

Original Research Article


# Cholecystectomies – A 1.5 year histopathological study

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## Abstract

**Background:** The gallbladder is a surgically important organ of the body which may be affected by a variety of pathological processes, which are often, under appreciated. It has a wide spectrum of diseases ranging from congenital anomalies, gallstones and its complications, non-inflammatory, inflammatory to the neoplastic lesions. Gallbladder pathology is a frequent source of patient complaint, presenting as acute or chronic right upper quadrant pain, jaundice, or dyspepsia. Gallstones are the commonest pathology of biliary system causing morbidity and mortality. Absolute diagnosis of the premalignant and malignant lesions is possible only after histopathologic examination of the specimen, as pre-operative imaging techniques fail to identify the lesions.

**Aims and objectives:** To study the histomorphology of various gall bladder lesions, to determine the age and sex distribution of the lesions and to ascertain the frequency of abnormalities.

**Materials and methods:** This was a prospective study conducted at Gandhi Hospital, Hyderabad for a period of 1.5 years, i.e. from December 2014 to May 2016. A total of 170 cholecystectomies were received, (including both conventional and laparoscopic types of surgeries) from Department of General Surgery. After gross examination, representative bits were taken and submitted to routine processing, paraffin embedding, cutting and staining. Sections were stained with conventional hematoxylin and eosin and were analyzed.

**Results:** In the present study, various types of lesions were identified and categorized as follows. Congenital anomaly (a single case of Duplication) was noted. Chronic cholecystitis (79), Chronic Cholecystitis with Cholelithiasis (59), Gangrene (13), Gangrene with perforation (3), Empyema (2), Xanthogranulomatous Cholecystitis (3), Adenomyosis (4), Follicular Cholecystitis (1),

Cholesterolosis (1), Eosinophilic Cholecystitis (1), Porcelain gall bladder (1), Mucocele (1), and Carcinoma (1).

**Conclusion:** Biliary disorders affect considerable portion of the population. 90% biliary diseases are attributed to cholecystitis. All cholecystectomies should be subjected to histopathological examination in order not to miss the spectrum of gall bladder lesions and their significance.

## Key words

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Gall bladder, Cholecystitis, Cholelithiasis, Adenocarcinoma.

## Introduction

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Gall bladder is among the most common surgically resected organs for various reasons, including common non neoplastic conditions like cholecystitis, with or without calculi and empyema due to obstruction, stasis and infection and gangrene as a result of decreased/ inadequate blood supply and ischemic necrosis due to various causes [1]. Chronic cholecystitis (CC) is the most commonly encountered lesion in India and worldwide with more than 78-90% of them associated with calculi [2, 3]. Of all the gall bladder lesions, 0.5% to 1.09% are malignant, which are either clinically suspected or incidentally diagnosed [3]. Main indication, in our hospital for cholecystectomy was cholelithiasis.

Gall bladder is a pear shaped organ situated under the right lobe of the liver. Non-neoplastic lesions include congenital anomalies, cholelithiasis, cholecystitis, adenomyomatosis and cholesterolosis. Neoplastic category includes adenoma, adenocarcinoma and mesenchymal tumours. Although clinically, most of the gall bladder lesions present as biliary pain (in the right upper quadrant/ right hypochondrium), morphologically the lesions vary from infective to neoplastic.

By the time gall bladder carcinoma manifests clinically, it has already reached an advanced stage and has metastasized to liver [4]. Tumors at an early stage are limited to the mucosa and are difficult to differentiate from cholecystitis clinically. So these early malignancies have to be diagnosed on histopathology for minimal morbidity [5]. Throughout the world 10% of

adult population have gallstones. Gallstones if present for a longer period and not removed in time, may predispose to the development of carcinoma of gall bladder [6]. The prevalence varies with age, sex and ethnic groups. Most patients are unaware of the disease and remain asymptomatic for life.

The current changes in lifestyles of individuals pertaining to indulgence in unhealthy fat-rich food, lack of exercise, obesity, sedentary lifestyles and various other factors have once again focused our attention to gall stones and diseases of the gall bladder. Carcinoma of gall bladder ranks 5<sup>th</sup> in the gastrointestinal malignant tumors and due to non-specific clinical presentation it is rarely diagnosed at an early stage [7].

Absolute diagnosis of the premalignant and malignant lesions is only possible on histopathologic examination of the specimen, as pre-operative imaging techniques fail to identify the lesions. Thus, it is important to study histopathological changes in order to determine the incidence, prevalence, and distribution of the lesions.

## Materials and methods

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This was a prospective study conducted at Gandhi Hospital, Hyderabad for a period of 1.5 years, i.e. from December 2014 to May 2016. A total of 170 cholecystectomies were received in histopathology department. Relevant clinical and radiological details were collected. Gross specimens were inspected, data recoded and morphological features noted. Absence or presence of gall stones, debris, collections of pus,

evidence of perforations or any mass lesions were recorded. Representative full thickness sections were obtained from fundus, body, neck and were subjected to conventional processing. Additional sections were taken from suspicious areas or any mass lesions. The hematoxyline and eosin stained sections were studied for

histopathological details and were classified as non neoplastic or neoplastic. Associated epithelial and stromal morphological changes occurring in association with chronic inflammation were also looked for (**Figures – 1 to 18**).

**Figure - 1:** Thickened wall with a large pigmented black coloured gall stone.

**Figure - 2:** Multiple whitish yellow cholesterol calculi. Mucosa velvety & bile stained.

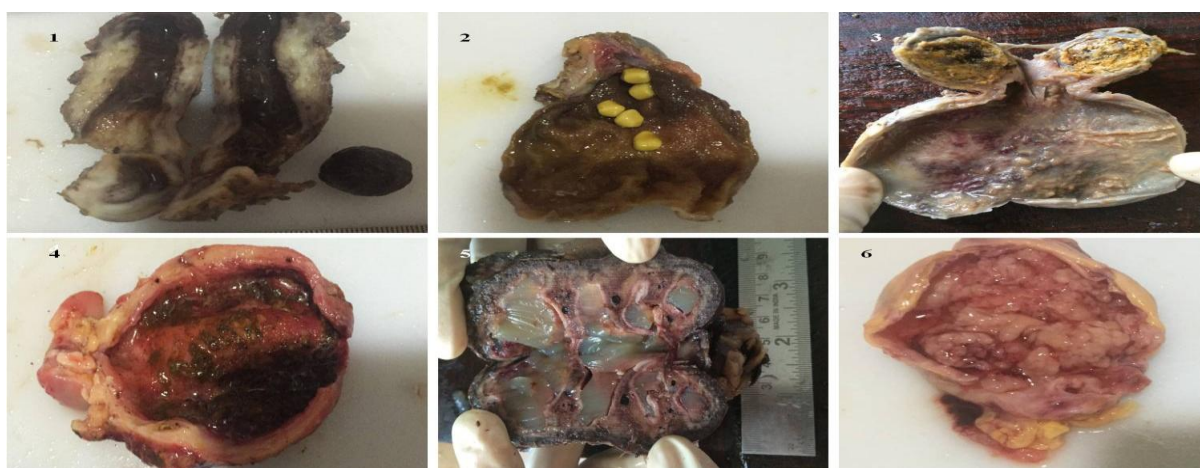
**Figure - 3:** Large cholesterol stone in the neck causing dilatation and empyema.

**Figure - 4:** Lumen filled with slough with areas of haemorrhages -Empyema.

**Figure - 5:** Locules filled with mucoid material - Mucocele.

**Figure - 6:** Papillary mass filling the lumen in Adenocarcinoma of gall bladder.

All the Gross images are cut opened representations of cholecystectomies.



All the Figures (7-18) are stained with H&E (Haematoxylin and Eosin stain) & depicted in 10X view.

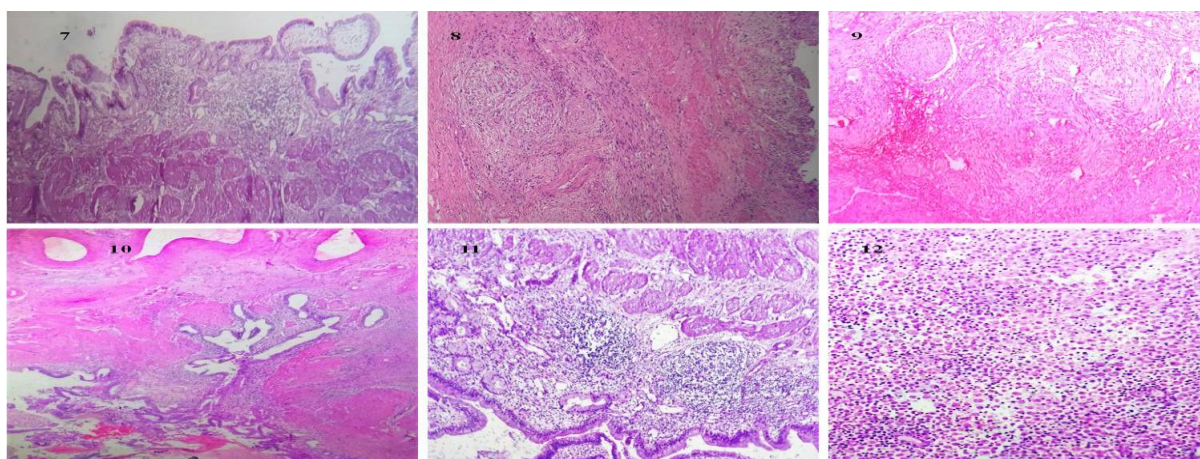
**Figure - 7:** Muscle hypertrophy & lymphocytic infiltrate in chronic cholecystitis.

**Figure - 8 & 9:** Focal erosions & marked neuronal hypertrophy in Chronic cholecystitis.

**Figure -10:** Rokitansky aschoff sinuses & thickened blood vessels in Chronic cholecystitis.

**Figure -11:** Lymphoid follicles highlighted in Follicular Cholecystitis.

**Figure - 12:** Dense & diffuse sheets of xanthoma cells in Xanthogranulomatous Cholecystitis.



**Figure - 13:** Collections of neutrophils, along with necrotic debris in Empyema of gall bladder.

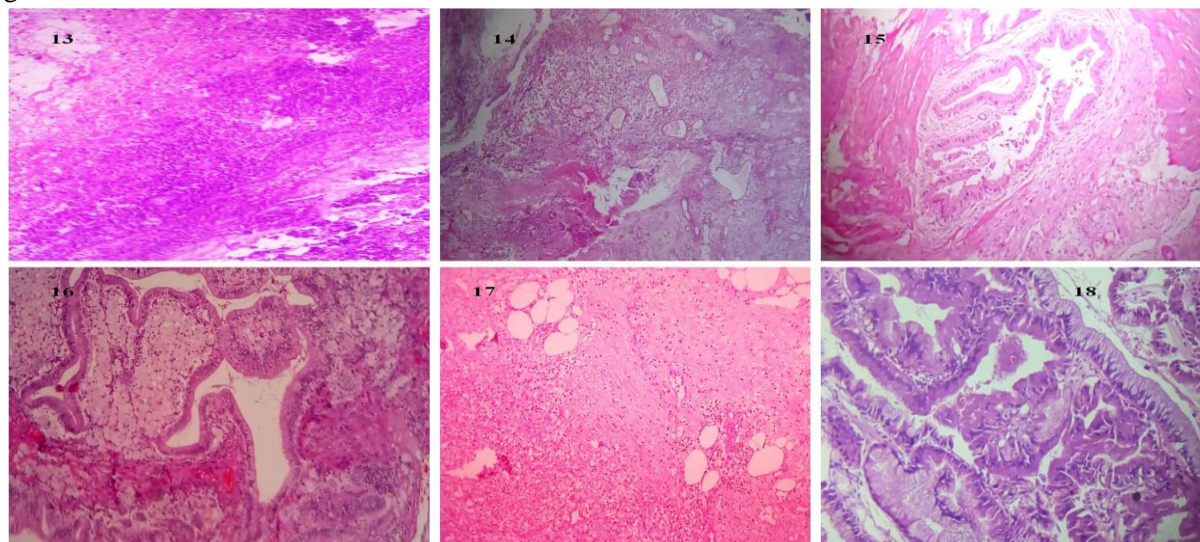
**Figure - 14:** Extensive areas of ischemic necrosis in gangrene of gall bladder.

**Figure -15:** Benign glands embedded and encircled by the smooth muscle fibres - Adenomyosis.

**Figure -16:** Diffuse collections of foamy macrophages in the lamina propria – Cholesterolosis.

**Figure – 17:** Dense collections of eosinophils in the muscle coat in eosinophilic Cholecystitis.

**Figure 18:** Neoplastic glands lined by tall columnar mucin secreting epithelium - Adenocarcinoma of gall bladder.



## Results

Out of 170 cholecystectomy specimens which were thoroughly examined both macro and microscopically, revealed various lesions ranging from congenital anomalies like duplication of gall bladder, calculi to carcinoma. The age range

was between 21 to 75 years, with majority of 64 cases seen in age group of 41-60 years (37.6%). A male to female ratio was almost 1: 1 (**Table – 1**).

**Table - 1:** Various pathological lesions encountered in our study.

Distribution of lesions of gall bladder - Age and sex wise																							
Age (years)	M : F		Total	Cong		CCC		CCC/CL		Gang		Gang +Per		Empyema		XGCC		AM		Others FCC CSL, ECC, MC, PGB		Tumor	
	M	F		No	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
21-40	20	29	49	1	-	08	16	09	12	-	-	1	-	-	-	-	-	1	1	-	-	-	-
41-60	33	31	64	-	-	16	18	09	09	-	1	4	1	1	1	-	1	-	-	1	2	-	-
>61	28	29	57	-	-	11	10	09	11	1	1	6	1	-	-	1	1	-	2	-	2	-	1
Total	81	89	170	1		35	44	27	32	1	2	11	2	1	1	1	2	1	3	1	4		1

M : F – Male to Female ratio, Cong – Congenital (01), CCC – Chronic Cholecystitis (79), CL – Cholelithiasis (59), Gang + Per – Gangrene with Perforations (03), Gang- Gangrene without perforations (13), Empyema (03), XGCC – Xanthogranulomatous Cholecystitis (03), AM – Adenomyosis (04), FCC – Follicular Cholecystitis (01), CSL – Cholesterolosis (01), ECC – Eosinophilic Cholecystitis (01), MC – Mucocele (01), PGB - Porcelain gall bladder (01).

## Discussion

In the present study, maximum number of cases were noticed between 41-60 years a little higher age group than an Indian study conducted by Harsh Mohan, et al. [8]. Among the various morphological lesions, chronic cholecystitis was the commonest in the present study, with incidence of 81%. In the present study prevalence of chronic cholecystitis without calculi was 46.5 % and with cholelithiasis 34.7%, whereas in other studies it was 79% and 4.5% respectively.

Cholesterolosis was seen in 0.6% of cases, which is less common when compared to Harsh Mohan, et al. study (10.1%). In our study 59 cases were associated with calculi, including pigmented, cholesterol and occasional mixed types based on their morphological appearance. Two cases were diagnosed as empyema of gall bladder constituting 1.2% in the present study. One case of gall bladder adenocarcinoma was encountered, constituting 0.6%.

Incidentally detected gall bladder carcinoma has a significant value as good prognosis is anticipated in them, since they are in relatively early stage and rarely show lymphatic or venous invasion. Like in other studies [9, 10, 11] gall bladder disease had slightly higher preponderance in females with a ratio of 1: 1.1.

Rare cases of special types of inflammations seen in gall bladder were xanthogranulomatous cholecystitis, follicular cholecystitis, eosinophilic cholecystitis and porcelain gall bladder.

## Conclusion

Biliary disorders are common ailments presenting with pain, dyspepsia and jaundice, especially seen in fertile, fatty, female population and in people leading sedentary life styles. 90% of biliary diseases are attributed to cholecystitis. Histopathology is a gold standard method for detection of carcinoma of gall bladder, as it is superior to clinical and radiological examination.

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