Case report

Post-laparoscopic cholecystectomy extra-hepatic arterial pseudoaneurysm: An uncommon complication

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ABSTRACT

Laparoscopic cholecystectomy is widely practiced and is rarely associated with any major complication. The incidence of vascular complications related to laparoscopic cholecystectomy is reported to be 0.8%. An extra-hepatic arterial pseudoaneurysm can occur either due to electrocautery thermal injury or due to the surgical clip application. It may communicate and bleed within the biliary tree and present as haemobilia. The patient usually presents weeks later after the laparoscopic cholecystectomy, with the apparent clinical picture of abdominal pain, upper gastrointestinal bleeding, and jaundice. Contrast-enhanced CT scan can help in diagnosis but is not confirmatory. Angiography can be diagnostic as well as therapeutic i.e., angiographic embolization can be performed. If embolization fails, then open surgical exploration should be planned.

Here, we present a case of post cholecystectomy hemobilia, who presented 3 weeks later after surgery with melena and mild abdominal pain. The case was diagnosed as extra-hepatic artery bleeding pseudoaneurysm and was successfully treated with angioembolization.

1. Introduction

Laparoscopic cholecystectomy is widely practiced and is seldomly associated with major complications. Biliary injury is the most common drastic complication associated with laparoscopic cholecystectomy. Approximately one-fourth of all biliary injuries will have concomitant vascular injuries [1]. The incidence of vascular complications related to laparoscopic cholecystectomy is reported to be 0.8% [2]. These complications may happen secondary to electrocautery thermal injury or might be due to surgical clips application, damaging the arterial wall and resulting in pseudoaneurysm formation [3]. The aneurysm is mostly extrahepatic in location. It may communicate and bleed within the biliary tree and present as haemobilia [4].

Patient with haemobilia usually presents weeks later after the initial surgery, with the clinical picture of abdominal pain, upper gastrointestinal bleeding, and jaundice. This presentation is considered classic for the bleedingpseudoaneurysm [4,5]. A mortality rate of up to 35% has been documented in the literature for ruptured aneurysms [4,6]. It is considered an uncommon and lethal complication, and rarely reported in the literature [7].

Here, we present a case of post cholecystectomy hemobilia who presented 3 weeks later after laparoscopic cholecystectomy with melena, abdominal pain, and jaundice. The case was diagnosed as an extra-hepatic arterial pseudoaneurysm and was successfully treated with angioembolization.

2. Case presentation

A 50-year-old married female, known hypertensive, presented to the emergency department with a history of melena for the last 2 weeks, intermittent mild vague abdominal pain, and mild yellow discoloration of the eyes. She has no history of itching and clay-colored stool. Her family history was not significant for any illness. She underwent laparoscopic cholecystectomy for cholelithiasis one month back. Before presentation to our unit, she underwent upper gastrointestinal endoscopy somewhere else, a week ago for melena workup, which was
documented normal. She also reported a history of 2 pints of blood transfusions during that visit.

On presentation she was afebrile, pulse rate was 110 beats/min, and blood pressure of 109/75 mmHg. On general physical inspection, she was pale and mild icteric. The abdominal examination does not reveal any tenderness or signs of peritonitis. A digital rectal examination showed a finger stained with a coffee-colored stool.

Initial investigations showed hemoglobin of 6.5 g/dl, hematocrit value of 22.3%, platelet count 457 × 10³ cells/ul, and INR value of 1.3. The leukocyte count was 12.99 × 10³ cells/ul. Total bilirubin level of 5.5 mg/dl, direct bilirubin level of 4.1 mg/dl, and indirect bilirubin level was 1.4 mg/dl. Alkaline phosphatase value was 564 U/L, AST was 78 U/L, and ALT was 47 U/L. Electrolytes were normal except for potassium which was 3.3 mEq/L. Two pints of red blood cells were transfused after grouping and cross-match. Ultrasound abdomen showed a minimal collection at surgical bed site. Colonoscopy was planned and gut preparation was advised.

Colonoscopy revealed melena at the mid-transverse colon; however, no active bleeding site was identified till the ileocecal junction examination. So, a repeat upper GI endoscopy was done, which revealed fresh blood in the second part of the duodenum; careful examination showed blood oozing from the duodenal ampulla however no active bleeding point was found. Immediately a contrast-enhanced multidetector CT scan was done which revealed a 3×4 cm contrast-filled saccular swelling during the arterial phase at the origin of the cystic and RHA at the operative bed near the surgical clips, having a mass effect on the common hepatic duct resulting in minimal proximal intrahepatic duct dilatation (Fig. 1). These findings were suggestive of the extrahepatic arterial pseudoaneurysm at the surgical bed.

A multidisciplinary team meeting was called for the discussion of the management plan. The team included hepatobiliary surgeons, interventional radiologists, and gastroenterologists. After a detailed discussion, angiographic embolization of suspected bleeding pseudoaneurysm was planned with surgical team backup. The patient was shifted to the radiology suite. Under local anesthesia in supine position access to the aneurysm was gained by the consultant interventional radiologist through the right femoral artery. The celiac axis was engaged with 5F SIM 2 catheter and an angiogram was obtained. The angiogram showed a bleeding aneurysm at the porta hepatis having a dual supply from the right hepatic artery (RHA) and gastroduodenal artery (GDA). The aneurysm was embolised with platinum coils. On the post-procedure angiogram, there was no blood flow seen in the aneurysm (Fig. 2).

Post-procedure, the patient was shifted to the surgical intensive care unit. There were no immediate post-procedure complications. Close vital monitoring and regular hemoglobin level measurements were done for the next 48 h. The melena subsided and hemoglobin level did not drop post-embolization. The patient was discharged on the 3rd day post-embolization in a stable condition and was called one week later. A follow-up CT scan after 2 weeks showed occlusion of the aneurysm with normal hepatic arterial blood flow (Fig. 3). Also, on follow-up, the
Hemobilia may be present in 90% of patients as melena or hematemesis, and jaundice. Even acute abdomen had been observed in a few cases. Stated by Hewes and coauthors [7] that the majority of the patients contact of the clips with the pseudoaneurysm wall most of the time. The location of the Pseudo-aneurysm is an unusual complication. The manifestation of iatrogenic arterial injury is hemobilia, reported here in this case.

This case of post cholecystectomy extra-hepatic bleeding pseudoaneurysm is an unusual complication. The location of the Pseudoaneurysm depends on the level of injury and can be found at the RHA, cystic artery, and GDA level [4]. The closeness of clips in the present case had been enlightened in literature. Milburn et al. [3] proposed the possible mechanism of arterial injury, as arterial wall erosion by the surgical clips. Srinivasaiah and colleagues [9] also observed the close contact of the clips with the pseudoaneurysm wall most of the time.

This case of post cholecystectomy extra-hepatic bleeding pseudoaneurysm is an unusual complication. The hemoglobin level was 9.9 mg/dl and the total bilirubin level decreased to 2.3 mg/dl. Till the last follow-up (six months post-embolization) the patient is fine.

3. Discussion

Despite the minimally invasive nature and greater advantages of laparoscopic cholecystectomy compared to the open procedure, still it carries an increased risk of iatrogenic vascular injuries even in most experienced hands. The documented incidence in the literature is approximately 0.8%. Intraoperative bleeding is the common manifestation of iatrogenic vascular injuries [2]. However, a less common manifestation of iatrogenic arterial injury is hemobilia, reported in this case.

This case of post cholecystectomy extra-hepatic bleeding pseudoaneurysm is an unusual complication. The length of presentation at 13 months. However, the presenting time can vary, ranging from days to months as Milburn et al. [3] recorded the longest duration of presentation at 13 months.

The symptoms and signs may vary. The classical presentation of extra-hepatic bleeding pseudoaneurysm is GI bleeding, abdominal pain, and jaundice. Even acute abdomen had been observed in a few cases. Hemobilia may be present in 90% of patients as melena or hematemesis, abdominal pain in 70%, and jaundice in approximately 60% of cases. The usual clinical presentation of hemobilia is intermittent bleeding per rectum in the form of melena. If missed and not identified initially, a massive hemorrhage with hematemesis, fresh rectal bleed and shock may occur secondary to aneurysmal rupture [5]. Jaundice can occur due to the presence of blood clots within the CBD, possible stricture of the CBD due to iatrogenic biliary injury, or due to the compression effect of the aneurysm over the biliary tree which was appreciated in this case.

4. Conclusion

Post-cholecystectomy extra-hepatic arterial pseudoaneurysm is an uncommon but potential complication. Every surgeon and gastroenterologist should keep this presentation in mind. There should be a high index of suspicion in patients with a prior history of cholecystectomy or recent hepatobiliary intervention presented with gastrointestinal bleed. It should be treated once diagnosed to control symptoms and to prevent possible complications. Angioembolization is the preferred line of treatment.

Patient perspective

I was operated on for gallstones. And almost 3 weeks after my surgery, I noticed dark-colored stools and I was having pain in my tummy. I had a camera test through my food pipe which was reported as normal. Then I got pale and my eyes were a bit yellow. My doctor transfused me some blood products and after a thorough investigation, they found that there was a bleeding dilated vessel at the previous surgery site which was the cause of my symptoms. Subsequently, they treated me and I am alright now. My doctors managed me quite well and I thank them.

Ethical approval

Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Sindh, Ethical Committee.

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Kaleem Ullah: Writing the paper.
Muhammad Asif Baig: Design the study.
Zaka Ullah Jan: Final review of the manuscript.
Muhammad Wajeeh Nazar: Assisted in writing manuscript.
Harsha Komal Shardha: Assisted in Literature search.
Grouve Kumar: Literature Review.

Declaration of competing interest

There are no conflicts of interests.

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