Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 **VOL14, ISSUE 12, 2023**

Clinical Profiling of Cholelithiasis Patients at a Tertiary Care Facility: A Cross-Sectional Study

Dr Nehal Sisodiya[1], Dr Hiren Nanjibhai Judal[2], Dr Manish Nagendra[3], Dr Mujtaba Nausheen[4*]

[1]Assistant Professor, Department of General Surgery, Dr. N. D. Desai Faculty of Medical Science and Research, Nadiad, Gujarat, India
[2]Associate Professor, MS General Surgery, Department of General Surgery, Banas Medical College & Research Institute, Moriya, Palanpur
[3]Associate Professor, Department of Microbiology, NSCB Medical College Jabalpur, MP
[*4]Assistant Professor, Department of Physiology, Parbhani Medical College, RP Hospital & Research Institute, Pedgaon, Parbhani, Maharashtra

***Corresponding Author: Dr Mujtaba Nausheen**

Abstract

Background and Objectives: Cholelithiasis represents a persistent, recurrent condition affecting the hepatobiliary system. Globally, gallstones stand as a primary contributor to both morbidity and mortality. Approximately 10% of adults grapple with gallstones, a prevalence exacerbated by recent shifts in dietary patterns. This investigation endeavours to assess demographic variables, diverse presentation modalities, treatment methodologies, and subsequent outcomes.

Methodology: A prospective analysis involving 123 patients diagnosed with cholelithiasis was conducted over one year. Parameters such as epidemiological factors, clinical profiles, diagnostic investigations, treatment modalities, and outcomes were meticulously scrutinized.

Results: The average age of the cohort was 36.95 years, with a female-to-male ratio of 1.41:1. Predominantly, pain in the abdomen emerged as the most prevalent symptom. Ultrasonography consistently revealed the presence of gallbladder stones in all patients, with 30.89% undergoing open cholecystectomy and 65.04% opting for laparoscopic cholecystectomy. The conversion rate from laparoscopic to open cholecystectomy was 5%. The mean postoperative stay for laparoscopic cholecystectomy was 3 days, whereas open cholecystectomy necessitated an average stay of 7 days.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Conclusion: Laparoscopic cholecystectomy emerges as a superior surgical intervention, characterized by reduced postoperative pain, a diminished duration of hospitalization, and enhanced cosmetic outcomes.

Key Words: Cholelithiasis, Cholecystectomy, Gallstones, Humans

Introduction

Cholelithiasis stands as one of the most frequently encountered diseases globally and remains a significant contributor to abdominal morbidity. The incidence of gallstone disease has witnessed a surge on a worldwide scale, attributed to profound alterations in dietary patterns and lifestyle choices marked by a heightened consumption of unhealthy diets and increased sedentary behaviours [1, 2].

In India, the prevalence of cholelithiasis is estimated to range from 2% to 29%, with a more pronounced presence in the northern states compared to the southern regions [3,4]. This prevalence, however, varies markedly across different parts of the world. In India, the estimated prevalence is around 4%, while in the Western world, it reaches 10% [5]. Gallstones often come to light incidentally in patients without apparent biliary symptoms, detected through ultrasonography, CT scans, abdominal radiography, or during laparotomy. Numerous studies have explored the probability of developing biliary colic or encountering significant complications associated with gallstone disease. Approximately 3% of asymptomatic individuals progress to symptomatic states annually, experiencing episodes of biliary colic. Once symptomatic, recurrent bouts of biliary colic are common, and complicated gallstone disease emerges in 3 to 5% of symptomatic patients each year [6].

In the United States, an estimated 20 million individuals grapple with gallstones, and around 1 million new cases of cholelithiasis arise annually. Prevalence in Europe, as per autopsy studies, is 18.5%, with the lowest prevalence in Ireland (5%) and the highest in Sweden (38%). Australia reports prevalence rates ranging from 15% to 25%. The Pima Indian tribe of Arizona

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

exhibits the highest prevalence, with total and female prevalence reaching 49% and 73%, respectively. Conversely, gallstones are infrequent in Africa, with a prevalence of less than 1%, and in Japan, the prevalence has increased from 2% to 7% [6, 7].

This study aims to explore the clinical presentation and management of patients with cholelithiasis admitted to a tertiary level Indian Hospital. The objectives include an investigation into the epidemiological aspects of cholelithiasis, an analysis of its clinical presentation, and an assessment of the outcomes resulting from various treatment modalities employed at the medical facility. Additionally, the study seeks to compare the postoperative outcomes between open and laparoscopic cholecystectomy. This comprehensive investigation aims to contribute valuable insights to the understanding and management of cholelithiasis in the specified medical context.

Material and Methods

This prospective cross-sectional descriptive study, conducted at a tertiary level Indian Hospital, spanned a period of one year. The research, comprising 123 cases treated on an inpatient basis. Inclusion criteria encompassed all cases of cholelithiasis admitted to the mentioned medical facility, while exclusion criteria included non-consenting patients, individuals with common bile duct stones, pregnant individuals, and those with gallbladder or hepatobiliary tract malignancy. The study focused on patients presenting with dyspepsia, acute or chronic cholecystitis, or pancreatitis, confirmed through abdominal ultrasound revealing gall bladder calculi.

Parameters assessed included demographic details, past medical history, risk factors, and dietary habits. Each consenting patient underwent a thorough examination and relevant investigations, with treatment modalities (open or laparoscopic cholecystectomy) determined by clinical and operative criteria. Postoperatively, all patients received antibiotics and standard care, and any complications were diligently monitored. Adequate guidance on postoperative

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

care, dietary recommendations, and regular follow-up visits to the surgical outpatient department were provided to the patients.

Results

The average age of the individuals included in the study was 36.95 ± 8.74 years. The study comprised 58.54% males and 41.46% females. The predominant proportion of patients fell within the 31-40 years age bracket, as outlined in Table 1.

Abdominal pain and tenderness emerged as prominent clinical manifestations within the cohort under investigation. Additionally, certain subjects exhibited accompanying symptoms such as nausea, vomiting, dyspnea, guarding rigidity, and fever. It is noteworthy that a subset of individuals presented with a combination of these clinical findings, as delineated in Table 2. The prevalent comorbid conditions in the studied population included hypertension and diabetes. Notably, approximately 36% of the subjects exhibited some form of addictive behavior.

The predominant USG findings among the study subjects included multiple stones and multiple stones with a thickened gallbladder, as elucidated in Table 3. A majority of patients underwent Laparoscopic Cholecystectomy, as indicated in Table 4, with an average operating time of 52 minutes. It is noteworthy that wound infection emerged as a more significant complication in open cholecystectomy compared to laparoscopic cholecystectomy, a distinction confirmed by chi-square test ($p < 0.05$).

Table 1: Age and gender wise distribution of study participants

Age group (in years)	Female		Male	
	n	%	n	%
11-20	2	1.63	0	0.00
21-30	14	11.38	17	13.82
31-40	38	30.89	18	14.63
41-50	11	8.94	7	5.69
51-60	6	4.88	5	4.07
>60	1	0.81	4	3.25
Total	72	58.54	51	41.46

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Table 2: Clinical presentation of cholelithiasis cases

Clinical presentation	**n**	**%**
Abdominal lump	0	0.00
Abdominal Pain	111	90.24
Abdominal tenderness	102	82.93
Dyspepsia	57	46.34
Fever	17	13.82
Guarding/Rigidity	25	20.33
Jaundice	11	8.94
Nausea/Vomiting	69	56.10
Risk factors present		
Alcohol	10	8.13
Diabetes Mellitus	10	8.13
Hypertension	14	11.38
Smoking	22	17.89
Tobacco	18	14.63
Non-Vegetarian Diet	64	52.03
BMI (mean ± SD)	26.45 ± 3.56	

Table 3: USG findings in cholelithiasis cases

USG finding	**n**	**%**
Multiple stones	42	34.15
Multiple stones + Thickening of GB	38	30.89
Single stone + Thickening of GB	36	29.27
Single stone	7	5.69

Table 4: Treatment of cholelithiasis cases

Treatment Approach	**n**	**%**	**Mean Operative Time (Minutes)**
Laparoscopic Cholecystectomy	80	65.04	52
Open cholecystectomy	38	30.89	118
Laparoscopic converted to Open cholecystectomy	5	4.07	155

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Table 5: Post-operative parameters in cholelithiasis cases

Post-operative parameters	Cholecystectomy		Total
	Laparoscopic (n)	Open (n)	
Wound Infection	5	7	12
Bile leakage	1	1	2
Bile Duct Injury	1	1	2
Total	7	9	16
Hospital Stay (mean ± SD)	3.56 ± 2.57	7.61 ± 2.71	$p < 0.05$

Discussion

Cholelithiasis stands as a frequently encountered ailment, representing a significant contributor to abdominal morbidity worldwide. The global surge in gallstone disease incidence is attributed to substantial shifts in dietary patterns, the prevalence of high-junk diets, and an augmented sedentary lifestyle [1,2].

A notable observation in our study was the preponderance of patients in the 4th and 5th decades, indicating an early onset of gallstone disease in the Indian population. This finding aligns with studies conducted by Bhatti in Lahore, Pakistan, and Muthalaisamy in Trichy. However, Veerbhadrappa in Madhya Pradesh reported an increased incidence in the 5th and 6th decades in India [8-10].

In our study, females constituted 41%, while males accounted for 59%. This distribution contrasts with Battacharya's series [11], which reported 71.4% females and 28.6% males. This sex preponderance favoring females is consistent with findings by Tamhankar AP [12], Ganey et al. [13], and Major Alok Sharma et al. [14]. The latter series indicated 70% males and 30% females.

Our study revealed a high mean BMI, aligning with Shukrya Kamil Khalaf's 2016 study, which independently associated increased BMI with a higher gallstone risk [9]. Similar associations between elevated BMI and heightened risk of symptomatic gallstone disease were noted in studies by Talseth in Sweden in 2016 and Stender in 2013 [15, 16].

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

Abdominal pain and tenderness emerged as primary clinical features among the participants in our investigation. Predominantly, the right hypochondrium was identified as the most frequent site of pain, followed by the epigastrium. Similar clinical presentations were observed in prior studies conducted by Alok Sharma, Ganey, Goswitz, et al. [13,14,17]. Ultrasound scanning was performed on all subjects, revealing the presence of gallstones in the gallbladder. Our study findings exhibited significant resemblance to the investigations conducted by Major Alok Sharma et al. [14].

Laparoscopic Cholecystectomy was conducted on approximately 65 patients, while open cholecystectomy was performed on 38 patients. The conversion rate from laparoscopic to open cholecystectomy stood at 5%, consistent with the findings of previous studies [18, 19].

In our present study, wound infection emerged as the most prevalent complication, followed by bile duct injury and bile leakage. No complications were reported during the follow-up period for any patient. Due to the limited duration of the follow-up, further details cannot be provided. Our study underscores the need for broader investigations involving larger populations to comprehensively ascertain the prevalence rate and optimal management strategies for individuals dealing with cholelithiasis.

Conclusion

Ultrasonography emerged as the preferred diagnostic tool, consistently revealing multiple gallstones and gallbladder thickening in the majority of cases. Notably, laparoscopic cholecystectomy demonstrated advantages over its open counterpart, showcasing reduced hospital stays, diminished pain, and lower disability levels.

References

1. Haribhakti SP, Mistry JH. Techniques of laparoscopic cholecystectomy: Nomenclature and selection. J Minim Access Surg. 2015;11(2):113 – 8.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

2. Johnston DE, Kaplan MM. Pathogenesis and Treatment of Gallstones. N Engl J Med. 1993;328(6):412-21.
3. Tendon R. Diseases of gallbladder and biliary tract-API Textbook of Medicine. 7th ed. Shah DSN, editor. 2003;642-4.
4. Unisa S, Jagannath P, Dhir V, Khandelwal C, Sarangi L, Roy TK. Population-based study to estimate prevalence and determine risk factors of gallbladder diseases in the rural Gangetic basin of North India. Hpb. 2011;13(2):117 –25.
5. Tandon R. Diseases of Gall Bladder and Biliary Tract. In: API Textbook of Medicine, Shah SN, ed. 9th ed. Mumbai: API Publications; 2012 Apr. p.911.
6. Cuschieri A. Disorder of the biliary tract. In: Textbook of Surgery. 4th ed. Philadelphia: Arnold Publication; 2002. p.375-453.
7. Kimberly D, Saunders MD. Pathogenesis of gallstones. Surg Clin North Am. 1990 Dec;70:1197-216.
8. Muthalaisamy DP, Rajachidambaram DK, Karthick DP. Clinicopathological evaluation of cholelithiasis and management strategies at a tertiary care hospital. Glob J Res Anal. 2018;6(12):90-4.
9. Bhatti A, Waqar A, Zia S, Hussain N, Zulfiqar T. A cross-sectional study on the risk factors of gallbladder stone. Int J Res Med Sci. 2016;4(11):5041–6.
10. VP S, Tank P, Singh A, Goel S, Nathwani P. A study of gallstone disease from a tertiary care center of Madhya Pradesh, India. Int Surg J. 2017;4(2):728.
11. Battacharya R. Cholecystectomy in West Port, New Zealand. Indian Journal of Surgery. 1983 Aug;450-5.
12. Tamahankar AP. The fate of gallstones: Traditional practice questioned. Ann Coll Surg Engl. 2003;85:102-4.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

13. Ganey JB, Johnson PA Jr, Prillaman PE, McSwain GR. Cholecystectomy: clinical experience with a large series. Am J Surg. 1986 Mar;151(3):352-7.
14. Sharma A. Towards a safer cholecystectomy – the fundus to porta approach. Indian Journal of Surgery. 1997 Jun;141-5.
15. Talseth A, Ness-Jensen E, Edna T-H, Hveem K. Risk factors for requiring cholecystectomy for gallstone disease in a prospective population-based cohort study. Br J Surg. 2016;103(10):1350–7.
16. Stender S, Nordestgaard BG, Tybjaerg-Hansen A. Elevated body mass index as a causal risk factor for symptomatic gallstone disease: A Mendelian randomization study. Hepatology. 2013;58(6):2133–41.
17. Goswitz JT. Bacteria and biliary tract disease. Am J Surg. 1974;128:644.
18. Lokesh K, Siddavaram S. A clinical study of gallstone disease. J Evid Based Med Heal. 2017;4(94):5789-97.
19. Shah P, Shahi S, Vishwambharan V, et al. A clinical study of all the cases of cholelithiasis getting admitted in the department of General Surgery, Dr. D Y Patil Medical College, Hospital & Research Centre Pimpri, Pune. European Journal of Molecular & Clinical Medicine. 2023;10(1):957-970.