



Right hepatic artery pseudoaneurysm post laparoscopic cholecystectomy

A case report



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Right hepatic artery pseudoaneurysm following laparoscopic cholecystectomy is rare, but its rupture is common. It carries a high mortality rate if not successfully timely managed. In laparoscopic era, surgeons and physicians in general must be aware of this entity and its therapy. Conservative management is not recommended due to the propensity to rupture. Treatment consists on reconstructive surgery or ligation, but coil embolization is the treatment of choice nowadays and should be done without delay.

KEY WORDS: Cholecystectomy, Embolization, Laparoscopy, Pseudoaneurysm rupture, Right hepatic artery

Introduction

In modern surgery, laparoscopy became the gold standard in the treatment of several surgical diseases because of its advantageous impact on morbidity and length of stay in hospitals. Nevertheless there may be higher risks of biliary and vascular injuries compared to the open procedure. In laparoscopic cholecystectomy, vascular injuries occur in up to 0.8%¹. The most frequent injured vessel is the right hepatic artery which is concerned in up to 0.6% of patients², and 85% of iatrogenic hepatic artery pseudoaneurysms involves the right hepatic artery³. In the presence of a bile duct injury up

to 25% will have a concomitant vascular injury⁴. These rare complications may pose a recognition problem pre and post operatively, and can be life-threatening requiring a timely management.

We report a case of right hepatic artery pseudoaneurysm ruptured 2 weeks after laparoscopic cholecystectomy, causing a haemorrhagic shock successfully managed with resuscitation and embolization.

Case Report

A 41 year old man had a laparoscopic cholecystectomy in a regional hospital, on the 8th December 2015, for symptomatic cholelithiasis without any mentioned intraoperative difficulty or incident. Two weeks later, he consulted the same hospital for pain in the right upper quadrant and the epigastria. Hemodynamic status was correct and hemoglobin level at 12g/dL. An abdominal CT was done showing a pseudoaneurysm of the right hepatic artery 13 mm in diameter and immediately adjacent to titanium clips (Figs. 1, 2). The patient kept for surveillance in his hospital, waiting for embolization appointment. The evolution was marked by the onset of hemorrhagic shock, two days before the interventional

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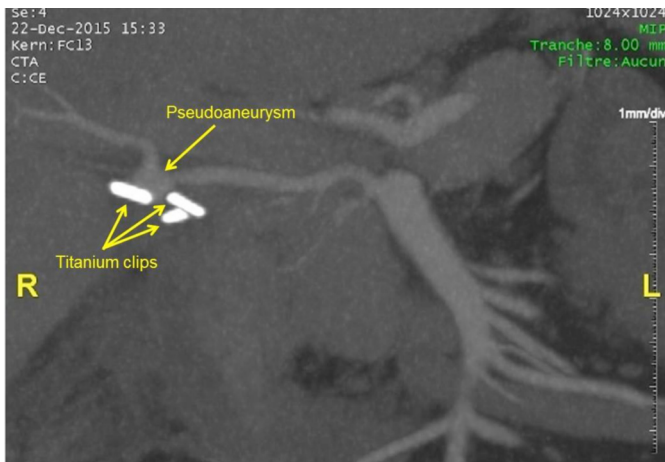


Fig. 1: Abdominal CT showing a pseudoaneurysm of the right hepatic artery.

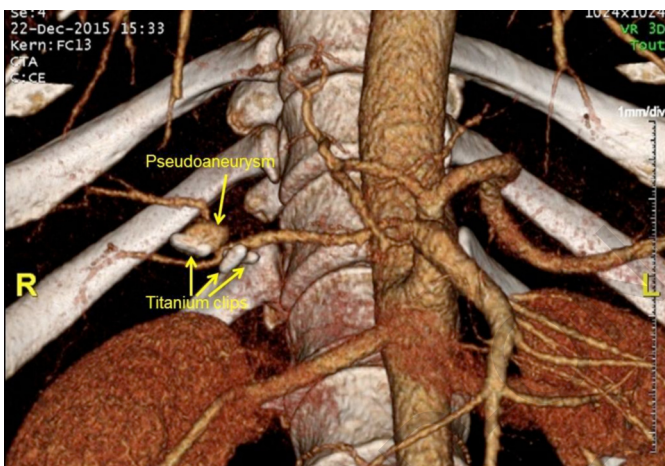


Fig. 2: Abdominal CT reconstruction showing a pseudoaneurysm of the right hepatic artery.

radiology procedure, with drop of hemoglobin level up to 3g/dl. After resuscitation including fluid and blood transfusion crowned by stabilization, the patient was sent to our institution and underwent an emergency embolization successfully completed (Figs. 3, 4). Two days after embolization, during his stay in intensive care unit, the patient developed a respiratory distress. The thoracic CT angiography diagnosed a massive proximal bilateral pulmonary embolism. The final outcome was good, with discharge from hospital, on oral antivitamin K treatment.

Discussion

Iatrogenic pseudoaneurysms complicating laparoscopic cholecystectomy are rare and involve mainly the right hepatic artery^{5,6}. The injury of the vessel occurs especially in difficult and laborious laparoscopy, but can occur without being noticed even in easy “uncomplicated” procedures⁷.

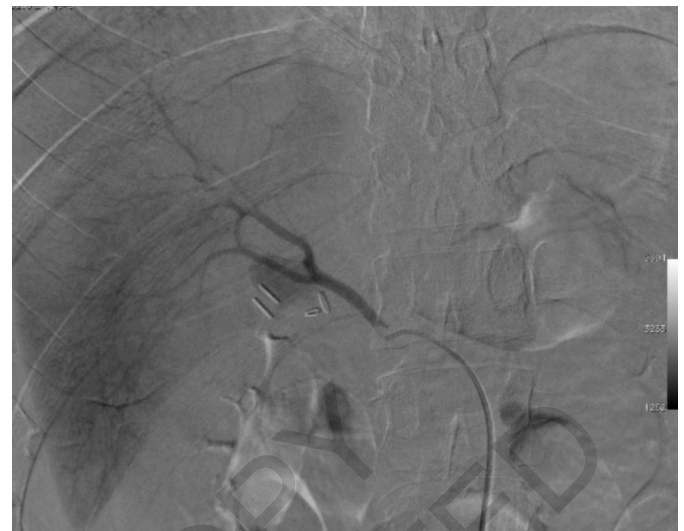


Fig. 3: Pseudoaneurysm of the right hepatic artery before embolization.



Fig. 4: Pseudoaneurysm of the right hepatic artery after embolization.

In the case we report, there were no mentioned per-operative difficulties. The close proximity of the pseudoaneurysm to the Titanium clips evokes the mechanism of erosion of the right hepatic artery by the clips during placement or after laparoscopy⁸. The patient presented 14 days post operatively with right quadrant and epigastria pain. This relatively short interval made easy the diagnostic process concluding to a pseudoaneurysm of the right hepatic artery. Many authors reported cases revealed many months after laparoscopy making

Riassunto

Lo sviluppo di uno pseudoaneurisma dell'arteria epatica di destra come sequela di una colecistectomia è raro, ma frequentemente va incontro a rottura. Ne consegue un'elevata mortalità se non trattato tempestivamente ed efficacemente.

Nell'era laparoscopica medici e chirurghi devono essere consapevoli di questa entità nosologica e dei modi del suo trattamento. La scelta conservativa non è da raccomandare per la propensione dello pseudoaneurisma alla rottura, mentre quello interventistico va dalla ricostruzione chirurgica all'allacciamento, senza trascurare l'embolizzazione con spirali metalliche che è la scelta attuale da adottare senza ritardi.

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the diagnosis more difficult especially with the various clinical presentations^{8,9}. The symptomatology varies from recurrent abdominal pain, gastrointestinal bleeding, hemobilia, anemia, and liver function test abnormalities¹⁰. Sometimes the situation is life threatening because of a sudden rupture defining an acute emergency^{4,5,11}. Decompression into the biliary tree with resulting hemobilia is more common than free rupture into the abdominal cavity^{5,12}. Our patient did not present with a gastrointestinal bleeding, otherwise a digestive endoscopy would have been performed, leaving the priority to CT scan to be done firstly. The final step in performing the diagnosis is the angiography in case of suspicious results of the endoscopy, ultrasound or the computed tomography¹³. Angiography is essential for confirmation of the pseudoaneurysm but also for therapeutic purposes. In fact the treatment of choice for hepatic artery pseudoaneurysms is coil embolization which is associated with a lower rate of mortality and morbidity than surgical intervention^{5,6}. Ligation or excision is an option when coil embolization fails or patients have coexisting conditions that require surgical intervention^{5,6}. Interventional radiology continues to progress and emerging stent grafting technique offers another safe and successful lifesaving procedure^{10,14}. Our patient had the chance to have a rapid diagnosis, but we did not perform embolization promptly before the rupture resulting in doing it in critical situation. In fact, pseudoaneurysm of the hepatic artery has a nature tendency to enlarge and rupture in 20% to 80% of cases⁶. Rupture is associated with a 21% to 43% mortality rate, and thus, pseudoaneurysms of the hepatic arteries should be treated without delay⁶. In our case, the resuscitation consisted on fluid loading and blood transfusion. No antifibrinolytic agent was used and thromboembolic complications prophylaxis was not prescribed. During and after interventional radiology procedures, non-fractionated heparin is often prescribed fear to have vessels thrombosis. Contrarily the fear of haemorrhage is not justified when the embolization succeed like it was the case of our patient who suffered a serious thromboembolic complication which fortunately has well evolved.

Conclusion

Laparoscopic cholecystectomy has gained the field upon the open surgical procedure, because of its obvious advantages. Nevertheless the rate of vessels and bile duct injuries became more frequent, and can present with acute or progressive manifestations. One of these complications is the pseudoaneurysm of the right hepatic artery, which should be called to mind, diagnosed and treated promptly with embolization before the likely serious event of rupture. Embolization is not a contraindication of anticoagulation; contrarily it should be prescribed to prevent local or remote thromboembolic complications.

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