and therefore delayed surgery affected mortality

[20]. The degree of fecal contamination, general health status of patient, number and location of perforation were main deciding factors for selecting the type of surgical operations.

Laparoscopic surgery provides feasible diagnostic and therapeutic abilities and is less invasive compared to conventional laparotomy. Its advantages, such as less postoperative pain and faster recovery, have already been well established in the majority of elective abdominal surgeries. Poor laparoscopic view, with such conditions as severe intestinal distension, adhesion, or intra-abdominal hemorrhage, can be a limitation of laparoscopy. These conditions may lead to inaccurate diagnosis, inappropriately prolonged operative time, and iatrogenic injuries. Conventional laparotomy should be considered for the safety of patients in cases with poor laparoscopic view [21].

Conclusion

Small bowel perforation can have a multitude of etiologies. The surgical treatment must be performed with no delay. For the hemodynamic stable patients, the exploratory laparoscopy should be performed in first intention as a diagnostic tool in case of doubt and therapeutic, but if the local conditions are not optimal, conversion to laparotomy, to perform an adequate peritoneal toilet and to shorten the operative time, is a wise choice.

Bibliography

1. Kalaycı O., et al. "A Rare Complication of Diffuse Malignant Peritoneal Mesothelioma: Spontaneous Ileal Perforation". *Indian Journal of Surgical Oncology* 10.3 (2019): 465-469.
2. Pernar LIM., et al. "An Unusual Cause of Intestinal Perforation". *JAMA Surgery* 152.2 (2017): 199.
3. Darlington CD and Anitha GFS. "Ascariidial Volvulus: An Uncommon Cause of Ileal Perforation". *Iranian Journal of Medical Sciences* 43.4 (2018): 432-435.
4. Sano S. "Isolated ileal perforation due to cytomegalovirus reactivation during management of terbinafine hypersensitivity". *World Journal of Gastroenterology* 16.26 (2010): 3339.
5. Kouame J., et al. "Typhoid Ileal Perforation Surgical Experience of 64 Cases". *Acta Chirurgica Belgica* 104 (2004): 445-447.
6. Giuliani A., et al. "Lymphangiomatosis of the ileum with perforation: A case report and review of the literature". *Annals of Medicine and Surgery* 41 (2019): 6-10.
7. Chitkara N., et al. "Multiple ileal perforations". *Postgraduate Medical Journal* 73.865 (1997): 757-758.
8. Nuhu A., et al. "Operative management of typhoid ileal perforation in children". *African Journal of Paediatric Surgery* 7 (2010): 9-13.
9. Singh G., et al. "Non-traumatic ileal perforation: A retrospective study". *Journal of Family Medicine and Primary Care* 3.2 (2014):132.
10. Khalid S and Bhatti AA. "Non-Traumatic Spontaneous Ileal Perforation: Experience With 125 Cases". *Journal of Ayub Medical College Abbottabad* (2014): 4.
11. Douglas CP., et al. "Ileal intussusception and perforation associated with Cronkhite–Canada syndrome". *ANZ Journal of Surgery* (2019): 15462.
12. Wani RA., et al. "Nontraumatic terminal ileal perforation". *World Journal of Emergency Surgery* 1.1 (2006): 7.

13. Ugochukwu AI, *et al.* "Ileal perforation due to typhoid fever – Review of operative management and outcome in an urban centre in Nigeria". *International Journal of Surgery* 11.3 (2013): 218-222.
14. Seth S and Agrawal K. "Small bowel perforations: Review of 33 cases". *Medical Journal of Dr. D.Y. Patil University* 9.2 (2016):186.
15. Anam M, *et al.* "Etiological Spectrum of Ileal Perforation on Surgical Grounds". *APMC* 12.3 (2018): 4.
16. Poornima R, *et al.* "Clinicopathological study of Ileal perforation: study in tertiary center". *International Journal of Surgery* 4.2 (2017): 543.
17. Madhu DK and Jha DNK. Study of Different Surgical Management And Their Complication Rates in Ileal Perforation". *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 16.8 (2017): 51-56.
18. Vicente CS and Freitas AD. "Surgical treatment of intestinal perforation in Behçet syndrome: an unusual presentation". *Pan African Medical Journal* (2018): 30.
19. Verma H, *et al.* "Surgical Audit of Patients with Ileal Perforations Requiring Ileostomy in a Tertiary Care Hospital in India". *Surgery Research and Practice* (2015):1-4.
20. Ito S, *et al.* "Successful treatment with laparoscopy-assisted surgery for ileal perforation due to an ingested foreign body: A report of two cases". *International Journal of Surgery Case Reports* 64 (2019): 165-169.
21. Lee JE, *et al.* "Small-cell neuroendocrine carcinoma of the ileum: case report and literature review". *BMC Surgery* 19.1 (2019):135.

Volume 7 Issue 1 January 2020

©All rights reserved by Sorin Cimpean., *et al.*