INCIDENTAL GALL BLADDER CARCINOMA IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT: BACKGROUND: Gall stones are the most common biliary pathology. Cholelithiasis, whether symptomatic or asymptomatic, needs cholecystectomy due to 70-98% association of gall bladder carcinoma with gall stones. Despite this, the prevalence of carcinoma gall bladder is 2-5% with 0.3-0.5% being incidentally diagnosed in patients undergoing cholecystectomy. In such cases, clinical judgment and high index of suspicion in a rural setup is a worthy tool. **AIMS AND OBJECTIVES:** The study was undertaken to determine incidence of cholelithiasis and gall bladder carcinoma in various age groups among patients undergoing cholecystectomy and to standardize stage wise treatment of gall bladder carcinoma, specifically in relation to incidentally diagnosed gall bladder carcinoma. **MATERIALS AND METHODS:** A total of 189 patients undergoing cholecystectomy over a period of two and a half years were analyzed in a rural hospital, attached to medical college. Patients with gall bladder carcinoma were followed 3 monthly until death or till 31ST Oct 2013. **RESULTS:** Maximum number of patients were in age group of 51-60 years (22.2%) with female to male ratio of 1.9:1. Pain in right hypochondrium was the most common symptom (76.2%) patients. Cholelithiasis was present in 75% patients with gall bladder carcinoma. Incidental diagnosis of gall bladder carcinoma in patients undergoing cholecystectomy for benign disease was 1.5%. Overall incidence of gall bladder carcinoma in patients undergoing cholecystectomy was 4.2%. After confirming the final diagnosis by histopathology, ultrasound showed only 62.5% sensitivity, 97.79% specificity, 55.56% positive predictive value, 98.33% negative predictive value and 96.3% accuracy to diagnose gall bladder carcinoma. Among three incidentally diagnosed patients, operated by laparoscopic cholecystectomy, two were alive at 8 and 13 months of follow-up respectively. **CONCLUSION:** A sound knowledge of various modes of presentation of cholelithiasis and gall bladder carcinoma, combined with clinical judgment, high suspicion in high risk areas and confirmation by newer diagnostic modalities like USG and CT is required for early diagnosis and treatment and prevention of complications.

KEYWORDS: Gall bladder carcinoma, incidentally diagnosed, cholelithiasis.

INTRODUCTION: Gall stones are the most common biliary pathology. The prevalence of gall stones varies in different parts of the world. In India it is estimated to be around 4%. An epidemiological study showed that north Indians have 7 times greater occurrence of gall stones than south Indians.^[1] A strong association has been noted between gallbladder cancer and cholelithiasis which is present in 70-98% cases.^[2] Cholelithiasis causing recurrent cholecystitis, due to obstruction of cystic duct, predisposes to malignancy.^[3]

The risk of developing cancer in patients with untreated cholelithiasis is estimated to be between 0.2 - 0.5% over a period of 20 years.^[4] The risk of gall bladder carcinoma in patients with chronic cholecystitis is 7 times greater than that in the normal population.^[5]

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Incidentally detected gall bladder carcinoma is found in 0.2-5% of patients undergoing cholecystectomy. Cancer of gallbladder is fifth most common gastrointestinal malignancy.^[6] It is 3- 5 times more common in women than men. The incidence of gall bladder carcinoma in India is low (1 for men and 2.3 for women per 1,00,000 population).^[7]

Diagnosis of gall bladder carcinoma is difficult at an early stage because of lack of specific signs and symptoms and the frequent association with chronic cholecystitis and gall stones. Ultrasonography is now considered as method of choice for screening of gall bladder diseases.^[8]

Laparoscopic cholecystectomy is the 'gold standard' in surgical treatment of symptomatic cholelithiasis. However, the guidelines for the treatment of occasional (intraoperative diagnosis) or occult (postoperative histological diagnosis) carcinoma of the gall bladder in patients undergoing laparoscopic cholecystectomy are lacking.^[2]

Hence, the present study was undertaken to evaluate the clinico-pathological correlation in patients undergoing cholecystectomy by clinical, radiological and histopathological data in order to help better diagnosis of gall bladder carcinoma and better treatment for the same.

MATERIAL AND METHODS: A total of 189 patients undergoing cholecystectomy, over two and a half years period, were analyzed in a rural hospital, attached to medical college. All the patients presenting with recurrent right upper abdominal or epigastric pain, usually after fatty meals, with or without nausea, vomiting, postprandial fullness, fever and flatulent dyspepsia were evaluated by clinical examination and ultrasonography. All symptomatic patients with gall bladder disease on ultrasonography and willing for cholecystectomy were included in the study. All suspected cases of malignancy were confirmed by Computed Tomography scan and those satisfying operability criteria were included in the study.

The exclusion criteria included patients with inoperable gall bladder carcinoma, chronic obstructive airway disease, portal hypertension, pregnancy, major bleeding disorders and patients unfit for surgery. The criteria for inoperability were patients having Stage III (invasion of the main portal vein, common hepatic artery or multiple extra hepatic organs) and Stage IV (distant metastasis) disease.

The symptomatology, clinical examination, ultrasonography and CT scan findings were recorded in a proforma. Routine laboratory investigations including hemoglobin, leukocyte count, and sickling, liver function test were performed.

All patients were operated by senior surgeon either by laparoscopic or by open method. A fully explained well informed consent was taken with explanation of risk of conversion to open specially in cases of laparoscopic cholecystectomy. Preoperatively confirmed gall bladder malignancy was operated by radical cholecystectomy. Radical cholecystectomy involves en bloc resection of the gall bladder and the adjacent liver parenchyma (segments 4b and 5) along with regional lymphadenectomy.

The patients were followed for at least one year. All gall bladders were subjected to histological examination and gall bladders with carcinoma were examined, in each, taking multiple sections. Patients who were diagnosed with gallbladder carcinoma after histopathology were classified according to TNM staging for gallbladder carcinoma and treated accordingly. Patients with gall bladder carcinoma were followed 3 monthly until death or till 31ST Oct 2013. All the data collected was studied and statistically analyzed using EPI6 INFO programme (Data analysis software).

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RESULTS: Maximum number of patients were in age group of 51-60 years (22.2%) followed by 41-50 years (21.7%). 34.4 % cases were males and 65. 6% cases were females, with female to male ratio of 1.9:1 [Table I, II]. Pain in right hypochondrium was the most common symptom seen in 76.2% patients, followed by flatulent dyspepsia (46%) and bloating (34.4%). However, among 8 cases of gall bladder malignancy, six cases (75%) had pain in abdomen, four cases (50%) had lump in abdomen, loss of weight and appetite each and three cases (37.5%) had jaundice. [Table III]

94.2 % patients (i.e.178 cases) were operated by laparoscopic technique. Six cases required conversion to open; four cases of gangrenous cholecystitis and two cases of empyema gall bladder. The conversion rate was 3.3%. All five preoperatively diagnosed gall bladder malignancy cases had open radical cholecystectomy performed. [Table II]

Ultrasound detected a total of 161 patients, with 23.6% cases in age group of 41-50 years, to have cholelithiasis, of whom 34.2% were males and 65.8% were females. Thus, the proportion of cholelithiasis in patients undergoing cholecystectomy was 85.2% based on ultrasonography and female to male ratio was 1.92:1[Table IV].

However, histopathology confirmed only 153 patients (80.9%), with 24.2% in age group of 41-50 years, to have cholecystitis with cholelithiasis (both acute and chronic), of whom 33.3% were males and 66.7% were females. Rest 36 patients (19.1%) were found to have other gall bladder diseases. Thus the actual proportion of cholelithiasis in the study group was 80.9 %, with female to male ratio of 2:1. [Table V]

Among eight patients of gall bladder carcinoma, 2 were males (one- preoperatively diagnosed, one-incidentally diagnosed) and 6 were females (four- preoperatively diagnosed, two- incidentally diagnosed), with mean age of presentation at 54.7 years (28-65 years). Cholelithiasis was present in 6 out of 8 (75%) patients with gall bladder carcinoma. Incidental diagnosis of gall bladder carcinoma in patients undergoing cholecystectomy for benign disease was 1.5%. Overall incidence of gall bladder carcinoma in patients undergoing cholecystectomy was 4.2%. [Table VI, VII]

80.9% had cholelithiasis with acute or chronic cholecystitis while 5.8% had acute acalculous cholecystitis. Gangrenous cholecystitis was present in 2.6% while xanthogranulomatous cholecystitis was seen in 1.6% cases. Hyperplastic polyp, empyema gall bladder and mucocoele were present in 1.1% cases each. [Table VIII, IX]

13 cases were misdiagnosed as chronic cholecystitis with cholelithiasis. Five of them were reported histopathologically as gangrenous cholecystitis without cholelithiasis, two turned out to be adenocarcinoma with cholelithiasis; two were mucocoele, two as cholesterol polyp, one as hyperplastic polyp and one as xanthogranulomatous cholecystitis.

Among four cases, misdiagnosed as gall bladder polyp, one patient had chronic cholecystitis with cholelithiasis, two had xanthogranulomatous cholecystitis and one had well differentiated adenocarcinoma histopathologically. Only one case of acute acalculous cholecystitis was misdiagnosed, which had empyema gall bladder on histopathology.

Patient imaged as calcified gall bladder on ultrasonography had empyema gall bladder on histopathology without calcification. Among 9 cases diagnosed as carcinoma gall bladder on ultrasonography, only 5 had proven carcinoma gall bladder on histopathology. The remaining 4 cases had chronic cholecystitis with cholelithiasis [Table X].

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After confirming the final diagnosis by histopathology, ultrasound showed only 62.5% sensitivity, 97.79% specificity, 55.56% positive predictive value, 98.33% negative predictive value and 96.3% accuracy to diagnose gall bladder carcinoma. However, the data was small. [Table XI]

In the open group, bile leak, subhepatic abscess and wound gape was seen in one patient each operated by radical cholecystectomy. Wound infection was seen in two patients. In the laparoscopic group, wound infection and port site metastasis was seen in one patient (0.5%) each. In the converted group, bile leak and wound gape was seen in 1 patient each (16.7%) operated for gangrenous cholecystitis while subhepatic abscess and wound infection was seen in two patients each (33.3%). [Table XII]

Among three incidentally diagnosed patients, operated by laparoscopic cholecystectomy, two were alive at 8 and 13 months of follow-up respectively. Patient at 13 months of follow-up with stage I disease (T1N0M0) had port site metastasis for which re-excision was done and patient is still under follow-up. Patient alive at 8 months of follow-up had carcinoma insitu i.e. stage 0 disease. No further treatment was given to these patients. The third patient who had polypoidal mass on ultrasonography, had stage II disease (T2N0M0); refused second stage procedure, received chemotherapy and died at 5 months. [Table XIII]

Among pre-operatively diagnosed gall bladder carcinomas, one patient of Stage I (T1N0M0) disease; operated by radical cholecystectomy lost for follow-up. Among remaining four patients, one patient had stage IVB disease (T3N0M1), two patients had stage IIIA disease (T3N0M0) and one patient had stage II disease (T2N0M0). One patient of stage IIIA was not willing for chemotherapy and died at 2 months. Remaining three patients received chemotherapy and all of them succumbed to their illness from 2-8 months after surgery, with a mean survival of 5 months. [Table XIII]

DISCUSSION: Despite advances in imaging and radiology, gall bladder carcinoma still remains a challenge to most surgeons. Due to its late, silent presentation, many prefer to remove the gallbladder containing stones, even when asymptomatic. Incidentally diagnosed gall bladder carcinoma during routine laparoscopic cholecystectomy is now more common due to increase in number of laparoscopic cholecystectomies and advances in imaging and histopathology. This study was undertaken to highlight the management protocols among such cases.

Demographic data in this study has shown that females are more commonly affected (65.6%) than males (34.4%) with female to male ratio of 1.9:1. 51-60 years is the most commonly affected age group. This is in concordance with studies of Joon et al^[9] and K F Chin et al^[10] who also concluded that cholelithiasis is common in fat, fertile, flatulent, female of forty. Laura et al^[11] in a review article quoted that the frequency of gallstones increases with age, escalating markedly after age 40yrs to become 4 to 10 times more likely in older individuals.

This is thought to be due to increased proportion of cholesterol in bile and cholesterol saturation in elderly subjects as compared to younger subjects. Women are almost twice as likely as men to form stones; the gap narrows following menopause after which men begin to catch up.^[12] This increased frequency in females is due to the effect of female sex hormones. Progesterone decreases the gall bladder motility and results in incomplete gall bladder emptying, whereas estrogen alters the cholesterol metabolism causing cholesterol saturation in bile.^[13]

76.2% had right hypochondriac pain as initial presentation, which along with associated signs and symptoms, pointed towards diagnosis of gallbladder disease and were later confirmed by

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ultrasound. Festi et al, in a cross sectional study, also concluded that pain at right hypochondrium was significantly associated with gallstones,^[14] thus confirming the importance of history and clinical examination in diagnosis of gall bladder disease.

Many patients presented with vague complaints of bloating (34.4%), dyspepsia (46%), belching (21.2%), without pain. These patients were initially diagnosed to have acid peptic disease and were treated with proton pump inhibitors. However, none of them showed and symptomatic relief. These patients were subjected to ultrasound evaluation and were found to have gallstones and were included in the present study.

None of these patients had a previous attack of biliary colic or acute cholecystitis. Chronic cholecystitis is known to present with complaints of dyspepsia and patient may have discomfort rather than pain.^[15] After the surgery they were symptomatically relived. Such patients should be evaluated carefully as owing to lack of pain as a presenting symptom or else the clinical diagnosis of cholelithiasis may be missed. Diehl et al also noted the presence of above mentioned symptoms in the patients with gallstones.^[16]

The gallstone related pain is usually described as occurring after fatty meals.^[17] Fats are relatively insoluble, which limits ability to cross the unstirred layer and reach the surface of mucosal cells. However, they are finely emulsified in small intestine by action of bile acids forming micelles, which renders them soluble and improves absorption.^[18] Bile is important for fat absorption. Fatty acids also stimulate release of cholecystokinin which causes contraction of gallbladder.^[18] In the present study we found that 34.4% (i.e. 65 cases) had pain following greasy meal (bloating). Rest did not have any such history. Diehl et al did not find any statistically significant association between postprandial pain and greasy meal.^[16] Festi et al. in their study reported statistically significant intolerance to fatty and fried food compared to controls.^[14]

Arnaud et al and Daphna et al^[19] all suggested abdominal pain, loss of appetite and weight, nausea, vomiting, jaundice and fever as presenting symptoms of gall bladder carcinoma, which was confirmed in present study. These symptoms are the earliest tools to suspect gall bladder carcinoma, by a trained human brain, which still remains undetected by latest radiological modalities, at its earliest stage. However, these symptoms are non-specific and indistinguishable from gall stone disease. Presence of lump in abdomen and jaundice may suggest the possibility of gall bladder carcinoma. So, early diagnosis of gall bladder malignancy is rarely achieved due to lack of specific symptoms and signs.^[9]

In the present study, incidental diagnosis of gall bladder carcinoma in patients undergoing cholecystectomy for benign disease was 1.5%. The overall incidence of gall bladder carcinoma in patients undergoing cholecystectomy was 4.2 %, with mean age of patients 54.7 years and peak incidence in 5th and 6th decade. This is in concordance with So Young et al,^[20] Abdul Samad et al^[21] and Andrea et al.^[22] The overall incidence of gall bladder carcinoma in patients undergoing cholecystectomy (4.2%) was high in our study probably due to demographic variation in the disease prevalence in India and small size data as compared to the previous studies.

In the present study, 75% cases of gall bladder carcinoma had cholelithiasis. It has been presumed that a longstanding chronic inflammation which is caused by cholelithiasis plays a role in the tumour progression and that carcinogenesis and gall stones are seen in 54-97% of the patients of gallbladder carcinoma.^[23]

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This finding has been supported by So Young et al,^[20] Satoshi et al^[24] and Abdul Samad et al.^[21] In the present study, cholelithiasis with chronic cholecystitis was present in maximum patients (71.9%) and acute calculous cholecystitis was seen in 8.9 % which is in concordance with the study above of Meirelles et al.^[25]

Standardization of Treatment of Gall Bladder Carcinoma: Among 3 patients of incidentally diagnosed carcinoma gall bladder, operated by laparoscopic cholecystectomy (T1a, T2, Tis), 2 were alive post-surgery without any adjuvant treatment at mean follow-up of 10.5 months. However one patient with T2 disease refused second stage procedure and died at 5 months. Thus incidentally diagnosed gall bladder carcinoma with Tis and T1a are adequately treated by simple cholecystectomy. This is in accordance with a large Japanese registry^[26] and mayo clinic series,^[27] who concluded that additional excision did not result in better survival in patients with T1 tumours. Yildirim et al^[28] also concluded that early tumours (T1a and Tis) that are recognized incidentally are curable with simple cholecystectomy alone.

Whether T2 carcinoma needs second radical procedure after post-operative diagnosis of incidental carcinoma; could not be commented as the patient refused second stage procedure. However the literature states that there is a need for a second radical procedure after postoperative diagnosis of incidental T2 gall bladder carcinoma.^[29]

In 5 pre-operatively diagnosed gall bladder carcinoma operated for radical cholecystectomy with stage I, II, 2 patients with IIIA and IVB respectively, the mean survival was 5 months post-surgery irrespective of adjuvant chemotherapy. Hence gall bladder carcinoma usually presents late and has poor survival rate irrespective of curative surgery or adjuvant chemotherapy in addition.

CONCLUSION: Gall stones are the most common biliary pathology. A strong association has been noted between gallbladder cancer and cholelithiasis. Diagnosis of gall bladder carcinoma is difficult at an early stage because of lack of specific signs and symptoms and the frequent association with chronic cholecystitis and gall stones. In the present study, pain in right hypochondrium was the most common symptom of patients with gall bladder diseases including gall bladder carcinoma making diagnosis of gall bladder carcinoma difficult clinically.

Ultrasonography is accurate in the diagnosis of benign gall bladder diseases. So, ultrasonography can be considered to be the method of choice for screening gall bladder diseases. To date, laparoscopic cholecystectomy is the gold standard in the surgical treatment of symptomatic cholelithiasis whereas diagnosed gall bladder carcinoma need open procedure. Incidentally diagnosed gall bladder carcinomas are adequately treated by simple cholecystectomy alone. Gall bladder carcinoma usually presents late and has poor survival rate irrespective of curative surgery or adjuvant chemotherapy in addition.

The limitation of this study is the small sample size hence more structured studies with larger sample and longer postoperative follow up are required to be carried out to standardize the treatment of gall bladder carcinoma in various stages in a concretized manner.

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SYMPTOMATOLOGY	NUMBER OF PATIENTS	PERCENTAGE
PAIN IN RIGHT HYPOCHONDRUM	144	76.2
FLATULANT DYSPEPSIA	87	46.0
FEVER	11	5.8
JAUNDICE	3	1.6
BLOATING (FATTY FOOD INTOLERANCE)	65	34.4
BELCHING	40	21.2
VOMITTING	28	14.8
LOSS OF WEIGHT/LOSS OF APPETITE	4	2.1
LUMP IN ABDOMEN	4	2.1
TABLE I: SHOWING THE SYMPTOMATIC PRESENTATION OF PATIENTS SEEKING TREATMENT FOR GALL BLADDER DISEASES		

AGE IN YEARS	MALE	FEMALE	TOTAL (PERCENTAGE)
1-10	-	-	-
11-20	6(3.2%)	10(5.3%)	16(8.5%)
21-30	8(4.3%)	15(7.9%)	23(12.2%)
31-40	11(5.8%)	24(12.7%)	35(18.5%)
41-50	16(8.5%)	25(13.2%)	41(21.7%)
51-60	11(5.8%)	31(16.4%)	42(22.2%)
61-70	11(5.8%)	16(8.5%)	27(14.3%)
71-80	2(1.0%)	3(1.6%)	5(2.6%)
TOTAL	65 (34.4 %)	124 (65.6 %)	189(100%)
TABLE II: SHOWING AGE AND SEX DISTRIBUTION OF PATIENTS UNDERGOING CHOLECYSTECTOMY			

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SEX	OPEN (RADICAL CHOLECYSTECTOMY FOR PREDIAGNOSED CARCINOMA GALL BLADDER)*	LAPAROSCOPY	
		SUCCESSFUL LAP	LAP CONVERTED OPEN (SIMPLE CHOLECYSTECTOMY)
MALE	1(0.5%)	62(32.8%)	2(1.1%)
FEMALE	4(2.1%)	116(61.4%)	4(2.1%)
TOTAL	5(2.6%)	178(94.2%)	6(3.2%)

**TABLE III: SHOWING NUMBER OF PATIENTS OPERATED
BY OPEN /LAPAROSCOPIC TECHNIQUE**

* All five open cases were radical cholecystectomies, performed for preoperatively diagnosed carcinoma gall bladder. The converted group included difficult cholecystectomies performed for inflammatory conditions. The successful laparoscopic group included both cholecystectomies for benign gall bladder diseases and incidentally diagnosed carcinoma gall bladder.

AGE IN YEARS	MALE	FEMALE	TOTAL PERCENTAGE
11-20	6 (3.7%)	7 (4.4%)	13(8.1%)
21-30	9 (5.6%)	16 (9.9%)	25(15.5%)
31-40	9 (5.6%)	19 (11.8%)	28(17.4%)
41-50	12 (7.5%)	26 (16.1%)	38(23.6%)
51-60	8 (4.9%)	25 (15.5%)	33(20.5%)
61-70	10 (6.2%)	10 (6.2%)	20(12.4%)
71-80	1 (0.6%)	3 (1.9%)	4(2.5%)
TOTAL	55 (34.2 %)	106 (65.8%)	161(100%)

**TABLE IV: SHOWING AGE AND SEX DISTRIBUTION OF PATIENTS WITH
CHOLELITHIASIS UNDERGOING CHOLECYSTECTOMY BASED ON ULTRASONOGRAPHY**

AGE IN YEARS	MALE	FEMALE	TOTAL
11-20	6(3.9%)	6(3.9%)	12(7.8%)
21-30	8(5.2%)	16(10.5%)	24(15.7%)
31-40	8(5.2%)	19(12.4%)	27(17.6%)
41-50	12(7.8%)	25(16.3%)	37(24.2%)
51-60	6(3.9%)	25(16.3%)	31(20.3%)
61-70	10(6.5%)	8(5.2%)	18(11.7%)
>70	1(0.6%)	3(1.9%)	4(2.6%)
TOTAL	51 (33.3 %)	102 (66.7 %)	153(100%)

**TABLE V: SHOWING AGE AND SEX DISTRIBUTION OF
HISTOPATHOLOGICALLY CONFIRMED CASES OF CHOLELITHIASIS**

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SEX	PRE-OPERATIVELY DIAGNOSED	INCIDENTAL DIAGNOSIS	TOTAL
MALE	1(12.5%)	1(12.5%)	2(25%)
Female	4(50%)	2(25%)	6(75%)
TOTAL	5(62.5%)	3(37.5%)	8(100%)

TABLE VI: SHOWING INCIDENCE OF GALL BLADDER CARCINOMA IN PATIENTS UNDERGOING CHOLECYSTECTOMY

AGE IN YEARS	MALE	FEMALE	TOTAL (PERCENTAGE)
11-20	-	-	-
21-30	1(12.5%)	-	1(12.5%)
31-40	-	-	-
41-50	-	1(12.5%)	1(12.5%)
51-60	1(12.5%)	2(25%)	3(37.5%)
61-70	-	3(37.5%)	3(37.5%)
>70	-	-	-
TOTAL	2(25%)	6(75%)	8(100%)

TABLE VII: SHOWING AGE-WISE INCIDENCE OF GALL BLADDER CARCINOMA IN PATIENTS UNDERGOING CHOLECYSTECTOMY

GALL BLADDER DISEASE	ULTRASONOGRAPHY DIAGNOSIS
CHOLELITHIASIS WITH ACUTE CHOLECYSTITIS	17
CHOLELITHIASIS WITH CHRONIC CHOLECYSTITIS	144
GALL BLADDER POLYP	6
ACUTE ACALCULOUS CHOLECYSTITIS	12
CALCIFIED GALL BLADDER	1
GALL BLADDER MALIGNANCY	9
TOTAL	189

TABLE VIII: SHOWING USG FINDINGS OF ALL PATIENTS UNDERGOING CHOLECYSTECTOMY

HISTOPATHOLOGY	MALE	FEMALE	TOTAL
ACUTE CHOLECYSTITIS WITH CHOLELITHIASIS	7(3.7%)	10(5.3%)	17(8.99%)
CHOLELITHIASIS WITH CHRONIC CHOLECYSTITIS	44(23.3%)	92(48.7%)	136(71.98%)
ACUTE ACALCULOUS CHOLECYSTITIS	4(2.1%)	7(3.7%)	11(5.8%)
XANTHOGRANULOMATOUS CHOLECYSTITIS	1(0.53%)	2(1.1%)	3(1.6%)
GANGRENOUS CHOLECYSTITIS	2(1.1%)	3(1.6%)	5(2.6%)
HYPERPLASTIC POLYP	2(1.1%)	-	2(1.1%)
CHOLESTEROL POLYP	2(1.1%)	1(0.53%)	3(1.6%)
CARCINOMA	2(1.1%)	6(3.2%)	8(4.2%)
EMPHYEMA GALL BLADDER	-	2(1.1%)	2(1.1%)
MUCOCELE GALL BLADDER	1(0.53%)	1(0.53%)	2(1.1%)
TOTAL	65(34.4%)	124(65.6%)	189(100%)

TABLE IX: HISTOPATHOLOGICAL RESULTS OF PATIENTS UNDERGOING CHOLECYSTECTOMY

ORIGINAL ARTICLE

GALL BLADDER DISEASE	ULTRASONOGRAPHY DIAGNOSIS	HISTOPATHOLOGICAL DIAGNOSIS
CHOLELITHIASIS WITH ACUTE CHOLECYSTITIS	17	17
CHOLELITHIASIS WITH CHRONIC CHOLECYSTITIS	144	131
GB POLYP	6	2
ACUTE ACALCULOUS CHOLECYSTITIS	12	11
CALCIFIED GB	1	-
GB MALIGNANCY	9	5

TABLE X: SHOWING ULTRASONOGRAPHIC AND HISTOPATHOLOGICAL CORRELATION FOR GALL BLADDER DISEASES

DIAGNOSIS	SENSITIVITY	SPECIFICITY	POSITIVE PREDICTIVE VALUE	NEGATIVE PREDICTIVE VALUE	ACCURACY
ACUTE CALCULOUS CHOLECYSTITIS	100%	100%	100%	100%	100%
CHRONIC CALCULOUS CHOLECYSTITIS	96.32%	75.47%	90.97%	88.89%	90.48%
GALL BLADDER POLYP	40%	97.83%	33.3%	98.36%	96.3%
ACUTE ACALCULOUS CHOLECYSTITIS	100%	99.44%	91.67%	100%	99.47%
GALL BLADDER MALIGNANCY	62.5%	97.79%	55.56%	98.33%	96.3%

TABLE XI: SHOWING ACCURACY OF ULTRASONOGRAPHIC DIAGNOSIS

COMPLICATIONS	OPEN(5)	LAPAROSCOPIC(178)	CONVERTED GROUP(6)
BILE LEAK	1(20%)	0	1(16.7%)
SUBHEPATIC ABSCESS	1(20%)	0	2(33.3%)
WOUND INFECTION	2(40%)	1(0.5%)	2(33.3%)
WOUND GAPE	1(20%)	0	1(16.7%)
PORT HERNIA	0	0	-
SCAR PAIN	2(40%)	0	-
PORT SITE METASTASIS	0	1(0.5%)	-

TABLE XII: SHOWING POST-OPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING CHOLECYSTECTOMY

ORIGINAL ARTICLE

SR. NO.	AGE/ SEX	CLINICAL PRESENTATION	ULTRASONOGRAPHY FINDINGS	OPERATION	HISTOPATHOLOGY FINDINGS A)CHOLELITHIASIS (present or absent) B)TYPE OF TUMOUR	STAGE	TREATMENT /FOLLOW UP
1	28/M	PAIN IN ABDOMEN, DYSPEPSIA	CHOLELITHIASIS MULTIPLE, WALL THICKNESS NORMAL	LAP	A) PRESENT B)WELL DIFFERENTIATED ADENOCARCINOMA OF GALL BLADDER	I (T1N0M0)	PORT SITE METASTASIS RE-EXCISED ALIVE AT 13 MONTHS
2	60/M	PAIN IN ABDOMEN, DYSPEPSIA	HETEROGENOUS ECHOTEXTURED MASS LESION IN RT HYPOCHONDRUM LIKELY TO BA GALL BLADDER MASS. WALL THICKNESS NORMAL	OPEN	A)ABSENT B)MUCIN SECRETING ADENOCARCINOMA	I (T1N0M0)	NO FOLLOW UP
3	55/F	PAIN IN ABDOMEN, LUMP IN ABDOMEN, JAUNDICE, LOSS OF WEIGHT	GALL BLADDER STONES DILATED IRREGULAR THICKENING OF CBD WALL WITH DILATATION OF IHBR.	OPEN	A)PRESENT B) WELL DIFFERENTIATED ADENOCARCINOMA. BIOPSY OF LIVER NODULE SHOWING METASTATIC ADENOCARCINOMA	IVB (T3N0M1)	CHEMOTHERAPY DIED AT 3 MONTHS
4	65/F	PAIN IN ABDOMEN, DYSPEPSIA	CHOLELITHIASIS WITH DISTENDED GALL BLADDER	LAP	A)PRESENT B) MODERATELY DIFFERENTIATED ADENOCARCINOMA, INTRAMUCOSAL.	0 (T1SN0M0)	ALIVE AT 8 MONTHS
5	48/F	PAIN IN ABDOMEN DYSPEPSIA, BLOATING	POLYPOIDAL 6MM INTRALUMINAL GALL BLADDER MASS, THICKNESS 3 MM.	LAP	A)ABSENT B)WELL DIFFERENTIATED ADENOCARCINOMA	II (T2N0M0)	CHEMOTHERAPY DIED AT 5 MONTHS
6	62/F	PAIN IN ABDOMEN, LUMP IN ABDOMEN, JAUNDICE LOSS OF WEIGHT	CHOLELITHIASIS WITH CHRONIC CHOLECYSTITIS WITH DILATED CBD AND IHBR	OPEN	A)PRESENT B)POORLY DIFFERENTIATED ADENOCARCINOMA	IIIA (T3N0M0)	CHEMOTHERAPY DIED AT 7 MONTHS
7	55/F	PAIN IN ABDOMEN, LUMP IN ABDOMEN, LOSS OF APPETITE	GALL BLADDER MASS WITH CHOLELITHIASIS	OPEN	A)PRESENT B) WELL DIFFERENTIATED ADENOCARCINOMA	II (T2N0M0)	CHEMOTHERAPY DIED AT 8 MONTHS
8	65/F	LUMP IN ABDOMEN, JAUNDICE, LOSS OF APPETITE LOSS OF WEIGHT	GALL BLADDER MASS LIKELY TO BE MALIGNANT WITH CHOLELITHIASIS. DILATED CBD AND IHBR	OPEN	A)PRESENT B) POORLY DIFFERENTIATED ADENOCARCOMA	IIIA (T3N0M0)	NOT WILLING FOR CHEMOTHERAPY DIED AT 2 MONTHS

TABLE XIII: SHOWING CLINICAL DATA OF PATIENTS WITH GALL BLADDER CARCINOMA (BOTH PREOPERATIVELY DIAGNOSED AND INCIDENTALLY DIAGNOSED)

ORIGINAL ARTICLE

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