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## VISCERAL SURGERY VIDEOS

# Laparoscopic right hepatectomy for complex biliary injury after laparoscopic cholecystectomy (with video)



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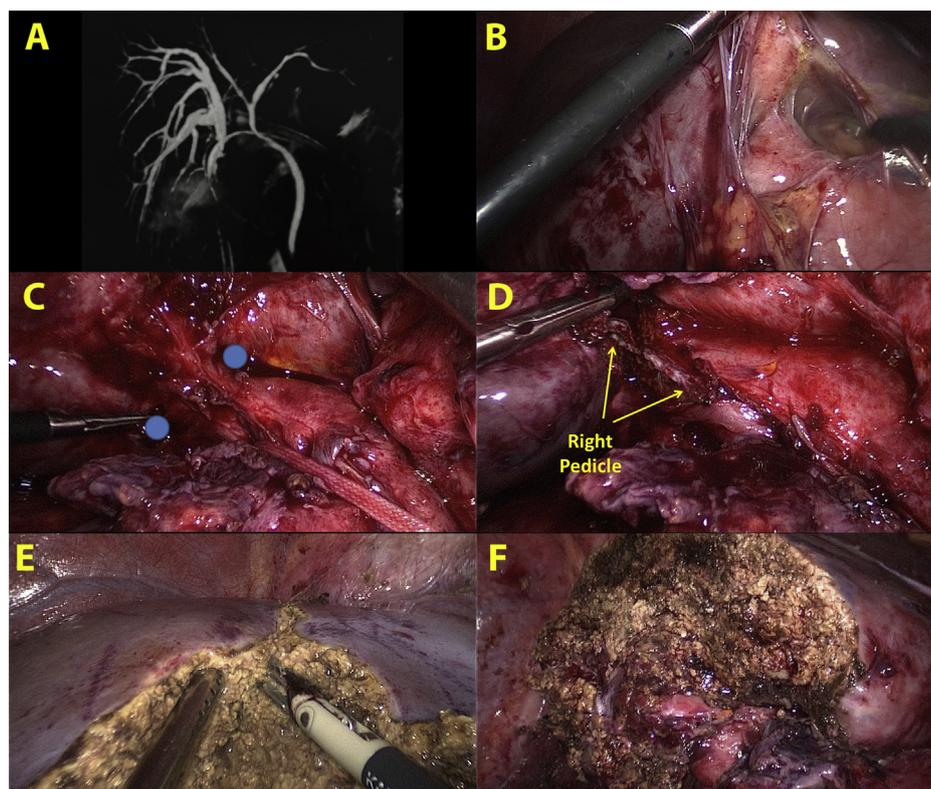
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### KEYWORDS

Bile duct injury;  
Laparoscopy;  
Technique;  
Liver resection

Post-cholecystectomy bile duct injury remains a major concern as its incidence is steady along the years, despite technical advances [1]. A complex biliary and arterial lesion after laparoscopic cholecystectomy may require liver resection. In some circumstances major liver resection is necessary and can be the definitive treatment [2]. In a worldwide review, 99 hepatectomies were reported among 1756 (5.6%) patients referred for post-cholecystectomy bile duct injury [3]. The aim of this video is to present a laparoscopic right hepatectomy in a patient with complex biliary injury. A 24-year-old woman underwent laparoscopic cholecystectomy. On the first postoperative day, she complained of acute pain in the right upper quadrant. She was then reoperated by laparoscopy. At reintervention, a massive volume of bile was found. The source of leakage was not clear, and abdominal cavity was drained. Drain was removed after 3 weeks, when drainage stopped. She then had several crises of cholangitis. ERCP disclosed integrity of main bile duct and was considered normal at the time. Later review showed that right hepatic duct was not contrasted. She maintained with elevated liver enzymes. CT scan showed bile collection in the subhepatic area. She was submitted to another laparoscopy, where multiple adhesions were found and collection was drained. After 6 weeks, drainage stopped but she continued to experience cholangitis and was referred. MRI disclosed an atrophied right liver with dilatation of the right hepatic duct, damage of the right hepatic artery and signs of cholangitis. Left liver was normal. This case was discussed by multidisciplinary team, and right hepatectomy was proposed. Another option would have been a Roux-en-Y hepatico-jejunostomy using the right hepatic duct in an already atrophied liver with probably an extensive and hazardous dissection of the hepatic hilum. Upfront right hepatectomy in this situation was decided because it can be the definitive treatment since left liver biliary tree was not injured. Despite the 3 former interventions and previous information regarding extreme adhesions,

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**Figure 1.** Laparoscopic right hepatectomy in a patient with complex biliary injury and multiple previous interventions. A. Preoperative MRI cholangiogram shows a dilated right bile duct disconnected from the main biliary tree. B. Multiple adhesions were found, and hepatic hilum was encumbered by previous manipulations. C. Intrahepatic approach to the right Glissonian pedicle was used. D. Two small incisions (blue spheres) were performed according specific anatomical landmarks [3]. E. Right pedicle is divided by stapler as shown (arrows). F. Liver is transected under intermittent Pringle maneuver. Raw liver surface after right hepatectomy.

we decided to initiate operation by laparoscopy in a referral center for the treatment of complex biliary iatrogenic injuries with experience of more than 100 cases. First trocar was inserted via open technique. Multiple adhesions were found and carefully divided until complete exposure of the liver. Hepatic hilum was encumbered by previous biliary fistula pathway, thick adhesions and fluid collections. These findings hindered the correct identification of the portal triad. Therefore, intrahepatic approach to the right Glissonian pedicle was used [3] and an anatomic right hepatectomy was performed. Operative time was 220 minutes. Blood loss was 400 mL and there was no need for transfusion. Recovery was uneventful, and she was discharged on the 4th postoperative day. Drain was removed on the 7th postoperative day. Liver enzymes normalized after surgery. Left liver presented satisfactory hypertrophy. She is well and asymptomatic 15 months after operation.

This video shows that laparoscopic right hepatectomy is feasible in selected patients with complex bile duct injury. Intrahepatic Glissonian approach can be a good option in patients with previous manipulation of the hepatic hilum but previous experience with this approach is warranted. The dissection of the hepatic hilum, in this patient, could compromise the left portal triad and the success of this procedure. This video shows the different steps necessary to perform this operation (Fig. 1).

## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.jviscsurg.2019.05.002>.

## Disclosure of interest

The authors declare that they have no competing interest.

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