

## A Histomorphological Pattern of Gallbladder Lesions in a Tertiary Hospital in Southwestern Nigeria: A Retrospective Descriptive Study

**Authors:** M. A. Ajani<sup>1,2,\*</sup>; F. A. Onakpoma<sup>1</sup>; E. O. Fatunla<sup>1</sup>; O.O. Adegoke<sup>1,2</sup>; A. A. Salami<sup>1,2</sup>

**Affiliations:** <sup>1</sup>Department of Pathology, University College Hospital, Ibadan, Oyo State, Nigeria.

<sup>2</sup>Department of Pathology, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria

### ABSTRACT

**BACKGROUND:** The gallbladder is one of the most common specimens encountered in the surgical pathology laboratory, and gallstone related diseases are among the most common medical problems requiring surgical intervention.

This study's objective was to determine the histomorphological patterns and frequency of gall bladder lesions from cholecystectomy specimens received in our institution for over twenty years.

**METHODS:** We carried out a retrospective review of all cholecystectomy specimens received at the pathology department for 20 years from January 1999 to December 2018. The specimens were obtained from within and outside the hospital facility. The demographic data, clinical details, and histological diagnosis were retrieved from the departmental records and were analyzed with SPSS version 23.

**RESULTS:** A total of 211 cholecystectomy specimens were received during the study period. Patients' age ranged from 14 to 84 years, with a mean age of  $47.6 \pm 0.899$  years. There was a female preponderance with male to female ratio of 43:168 (1:3.9). Surgery for gallbladder disease was most commonly performed in the age range of 41-50 years. Out of the 211 specimens, 153 (72.5%) had calculi and 58 (27.5%) were acalculous. Chronic calculous cholecystitis was the most common histopathological diagnosis (65.4%). Others were chronic acalculous cholecystitis (18.0%), acute on chronic acalculous cholecystitis (2.4%), adenocarcinoma (3.3%), metastatic adenocarcinoma (0.1%), adenocarcinoma with chronic calculous cholecystitis (0.5%), klatskin tumour (0.5%), and normal gallbladders (1.9%).

**CONCLUSION:** This study revealed that the commonest indication for cholecystectomy in our hospital was gall stone disease. Malignancy of the gallbladder is uncommon in our center.

**Keywords:** Gallbladder, Cholecystectomy, Cholecystitis, Calculi, Adenocarcinoma.

### INTRODUCTION

The gallbladder is one of the most common specimens encountered in a surgical pathology

laboratory and gallstones disease remains one of the most common medical problems requiring surgical intervention [1]. Gallbladder diseases remain one of the most common digestive

**\*Corresponding author:** Dr. Mustapha A. Ajani, Department of Pathology, College of Medicine, University of Ibadan/University College Hospital, Ibadan, Oyo State, Nigeria, Email: ajanimustapha42@gmail.com, Tel: +2348039125255; **Potential Conflicts of Interest (Col):** All authors: no potential conflicts of interest disclosed; **Funding:** All authors: no funding was disclosed; **Academic Integrity.** All authors confirm that they have made substantial academic contributions to this manuscript as defined by the ICMJE; **Ethics of human subject participation:** The study was approved by the local Institutional Review Board. Informed consent was sought and gained where applicable; **Originality:** All authors: this manuscript is original has not been published elsewhere; **Review:** This manuscript was peer-reviewed by three reviewers in a double-blind review process; **Type-editor:** Batenhorst (USA).

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problems in Western Europe and the United States. In tropical Africa, gallbladder diseases were initially thought to be uncommon but they are now seen more frequently [2,3,4]. This increase in incidence is probably due to the dietary habits (increase in intake of calories and cholesterol/fats) of the population [2]. In the histopathological examination of cholecystectomy materials, chronic cholecystitis is most commonly observed and gallbladder stones are frequently observed in these cases [5]. However, other diverse but benign histopathological changes of gallbladder mucosa with specific clinical correlations are also seen. Very rarely, a cholecystectomy specimen may reveal an unexpected gallbladder carcinoma [1]. Gallbladder cancer is a rare malignancy with an overall poor prognosis, especially if diagnosed late in the disease [1,6,7]. Hence, the histopathological examination of every cholecystectomy specimen is of utmost importance.

The spectrum of changes seen in cholecystectomy specimens includes but are not limited to acute cholecystitis, chronic cholecystitis, cholesterosis, adenomyoma, adenomatous hyperplasia, metaplasia, polyps and carcinoma [1,8-11]. The majority of cholecystectomies performed is due to gallstone related diseases. The risk factors for gallstone formation are multifactorial and include non-modifiable and modifiable factors. The non-modifiable factors are family history, genetic predilection, ethnic background, female sex and advancing age [10]. The modifiable factors are obesity, drugs, physical inactivity, rapid weight loss, prolonged parenteral nutrition and underlying diseases such as liver cirrhosis and Crohn's disease [10].

This study aims to determine the prevalence and histomorphological patterns of gallbladder lesions in cholecystectomy specimens submitted to our department during the study period and determine the most common cholecystectomy indications at our center.

## METHODS

We carried out a retrospective review of all cholecystectomy specimens received at the Department of Pathology, University College Hospital, Ibadan, Nigeria, between January 1999 and December 2018. The samples were obtained from within and outside the hospital. The Hematoxylin and Eosin stained slides of the cases

were retrieved from the departmental archives and where necessary, new slides were made from the archived paraffin-embedded tissue blocks. Three Pathologists independently looked at the slides to ascertain the previously made diagnoses. Information about the cases and the slides were all extracted from the departmental archives. The data was analyzed using SPSS version 23.

**Ethical approval:** Ethical approval was not required or indicated for this study because we used anonymized data. The data obtained did not infringe on the rights of subjects and did not violate the principles of confidentiality on patients' information or diagnosis.

## RESULTS

A total of 211 cholecystectomy specimens were received during the study period, with a prevalence of an average of 10 per year. Patients' age ranged from 14 to 84 years, with a mean age of  $47.6 \pm 0.899$  years. There was a female preponderance with 168 females and 43 males and a male to female ratio of 1:3.9. Surgery for gallbladder disease was most commonly performed in 40-49 years (Table 1).

**Table 1: Sex and age distribution gallbladder lesions**

Demographic factors	Frequency (%)
<b>Gender</b>	
Male	43 (20.4)
Female	168 (79.6)
<b>Age</b>	
10-19	3 (1.4)
20-29	17 (8.1)
30-39	45 (21.3)
40-49	65 (30.8)
50-59	48 (22.7)
60-69	24 (11.4)
70-79	8 (3.8)
80-89	1 (0.5)
<b>Total</b>	<b>211 (100)</b>

Out of the 211 specimens, 153 (72.5%) had calculi and 58 (27.5%) were acalculous. Chronic

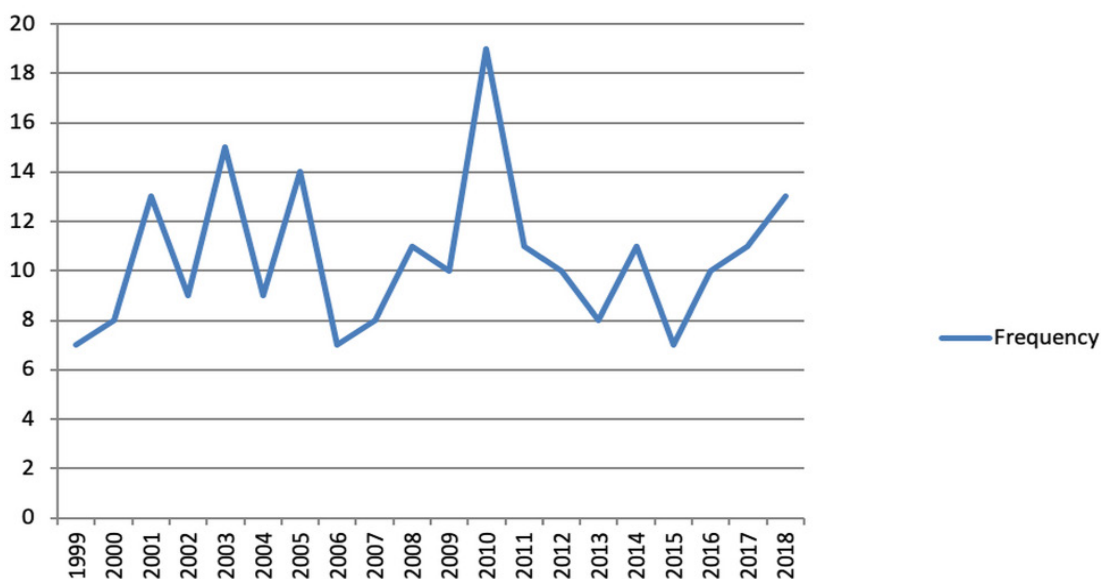
**Table 2: Distribution of histological diagnosis**

Histological Diagnosis	Frequency	%
Chronic calculous cholecystitis	138	65.4
Chronic acalculous cholecystitis	38	18.0
Acute on chronic calculous cholecystitis	14	6.6
Adenocarcinoma	7	3.3
Acute on chronic acalculous cholecystitis	5	2.4
Normal	4	1.9
Chronic granulomatous inflammation	1	0.5
Submucosal fibrosis	1	0.5
Adenocarcinoma with chronic calculous cholecystitis	1	0.5
Klatskin tumor	1	0.5
Metastatic adenocarcinoma	1	0.5
Total	211	100

calculous cholecystitis was the most common histopathological diagnosis (65.4%) (Table 2) and it is also the most common indication for cholecystectomy in these patients studied. Other histopathological diagnoses were chronic acalculous cholecystitis (18.0%), acute on chronic acalculous cholecystitis (2.4%), adenocarcinoma

(3.3%), metastatic adenocarcinoma (0.1%), adenocarcinoma with chronic calculous cholecystitis (0.5%), klatskin tumour (0.5%), and normal gallbladders (1.9%). The highest number of cases of gallbladder lesions were found in the year 2010 (n=19, 9%) (Figure 1).

**Yearly distridution of Gallbladder lesions at UCH, Ibadan**



**Figure 1: Distribution of gallbladder lesions in Ibadan**

## DISCUSSION

A total of 211 patients had open cholecystectomy for gallbladder diseases over 20 years resulting in a hospital prevalence of 10 cases of gallbladder disease per year. The true incidence of gallbladder diseases in most African countries, including Nigeria, is unknown; our findings indicate these diseases' rarity in this environment. This compares with results in other regions of Nigeria [3,12-16] and other African countries [17,18] but at variance with others that showed an increasing trend in Nigeria and other African countries [4,19-21]. This rising trend was attributed to a rapidly urbanizing population and the associated changing lifestyle and dietary habits, especially increased fat consumption and low dietary fiber intake. Despite the gradual increase in incidence, it still uncommon compared to Europe and North America [22-27].

Findings from several studies have shown a disproportionate number of women diagnosed with gallbladder disease than men. Women were reported to be twice as likely to form gallstones, undergo cholecystectomy, and be diagnosed with gallbladder cancer [7,22,23]. A similar trend was observed in our study, with male to female ratio of 1:3.9 (Table 1); this is in keeping with another study in Nigeria with a ratio as high as 6:1.4 [3] but at variance with other reports locally and worldwide with a ratio of 2:1 [16,24,25]. The sex disparity is usually attributed to female sex hormones, particularly estrogen. Some studies show a modestly increased risk of gallbladder disease associated with oral contraceptive use and estrogen replacement therapy [22,23].

However, the gender differences gap narrows with increasing age, especially after menopause, at which men begin to catch up [23]. This study's peak age spread between 40-49 years, cumulatively accounting for 30.8% (n=65) with a mean age of 47.6 years. This is in keeping with another study in Ghana [4] but in contrast with studies from Calabar and Zaria (30-39 years) [15, 16]. More than 95% of biliary tract diseases are attributable to cholelithiasis.

Gallstones constitute a significant health problem in developed societies, affecting 10% to 15% of the adult population in the United States, while in Europe, the prevalence ranges from 5.9% to 21.9%.

Prevalence of gallbladder diseases cholelithiasis and cholecystitis are not as common in Africa as in North America and Europe [26,27]. However, with the changing lifestyle and dietary habits, there is an expectation to be a rise in Africans' incidence. In this study, 153 (72.5%) patients had calculi, as shown in Figure (1) and this is in keeping with the fact that cholelithiasis accounts for more than 95% of gallbladder diseases [4]. Cholecystitis was the most common gallbladder lesion, present in 86.3% (n=182) of the cases reported.

The majority of the cholecystitis cases were chronic at diagnosis (n=177,83.9%). This shows that the majority of the patients in our study were diagnosed at advanced stages of the disease, possibly starting as gallstones, which is asymptomatic in most cases, and only reporting to the hospital when it finally predisposed to inflammation (cholecystitis) as cholelithiasis was found to be associated with most cases of cholecystitis. This observation is consistent with our findings, as 62.6% of cholecystitis found in this study was associated with cholelithiasis [3,4,12-16]. Gallbladder cancer has been postulated to arise in a background of chronic cholecystitis and cholelithiasis. Seven primary gallbladder cancers were reported in our study; however, only one case was associated with chronic calculous cholecystitis. This is at variance with other studies, which showed that most but not all people with gallbladder cancer have cholelithiasis [4,7].

This is a baseline retrospective single-centred histomorphological study with small sample size. Multi-centre studies with large sample size should be explored in the future. This will provide further support for the rarity of gallbladder disease in our environment.

## CONCLUSION

The study showed that chronic calculous cholecystitis is the most common indication for cholecystectomy in our environment. The number of cholecystectomy samples seen during the study period attests to the rarity of gallbladder disease in this environment compared to findings in developed countries. This low incidence of gallbladder disease may be due to our diet's high fiber and low cholesterol content.

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