

## Cholelithiasis induced Metaplasia in post cholecystectomy specimen : A Tertiary Care Study.

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**Abstract:** Cholelithiasis is derived from Greek word 'chol' means bile, lith means stone and iasis means process. cholelithiasis is civilization disease and accounts for 10-15%. Epithelial exposure to harmful toxin both exogenous and endogenous compounds lead to alteration in gall bladder mucosa. Epithelium shows atrophy, hypertrophy with metaplastic changes. So priority is to be given to prevent these changes leading to dysplasia by cholecystectomy.

**Keywords:** Metaplasia (intestinal and pyloric), dysplasia, cholecystectomy.

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### I. Introduction:

Cholelithiasis being the most common biliary pathology requires more surgical intervention than any other abdominal Surgery even surpassing the Appendectomies. Nearly 10-15% of white adults in developed countries harbor Gall Stones (1). As per Indian railways epidemiological study North Indians have more prevalence than South, Kashmir has prevalence of 6.12%. Gall bladder is exposed to high concentration of potential harmful exogenous and endogenous compounds excreted into the bile leading to alteration in gall bladder mucosa and this multistep progression leads to inflammation, atrophy, metaplasia and dysplasia. The inflammatory process initiated by the stones is aided by possible irritation factors in the diet and environment as well as by gene environment interactions. The consequence of this inflammatory process is changes in cell differentiation thereby resulting in intestinal metaplasia (IM). These epithelial changes are distinct phases of epithelial differentiation leading to more severe cytological damage known as dysplasia, a lesion that ultimately precedes invasive gallbladder carcinoma and being termed as 'carcinoma in situ' (2). Identification of intestinal metaplasia which appear very early in the process of carcinogenesis in patients with gallstones is therefore important, so that early intervention can be made to prevent gallbladder cancer (3).

### II. Material And Methods

The study was conducted on 100 patients over a period of one year in the Department of General Surgery Sher-e- Kashmir Institute of Medical sciences, Bemina from November 2016 to October 2017 after taking clearance from ethical committee and patient consent. All patients with symptomatic cholelithiasis were admitted for cholecystectomy. Patients with acute chelecystitis, documented gall bladder malignancies were excluded from the study. Detailed personal and medical information that included demographic data, medical illnesses, family history of gallstones, smoking were collected. All baseline investigations were done including ultrasound abdomen for size, number and wall thickness. The specimens were buffered in 10% formaline and send to department of pathology, formaline fixed tissues were then embedded in paraffin wax and microtoned and studied for H&E staining and visualized for metaplasia both intestinal and pyloric.

### III. Results & Statistics

#### 1. Frequency of histopathological alteration in gall bladder mucosa:

Diagnosis	Ch.inflammation	fibrosis	metaplasia	Dysplasia
<b>Mild</b>	<b>43</b>	<b>38</b>	<b>0</b>	<b>1</b>
<b>Moderate</b>	<b>40</b>	<b>18</b>	<b>0</b>	<b>0</b>
<b>Severe</b>	<b>17</b>	<b>10</b>	<b>0</b>	<b>3</b>
<b>Positive</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>
<b>X<sup>2</sup> value</b>	-----	<b>174.11</b> -----	-----	-----
<b>P value</b>	-----	<b>&lt;0.0001</b> -----	-----	-----

## 2. Correlation of duration of pain with the severity of disease

Diagnosis	Mean+/- SD months
metaplasia	15.27+/-6.63
F ratio	25.12
P value	<0.001

## 3.sex distribution

diagnosis	Male	Female
metaplasia	3	8

## 4.Age distribution

Diagnosis	<30	>30
Metaplasia	2	9

Out of 100 cases of cholelithiasis admitted in our department 11 cases were positive for metaplasia. It was seen that more prolonged duration and severity of disease lead to more epithelial changes and metaplasia. Metaplasia was more predominant in females as compared to males and disease was prevalent more than 3<sup>rd</sup> decade.

## IV. Discussion

In the specimens studied, the metaplastic abnormalities showed a close association with Cholelithiasis and inflammation, as demonstrated by various studies (4). In tissue samples collected from gallbladders exclusively with acute inflammatory process, no areas of antral metaplasia were found, which reinforces the concept that antral metaplasia is closely associated chronic inflammatory process (18). In normal conditions, the pathologist's major concern is to recognize the different grades of the inflammatory process in the gallbladder and to rule out or confirm an occult carcinoma. That is the cause for little attention paid to recognition of these epithelial abnormalities in most of cases. The histogenesis of this type of metaplasia is known to be caused by prolonged mucosal irritation due to calculi and inflammatory processes of the gallbladder, which favor epithelial desquamation and regeneration, as well as the subsequent emergence of metaplastic abnormalities, either intestinal or antral (5).

According to Jaun Jose Barcia, who produced a rational system of scoring and observation for chronic inflammatory pathology of gall bladder. The spectrum of changes in chronic inflammatory disease of gall bladder was noted and a rational for the microscopic observation and diagnosis of the chronic inflammatory pathology was followed. Barcia reported pyloric and intestinal metaplasia in 98.6% and pyloric in 1.4%, but in our study pyloric metaplasia was present in 45.4% and intestinal in 54.4% (6). Similarly Mukhopadhyay and Landas reported pyloric and intestinal metaplasia in 89% and 11% cases. Although the presence of metaplasia was associated with chronic changes, the extent of metaplasia did not correlate with the fibrosis or amount of inflammatory changes. So the production seems to be pathologically independent. Metaplasia is a strong supportive factor for the diagnosis of chronic cholecystitis. Evidences suggest that the sequence metaplasia – dysplasia – carcinoma might be present in several gallbladder tumors (7). Antral metaplasia could precede intestinal metaplasia, which could precede dysplasia following neoplasm. Therefore, two models of gallbladder carcinoma were suggested according to histogenetic bases: one model derives from normal epithelium and the other comes from metaplastic epithelium. Both models would have a different biological behavior expressing less aggressiveness and higher survival rates (8). This study basically showed a high percentage of metaplastic lesions in gallbladders with chronic inflammatory process and lithiasis. Therefore it is elucidated that to prevent the progression from metaplasia to dysplasia, patients need early cholecystectomy.

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