

Laparoscopic radical cholecystectomy for carcinoma gallbladder: A case series

Ashutosh Gupta, Amit Choraria, Shantanu Tiwari, Hitesh Dubey, Rajesh Kumar Agrawal, Sourabh Nandi, Vivek Chaudhary

ABSTRACT

Introduction: Nowadays laparoscopic surgery is a very common form of treatment strategy for digestive diseases and these ‘keyhole’ surgeries provide many benefits to the patients. However, controversy exists when the laparoscopic surgery is done for early gallbladder cancer. The aim of our study was to report two such cases to see feasibility and safety of laparoscopic radical cholecystectomy with lymph node dissection. **Case Series:** Two patients underwent laparoscopic radical cholecystectomy with lymph node dissection for gallbladder carcinoma. Both patients were preoperatively diagnosed. Mean operative time was 172 minutes, and average estimated blood loss was 225 ml. There was no intraoperative complication. The liver dissection was done by Harmonic in one case and by Waterjet in the other case. Average hospital stay after surgery was four days. Postoperative morbidity included minimal bile leak in one patient

only and no bile leak in patient operated with Waterjet system. Postoperative histopathology revealed adenocarcinoma of gallbladder with no lymph node invasion T2N0M0 (Stage II) in both patients. The mean lymph node retrieval was 5.5. Both patients received adjuvant chemotherapy with gemcitabine and carboplatin. **Conclusion:** We conclude that laparoscopic radical cholecystectomy with lymph node dissection is safe and beneficial for the patients with T1b/T2 gallbladder carcinoma and is useful in selected patients with a preoperative suspicion of early-stage gallbladder cancer by sparing them the necessity of a second-stage open procedure.

Keywords: Cancer, Carcinoma gallbladder, Laparoscopic radical cholecystectomy, Lymph node dissection

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INTRODUCTION

The most aggressive malignancy of hepatobiliary system is gallbladder carcinoma and is widely known for its poor prognosis [1]. We all know that nowadays laparoscopic surgery is accepted as a very common form

of treatment strategy for digestive diseases [2]. However, controversy exists when the laparoscopic surgery is done for early gallbladder cancer. Management protocol for Tis and T1a gallbladder cancer requires only simple cholecystectomy with clear margins which can be done either by laparoscopy or traditionally open procedure [3]. In case of T1b or more advanced gallbladder cancer, management requires radical cholecystectomy which includes hepatic segment 4b-5 resection and lymphadenectomy of hepatoduodenal ligament [4].

Majority of surgeons fear that tumor might disseminate during laparoscopy. Also as this surgery is one of the most advanced type of laparoscopy which is associated with a long learning curve, so surgeons find it difficult to retrieve adequate lymph nodes and do liver resections. All of this hence creates controversy associated with this surgery.

The aim of our study was to report postoperative data in two such cases and to check feasibility and safety of laparoscopic radical cholecystectomy with lymph node dissection at our center.

CASE SERIES

Two patients underwent laparoscopic radical cholecystectomy with lymph node dissection for gallbladder carcinoma at Department of Surgical Oncology, Regional Cancer Center, Raipur, Chhattisgarh, India.

First patient was a sub-urban female aged 35 years coming with constitutional symptoms of loss of weight and appetite since two months. There was no significant past medical or surgical history. Examination revealed a small 2 cm mass in right hypochondrium consistent with gallbladder mass. Other systems were normal and jaundice was absent. She was extensively investigated on suspicion of gallbladder cancer. Contrast-enhanced computed tomography (CECT) scan of abdomen revealed gallbladder mass of 2.5 cm maximum dimension with cholelithiasis with no invasion to liver, no significant lymphadenopathy, no dilatation of intrahepatic biliary system, and no systemic metastasis. Her hematology and biochemistry was within normal limit and CA 19-9 was 42.68 U/ml. As per the hospital protocol, she first underwent diagnostic laparoscopy which revealed no peritoneal metastasis and then proceeded to definitive surgery. A total laparoscopic standard radical cholecystectomy was done and specimen was bagged in a polythene bag and was retrieved from a mini laparotomy at midline supraumbilical site and sent for histopathology (Figure1).

Second patient was rural female aged 49 years coming with complaints of pain in right hypochondrium since one month. There was no significant past medical or surgical history. Examination revealed mild tenderness but no lump. Other systems were normal and jaundice was absent. She was extensively investigated on suspicion of gallbladder cancer. The CECT scan of abdomen revealed

gallbladder mass of 2 cm maximum dimension with no invasion to liver, no significant lymphadenopathy, no dilatation of intrahepatic biliary system, no systemic metastasis. Her hematology and biochemistry was within normal limit and CA 19-9 was 55.8 U/ml. As per the hospital protocol, she first underwent diagnostic laparoscopy which revealed no peritoneal metastasis and then proceeded to definitive surgery. A total laparoscopic standard radical cholecystectomy was done and specimen was bagged in a polythene bag and was retrieved from a mini laparotomy at midline supraumbilical site and sent for histopathology (Figure 2).

Mean operative time was 172 (160, 184) minutes, and average estimated blood loss was 225 ml (250 ml, 200 ml). The liver dissection was done by Harmonic in first case and by Waterjet in the second case (Figure 3). There was no intraoperative bile leak. During intraoperative liver resection small biliary radicals were clipped by titanium clips to avoid leak. There was no intraoperative complication in both patients. Average hospital stay after surgery was four days. Drain removal was done on eighth postoperative day for both patients.

Postoperative morbidity included minimal bile leak in first case, which resolved on fourth postoperative day by conservative management. There was no biliary leak in second case in which we used Waterjet for dissection.

Postoperative histopathology revealed adenocarcinoma of gallbladder with no lymph node invasion T2N0Mo (Stage II) in both patients. The mean lymph node retrieval was 5.5 (5, 6).

Both patients received adjuvant chemotherapy six cycles with gemcitabine and carboplatin. The mean follow-up was 9 (12, 6) months. Follow-up was done three monthly and radiological evaluation was done



Figure 1: Specimen of first case. Tumor along with liver margin is seen. Also lumen contains gallstones.

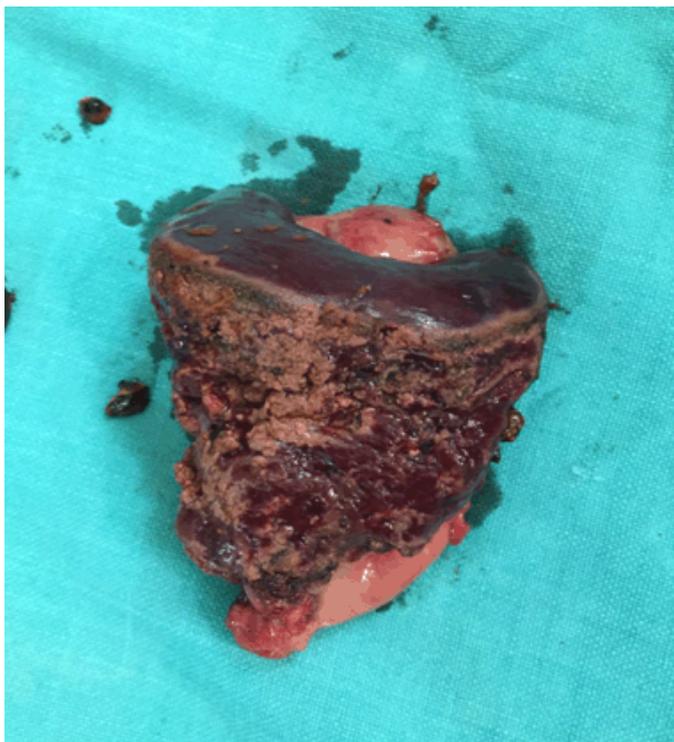


Figure 2: Specimen of second case showing liver margin.



Figure 3: Liver resection using Waterjet.

six monthly as per the hospital protocol. Follow-up evaluation and CECT scan of abdomen and thorax did not reveal any recurrence. Also there was no port site metastasis. Hence, there was no evidence of recurrence in the study period.

DISCUSSION

As per standard surgical guidelines, the management of patients affected by gallbladder cancer is related to the TNM stage. Simple cholecystectomy is sufficient for Tis or T1a tumor. Evidence suggests similar oncologic outcomes of laparoscopy versus open cholecystectomy for Tis and T1a tumors [5]. In contrast, for T1b or higher stage tumor which necessitates a radical procedure, a minimally invasive approach is questioned by majority of surgeons.

Despite the absence of any randomized controlled trial comparing results of minimally invasive versus open radical cholecystectomy, current evidence seems to support laparoscopy, both in an elective setting, when it is performed in case of suspected gallbladder cancer, and in a completion setting, when it is performed for incidentally diagnosed gallbladder cancer after cholecystectomy. Available studies report low rates of conversion to open procedure. Also there are less intraoperative complications with limited intraoperative blood loss. There has been no mortality reported and acceptable morbidity rates. Eventually, there is a shorter length of stay following laparoscopy, making it feasible and safe. In addition, two comparative studies reported a comparable number of retrieved lymph nodes and a comparable survival rate between laparoscopic and open procedures, supporting its oncological validity [6, 7].

Controversy is mainly related to historical studies which had tumor recurrence with laparoscopic approach [8]. For example, reports concerning port site recurrence, peritoneal dissemination of cancer cells, imprecise handling of gallbladder during laparoscopy leading to accidental perforation of gallbladder [9–14]. This brought about a caution for the use of laparoscopy. Contradictory to that, some evidence highlights the role of gentle manipulation of gallbladder and of the use of plastic bag for specimen extraction in reducing the rate of port site and peritoneal tumor implantation [14–17]. Also in some reports, no peritoneal or port site recurrence occurred; further supporting that laparoscopic approach is not directly responsible for increasing the risk of dissemination [18]. Another problem is technical difficulty of performing such complex procedures by minimally invasive approach lowers its acceptance. But current evidence also shows equal outcomes in radical laparoscopic versus open surgeries for liver diseases, which is the main factor making the procedure complex [19, 20]. Hepatic portal pedicle is a complex structure, containing important structures whose damage during lymphadenectomy may result in uncontrollable bleeding or injury to bile duct. This has also brought about question of safety and adequacy of this approach. Also if the cystic duct margin is positive and bile duct resection is required, it becomes an indication for open procedure in some studies, although it is not an absolute contraindication to laparoscopy [7, 21].

CONCLUSION

In conclusion, laparoscopic radical cholecystectomy with lymph node dissection is safe and beneficial for the patients with T1b/T2 gallbladder carcinoma and is useful in selected patients with a preoperative suspicion of early stage gallbladder cancer by sparing them the necessity of a second-stage open procedure.

Author Contributions

Ashutosh Gupta – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Amit Choraria – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Shantanu Tiwari – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Hitesh Dubey – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Rajesh Kumar Agrawal – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Sourabh Nandi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Vivek Chaudhary – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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