Incidental carcinoma of gallbladder following laparoscopic cholecystectomy: A single center study

Santosh Shrestha, MS; Deepak Sharma, MS; Roshan Ghimire, MS; Dhiresh Kumar Maharjan, MS; Prabin Bikram Thapa, MS

Department of General Surgery, Digestive Diseases and Laparoscopic Surgery, Grande International Hospital, Kathmandu, Nepal

Corresponding author

Santosh Shrestha, MS

Email: santoshshrestha84@gmail.com

Received 15 May 2020
Accepted 9 July 2020

ABSTRACT:

Background

Gallbladder adenocarcinoma is the most common malignant tumor of the biliary tract. Most of gall bladder cancers are detected incidentally only after pathological examination of the excised surgical specimens. In this study we investigated the characteristics of incidental gallbladder cancers in our center.

Material & methods

We retrospectively reviewed all of the cholecystectomy specimens in sent for histopathology following laparoscopic cholecystectomy in the study period from January 2015 to October 2019. Clinicopathological characteristics were extracted from the patients' clinical charts, which included symptoms, radiological findings, laboratory data, and surgical procedures as well as outcome.

Results

We identified 6 cases of incidental gall bladder cancer, consisting of 4 women and 2 men ranging in age from 28 to 77 years (mean age 60.5 after pathological study of 1530 resected gall bladders. Out of the 6 cases, 1 case was carcinoma in situ of gall bladder, 1 was T1b and other 4 cases were T2 carcinoma.

Conclusions

The rate of incidental gallbladder carcinoma in our study was 0.39%. This lower incidence could in part be due to increasing use of routine laparoscopic cholecystectomy for symptomatic gallbladder. This strategy of increased early intervention further adds to the advantage of higher chances of gallbladder cancer detection in early stages, and thus better prognosis.

Key words: **Gall bladder, carcinoma, laparoscopic cholecystectomy**

Introduction

Gall bladder cancer (GBC) is a rare but the most common (80-95%) biliary tract neoplasm. It has an incidence rate of 0.3-1.5%[1]. Female patients are thrice as affected as males[2]. Geologically, it is more frequently seen among in Latin America and Asia[3]. Patients' outcome depends solely on early diagnosis and curative treatment, but most of these patients present at later stages with poorer prognosis[4]. In this era of laparoscopic cholecystectomy (LC), increased rate of incidental gall bladder cancer detection in early stages is resulting in better prognosis[5]. Rate of Incidental Gallbladder Cancer (IGBC) after LC ranges from 0.5% to 2.1%[6]. Stones and chronic inflammation are definitive risk factors. Around 90% of GBC have accompanying stone[7]. However, only 0.5–3% of patients with cholelithiasis will develop GBC[8]. Incidence rates of IGBC is higher among subgroups of patients with gall stone disease (GSD) – eg.

elderly patients, those with acute cholecystitis/ empyema GB, Mirizzi syndrome, porcelain GB, and single large sessile GB polyp[9].

Material and methods

The aim of this study was to evaluate the incidence and the factors associated with GBC in laparoscopic cholecystectomy cases. A retrospective descriptive study was conducted at Grande International Hospital (GIH), among 1530 cases of elective laparoscopic cholecystectomy performed from January 2015 to October 2019. Patients with emergency cholecystectomy and preoperatively diagnosed cases of GBC were excluded from the study. Patients demographic variables (age, sex), preoperative radiographic diagnosis (stone, polyp), histopathological staging (early: Tis, T1a, late: T1b, T2-4) according to AJCC 8th edition, overall survival and mortality were documented. Patients were followed up in outpatient department on 7th postoperative period with histopathology reports. All the patients were later followed up on telephone and standard questionnaire was used (table 1).

Results

There were 6 cases of IGBC among 1530 elective laparoscopic cholecystectomy cases. Four of them had gallstone disease, and two had gallbladder polyp. Among the 4 females and 2 male carcinoma patients, age ranged from 28-77 years with a mean age of 60.5 years.

Histopathologically, IGBC was detected in early stage (Tis: 1) in only one case. Rest were caught in late stages (T1b: 1,T2: 4). Of these 6 patients, 3 died after 4 weeks, 5 weeks, and 5 months postoperatively due to advanced disease, other co-morbidities and complications related to chemotherapy, respectively. Rest 3 cases are surviving with overall median survival of 11.7 months.

Table 1: Questionnaire for telephone follow-up

Patient presently alive?
A) If yes,
a. Present status of health (good/ average/ poor)
b. Any complaints
c. Any specific symptoms (jaundice/ recurrent vomiting/ weight loss/abdominal distension (ascites)/ hemoptysis/ bone pains)
d. Further treatment undertaken for Carcinoma gall bladder after cholecystectomy (surgery/ chemo/ radiotherapy/ any other treatment)
B) If no,
a. Cause of death
b. Symptoms before death
c. Any treatment undertaken for Carcinoma gall bladder after cholecystectomy (surgery/ chemo/ radiotherapy/ any other treatment)

Discussion

De Stoll in 1771 was the first person to report carcinoma of gallbladder[10]. Gall stone is the most common association with gallbladder cancer. Other factors which increases risk include porcelain gallbladder, adenomatous polyp of gallbladder, chronic infection with Salmonella typhi, carcinogen exposure (eg. miners predisposed to Radon) and abnormal pancreaticobiliary duct junction[8].

Carcinoma of gallbladder cases are usually diagnosed at advanced stage and have a poor prognosis with 5 year survival rate <5%; but when detected in early stages, the prognosis increases up to 90-100%[11 12]. Pre-surgically diagnosed case of gall bladder cancer has a poor prognosis. Wullstein et al. reported that the median survival for pre-diagnosed gallbladder cancer and incidental gallbladder cancer were 9.2 and 26.5 months respectively[13].

Our study shows incidence rate of IGBC following laparoscopic cholecystectomy at 0.39% which in more in concurrence with the study by Tantia et al. conducted on 2009 among 3205 laparoscopic cholecystectomies, incidence was 0.59%[14]. Waghmore et al. (2.59%), Ferrarese et al. (1.38%),

Table 2: Demographics of patients with gall bladder carcinoma and their characteristics

S.N	Age (yrs)	Sex	Pre-operative diagnosis	Staging	Radical operation	Adjuvant therapy	Overall Survival	Mortality
1	74	Female	Acute calculous cholecystitis Stone 2.5cm	pT1bNx	Completion open extended cholecystectomy	Yes	2 months till date	No
2	28	Male	Chronic calculous cholecystitis Multiple Stones	pT2Nx	liver metastasis and omental mets with biopsy taken	No	4 weeks	Yes
3	44	Male	GB Polyp 11mm size	pT2Nx	completion open extended cholecystectomy	Yes	18months till date	No
4	77	Female	Chronic cholecystitis Stone 2.8cm COPD, HTN	pT2Nx	completion open extended cholecystectomy	No	5 weeks	Yes
5	68	Female	Mucocele of GB Stone	pTis	no surgery	No	22 months till date	No
6	72	Female	GB Polyp 14mm size HTN, DM	pT2Nx	Completion open extended cholecystectomy	Yes	5 months	Yes

Table 3: Incidence rate of IGBC

Studies	Year	Place	Sample size	Male:Female	Mean age (yrs)	Incidence rate of IGBC
Tantia et al.[14]	2008	India	3205	1:2.8	56	0.59
Ghimire et al.[15]	2011	Nepal	783	1:2.3	63.8	1.28
Ferrarese et al.[5]	2013	Italy	508	1:1.3	67.8	1.38
Waghmare et al.[16]	2014	India	270	1:2	50	2.59
Tatli et al.[17]	2017	Italy	341	1:6	67.71	2.05
Our study	2019	Nepal	1530	1:2	60.5	**0.39**

Tatli et al. (2.05%) and Ghimire et al. (1.28%) had incidence rate of IGBC significantly higher than our study[5, 15-17]. Lower IGBC incidence rate in our study could be due to early diagnosis and intervention in cholecystitis cases.

Conclusions

The rate of incidental gallbladder carcinoma in our study was 0.39%. This lower incidence could in part be due to increasing use of routine laparoscopic cholecystectomy for symptomatic gallbladder. This strategy of increased early intervention further adds to the advantage of higher chances of gallbladder cancer detection in early stages, and thus better prognosis.

References

1. Clemente G, Nuzzo G, De Rose AM, Giovannini I, La Torre G, Ardito F, et al. Unexpected gallbladder cancer after laparoscopic cholecystectomy for acute cholecystitis: A worrisome picture. J Gastrointest Surg. 2012;6(8): 462-8.
2. Panebianco A, Volpi A, Lozito C, Prestera A, Ialongo P, Palasciano N. Incidental gallbladder carcinoma: our experience. G Chir. 2013;34(5-6):167–9.
3. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. Cancer incidence and mortality worldwide: Source, methods

and major pattern in GLOBOCAN 2012. Int J Cancer. 2015;136(5):359-86.

4. Hundal R, Shaffer EA. Gallbladder cancer: Epidemiology and outcome. Clin Epidemiol. 2014;6:99-109.

5. Ferrarese AG, Solej M, Enrico S, Falcon A, Catalano S, Pozzi G, et al. Diagnosis of incidental gallbladder cancer after laparoscopic cholecystectomy: Our experience. BMC Surg. 2013;13(2):S20.

6. Kwon AH, Imamura A, Kitade H, Kamiyama Y. Unsuspected gallbladder cancer diagnosed during or after laparoscopic cholecystectomy. J Surg Oncol. 2008;97(3):241-5.

7. Oddsdottir M, Hunter JG. Gall bladder and the extrahepatic biliary sytem. In: Brunicardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Pollock RE, editors. Schwartz's principle of surgery (8th ed.). New York: McGraw Hill; 2005. 1187-1219.

8. Whang EE, Zinner MJ. Cancer of the Gall bladder and the bile ducts. In: Zinner MJ, Ashley SW, editors. Maingot's abdominal operations (11th ed.). New York: McGraw Hill; 2007. 921-35.

9. Behari, A, Kapoor VK. Incidental gall bladder cancer. Advances in Surgery. 2013;47(1): 227–49.

10. De Stoll M. Rationis medendi in practice Unindobonensi. Part I Bernard, Vienna, 1777.

11. Lai CH, Lau WY. Gallbladder cancer, a comprehensive review. The Surgeon. 2008;6(2):10-19.

12. Misra MC, Guleria S. Management of cancer gallbladder found as a surprise on a resected gallbladder specimen. J Surg Oncol. 2006;93(8):690-8.

13. Wullstein C, Woeste G, Barkhausen S, Gross E, Hopt UT. Do complications related to laparoscopic cholecystectomy influence the prognosis of gallbladder cancer? Surg Endosc. 2002;16(5):828–32.

14. Tantia O, Jain M, Khanna S, Sen B. Incidental carcinoma gall bladder during laparoscopic cholecystectomy for symptomatic gall stone disease. Surg Endosc. 2009;23(9): 2041–6.

15. Ghimire P, Yogi N, Shrestha BB. Incidence of incidental carcinoma gall bladder in cases of routine cholecystectomy. KUMJ. 2011;34(2):3-6.

16. Waghmare RS, Kamat RN. Incidental gall bladder carcinoma in patients undergoing cholecystectomy: A report of 7 cases. J Assoc Physicians India. 2014;62(9):793-6.

17. Tatli F, Ozgönül A, Yucel Y, Yalcin HC, Ciftci R, Gümer M, et al. incidental gallbladder cancer at cholecystectomy. Ann Ital Chir. 2017;6:399-402.