CASE REPORT

Laparoscopic Management of Hilar Cholangiocarcinoma: a Case Report

Shailesh Puntambekar¹ · Vikrant Sharma¹ · Sanjay Kumar¹ · Sainath Mitkare¹ · Geetanjali Joshi¹ · Hirav Parikh¹

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Abstract The only option for cure of Klatskin's tumour is surgical excision. The radicality of the procedure is determined by the extent of the tumour and functional parameters of the patient. Complete laparoscopic resection of hilar cholangiocarcinoma with biliary reconstruction is a challenging procedure. The main aim is to achieve pathological negative margins, complete lymph node retrieval and enterobiliary bypass. We present a case report of a patient with hilar cholangiocarcinoma managed laparoscopically. The nodal yield was nine. On 6-month follow-up, the patient was symptom free. The main aim is to study the feasibility of performing this complex procedure completely laparoscopically.

Keywords Klatskin's tumour · Laparoscopic resection · Oncological safety · Hepaticojejunostomy

Introduction

Surgical management of Klatskin's tumour remains the only available treatment option with curative intent and potential influence on overall survival. There are very few reports of hepatobiliary cancers being managed laparoscopically. The fear of incomplete oncological clearance and technical difficulty of biliary reconstruction are the main reasons. Thus, achieving an R-0 resection and adequate lymph node retrieval is still considered a challenge. In our case report, we describe a complete laparoscopic resection of Klatskin's tumour with intracorporeal biliary reconstruction with Roux-en-Y hepaticojejunostomy.

Case

A 25-year-old gentleman presented with nausea, vomiting and anorexia since 2 months, with no palpable mass per-abdominally. He had a clinical and biochemical picture of obstructive jaundice with a direct bilirubin of 20 mg/dl and alkaline phosphatase of 364. His Ca 19-9 values were raised. Triple phase CECT abdomen showed common hepatic duct (CHD) stricture extending proximally up to confluence, collapsed gall bladder and dilated intrahepatic biliary radicals (Fig. 1a). A preoperative per-cutaneous transhepatic biliary drainage (PTBD) was done to correct hyperbilirubinaemia. Biliary brushing cytology was negative for malignancy.

Diagnostic laparoscopy was performed; port positions were as shown in Fig. 1b. After portal dissection and lowering of the hilar plate, localized nodularity of the common hepatic duct was found with involvement of the hepatic confluence. The stricture was classified as Bismuth type II. No vascular or liver parenchymal infiltration was seen. The hepatic hilum was completely skeletonized (Fig. 2a). Cholecystectomy with

✉ Shailesh Puntambekar
shase63@gmail.com

Vikrant Sharma
vikrant_doc@yahoo.com

Sanjay Kumar
drsanjayk99@gmail.com

Sainath Mitkare
dr.sainath_mitkare@yahoo.com

Geetanjali Joshi
geetanjali_agarwal@hotmail.com

Hirav Parikh
hiravpp@yahoo.co.in

¹ Galaxy Care Laparoscopy Institute, 25-A Erandwane Karve Road, Pune 411004, India

Fig. 1 **a** Showing dilated intrabiliary radicals and cutoff at hilum. **b** Port positions

resection of the entire extrahepatic biliary ductal system and hepatic duct confluence taking adequate margins was done (Fig. 2b). Intraoperative frozen section was performed to confirm negative resection margins. All pericholecystic, pericholedochal and periportal nodes with fibro-fatty tissues were removed and sent for histopathology. Biliary continuity was established with a Roux-en-Y loop, and a double hepatico-jejunostomy was done by anastomosing both ducts separately (Fig. 2c). Laparoscopic jejunojunctionostomy was done to establish intestinal continuity. The PTBD tubes were left in situ, for initial biliary decompression and future cholangiogram.

The operative time was 240 min with an estimated blood loss of 150 ml. Final histopathology revealed a primary hilar cholangiocarcinoma of size $2 \times 1 \times 1$ cm, moderately differentiated adenocarcinoma invading the muscularis, reaching up

to the adventitia with all resected margins and nodes free of tumour (0/9), with no lymphovascular emboli, and the gall bladder was found to be normal.

The postoperative period was uneventful and the patient was discharged on day 6. Results of liver function tests were within normal limits. Subsequently, the PTBD catheters were removed on the 15th day. The patient had completed adjuvant gemcitabine and cisplatin combination chemotherapy. Follow-up visits at 3- and 6-month intervals were unremarkable with normal results of liver function tests and the patient being symptom free.

Discussion

Laparoscopic resection of biliary tract malignancy is a relatively new endeavour. Earlier reports have reported

Fig. 2 **a** Lowering down of hilar plate and skeletonizing portal pedicle. **b** Post resection cut ends of right and left hepatic ducts. **c** Double hepatico-jejunostomy posterior layer complete with PDS 3.0 continuous suture

the use of a minimally invasive approach to treat extrapancreatic and peripancreatic cholangiocarcinoma, using robot-assisted and hybrid methods of resection and reconstruction [1–4]. Laparoscopic hepato-pancreatoduodenectomy has also been reported in a case with widespread infiltration [5]. The operating times and blood loss encountered by the above authors ranged from 300 to 600 min and 200 to 800 ml respectively. This was a hilar cholangiocarcinoma not invading other structures or adjacent organs. Therefore, limited surgical resection was justified as has been reported by Hyung et al. [6]. The functional and oncological outcomes of complete laparoscopic surgery were found to be adequate. But a longer follow-up of the patient is required to determine long-term survival and to determine oncological safety. However, the benefits in terms of short-term outcomes like shorter hospital stay, decreased blood loss, lower analgesic requirement and early return to work have been seen with this patient. Long-term outcomes in terms of disease-free survival, overall survival and port site are needed.

Conclusion

This report demonstrates the technical feasibility of minimal access surgery in the treatment of early-stage hilar

cholangiocarcinoma. Long-term results will establish its role in regular management.

Conflict of Interest The authors declare that they have no competing interests.

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