

An additional cause to be introduced in the inventory of non-traumatic perforations of the small intestine: gallstone migration.

Abdelmalek Mokhtar¹, Mohamed Ali Mseddi¹, Bechir Zahaf¹, Mohamed Taieb Frikha¹, Mohamed Ben Slima¹, and Karim Sassi¹

¹La Rabta Hospital

August 24, 2022

Abstract

The main objective of this case report is to critically evaluate the difficulties associated with the diagnosis and treatment of a rare endogenous intestinal perforation, represented by an impacted gallbladder stone; thus increasing the awareness of jejunal perforation and small bowel diverticula.

Title:

An additional cause to be introduced in the inventory of non-traumatic perforations of the small intestine: gallstone migration.

Authors: Abdelmalek MOKHTAR¹, Mohamed Ali MSEDDE¹, Bechir ZAHAF¹, Mohamed Taieb FRIKHA¹, Mohamed BEN SLIMA¹, Karim SASSI¹

Affiliation: General Surgery department, La Rabta, Tunis, TUNISIA¹

Email ID of corresponding author: mseddibaka@gmail.com

Introduction:

Non traumatic small intestine perforation is a devastating condition that can endanger the patient. Apart from the treatment of the perforation, special attention must be devoted to its cause in order to avoid further perforations. In this case, we describe an unusual cause of endogenous perforation, represented by an impacted gallbladder stone.

Case report:

The patient was an 80-year-old woman who had been describing recurrent hepatic colic for 5 years prior to her present consultation. She consulted for right hypochondrial pain accompanied by chills. At the examination she exhibited fever of 38.7°C, accelerated pulse to 114 bpm, guarding circumscribed to the right hypochondrium with tenderness on the remaining quadrants, without icterus. On biology, inflammatory markers were increased without cholestasis. On ultrasound, the gallbladder was thickened and 5 mm in size, with lithiasis and subhepatic and Douglas effusion. After adequate resuscitation, patient was rushed for exploratory laparotomy for a cholecystectomy for acute perforated cholecystitis. The surgical approach involved a right subcutaneous incision. The inspection revealed a generalized purulent effusion with dense adhesions in hepatic area rendering the dissection hazardous. A slit on the left side allowed to widen the operative incision. After adhesiolysis and thorough washout of encountered intraperitoneal spillage, we have identified an inflammatory intestinal-mesenteric organization compartmentalizing a punctiform perforation

at the antemesenteric edge with splanchnic edges, oedematous intestinal wall around the perforation and mesenteric engorgement. The bidigital palpation found a mass that rolled over the fingers. She had a segmental resection with transformation into a double ileostomy accompanied by feeding jejunostomy, in the perspective of overcoming disorders associated with a proximal ileostomy, due to perforation located at 40cm of the ligament of Treitz. A gallstone measuring 2cm was expressed out from the specimen. Her postoperative progress was almost uneventful; however, several days were required for wound healing and improvements in daily living activities because she was frail and elderly. Histopathological results of the intervened patient revealed isolated jejunal perforation with ischemic edges and covered with fibrous coating, without local inflammatory process or arteriosclerosis at the site of perforation. There was no evidence of malignancy in the resected specimen. She later passed away 2 months later due to major ionic disorders.

Discussion:

Small intestine perforations are considered rare, unlike gastroduodenal and colonic perforations [1]. The spectrum of etiology of perforation in tropical countries is different from its western counterpart. In contrast to western countries where lower gastro-intestinal tract perforations predominate, upper gastro intestinal tract perforations constitute the majority of cases in developed countries [2]. The following are the main causes of perforation: ischemic, occlusive, inflammatory (Meckel's diverticulitis), infectious (tuberculosis, typhoid fever), or traumatic (instrumentation, foreign body...) [1]. Although infectious causes, especially typhoid and tuberculosis are forefront in developing countries, Crohn's disease and malignancies are more common in developed countries [3]. Rare causes of perforation include lymphoma, malignant small intestine tumor, Crohn's disease and internal hernia, which account to only 5.4% according to the retrospective study of a Turkish team aiming to track down all causes of small bowel perforation [4]. Gallstones were not covered by this inventory, thus leading us to publish this case.

Among the infrequent complications that can be observed in the evolution of cholelithiasis is biliary ileus; it is in the path of vesicular macrocalculi that exert spontaneously resolving acute cholecystitis attacks. Over time the vesicular wall thickens due to the parietal inflammatory modulation with accentuation of fibrosis. During this transformation, it can attract an adhesion with the neighboring structures, in particular the duodenum, due to its favorable anatomical position. The impact of the stone generates a localized pressure necrosis up to the parietal ulceration and then perforation, thus allowing the stone to be delivered into the digestive lumen to discharge the calculus into the digestive tract. The calculus will follow the peristaltic activity along its course it could be impacted against the anatomical stricture zones generating the occlusion but the intestinal perforation is a rare event. This case illustrates this rarest eventuality. Perforation generally occurs in the antimesenteric border. This is explained by its poor blood supply, making it more susceptible to pressure necrosis from gallbladder stones [5]. Peritonitis arises from intestinal contents smeared out of the perforation.

The management covers the fundamental and elementary gestures: aspiration of pus, retrograde emptying of the small intestine, peritoneal cleansing with warm saline and removal of loose fibrin. The operative challenge resides in the handling of the perforation and the causative fistula. Intestinal sutures are avoided and intestinal bypass is necessary with a resection extension of 10 centimeters on both sides of the perforations, because the ulceration of the mucosa and of the surrounding submucosa is almost constant [6]. Anastomosis failure is more likely in case of documentation of shock at presentation, the presence of two or more perforations, and intraoperative contaminant volume of more than one litre, the choice of ileostomy over resection/anastomosis is then the keystone of surgical treatment [7]. We advocate resection because it additionally provides insight into the cause of the perforation, whose therapeutic pursuit is steered by the histological result. The association of a biliary gesture or its execution in a second operative course increases the morbidity and remains for most of the authors useless in the absence of ulterior symptoms since the fistula ceases spontaneously in more than 50% of cases. The recurrence rate is minimal (less than 5%) [8]. By taking this information into consideration, we agreed to suspend the biliary procedure and shorten the operative time. The latest operative step must be devoted to examine the small intestine thoroughly for the presence of other intraluminal stones.

Conclusion:

The surgeon must be prepared for the perforation of the small intestine by a gallstone in order to undertake the appropriate operative gestures.

References:

- [1] J. Maquet, Y.-G. Boulanger, M. Milicevic, Perforation intestinale grêle sur corps étranger, *Rev Med Liege*. (n.d.) 3.
- [2] P.K. Hota, N. Bung, Y.V. Prashanth, A study of non-traumatic gastrointestinal perforations in a tropical country, *Int Surg J*. 8 (2021) 2656. <https://doi.org/10.18203/2349-2902.isj20213592>.
- [3] A. Türkoğlu, A. Oğuz, Z. Bozdağ, Y. Zengin, Z. Arıkanoglu, M. Gümüş, Patient management and clinical outcomes in non-traumatic small bowel perforations, *J Clin Exp Invest*. 6 (2015). <https://doi.org/10.5799/ahinjs.01.2015.02.0503>.
- [4] H.Y. Akyildiz, A.C. Akcan, E. Sözüer, C. Küçük, N. Yilmaz, T. Artış, Bağırsak delinmelerinin nadir nedenleri ve cerrahi tedavisi, *Ulus Travma Acil Cerrahi Derg*. 15 (2009) 5.
- [5] Narang et al. - 2013 - Rectal perforation by impacted fecaloma—a new mech.pdf, (n.d.).
- [6] S. Mallick, J.F. Klein, CONDUITE A TENIR FACE AUX PERFORATIONS DU GRELE D'ORIGINE TYPHIQUE : A PROPOS D'UNE SERIE OBSERVEE DANS L'OUEST GUYANAIS, (n.d.) 4.
- [7] B.K. Jain, H. Arora, U.K. Srivastava, D. Mohanty, P.K. Garg, Insight into the management of non-traumatic perforation of the small intestine, *J Infect Dev Ctries*. 4 (2010) 650–654. <https://doi.org/10.3855/jidc.829>.
- [8] H. Abid, F. Babakhouya, A. Zerhouni, I. Toughrai, H. Sbair, B. Meryem, A. Ibrahim, I. Mellouki, Iléus biliaire: une cause rare d'occlusion intestinale, à propos d'un cas, *The Pan African Medical Journal*. 29 (2018). <https://doi.org/10.11604/pamj.2018.29.101.10691>.



