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**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 early gallbladder cancer. The aim of our study was to report 2 such cases to see feasibility and safety of laparoscopic radical cholecystectomy with lymph node dissection.

**Case Report**

2 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 225ml. There was no intraoperative complication. The liver dissection was done by Harmonic in one case and by Water Jet in the other case. Average hospital stay after surgery was 4 days. Post-operative morbidity included minimal bile leak in one patient only and no bile leak in patient operated with Waterjet system.

Post-operative histopathology revealed adenocarcinoma of gall bladder 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:** Laparoscopic Radical Cholecystectomy, Carcinoma Gall bladder, Case Report
INTRODUCTION
The most aggressive malignancy of hepatobiliary system is gall bladder 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 early gallbladder cancer. Management protocol for Tis and T1a gall bladder 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 gall bladder 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 post-operative data in 2 such cases and to check feasibility and safety of laparoscopic radical cholecystectomy with lymph node dissection at our center.

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

First patient was a sub-urban housewife lady aged 35years coming with constitutional symptoms of loss of weight and appetite since 2 months. There was no significant past medical or surgical history. Examination revealed a small 2cm mass in right hypochondrium consistent with gall bladder mass. Other systems were normal and jaundice was absent. She extensively was investigated on suspicion of
gall bladder cancer. CECT abdomen revealed gall bladder 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 (Figure 1).

Other patient was rural housewife lady aged 49 years coming with complaints of pain in right hypochondium since 1 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 extensively was investigated on suspicion of gall bladder cancer. CECT abdomen revealed gall bladder mass of 2cm maximum dimension with no invasion to liver, no significant lymphadenopathy, no dilatation of intrahepatic biliary system, no systemic metastasis. Her haematology 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 (250ml, 200ml). The liver dissection was done by Harmonic in first case and by Water jet 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 4 days. Drain removal was done on 8th post-operative day for both patients.

Post-operative morbidity included minimal bile leak in first case, which resolved on 4th post-operative day by conservative management. There was no biliary leak in second case in which we used Water Jet for dissection.
Post-operative histopathology revealed adenocarcinoma of gall bladder with no lymphnode invasion T2N0M0 (Stage II) in both patients. The mean lymphnode retrieval was 5.5 (5, 6).

Both patients received adjuvant chemotherapy 6 cycles with Gemcitabine and Carboplatin. The mean follow up was 9 (12, 6) months. Follow up was done 3 monthly and radiological evaluation was done 6 monthly as per the hospital protocol.

Follow up evaluation and CECT 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 gall bladder 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 gall bladder cancer, and in a completion setting, when it is performed for incidentally diagnosed gall bladder 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 gall bladder [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.

CONFLICT OF INTEREST

The authors declare no conflict of interests.

AUTHOR’S CONTRIBUTIONS

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Group 2 - Drafting the article, Critical revision of the article

Group 3 - Final approval of the version to be published
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Group 3 - Final approval of the version to be published

REFERENCES


**FIGURE LEGENDS**

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

Figure 2: Specimen of second case showing liver margin.

Figure 3: Liver resection using Waterjet.
Figure 1: Specimen of first case. Tumor along with liver margin is seen. Also lumen contains gall stones.
Figure 2: Specimen of second case showing liver margin.

Figure 3: Liver resection using Waterjet.