

## SURGICAL INCIDENCE OF CHOLELITHIASIS IN HYDERABAD AND ADJOINING AREAS (PAKISTAN)

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### ABSTRACT

**Main Objective:** To determine the surgical incidence of cholelithiasis in Hyderabad & adjoining areas.

**Design:** Cross sectional study.

**Settings:** Surgical Units of Liaquat University of Medical and Health Sciences, Jamshoro; Memon Charitable Hospital; Wali Bhai Rajputana Hospital; Naseem Medical Center; and Isra University Hospital, Hyderabad.

**Patients:** 483 male and 1583 female patients of 10 to 80 years age surgically treated for gallstones during the years 1999 to 2001.

**Measurements:** The surgical incidence of cholelithiasis for the period January 1999 to December 2001 was studied with the help of a questionnaire designed to know the dietary habits, age, sex and month of presentation of gallstone cases.

**Results:** Of the gallstone patients treated, the surgical incidence in males was found to be 4.0% (95% CI, 3.6 - 4.5) and in females 14.2% (CI, 14.1 - 15.7), constituting male to female ratio 1:3.3. May and November were the peak months for the presentation of gallstone cases. The age range for male gallstone patients was 10 to 78 years and for females 11 to 80. The peak age group for the occurrence of gallstones in males was 45-59 years and in females 30-44. Females between the ages 30 - 44 years were seen to be more prone to develop gallstones than the females of any other age group.

**Conclusions:** Overall surgical incidence for cholelithiasis was found to be 9.03% (95% CI, 8.6 - 9.4), with females being 3.3 times more prone to develop gallstones than the males.

**KEY WORDS:** Cholelithiasis, gallstones, surgical incidence.

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## INTRODUCTION

Cholelithiasis is a major health problem in many countries of the world, more so in developed countries<sup>1-3</sup>. Gallstones are more common in adults than in children or elderly persons; in females than in males, and the causes for these age- and sex-related variations are now well known<sup>4-7</sup>. Epidemiological studies in many countries have been performed with the aim of establishing gallstone prevalence and incidence rates<sup>8-11</sup>. The surgical incidence for cholelithiasis in Liaquat University Hospital, Jamshoro during the years 1990-1993 was seen to be 3.07%<sup>12</sup>.

In this manuscript on the basis of hospital statistics of five major hospitals (including Liaquat University of Medical and Health

Sciences Hospital, Jamshoro) of Hyderabad and adjoining areas we report the surgical incidence for cholelithiasis during the period January 1999 to December 2001. The findings of present study are compared with the reported results of other countries, for similarities and differences, if any.

## PATIENTS AND METHODS

### Patients

Male and female patients of any age with gallstones, admitted in Liaquat University of Medical and Health Sciences Hospital, Jamshoro (n = 485), Memon Charitable Hospital, Hyderabad (n = 783), Wali Bhai Rajputana Hospital, Hyderabad (n = 526), Naseem Medical Center, Hyderabad (n = 221) and Isra University Hospital, Hyderabad (n = 51) were enrolled in this study. All were identified at the register of admissions for cholecystectomy. The gallstone patients who were admitted for cholecystectomy but left the hospital without cholecystectomy were excluded from the study. The study period was from January 1999 to

December 2001. All gallstone patients were the residents of Hyderabad and adjoining areas. Various surgeons of five different hospitals of Hyderabad treated the cases.

Age, sex and month of presentation of gallstone cases were recorded from the register of admissions. All gallstone patients were interviewed by means of a structured questionnaire developed with the aim to know the dietary habits of the population.

### Analysis

Gallstones were present in all cases of cholecystectomy as previously diagnosed by ultrasound examination. Surgical incidence with 95% confidence intervals was computed by the standard jackknife method<sup>13</sup>.

## RESULTS

The surgical incidence (with 95% confidence interval) of cholelithiasis in five different hospitals of Hyderabad during three-year period i.e. from January 1999 to December 2001 is shown in Table-I. Amongst the hospitals Liaquat University of Medical and Health

Table-I: Surgical incidence of gallstone disease in Hyderabad and adjoining areas during 1999 to 2001

Hospitals	Male patients	Female patients	Surgical incidence (%)	95% Confidence interval
Liaquat University of Medical and Health Sciences hospital, Jamshoro ( n = 8095 )	82 / 5292	403 / 2803	5.99	5.47 – 6.55
Memon Charitable Hospital, Hyderabad ( n = 5973 )	235 / 2586	548 / 3387	13.1	12.81 – 14.08
Wali Bhai Rajputana Hospital, Hyderabad ( n = 5908 )	121 / 3165	405 / 2743	8.90	8.12 – 9.71
Naseem Medical Center, Hyderabad ( n = 1953 )	33 / 779	188 / 1174	11.32	9.29 - 13.71
Isra University Hospital, Hyderabad ( n = 953 )	12 / 300	39 / 653	5.35	4.05 – 7.11

Sciences Hospital, Jamshoro is a government hospital; Naseem Medical Center, Hyderabad and Isra University Hospital, Hyderabad are private hospitals; Wali Bhai Rajputana Hospital, Hyderabad is a private as well as charitable hospital. Highest surgical incidence 13.1% (95% CI, 12.2 – 14.08) was seen in Memon Charitable Hospital, Hyderabad. The patients treated in this hospital belonged to low socio-economic status and majority (with relative risk 2.49, 95% CI, 2.1 - 2.5) of them was rapeseed oil consumers.<sup>14</sup>

Figure-1 depicts the statistics of patients surgically treated in different hospitals of Hyderabad during January 1999 to December 2001. As can be seen, the overall surgical incidence for cholelithiasis was 9.03%

(CI, 8.6 - 9.4). The surgical incidence amongst the males and females was 4.0% (CI, 3.6 – 4.5%) and 14.2% (CI, 14.1 – 15.7%) respectively.

Monthwise presentation of gallstone cases is shown in Figure-2. The months of May followed by November were the peak months for presentation of gallstone cases.

Table-II shows age- and sex-wise distribution of gallstone cases. Females in the age group 30–44 years were seen to be more prone to develop gallstones than the females of any other age group.

During the study period it was noted (Figure-3) that the surgical incidence of gallstones in females had gradually increased whereas in males it had slightly decreased.

Table-II: Age- and sex-wise distribution of cholelithiasis cases treated at different hospitals of Hyderabad during 1999 to2001

Age group in years	Male	Female	Male : Female
<14	8	8	1 : 1
15 – 29	57	245	1 : 4.3
30 – 44	135	618	1 : 4.6
45 – 59	157	501	1 : 3.2
60 – 74	106	177	1 : 1.7
75 & above	20	34	1: 1.7
Total	483	1583	1 : 3.3

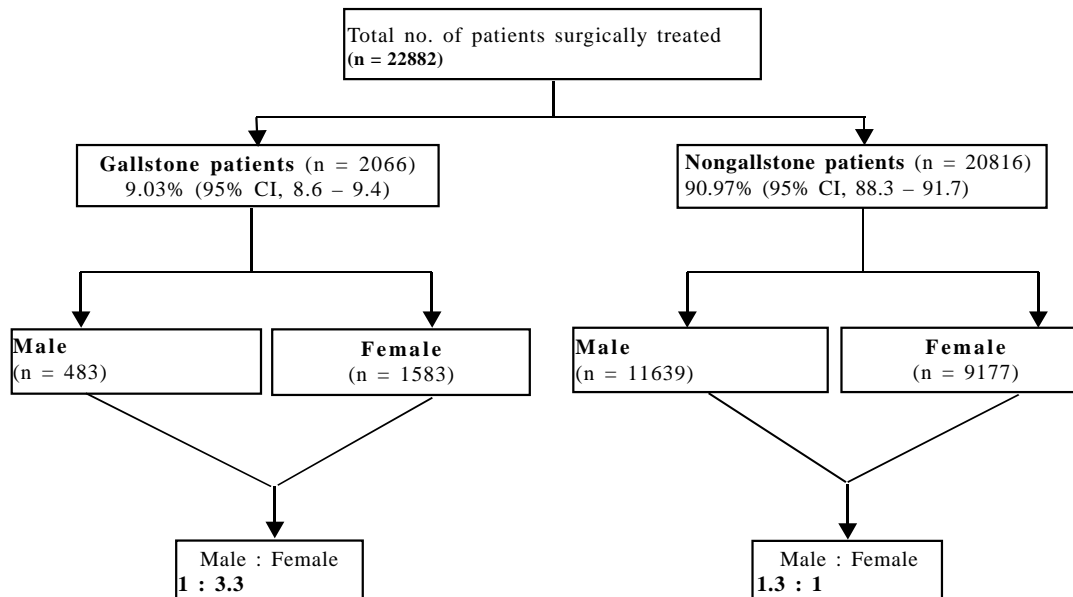


Figure 1: Statistics of patients surgically treated in different hospitals of Hyderabad during Jan. 1999 to Dec. 2001.

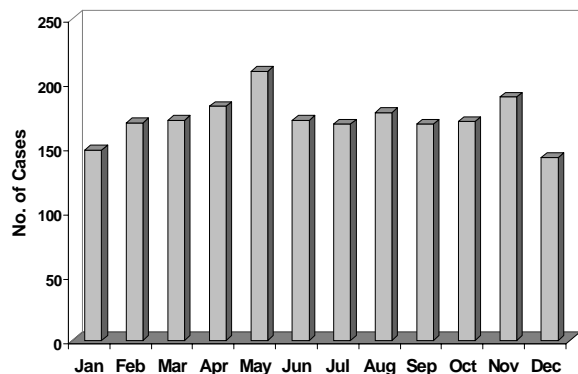


Figure 2: Month-wise presentation of gallstone cases in different hospitals of Hyderabad during 1999 to 2001

### DISCUSSION

All the reports available in the literature show that cholelithiasis is predominantly a female disease. In the present study, the surgical incidence for cholelithiasis amongst male (4.0%) and female (14.2%) patients treated at various hospitals of Hyderabad and adjoining areas is much lower than reported for Netherlands, where it is 39% in males and 50% in females for all age groups<sup>11</sup>. Many of the gallstone patients of Hyderabad and adjoining areas who could not benefit from surgical treatment are being treated in an expectant manner instead. Moreover, many individuals in this area may have asymptomatic gallstone disease as well. Because of these reasons the prevalence of gallstone disease in population may have had little influence on the surgical incidence. The reported prevalence of gallstone disease was 9.2% for Italy<sup>15</sup>, 9.7% for Spain<sup>16</sup>, 28.5% for Chile<sup>17</sup> and 3.1% for Thailand<sup>18</sup>.

The effect of sun (or ultraviolet light) exposure has been implicated in the pathogenesis of cholesterol gallstones<sup>19</sup>. As May is the hottest summer month in this region, hence the highest surgical incidence of cholelithiasis noted in the month of May in present study might be due to the effect of sun exposure of the patients in this month. Moreover, our previous finding<sup>12</sup> that cholesterol gallstones are more common (77.9%) in this area also supports the possible involvement of sun exposure in the pathogenesis of cholesterol gallstones in humans.

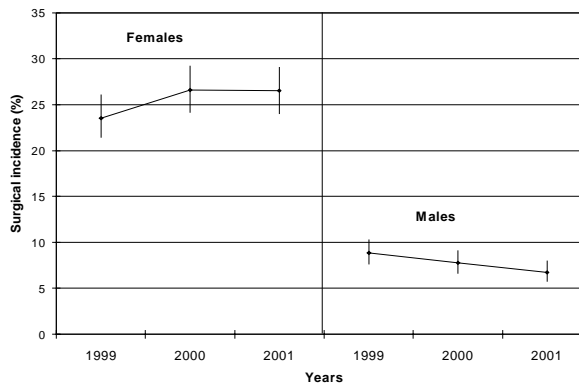


Figure 3: Sex-wise surgical incidence of cholelithiasis in five different hospitals of Hyderabad during 1999 to 2001.

In the present study, the peak age range for the occurrence of gallstones in patients of both sexes was found to be 30–59 years, whereas in United States of America and in Europe peak onset of gallstone disease has been reported to be in patients over 60 years age.<sup>20,22,24</sup> This earlier onset of gallstone disease in our patients as compared to the Americans and Europeans<sup>20-24</sup> seems to be associated with longer summer and faulty dietary habits of the population. This aspect however needs to be addressed in more details.

Present study also showed that in both sexes, hospitalization of patients for gallstones was rare upto 14 years age, and increased significantly with age, more so in females, and peaked in 30–44 year age group for females and 45–59 for males and thereafter declined gradually. The highest sex difference (Male to female ratio: 1 to 4.6) in the occurrence of gallstones was seen in patients between 30–44 years age. This sex related difference in the incidence of gallstones could be linked with pregnancy and female sex hormones, since pregnancy and female sex hormones increase blood cholesterol level that returns to normal after parturition and during or within a few days of menstrual period<sup>24</sup>. The male to female ratio (1: 3.3) seen in present study is different from the male to female ratio (1:5.3) observed in Mexican Americans<sup>20</sup> and (1:16.6) in Pima Indians<sup>25</sup>.

The increase observed in the surgical incidence of gallstones in females during the three

years period (Fig. 3) merits observations for longer period during which information about the use of oral contraceptives should also be obtained. However, an increase in the surgical incidence of gallstone cases in females could also be due to greater awareness of general population about the innocuous surgical treatment of gallstones.

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