

REVIEW ARTICLE

The Role of Laparoscopy in The Treatment of Cholangio-Carcinoma: Has Anything Changed?

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ABSTRACT

The use of laparoscopy has widely become accepted in many gastrointestinal disease even in malignancies. Performing laparoscopic resection for the treatment of cholangiocarcinoma is still not universally accepted as an alternative approach to open surgery, and only a limited number of such procedures have been reported due to the difficulty of performing oncologic resection and the lack of consensus regarding the adequacy of this approach. Laparoscopy was initially limited to staging, biopsy and palliation. Recent technological developments and improvements in endoscopic procedures have greatly expanded the applications of laparoscopic liver resection and lymphadenectomy, and some reports have described the use of laparoscopic or robot-assisted laparoscopic resection for cholangiocarcinoma as being feasible and safe in highly selected cases, with the ability to obtain an adequate surgical margin.

Key words : cholangiocarcinoma – laparoscopy - treatment

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INTRODUCTION

Bile duct cancer (cholangiocarcinoma) is not common. About 8,000 people in the United States are diagnosed with bile duct cancer each year. This includes both intrahepatic (inside the liver) and extrahepatic (outside the liver) bile duct cancers. But the actual number of cases is likely to be higher, as these cancers can be hard to diagnose, and some might be misclassified as other types of cancer [1]. Bile duct cancer is much more common in Southeast Asia, mostly because a parasitic infection that can cause bile duct cancer is much more common there. Bile duct cancer can occur at younger ages, but it is seen mainly in older people [2]. The average age of people in the US diagnosed with cancer of the intrahepatic bile ducts is 70, and for cancer of the extrahepatic bile ducts it is 72. The chances of survival for patients with bile duct cancer depend to a large extent on its location and how advanced it is when it is found. For survival statistics, see the section "Survival statistics for bile duct cancers." [3].

Bile duct cancer is an uncommon cancer, which in some ways makes it harder to study than more common cancer types. But research into treatment of bile duct cancer is currently being done in many medical centers throughout the world.

Cholangiocarcinoma is staged using the seventh edition of the AJCC staging system², which incorporates a standardized TNM classification of the disease [4–7]. Multiple radiological and endoscopic modalities are used to provide an initial determination of both stage and potential resectability of the primary tumour. Case series indicate that 40 per cent of all borderline resectable primary tumours are truly resectable at exploratory Laparotomy (8–14).

STAGING LAPAROSCOPY

Staging laparoscopy is important in determining the resectability of the primary tumour, to exclude the presence of radiologically occult peritoneal disease obviating the need for exploratory laparotomy and

trial dissection. Staging laparoscopy, in this context, prevents unnecessary exploratory laparotomy with its associated increased recovery period and delayed return to normal activities of daily living. It also helps stratify patients with unresectable metastatic disease from those with potentially resectable disease, and expedites prompt referral for palliative chemotherapy.

A few studies of staging laparoscopy in patients with cholangiocarcinoma have reported an overall yield and accuracy of 14%-45% and 32%-71%, respectively [15-20]. The yield of laparoscopy for cholangiocarcinoma has decreased due to improvements in the accuracy of imaging techniques, bringing into question its routine use in preoperative staging [19,22]. Clearly, prospective studies of larger series are needed to elucidate the appropriate indications and effects of staging laparoscopy in patients with cholangiocarcinoma.

LOW-COST TECHNIQUE FOR LAPAROSCOPIC HEPATIC RESECTION:

Yamamoto and his colleagues introduced hepatic transection by the classical method with a few (two or three) energy devices in Japan in 2016. They performed laparoscopic hepatectomy for 40 patients with cholangiocarcinoma and liver dysfunction. For parenchymal transection, they used bipolar radiofrequency coagulation forceps connected to a voltage-controlled electro-surgical generator and ultrasonic dissector. The demarcation of the liver surface was made by an ultrasonic dissector. Along the demarcation line, the blades of a BiClamp were opened slightly and inserted into the hepatic parenchyma. They clamped slowly, softly, and gradually, and a small amount of hepatic parenchyma was consequently coagulated and fractured. After the crush, the small vessels and intrahepatic bile duct that were sealed were left as atrophic strings, and the strings were divided by an ultrasonic dissector. Large vessels and Glisson's sheaths were left because of the small clamp. Large Glisson's sheaths and hepatic veins were ligated with a titanium clip or autosutures, and cut without bile leakage or bleeding. The mean operation time of the procedure was 196.9 min, mean blood loss was 69.9 mL, and mean postoperative hospitalization was 9.5 days. No blood transfusions were needed. Two cases had perioperative complications—one involving right shoulder pain and the other involving ascites due to liver dysfunction—but there were no serious postoperative complications. Their results appear to demonstrate that this simple and safe method helps decrease intraoperative bleeding and shorten hospital stay [23].

LAPAROSCOPIC RESECTION

Yu et al [24] performed laparoscopic local hilar resection and choledochojejunostomy in seven patients with Bismuth type-I disease, laparoscopic combined partial liver resection and hepaticojejunostomy in five patients with type II disease, and palliative surgical bypass in two patients with more advanced hilar cholangiocarcinoma. The mean operative time and amount of blood loss were 305 min and 386 mL, respectively. Furthermore, the R0 resection rate was 100% and 60% in the patients with type I and II tumors, with in-hospital mortality and morbidity rates of 0% and 35.7%, respectively. Meanwhile, port-site recurrence was detected in two patients with type-II tumors. The authors concluded that laparoscopy can be used as the first choice treatment for preoperative Bismuth type I cholangiocarcinoma.

Gumbs *et al* [25] reported the use of a minimally invasive approach to treating extrapancreatic cholangiocarcinoma. In that study, five of 29 patients underwent laparoscopic resection for hilar cholangiocarcinoma. Three patients had Blumgart T1 lesions and two had T2 lesions, requiring concomitant laparoscopic right and left hepatectomy, respectively. One of the patients

(20%) was converted to an open procedure due to concerns of portal vein involvement. The mean amount of blood loss was 240 mL (range, 0-400 mL) and the median length of stay was 15 d (range, 11-21 d). The patient with

AJCC stage IV disease underwent R1 resection based on the final pathology, while all other patients received R0 resection. None of the five patients developed portsite recurrence.

CONCLUSION

Staging laparoscopy appears to be poor for determining locally advanced disease. Contraindications to resection relating to local advancement are unlikely to be determined at staging laparoscopy because the judgment of resectability is dependent upon the operator's 'hands-on' assessment. The decision not to proceed to resection due to local advancement should therefore be made explicitly at exploratory laparotomy.

Aggressive surgery, including major hepatectomy with combined caudate resection, has become widely accepted as a standard treatment for cholangiocarcinoma (26-30) in previous reports of minimally invasive surgery for hilar cholangiocarcinoma, there were only a few descriptions concerning the decision

to resect the caudate lobe. In experienced hands, laparoscopic caudate resection can be a safe and feasible procedure [31,32].

Despite concerns regarding technical feasibility and theoretical possibilities, the use of laparoscopic resection to treat hilar cholangiocarcinoma remains experimental. In fact, only 40%-50% of patients explored with curative intent are ultimately found to be resectable [33].

Totally the use of laparoscopy for cholangiocarcinoma is still not universally accepted as an alternative approach to open surgery.

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M Y Rajput

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