

# Incidental Gallbladder Carcinoma in Post Cholecystectomy Done for Suspected Benign Lesions at a Tertiary Care Hospital

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## Abstract

**Background:** Incidental gallbladder carcinoma (IGBC) refers to gallbladder cancer which is not suspected clinically or radiologically and is detected for the first time on histopathological examination (HPE). The increasing trend of laparoscopic procedures has made cholecystectomies one of the most common surgical specimens received for histopathological evaluation. The concern whether routine histopathological examination is needed for all cholecystectomy specimens still remains debatable.

**Materials and Methods:** This retrospective data analysis was carried out at C. U. Shah Medical College, Surendranagar, in the pathology department from January 2023 to December 2024 (2 Years), including 272 patients who have undergone cholecystectomy and sent gall bladder specimen for Histopathological examination in the pathology department. Results were analysed to find out the incidence of gall bladder carcinoma.

**Results:** A total of 272 Cholecystectomy cases were received in the department over a period of 2 years. Out of 272 specimens, non-neoplastic lesions were 244, and 28 cases were of neoplastic etiology. Out of 28 cases, 20 cases were benign, and 8 cases (2.94%) were found malignant microscopically. Out of the eight cases of IGBC, 50% (4/8) were females while 50% (4/8) were males. The age group affected was 42–78 years (mean – 62.5 years). Mean gall bladder wall thickness was 8.5 ( $\pm 0.7$ ) mm.

**Conclusion:** In our study, we found the incidence of IGBC is 2.94%. Histopathological evaluation of all the routine cholecystectomy specimens is the gold standard for IGBC detection and is highly recommended irrespective of the radiological diagnosis or macroscopic findings.

**Keywords:** Gallstone; Radiology; Incidental gallbladder carcinoma; Histopathology; Cholecystectomies; Cholecystitis

## Introduction

Gallbladder carcinoma (GBC) ranks fifth among the gastrointestinal carcinomas and is the most common cancer of the biliary tract [1]. According to the Indian cancer registry data, incidence of GBC is 0.8%–1%. While New Delhi and Bhopal are the leading states, lowest incidence is seen in Chennai [2]. Risk factors include cholelithiasis, calcified gallbladder wall, adenomatous polyp, obesity, estrogen, choledochal cyst, and chemical carcinogens [3]. Incidental gallbladder carcinoma (IGBC) is defined as GBC diagnosed histopathologically after cholecystectomy done for benign gallbladder disease. It is also known as occult/in apparent/missed GBCs [2]. Most of these patients do not have a radiological or intraoperative suspicion for malignancy [4, 5]. It is mostly detected incidentally at the time of surgery done for cholelithiasis or cholecystitis or when it presents with complications such as jaundice, hepatomegaly, ascites, or duodenal obstruction due to the spread of malignancy [6]. Aim of study was to evaluate the incidence of incidental gall bladder carcinoma in cholecystectomy specimens which were done for benign disease and to establish the utility of routine histopathological examination.

## Materials and Methods

This retrospective data analysis was carried out at C. U. Shah Medical College, Surendranagar, in the pathology department from January 2023 to December 2024 (2 Years), including 272 patients who have undergone cholecystectomy and sent gall bladder specimen for Histopathological examination in the pathology department. The excised specimen was fixed in 10% neutral buffered formalin and sent for histopathological examination. Diagnosis of IGBC was confirmed on Hematoxylin- and eosin-stained, formalin-fixed, paraffin-embedded sections and pathological staging of carcinoma was done according to American Joint Committee recommendations for cancer staging (AJCC). Results were analysed to find out the incidence of gall bladder carcinomas.

**Inclusion Criteria:** All cholecystectomy specimens done for benign lesions. All age group and gender.

**Exclusion Criteria:** All known, clinically and radiologically suspected cases of gall bladder carcinoma.

## Results

A total of 272 Cholecystectomy cases were received in the department over a period of 2 years. Eight (2.94%) cholecystectomy specimens were microscopically diagnosed as incidental gall bladder carcinoma. Out of 272 specimens, non-neoplastic lesions were 244, and 28 cases were of neoplastic etiology. Out of 28 cases, 20 cases were benign, and 8 cases (2.94%) were found malignant microscopically, which are considered as incidental gall bladder carcinomas (IGBC). In non-neoplastic cases, maximum cases were found to be chronic cholecystitis (75.73%), which are followed by Acute on chronic cholecystitis (7.35%), acute cholecystitis (5.14%), and eosinophilic cholecystitis (1.47%). Adenomatous hyperplasia, adenomyoma of gall bladder, adenomatous polyp and metaplasia were included in benign cases (Table 1).

There were eight cases (2.94%) diagnosed as IGBC. These cases were further studied based on preoperative imaging findings and macroscopic findings. On microscopic examination, all cases showed features of adenocarcinoma, in which tumour cells were arranged in glands and papillae. Tumour cells were round to cuboidal with moderate eosinophilic cytoplasm and a central pleomorphic vesicular nucleus with 1–2 nucleoli. Mitosis including atypical forms was seen. In our study, there were two cases (25%) of well differentiated carcinoma, one case (12.5%) of moderately differentiated carcinoma and one case (12.5%) of poorly differentiated carcinoma. Each case (12.5%) of metastasis of adenocarcinoma and mucinous type of adenocarcinoma were found. Two cases (25%) of intracholecystic papillary neoplasm were found (Table 2). Majority of the cases of IGBC (5/8) were associated with gallstones.

It was observed that out of the eight cases of IGBC, 50% (4/8) were females while 50% (4/8) were males. The age group affected was 42–78 years (mean – 62.5 years). Preoperative sonography detected an increase in wall thickness in 6 cases (75%). Mean gall bladder wall thickness was 8.5 ( $\pm 0.7$ ) mm in incidental gallbladder carcinoma cases (Table 3).

**Table 1:** Distribution of cases according to Histopathological findings

Histopathological findings	Number of cases	Percentage (%)
Chronic cholecystitis	206	75.73
Acute cholecystitis	14	5.14
Acute on chronic cholecystitis	20	7.35
Eosinophilic cholecystitis	4	1.47
Adenomyoma of gallbladder	4	1.47
Adenomatous polyp	3	1.10
Hyperplasia	10	3.67
Metaplasia	3	1.10
Malignant	8	2.94
<b>Total</b>	<b>272</b>	<b>100</b>

## Discussion

Incidental GBCs are defined as carcinomas of gallbladder diagnosed during or after cholecystectomy done for benign diseases of gallbladder. The incidence of IGBC is reported to be 0.2%–2.1% [7, 8, 9, 10]. In our study, it was found to be 2.94%. It was more commonly seen in the elderly age group which was in concordance with the previous literature [11, 12]. Cholelithiasis is a well-known risk factor for gallbladder cancers [4, 11, 12, 13]. We found the presence of gallstones in 62.5% of IGBCs.

Rate of truly incidental GBC following cholecystectomy for benign disease was noted to be low (2.94%) and consistent with other studies conducted by Lundgren et al. [19] and Singh et al. [20].

**Table 2:** Subtypes of Gallbladder Carcinoma with grading

Subtypes with grading of GB carcinoma	Number	Percentage (%)
Intracholecystic papillary neoplasm	2	25
Well differentiated Adenocarcinoma	2	25
Moderately differentiated adenocarcinoma	1	12.5
Poorly differentiated adenocarcinoma	1	12.5
Mucinous adenocarcinoma	1	12.5
Metastasis of serous papillary adenocarcinoma	1	12.5
<b>Total</b>	<b>08</b>	<b>100</b>

**Table 3:** Distribution of incidental gallbladder carcinoma cases according to sex, age, and wall thickness

Variable of malignant cases	Value Number (%)
Male	4 (50%)
Female	4 (50%)
Mean age ( $\pm$ SD)	62.5 ( $\pm$ 4.16) years
Mean GB wall thickness ( $\pm$ SD)	8.5 ( $\pm$ 0.7) mm

Mean age of diagnosis was noted to be around 60 years in our study supporting the other studies mentioned [15, 21]. Incidental gallbladder cancer was more common in females but in our study, it is found to be equal in males and females [21].

The gallbladder wall's normal thickness is 1–2 mm. Grossly, if the thickness of the gallbladder wall is  $>3$  mm, then it is called thickened gallbladder wall [22]. In our study, the mean wall thickness of the gallbladder was  $8.5 \pm 0.7$  mm, and in all the IGBC cases which were preoperatively diagnosed as cases of benign gallbladder diseases by radiologists and surgeons, the gallbladder wall was found to be thickened on HPE.

Lastly, large multicentric studies are required to assess the risk factors of gall bladder carcinoma which will help the health care system to formulate strategies to reduce mortality and morbidity of the patients. There is a strong association between gallstones and GBC, which is attributed to chronic irritation of the mucosa initiating the reparative-regenerative and dysplastic sequence.

Gallbladder cancers are one of the common tumors of gastrointestinal tracts and are known to have a poor prognosis. Due to nonspecific signs and symptoms gall bladder carcinoma may be detected incidentally on histopathological examination. The stage of tumour at which it is identified is of prognostic importance; early stage has better prognosis. We propose that all the benign gallbladder specimens should be routinely submitted to the histopathology lab for examination after cholecystectomy to exclude IGBC.

**Table 4:** Comparison of incidence of Incidental Gall Bladder Carcinoma in different studies

Author	Year	Incidence (%)
Siddiqui et al. [18]	2013	2.80
Waghmare RS et al. [4]	2014	2.59
Martins-Fihlo Ed et al. [14]	2015	0.34
Emmett CD et al. [15]	2015	0.25
Duzkoylu Y et al. [16]	2016	0.20
Ahn Y et al. [11]	2016	1.50
Geramizadeh B et al. [17]	2017	0.37
Present study	2023-24	2.94

### Limitations

As this study was retrospective, in many cases relevant clinical data were not available. This study was done in single centre of Gujarat with limited time frame and limited number of cases. Therefore, it cannot reflect correct magnitude of the disease.

### Conclusion

Many a times radiological investigations and gross examination cannot diagnose or sometimes miss the gallbladder carcinoma. In such cases histopathological examination is very helpful and it is very cost effective. In high risk zone, such as our centre

(as incidence of IGBC is 2.94%), histopathological examination of all surgically resected gallbladder should be mandatory as gallbladder carcinoma generally carries a poor prognosis.

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