

## Original Research Article

# Histopathological spectrum of gall bladder lesions

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### ABSTRACT

**Background:** Gall bladder diseases are a very common health problem that affects millions of people throughout the world. Cholelithiasis is commonly associated with carcinoma gallbladder. Cholecystectomy is the most commonly performed surgical procedure done for gall bladder disease.

**Methods:** A total of 161 cases of gall bladder lesions were evaluated from January 2017 to December 2018 which were sent to department of pathology. Specimens were fixed in 10% formalin. Appropriate areas were selected from the specimen and grossed, processed, sectioned, stained using haematoxylin and eosin and were observed under microscope.

**Results:** Out of 161 cases, 105 were female (65.22%) and 56 cases were male (34.78%). Histopathologically, the most common diagnosis was Chronic calculus cholecystitis (57.76%) followed by chronic acalculus cholecystitis (22.36%). Remaining cases were of Acute on chronic cholecystitis (6.21%), Acute on chronic cholecystitis with cholelithiasis (4.96%), Acute on chronic cholecystitis with perforation peritonitis (1.24%), Acute suppurative cholecystitis with perforation peritonitis (0.62%), Biliary Atresia (1.24%), Chronic cholecystitis with choledochal cyst (1.24%), Follicular cholecystitis (1.24%), Adenocarcinoma (0.62%), Adenosquamous carcinoma (0.62%) and one case was inconclusive (0.62%).

**Conclusions:** The incidence of chronic calculus cholecystitis was found to be 57.76% with female preponderance and mostly in third decade. Malignancy of gall bladder is a rare condition. Routine histopathological examination of all cholecystectomy specimens is strongly recommended for the detection of various variants of chronic cholecystitis and also of incidental carcinoma of gall bladder which helps in their treatment and prognosis.

**Keywords:** Gall bladder, Gall stones, Gall bladder carcinoma

### INTRODUCTION

Gallbladder is one of the organ having a wide spectrum of diseases ranging from congenital anomalies, calculi and its complications, non-inflammatory, inflammatory to the neoplastic lesions. Among the gall bladder diseases, gall stone is a very the common health problem that affects millions of people throughout the world.<sup>1</sup> Gall stones produce inflammation of gall bladder which can be acute, chronic or acute on chronic. Chronic cholecystitis produces diverse histopathological changes in gallbladder mucosa like acute - chronic inflammation, xanthogranulomatous cholecystitis, glandular

hyperplasia, cholesterosis, and metaplasias.<sup>2</sup> The incidence of gall bladder carcinoma (GBC) is 0.8-1%.<sup>3</sup> Cholelithiasis is found in approximately 85% of people with gallbladder cancer.<sup>4</sup> Other risk factors which increases the risk of GBC include porcelain gallbladder, adenomatous polyps of the gallbladder, chronic infection with *Salmonella typhi*, carcinogen exposure (e.g. miners exposed to radon), and abnormal pancreaticobiliary duct junction.<sup>5</sup> Gallbladder cancer (GBC) can be clinically obvious, an unexpected finding at laparotomy, detected incidentally on histologic examination or may be missed only to present with recurrence during follow-up.<sup>6</sup> Also, the prognosis of gall bladder cancer is very poor. It is

pertinent to analyze the histopathological changes associated with the gallbladder disorders. The present study was done to study the different histopathological patterns of gall bladder diseases and their incidences.

**METHODS**

This is a retrospective observational study conducted in the department of pathology at tertiary health care academic institute from January 2017 to December 2018. The study was approved by ethical committee of the institute. A retrospective analysis of 161 cases who had undergone cholecystectomy at the institute was done.

**Inclusion criteria**

- All patients who underwent cholecystectomy in the hospital during the study period were included in the study.

**Exclusion criteria**

- HIV patients were excluded.

Clinical details like age, sex and relevant investigations like LFT, USG were considered. All specimens were fixed in 10% formalin. Gross features of cholecystectomy specimens were recorded. Three sections each from neck, body and fundus were taken. In cases with any growth, irregularity in the wall, calcification, necrosis etc more sections were taken. Standard grossing techniques were followed. Appropriate areas were selected, grossed, processed, sectioned, and stained with haematoxylin and eosin dye. Histopathological examination was done on formalin fixed and paraffin processed tissues.

**Statistical analysis**

The results were analysed using descriptive statistics.

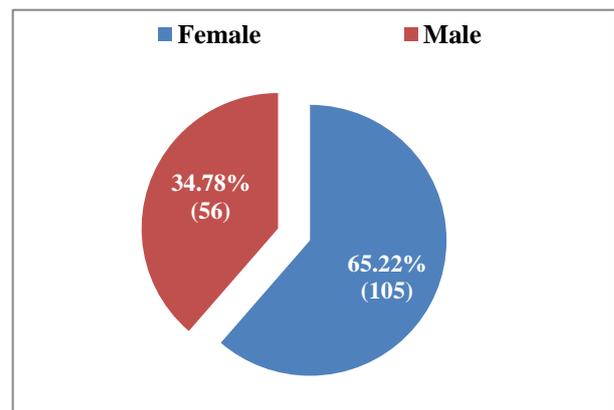
**RESULTS**

A total of 161 patients who had undergone cholecystectomy were studied for a period of two years. Among these patients, 105 cases were of female (65.22%) and 56 cases were of male (34.78%). The age of the patients ranged from 3 months to 76 years with maximum number of patients being 31 to 40 years. Mean age was 46.51 years. Table 1 shows age distribution of gall bladder diseases. Gall stones were present in 106 cases (65.83%). Gall stones and associated diseases were found to be more common in women within fourth decade as compared to men. Figure 1 shows sex distribution of gall bladder disease. Pigment stones were found to be most common followed by cholesterol stones. Commonest presenting symptoms was pain in abdomen. Histopathologically, the most common diagnosis was Chronic calculus cholecystitis (57.76%) followed by chronic acalculus cholecystitis (22.36%). Remaining cases (19.86%) were of Acute on chronic cholecystitis,

Acute on chronic cholecystitis with cholelithiasis, Acute on chronic cholecystitis with perforation peritonitis, Acute suppurative cholecystitis with perforation peritonitis, Biliary Atresia, Chronic cholecystitis with choledochal cyst, Follicular cholecystitis, Adenocarcinoma, Adenosquamous carcinoma and one case was inconclusive. Table 2 shows morphological spectrum of gall bladder lesions. The present study concluded that gallbladder malignancy was relatively uncommon and was seen in only two cases which were diagnosed as adenocarcinoma and adenosquamous carcinoma.

**Table 1: Age distribution of gall bladder diseases.**

Age group	Frequency	Percentage
0 to 10	5	3.11%
11 to 20	3	1.86%
21 to 30	17	10.56%
31 to 40	49	30.43%
41 to 50	28	17.39%
51 to 60	20	12.42%
61 to 70	30	18.63%
>70	9	5.59%
Total	161	100%



**Figure 1: Sex distribution.**

**DISCUSSION**

In the present study of 161 cases, 49 cases (30.43%) were in third decade which is consistent with the study conducted by Narendra et al.<sup>7</sup> Females were found to be predominantly affected (65.22%) compared to males (34.78%) which is similar to the studies conducted by Beena D et al, Srinivasan G et al, Sharma I et al.<sup>8-10</sup> Table 3 shows comparison of age group distribution. Out of 161 cases, 160 cases (99.38%) were complaining of pain in epigastrium followed by nausea/vomiting (6.83%). None of the patients presented with any evidence of malignancy clinically. This finding is going in correlation with studies conducted by Narendra et al<sup>(7)</sup>, Naqvi et al, and Siddiqui et al.<sup>11,12</sup> 133 cases (82.60%) had normal wall and green velvety mucosa which was concordant with studies done by Sumit G, Baidya et al, and Khanna

et al, followed by congestion of the serosa in 30 cases (18.63%).<sup>13-15</sup> 106 cases presented with calculi (65.84%) with 55 cases (34.16%) being acalculus. Majority of the cases (31.06%) presented as multiple gall bladder calculi followed by single stones in 22.36% of cases. 106 cases (65.84%) had gall bladder calculi with majority of cases having multiple black pigmented stones (88 cases,

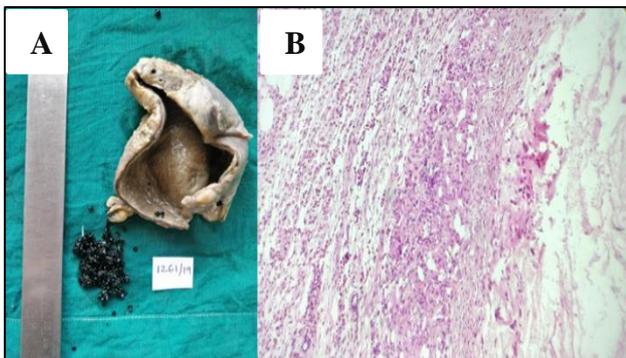
83.02%) followed by yellow cholesterol stones in (15 cases,14.15%) of cases. This is in concordance with studies conducted by Selvi et al, who evaluated 78 cholecystectomy specimens out of which 65 cases (83.3%) had stones with majority being pigmented stones (60.2%).<sup>16</sup>

**Table 2: Morphological spectrum of gall bladder lesions.**

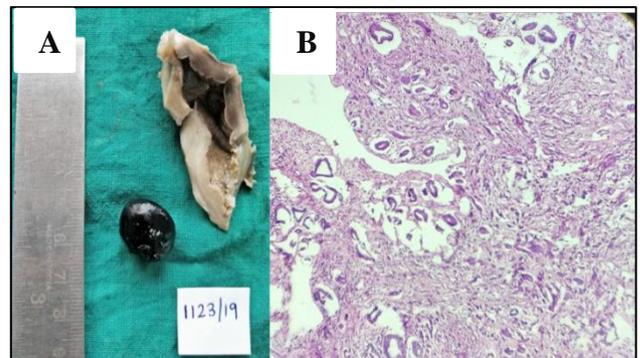
HP lesions	Frequency	Percentage
Acute on chronic cholecystitis	10	6.21%
Acute on chronic cholecystitis with cholelithiasis	08	4.96%
Acute on chronic cholecystitis with perforation peritonitis	02	1.24%
Acute suppurative Cholecystitis with perforation peritonitis	01	0.62%
Biliary Atresia	02	1.24%
Chronic calculus cholecystitis	93	57.76%
Chronic acalculus cholecystitis	36	22.36%
Chronic cholecystitis with choledochal cyst	02	1.24%
Follicular cholecystitis	02	1.24%
Xanthogranulomatous cholecystitis	02	1.24%
Adenocarcinoma	01	0.62%
Adenosquamous carcinoma	01	0.62%
No opinion possible	01	0.62%
Total	161	

**Table 3: Comparison of age group distribution.**

AGE Group	Present Study	Beena et al <sup>8</sup>	Narendra et al <sup>7</sup>	Awasthi et al <sup>19</sup>	Nigam et al <sup>20</sup>
0-10	3.11	-	-	-	-
11-20	1.86	1.5	10	2.9	0.0
21-30	10.56	12.5	22	18.2	9.6
31-40	30.43	23	37	23.5	20.38
41-50	17.39	26	15	27.2	41.92
51-60	12.42	22	08	19.5	18.46
61-70	18.63	15	08	8.7	9.61
>70	5.59	-	-	-	-



**Figure 2: (A) Gross specimen of Xanthogranulomatous cholecystitis shows enlarged gall bladder with multiple black pigmented stones, (B) Sheets of foamy macrophages with dense inflammatory infiltrate.**



**Figure 3: (A) Gross specimen of adenocarcinoma gall bladder shows thickened wall and single black pigmented stone, (B) Gall bladder mucosa with atypical glands infiltrating into muscularis propria.**

In this study, majority (93 cases, 57.76%) of the cases were diagnosed as chronic calculus cholecystitis which had presented as pain in abdomen in the right hypochondrium followed by chronic acalculus cholecystitis (36 cases, 22.36%) which is similar to study conducted by Srinivasan et al, and Sharma et al, but differs from studies conducted by Goyal et al, and Arathi et al, in which chronic acalculus cholecystitis was the histopathological diagnosis in majority of the cases.<sup>9,10,17,18</sup> In the present study, remaining cases are of Acute on chronic Cholecystitis (6.21%), Acute on chronic cholecystitis with cholelithiasis (4.96%), Acute on chronic cholecystitis with perforation peritonitis, Biliary Atresia, Chronic cholecystitis with choledochal

cyst, Follicular Cholecystitis and Xanthogranulomatous cholecystitis (1.24% each) (Figure 2). One case (0.62%) of Acute suppurative cholecystitis with perforation peritonitis was also found. Two cases (1.24%) were diagnosed as Adenocarcinoma of gall bladder (Figure 3) and Adenosquamous Carcinoma. They were incidental findings. This is in concordance with studies conducted by Beena et al, Sharma et al, Goyal et al, and Arathi et al.<sup>8,10,17,18</sup> Study have shown that incidental gall bladder carcinomas are found in about 0.5-1.1% of cholecystectomies for gall stone disease.<sup>19</sup> Only one case was found to be inconclusive. Table 4 shows comparison of histopathological lesions. Major limitation of our study was the less number of cases.

**Table 4: Comparison of Histopathological lesions.**

HP lesions(%)	Present study	Srinivasan et al <sup>9</sup>	Beena et al <sup>8</sup>	Sharma et al <sup>10</sup>	Goyal et al <sup>17</sup>	Arathi et al <sup>18</sup>
Acute on chronic cholecystitis	6.21	-	10	-	9.5	-
Acute on chronic cholecystitis with cholelithiasis	4.96	-	-	-	-	-
Acute on chronic cholecystitis with perforation peritonitis	1.24	-	-	-	-	-
Acute suppurative Cholecystitis with perforation peritonitis	0.62	-	3.5	-	9.5	8.4
Biliary Atresia	1.24	-	-	-	-	-
Chronic calculus cholecystitis	57.76	86	-	86.20	-	-
Chronic acalculus cholecystitis	22.36	14	82	-	57.8	86.3
Chronic cholecystitis with choledochal cyst	1.24	-	-	-	-	-
Follicular cholecystitis	1.24	-	-	1.3	-	-
Xanthogranulomatous cholecystitis	1.24	-	1	1.3	2.5	1.8
Adenocarcinoma	0.62	-	-	0.94	-	-
Adenosquamous carcinoma	0.62	-	0.5	-	1.2	1.6
No opinion possible	0.62	-	-	-	-	-

## CONCLUSION

The incidence of chronic calculus cholecystitis was found to be 57.76% with female preponderance and mostly in third decade. Our study strongly recommends routine histopathological examination of all cholecystectomy specimens for the detection of various variants of chronic cholecystitis and also of incidental carcinoma of gall bladder which helps in their treatment and prognosis.

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