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Case Report

Operative Treatment of Duodenal Perforation under Local Anesthesia in an Adult with Renal Impairment: A Case Report -

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ABSTRACT

Background: Duodenal perforation, with leakage of intestinal content into the peritoneal cavity, is a surgical emergency and may have lethal consequences. An association of duodenal perforation with obstructed hernia and renal impairment present a great challenge to the surgeon. The aim of this study is to report a case of perforated duodenum presenting as purulent effluent in large inguinoscotal hernia in a renal impaired patient.

Case Presentation: A 65-year old man presented with a 2-day history of pain in a long standing right inguinal hernia. There was also fever and vomiting with an associated inability to pass faeces/flatus and a reduction in urine volume. On examination, he was an elderly man in painful distress, pale and dehydrated. There was generalized abdominal tenderness. External genitalia revealed a tender huge irreducible right inguinoscrotal swelling extending from the right inguinal hernia to a few centimeters above the right knee. Laboratory work up showed markedly elevated levels of serum potassium, urea and creatinine. A review by the nephrologist confirmed an impaired renal status and high general anesthetic risk. Hence, the decision was taken to perform the procedure under local anesthesia. Purulent collections in the hernia sac necessitated a laparotomy which revealed a perforation in the second part of the duodenum. The definitive surgery performed was right inguinal herniorrhaphy and repair of the duodenal perforation.

Conclusion: Duodenal perforation may co-exist with complicated inguinal hernia in a background of renal impairment; surgical treatment can be performed under local anesthesia.

Keywords: Duodenal ulcer; Inguinal hernia; Laparotomy; Local anesthesia; Renal impairment

INTRODUCTION

Duodenal perforation, with leakage of intestinal content into the peritoneal cavity, is a surgical emergency and may have lethal consequences [1]. Duodenal perforation may be spontaneous or traumatic [2]. Spontaneous duodenal perforation results from peptic ulceration/Non-Steroidal Anti-Inflammatory Drugs (NSAID) abuse while traumatic duodenal perforation results from interventions such as surgery or stab wounds. The two main factors implicated in spontaneous duodenal perforation are NSAID and Helicobacter pylori (H. Pylori). Other factors that may predispose to duodenal perforation include chronic liver disease, chronic renal failure and hyperparathyroidism [2]. In most patients, ulcers in the anterior part of duodenum usually perforate whereas ulcers on posterior part tend to cause bleeding as they erode into gastroduodenal artery and there is 30-50% risk of ulcer perforation associated with NSAID abuse [2]. In gastroduodenal perforations, 67% of the perforations are in the duodenum and 17% of the perforations occur in stomach [3]. Following duodenal perforation, there is release of food and digestive enzymes into the peritoneal cavity initially causing chemical peritonitis; secondary bacterial peritonitis happens later [4]. In erect posture, gravity makes the infected peritoneal fluid to settle in the pelvic cavity. It is important to note that duodenal perforation can occur with no antecedent history of peptic ulcer disease. Patients with duodenal perforation may not have abdominal symptoms or signs, but chest x ray taken for other reasons indicate a pneumoperitoneum. Duodenal perforation may be sealed by a plug of omentum or another viscus before significant soiling and peritonitis occurs. The aim of this study is to report a case of perforated duodenum presenting as purulent effluent in large inguinoscotal hernia in a renal compromised patient. This case is worthy of being reported because of operative treatment of the duodenal perforation under local anesthesia.

CASE PRESENTATION

A 65-year old man presented with a 2-day history of pain in the scrotum. The pain was of gradual onset, severe, colicky and radiates to the abdomen. There was an associated scrotal swelling. The patient has had the scrotal swelling for 5 years and the swelling has refused to go back in the past 1 year with occasional mild pain that was alleviated by over-the-counter drugs (analgesics). There was vomiting and fever which was moderate grade. The patient was unable to pass faeces and flatus. However, there was no abdominal distension. He also complained of a reduction in the volume of urine.

On examination, an elderly man in painful distress, pale and dehydrated. Temperature was 37.4°C, pulse rate was 84 beats per minute, regular, moderate volume and respiratory rate was 16 cycles per minute.

Abdomen was full, moves with respiration, umbilicus was inverted and there was generalized tenderness. No palpable organomegaly was elicited.

External genitalia revealed a huge right irreducible inguinoscrotal swelling extending from the right inguinal hernia to a few centimeters above the right knee. The inguinoscrotal swelling was soft but mildly tender. The overlying skin of the scrotal swelling appeared normal (Figure 1).

A working diagnosis of huge obstructed right inguinoscrotal hernia was made. The patient was resuscitated and worked up for an emergency surgery. Laboratory work up showed markedly elevated levels of serum potassium, urea and creatinine. A review by the nephrologist and anesthetist confirmed an impaired renal status and high general anesthetic risk respectively. Hence, the decision was taken to perform the procedure under local anesthesia.

Intra-operatively, under local anesthesia, a huge hernia sac with peritoneal covering containing small bowel, cecum, appendix and purulent collections were found. The urinary bladder and cecum formed the lateral and medial parts of the hernia sac respectively. A laparotomy (through a different upper midline incision under local infiltration) which was also performed showed a perforated second part of the duodenum and about 4 liters of pus was drained from the peritoneal cavity. The definitive surgery performed was right inguinal herniorrhaphy and repair of the perforated second part of the duodenum. The highlight of this report is that the entire operative procedure was performed under local anesthesia due to the impaired renal status of the patient. The intra-operative pictures are shown in figures 1-5.

DISCUSSION

Non-Steroidal Anti-Inflammatory Drugs (NSAID) are very effective in the treatment of chronic inflammatory conditions but their

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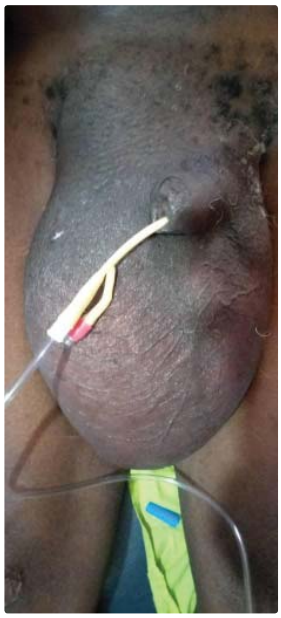

Figure 1: Huge right inguinoscrotal hernia with urethral catheter *in-situ*.

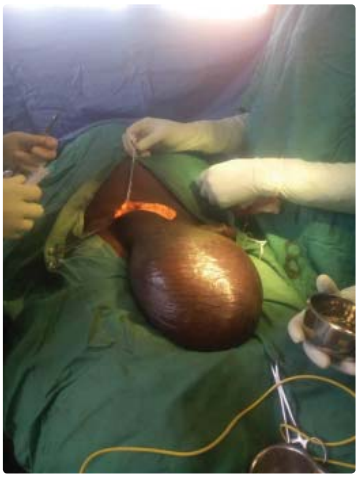

Figure 2: Intra-op picture. Initial inguinal incision.

Figure 3: Intra-operative picture: Contents of the hernia sac.

Figure 4: Further infiltration of Local anesthesia for extension of the surgical incision.

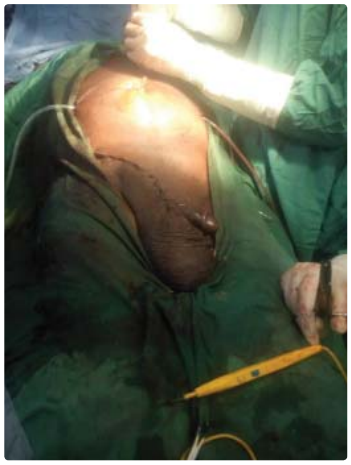

Figure 5: End of surgery: Suture line.

use is associated with significant complications of peptic ulceration [5]. The prevalence of peptic ulceration in patients receiving NSAID has been quoted to be between 17% and 31% [5]. Cigarette smoking increases the effect of NSAID on peptic ulceration [6]. However, the association of NSAID with the complications of gastric perforation is easier to prove than in duodenal perforation [5].

Historically, in 1843 Edward Crisp was the first to report 50 cases of gastric and duodenal perforation [7]. For thousands of years apparent healthy people had abdominal pain followed by death in a few hours or days. Most times, these symptoms are attributed to poisoning and people have been sent to prison for this [8]. King Charles' daughter, Henriette-Anne, died suddenly in 1670 (at the age of 26 years) after a day of abdominal pain. Autopsy was performed, because poisoning was suspected, which showed peritonitis and a small hole in the upper gastrointestinal tract. However, the doctors had never heard of a perforated bowel and attributed the hole to the knife of the dissector [8,9]. Johan Mikulicz-Radecki (1850-1905) was the first surgeon to close a perforated duodenum by simple closure [10].

In the present report, our patient was a 65 year old man. One study from Westminster, London reported that elderly persons are mostly affected by complications of NSAID induced peptic perforation [5].

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There are reports of increasing incidence of duodenal perforation more in elderly females than in elderly males [11]. The reason for this increase has been attributed to increased use of NSAID by females.

The patient in the index case report had a duodenal perforation co-existing with inguinoscrotal hernia. One study from Boston Massachusetts reported inguinal sac abscess in a patient with perforated peptic duodenal ulcer [12]. Perforated peptic duodenal ulcer has also been reported in a para esophageal hernia [13].

Laparotomy for the treatment of duodenal perforation is a major surgical undertaking which is usually performed under general anesthesia. However, in a background of co-morbidities such as renal impairment, the patient may not withstand the stress of surgery and general anesthesia. In the scenario painted above, the surgeon is left with no option than to repair both the giant inguinal hernia and perforated duodenum under local anesthesia. This is what applied to the index patient. Saber et al documented the role of local anesthesia in the treatment of duodenal perforation in high risk patients [14]. Other researchers have stated the role of percutaneous peritoneal drainage under local anesthesia in such high risk patients [14,15].

CONCLUSION

Perforated duodenum may co-exist with complicated inguinal hernia and in a background of renal impairment; in such cases surgical treatment can be performed under local anesthesia. Future prospective study should compare the outcome of treatment of duodenal perforation under local anesthesia with the outcome of treatment under general anesthesia.

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