LESS
Laparosc Endosc Surg Sci 2022;29(1):49-51
DOI: 10.14744/less.2022.22043

Case Report

A serious danger in laparoscopic cholecystectomy: Middle hepatic vein (Careful for serious bleeding)

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ABSTRACT

The incidence of vascular injuries during cholecystectomy is reported as 0–2% in different series. The liver bed is a potential area that some serious bleeding can occur. It is well-known that middle hepatic vein is very close to gallbladder. It can be injured specially in patients with acute or chronic cholecystitis. We presented two patients, in which middle hepatic vein was detected very near to gallbladder during laparoscopic cholecystectomy. Two operations were done without any bleeding complication.

Keywords: Bleeding, laparoscopic cholecystectomy, middle hepatic vein

Introduction

Many different types of vascular injuries including arterial or venous may occur during laparoscopic cholecystectomy (LC). While biliary injuries has been studied widely in the literature, vascular injuries that occur during LC are less known entity. The incidence of vascular injuries during cholecystectomy is reported as 0–2% in different series.[1,2] Origin of serious bleeding can be the aorta, inferior vena cava, iliac vessels, portal vein, as well as the hepatic artery. On the other hand, many of the hemorrhages during LC from gallbladder bed directly related with middle hepatic vein or it's branches.

It is very important to know the normal and variational anatomy of hepatobiliary organs. In this case report, we aimed to discuss the importance of relation between middle hepatic vein and gallbladder. Two patients with normal gallbladder and chronic cholecystitis were operated. During these cholecystectomies, middle hepatic vein was detected 0–1 mm near to the gallbladder wall and preserved without any bleeding.

Case Report

Case 1 – A 69-year-old female presented to our clinic after experiencing abdominal pain for the past 2 weeks. Her medical history was uneventful. There was an epigastric pain in abdominal examination, her blood tests were in normal limits. There was a multiple milimetric stones in her abdominal ultrasonography. She underwent LC. After laparoscopic exploration, cystic artery and cystic duct were clipped and cut. In gallbladder dissection, we encountered by a venous structure (6–8 mm) that adheres to gallbladder wall (Fig. 1). After meticulous dissection with laparoscopic dissector and hook venous, structure was separated. There was no bleeding. The operation was finished without complication.

Case 2 – A 65-year-old female presented with biliary colic

Received: 30.01.2022 **Accepted:** 03.03.2022
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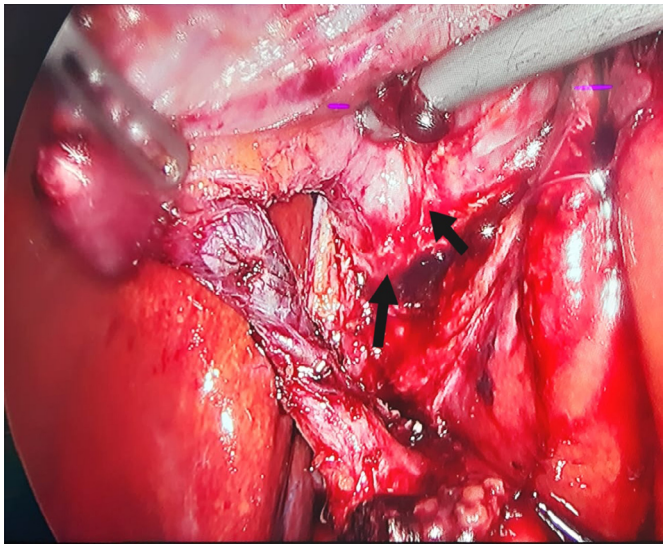

Figure 1. There was a vein in dissection of gallbladder with a inflammated tissue in liver bed.

to emergency surgery unit. There was a right upper quadrant pain in abdominal palpation. There were no rebound tenderness or defense. Her routine biochemical tests including Aspartate transaminase, Alanine transaminase, and total and direct bilirubin were with in normal limits. There were multiple stones (maximum one 15 mm) in gallbladder with ultrasound (USG). The patient was decided to LC. In exploration, there was a gallbladder with chronic cholecystitis. Cystic artery and cystic duct were clipped and cut according to safe cholecystectomy technique. In dissection of gallbladder, there was a major vein approximately 8–11 mm in diameter middle hepatic vein (MHV) posterior to the gallbladder (Fig. 2). The venous structure

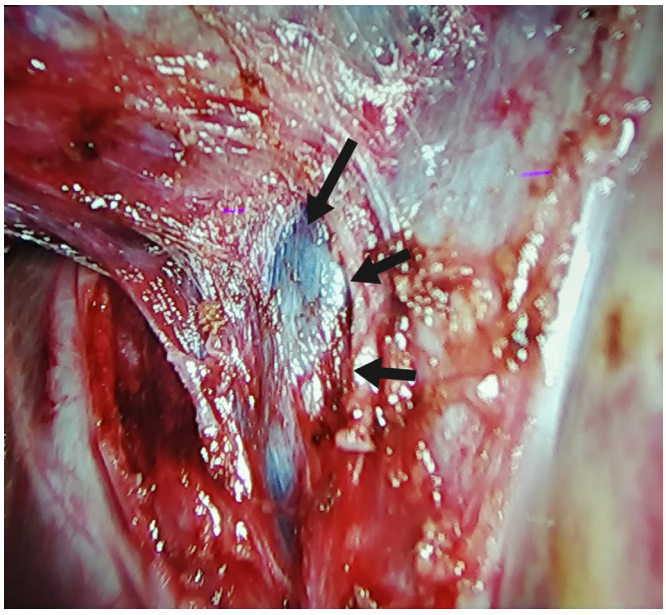

Figure 2. Major vein (middle hepatic vein) – black arrows detected about 1 mm near to gallbladder wall.

was freed without vascular injury. The operation and postoperative course were successful without complication.

Discussion

LC is the procedure of choice in cholelithiasis. However, it can be associated with severe and potentially lethal complications. The incidence of serious bleeding requiring transfusion or reoperation is relatively rare, approximately 0.1% of cases. Intraoperative bleeding may be due to direct vessel injury with trochar insertion, slippage of clips/ligatures of the cystic artery, and liver bed bleeding. Dissection of the gallbladder from liver is usually uneventful and most of the liver bed bleedings are controlled by compression, hemostatic agents, simple cautery, and suturing. It was well-known that anatomically MHV is very close to the gallbladder wall.[3,4] The average distance of the MHV or its major branches to the gallbladder wall can be 1–1.7 mm. It was showed that these venous structures are closest to gallbladder bed on the right side in terms of the longitudinal axis. Hence, this is an important clue for dissection of gallbladder bed in LC. Misawa et al. reported that the branch of the middle hepatic vein was completely adherent to the gallbladder bed in five of the 50 patients.[5]

In patients with acute or chronic cholecystitis, atrophic gallbladder and cirrhotic livers predispose to chances of major bleeding during LC.[6] Middle hepatic vein or it's branches can easily injured during dissection, especially when the gallbladder has acute inflammation. Carbon dioxide used in laparoscopy may enter the systemic circulation through the injured hepatic vein and cause air embolism and death.[7] Shin HY reported a patient who had cardiac arrest during cholecystectomy. It was showed that air embolism was the reason after bleeding from middle hepatic vein.[8] Hence, to prevent, such vascular injuries are an important issue. Doppler USG and computed tomography (CT) scan can evaluate the anatomical relationship between the gallbladder bed and the major branches of the middle hepatic vein. In patient, suspicious for bleeding can be evaluated by Doppler USG or CT scan before LC.

There are many vessels other than MHV and it's branches between the gallbladder and the liver bed. These vessels can bleed during LC. A bleed from the liver bed may be controlled by cauterization, direct pressure application or endoclips prior abdominal surgery, anatomical variations, intra-abdominal adhesions, and sharp dissection which may also be associated with bleeding complications.

In our case, one of our patient was presented with chronic cholecystitis. Middle hepatic vein was preserved during operation. Pre-operative evaluation of hepatic vascular anatomy in selected cases, proper dissection plane during LC, may decrease serious bleeding complication. It is very important that the surgeon should be very careful, especially during the final steps of gallbladder dissection from the liver bed during LC. Some major bleedings can be prevented by this approach.

Disclosures

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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