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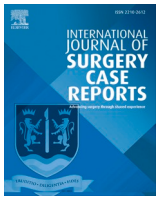

Case report

Bowel obstruction secondary to gallstone ileus within a strangulated inguinal hernia: Report of a rare diagnosis

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ABSTRACT

Introduction: Gallstone ileus is rare and inguinal hernias are common causes of intestinal obstruction but combination of them is a very rare cause of intestinal obstruction. It is accepted that in patients with severe comorbidities surgeons can manage inguinal hernias and gallstone conservatively. In this article we report a patient with gallstone and inguinal hernia that managed with conservatively management because of heart failure but admitted with complication of gallstone and hernia and treated successfully.

Case presentation: An 80-year-old woman with a history of heart failure and two bouts of acute cholecystitis, who presented with pain and swelling in the inguinal region and obstructive symptoms. And due to the urgent nature of the condition, she underwent surgery.

Conclusion: One of the rare complications of gallstones is cholecystoduodenal fistulas, especially in patients whose episodes of cholecystitis are treated medically. Early diagnosis and appropriate surgical management in these circumstances reduce the mortality and morbidity.

1. Background

Gallstone ileus is an uncommon cause of bowel obstruction. About 1–4 % of all intestinal obstructions is caused by gallstone ileus [1–3]. Gallstone ileus is defined as a mechanical intestinal obstruction due to impaction of one or more gallstones within the gastrointestinal tract [4]. This happens more in females and elderly patients, especially in patients with a bowel obstruction manifestation and known history of gallstones. Inguinal hernias are more prevalent among males with a lifetime risk of 27–43 % [5] and 3–6 % in females and account for 20 % of small bowel obstructions [6]. About 80 % of abdominal wall hernias are inguinal hernias [7]. The hernia usually contains the small intestine and the greater omentum and other organs such as urinary bladder, appendix, colon, ovary and fallopian tube [8]. Small bowel obstruction due to gallstone ileus through an inguinal hernia is an unusual manifestation.

Gallstone ileus occurs when a gallstone passed through a cholecystoduodenal fistula and enters to intestinal lumen. A fistula forms between the duodenum and the gallbladder. During cholecystitis, inflammation makes adhesion between the duodenum and the gallbladder. The pressure from the gallstone causes the fistula formation. The stone moves through the intestinal tract and sticks in the narrowest portion of gastrointestinal tract and causes obstruction. Although it can impact in any part, but terminal ileum and the ileocecal valve are the most common sites of obstruction, while these parts have lesser peristaltic wave and narrower lumen in comparison to other parts [9]. Based on the Surgical Case Report, 2020 (SCARE) guidelines, we report a rare case with only one prior description in the medical literature [10].

2. Case description

An 80-year old woman was admitted to Shahid Madani Hospital in the Alborz province in Iran via an ambulance with complaints of pain and bulging of the left inguinal region. She also complained of vomiting containing food residues for four days. She was suffered from mild cardiac failure. She had a history of two previous myocardial infarction with minimal sequelae and currently using captopril 25 mg twice daily, losartan 50 mg daily and carvedilol 6.25 mg daily tablets. In her past medical history she had two episodes of acute cholecystitis that managed with medical treatment because of her cardiac failure. She was hemodynamically stable and afebrile on presentation. Examination

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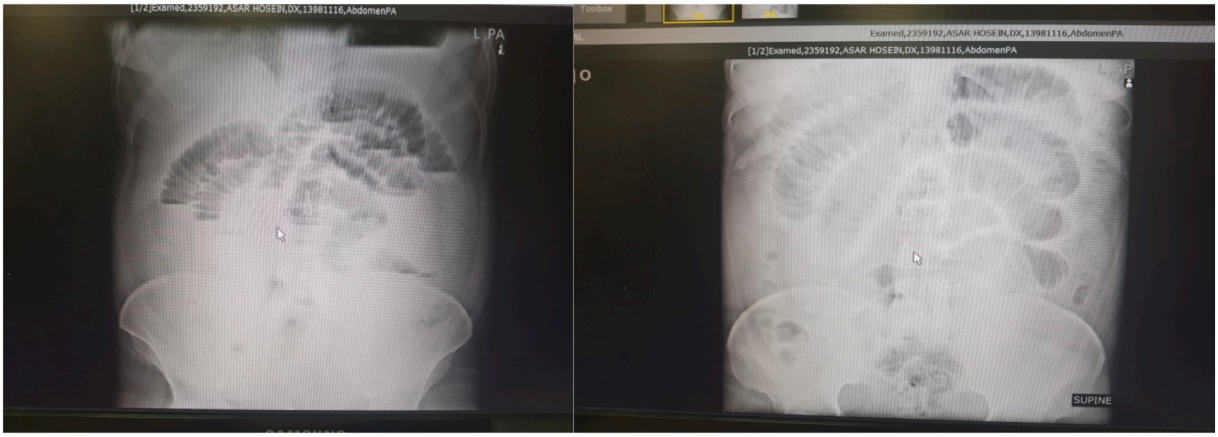

Fig. 1. Abdominal radiograph shows distended gas-filled loops of small bowel.

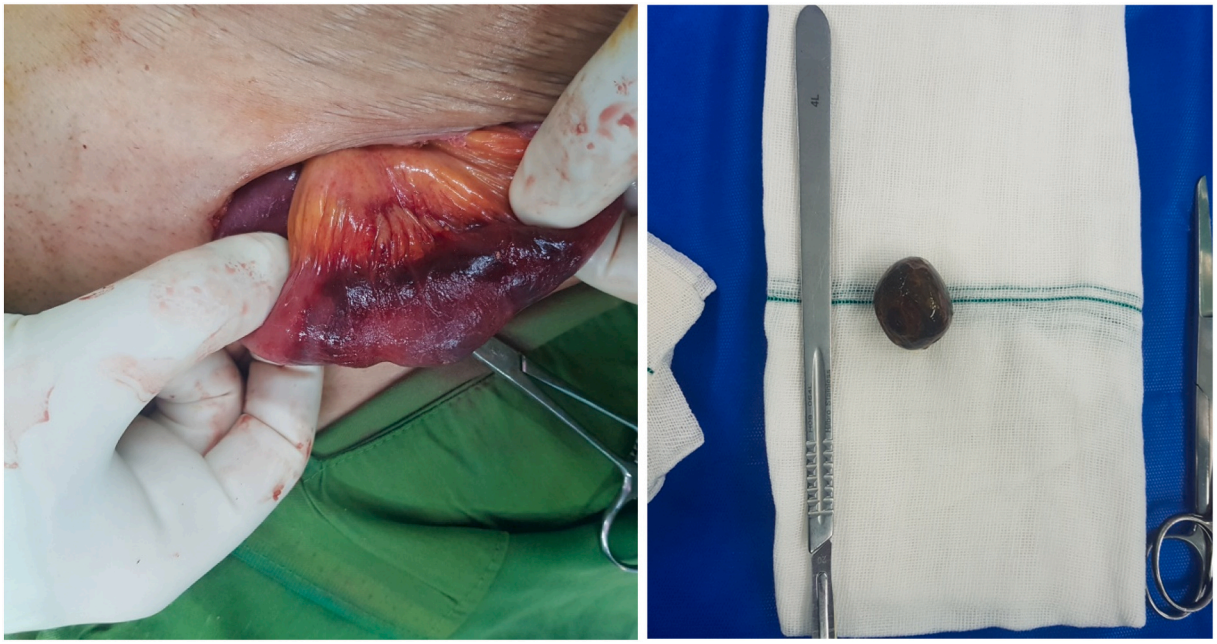

Fig. 2. Stone in bowel loop.

revealed a soft abdomen with moderate distension and epigastric tenderness with no rebound tenderness or guarding. In her inguinal examination, we found a large distended irreducible left-sided inguinal hernia with erythema and tenderness. White blood cell count was 13.62 g/l, C-reactive protein was 26.6 mg/l, and hepatic enzymes were normal in the patient's laboratory findings. An abdominal radiograph showed distended gas-filled loops of small bowel (Fig. 1). Intravenous fluids were administered and a nasogastric tube was inserted. The physical examination unequivocally confirmed an incarcerated left inguinal hernia, which was a strict indication of acute surgical intervention considering the very high cardiovascular risks. Exploration was performed by attending surgeon via an inguinal incision on the left side. An uncertain cystic structure was found in the hernial sac and several small, solid, abnormal masses were palpated in this structure (Fig. 2). The lesion seemed to be a gynecological lesion, not an intestinal loop. As regards the uncertain bizarre finding, the abdominal cavity was explored via a midline laparotomy. During exploration there was severe adhesion between gallbladder and duodenum that seems to be a cholecystodeodenal fistula. There was no sign of inflammation on fistula site and there were no more stones on gallbladder and small bowel. The gangrenous bowel segment was resected and end to end anastomosis was performed and because of severe adhesions and the patient's condition, the cholecystodeodenal fistula was left untouched. Then the patient was transferred to the surgical intensive care unit and she was also under the supervision of a cardiologist during hospitalization and 5 days after admission the patient was discharged and in the outpatient follow up visit during 6 months there was no problem and was satisfied with the type of treatment that he received.

3. Discussion and conclusions

One of emergencies in general surgery is incarcerated inguinal hernia. Nearly 5–15 % of operated inguinal hernias are incarcerated hernia [11]. Incarceration refers to the state that hernia contents trap within the hernia sac and it is impossible to reduce them back into the abdomen. Incarceration increases the risk of strangulation and obstruction, so it is mandatory to manage it as soon as possible [12]. On the other hand, another common surgical emergency is bowel obstruction [13], which causes high number of hospital admission and morbidity [14,15]. One of the major etiologies of bowel obstructions is

adhesion band (more than 70 %). Hernia, malignancy, inflammatory bowel disease, volvulus, intussusceptions and gallstones are another less common causes [14,16]. Gallstone is a rare condition that accounts for 1–3 % of mechanical ileus of bowel and about 65 % of bowel obstructions in population older than 65 years [3]. In this article, we report a patient with bowel obstruction manifestation secondary to gallstone ileus within inguinal hernia, which is a very rare condition and has been reported once within the literature. Our patient was an old woman, who had both risk factors of gallstone ileus [4]. Gallstone ileus clinical findings are variable because of vague symptoms and gallstone diagnosis maybe delayed. Symptoms may begin 4–8 days before intestinal obstruction. The gallstone erodes the intestinal wall and travels to intestine via a cholecystoduodenal fistula. When the stone impacts in the bowel, the spontaneous passage may be difficult [17]. So the best approach in these circumstances is surgery [18].

American Society of Anesthesiologists [19] score is a measurement recorded normally by anesthetists before surgery and raging from one in normal healthy patient to six in brain-death [20]. Studies demonstrate that surgical repairmen of inguinal hernia have higher risk of morbidity and mortality in patients with higher ASA score. Besides inguinal hernia have higher risk of incarceration and strangulation in these patients. So in patients with higher ASA score and asymptomatic hernia and many risk factors surgeons prefer to delay the surgery [21]. Our patient had two episodes of acute cholecystitis, but because of her cardiovascular condition and high ASA score, she was treated medically not surgically. So as the result of inflammation following cholecystitis, a fistula formed. The gallstone passed through fistula and entered into the intestine and caused bowel obstruction. Our patients represented typical symptom of bowel obstruction and plain x-ray demonstrated the obstruction. On the other hand, the patient had a left-sided inguinal hernia. Since the chance of spontaneous passage of gallstone was very low and the chance of strangulation was very high in this patient, we chose surgical treatment. Although according to her high ASA score, the risk of morbidity and mortality was high. During the surgery the hernia was reduced and operated with Bassini's method. The gangrenous bowel segment was resected and end to end anastomosis was done and because of severe adhesion and the patient's condition, the cholecyctodeodenal fistula was left behind. The patient had a good recovery after the operation and was discharged with a plan for follow up in 6 months.

4. Conclusion

Hernia is the second cause of bowel obstruction but existing hernia and gallstone ileus simultaneously is a very rare condition. The past history of patient and our physical exam showed this condition in our patient. Early diagnosis and appropriate surgical management in these circumstances reduce the mortality and morbidity.

Consent

Informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

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Ethical approval

This is a case report paper.

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The corresponding author is Dr. Javad Zebarjadi Bagherpour who accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

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None.

CRediT authorship contribution statement

All authors had same contribution on this work.

Declaration of competing interest

There are no conflicts of interest.

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References

[1] F. Lassandro, N. Gagliardi, M. Scuderi, A. Pinto, G. Gatta, R. Mazzeo, Gallstone ileus analysis of radiological findings in 27 patients, Eur. J. Radiol. 50 (1) (2004) 23–29.
[2] M. Saad Al Skaini, M. Ezzedien Rabie, A.H. Al Ghamdi, A.Y. Kandeel, M. Sulaiman Al Mahdi, Gallstone ileus masquerading as an obstructed femoral hernia, Surg. Pract. 9 (3) (2005) 104–106.
[3] W. Kirchmayr, G. Mühlmann, M. Zitt, J. Bodner, H. Weiss, A. Klaus, Gallstone ileus: rare and still controversial, ANZ J. Surg. 75 (4) (2005) 234–238.
[4] A. Ayantunde, A. Agrawal, Gallstone ileus: diagnosis and management, World J. Surg. 31 (6) (2007) 1294–1299.
[5] F. Köckerling, M.P. Simons, Current concepts of inguinal hernia repair, Visc.Med. 34 (2) (2018) 145–150.
[6] U. Ihedioha, A. Alani, P. Modak, P. Chong, P. O'dwyer, Hernias are the most common cause of strangulation in patients presenting with small bowel obstruction, Hernia 10 (4) (2006) 338–340.
[7] R. Bendavid, J. Abrahamson, M.E. Arregui, J.B. Flament, E.H. Phillips, Abdominal Wall Hernias: Principles And Management, Springer, 2001.
[8] D. Schizas, I. Katsaros, D. Tsapralis, D. Moris, A. Michalinos, D. Tsilimigras, et al., Littre's hernia: a systematic review of the literature, Hernia 23 (1) (2019) 125–130.
[9] M.B. Luu, D.J. Deziel, Unusual complications of gallstones, Surg.Clin. 94 (2) (2014) 377–394.
[10] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, A. Thoma, et al., The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines, Int. J. Surg. 84 (2020) 226–230.
[11] B. Kulah, I.H. Kulacoglu, M.T. Oruc, A.P. Duzgun, M. Moran, M.M. Ozmen, et al., Presentation and outcome of incarcerated external hernias in adults, Am. J. Surg. 181 (2) (2001) 101–104.
[12] H. Devlin, Principles in hernia surgery, in: H.B. Devlin (Ed.), Management of Abdominal Hernias, 1st edition, Butterworth, London, 1988.
[13] O. Peacock, M. Bassett, A. Kuryba, K. Walker, E. Davies, I. Anderson, et al., National Emergency Laparotomy Audit (NELA) Project Team. Thirty-day mortality in patients undergoing laparotomy for small bowel obstruction, Br. J. Surg. 105 (8) (2018) 1006–1013.
[14] H. Markogiannakis, E. Messaris, D. Dardamanis, N. Pararas, D. Tzertzemelis, P. Giannopoulos, et al., Acute mechanical bowel obstruction: clinical presentation, etiology, management and outcome, World J. Gastroenterol. 13 (3) (2007) 432.
[15] G. Miller, J. Boman, I. Shrier, P. Gordon, Natural history of patients with adhesive small bowel obstruction, Br. J. Surg. 87 (9) (2000) 1240–1247.
[16] B.T. Fevang, J. Fevang, L. Stangeland, O. Søreide, K. Svanes, A. Viste, Complications and death after surgical treatment of small bowel obstruction: a 35-year institutional experience, Ann. Surg. 231 (4) (2000) 529.
[17] F. Lassandro, S. Romano, A. Ragozzino, G. Rossi, T. Valente, I. Ferrara, et al., Role of helical CT in diagnosis of gallstone ileus and related conditions, Am. J. Roentgenol. 185 (5) (2005) 1159–1165.
[18] T.E. Pavlidis, K.S. Atmatzidis, B.T. Papaziogas, T.B. Papaziogas, Management of gallstone ileus, J. Hepato-Biliary-Pancreat. Surg. 10 (4) (2003) 299–302.
[19] Å. Neuman, C. Hohmann, N. Orsini, G. Pershagen, E. Eller, H.F. Kjaer, et al., Maternal smoking in pregnancy and asthma in preschool children: a pooled

analysis of eight birth cohorts, Am. J. Respir. Crit. Care Med. 186 (10) (2012) 1037–1043.
[20] W.D. Owens, J.A. Felts, E. Spitznagel Jr., ASA physical status classifications: a study of consistency of ratings, Anesthesiology 49 (4) (1978) 239–243.
[21] R.G. Işıl, U. Demir, C. Kaya, Ö. Bostancı, U.O. İdiz, C.T. Işıl, et al., Approach to inguinal hernia in high-risk geriatric patients: should it be elective or emergent? Turk.J.TraumaEmerg.Surg. 23 (2) (2017) 122–127.