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General Surgery

A Comparative study of Laparoscopic Cholecystectomy and Open Cholecystectomy for the Management of Cholelithiasis

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Original Research Article

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Abstract: The incidence of gallbladder stones is increasingly becoming common in adult patients in today's world due to fast changing of food habits. General surgeons often see such patients in surgery clinics; therefore, they must have complete knowledge regarding the disease and its management. We in the present study tried to evaluate the outcomes of the treatment of cholelithiasis by laparoscopic Cholecystectomy and open Cholecystectomy methods in different patients. Methods: The study was conducted in the Department of General Surgery, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical committee permission was obtained for the study. A total number of 50 patients were included in the study. Based on the previous conditions and type of presentation (n=26) patients underwent open cholecystectomy and (n=24) underwent laparoscopic cholecystectomy. Results: pain was the commonest symptom presenting in 49 patients, 28 patients had nausea and vomiting, 7 patients had jaundice. Out of 26 patients who underwent open cholecystectomy, 17 patients were operated through a right subcostal incision, 8 patients were operated through a right paramedian incision and 1 patient through a right transverse incision. The operating room time for open cholecystectomy was 65 min and lap cholecystectomy was 115 min. 48 patients were reported has had chronic cholecystitis, 2 patients had acute cholecystitis and no case of malignancy was noted on histopathology examination. 1 patient had postoperative bile leak which was managed conservatively and the patient recovered. 2 patients had bile duct injury which was repaired on the T-tube. Conclusion: it can be concluded that Laparoscopic cholecystectomy is now becoming the choice of treatment for cholelithiasis because of advantages like minimal complications and minimal duration of postoperative stay in the hospital. However, this does mean that open cholecystectomy should not be undertaken whenever there is an indication for it.
Keywords: Laparoscopic Cholecystectomy, Open Cholecystectomy, Cholelithiasis.

INTRODUCTION

Cholelithiasis is a most common biliary pathology. Gallstones are commonly present in 10-15% of the population and in a majority (>80%) of the people they remain asymptomatic. It was also known that such jaundice could be caused by the wrong diet. The prevalence of gallbladder stone varies widely in different parts of the world. In India, it is estimated to be around 4%. An epidemiological study restricted to railroad workers showed that North Indians have 7 times higher occurrence of gallstone as compared with South Indians [1]. There has been a marked increase in the incidence of the gallstone in the west during the past century [2]. It is estimated that at least 20 million persons in the United States have gallstones and that approximately 1 million new cases of cholelithiasis develop each year [3]. Prevalence in Europe is 18.5% from the autopsy studies with the lowest prevalence from Ireland [5%] and the highest from Sweden [38%]. In Australia, the prevalence rate varies from 15% to 25%. It has the highest prevalence in Pima Indian tribe of Arizona with a total and female prevalence of 49% and 73% respectively [2, 4]. Gallstones are rare in Africa with the prevalence of less than 1% and in Japan, it has been increased from 2% to 7% [2]. Cholelithiasis is rare in first 2 decades of life and incidence generally increases after 21 years reaching the peak in 5^{th} and 6^{th} decade of life and women are more affected than men in the ratio of 4:1 [5]. Diagnosis of gallstone is by proper history and physical examination and combining it with an appropriate investigation which varies from surgeon to surgeon and hospital to hospital and country to country. In 1992 the NIH consensus development conferences state that laparoscopic cholecystectomy "provides a safe and effective treatment of patients with symptomatic gallstones" [6]. Since the introduction of laparoscopic cholecystectomy, the numbers of surgeries performed in the US has increased from 5 lakhs per

year to 7 lakhs per year [7]. There we in the present study tried to evaluate the outcomes of both open cholecystectomies versus laparoscopic cholecystectomies in this group of patients.

MATERIALS AND METHODS

The study was conducted in the Department of General Surgery, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical committee permission was obtained for the study. A total number of 50 patients were included in the study. Written consent was obtained from all the patients. Risk and complications of the condition, as well as surgery, has been explained to the patients, concern was taken. In this study based on the previous conditions and type of presentation (n=26) patients underwent open cholecystectomy and (n=24) underwent laparoscopic cholecystectomy. History of all the 50 cases was taken according to the proforma approved by the guide. Information regarding the age, socioeconomic status, nature of the symptoms, and duration of the symptoms, past history of similar complaints, diet history, and history of OCP was obtained. H/o Alcohol ingestion, diabetes were obtained. All patients' undergone detailed examination, all patients had haemogram, ECG, LFT, blood sugar, blood urea, serum creatinine, urine analysis, blood group, chest x-ray, an ultrasound scan of the abdomen. Relevant investigations and specialty consultations were taken for patients with associated medical illness and their control was achieved.

For Laparoscopic cholecystectomy preoperative antibiotics, such as a first-generation cephalosporin, can be used routinely or reserved for patients with medical risk factors and those with evidence of recent cholecystitis. The procedure is performed under general or epidural anesthesia. Two video monitors are used; these are placed on the right and left the side of the operating table to allow the surgical team members on the opposite side an adequate view of the procedure. It is best if the monitors are placed as close to the head of the patient as possible and at the eye level of the operating surgeon. After performing the routine surgery the patient is moved to the recovery room the nasogastric tube is removed from the operating room, and the Foley's catheter is removed in the recovery room. The patient is monitored in the recovery room and given pain medication as needed, although generally, none is required.

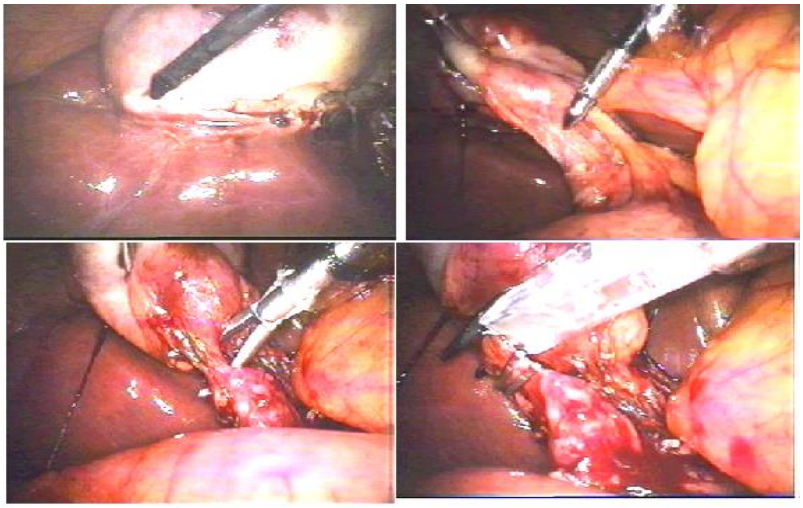

Fig-1: showing the Laparoscopic view of dissection of the gallbladder, Calots triangle, cystic duct dissection, application of clips to cystic duct

For an open method, the incisions most commonly advocated are the right upper paramedian, Kocher's right subcoastal or a midline incision. Cholecystectomy is performed through a 5 cm transverse incision using special instruments and a suitable ring retractor for exposure. The gallbladder wall is excised from the fundus to cystic duct leaving in situ or all of the gallbladder wall which lies directly in relation to the liver and porta hepatis. A subhepatic tube drain was used in patients who undergone open cholecystectomy and connected to the urosac bag. The abdominal wound was closed in layers.

RESULTS

This study includes a total of 50 cases that were studied prospectively. There is an increased incidence of cholelithiasis in the 5th and 6th decade with the peak in the 5th decade. In this study, the youngest patient was 15 years old and the oldest patient is 72 years old shown in table 1. In this study 30 patients were female and 20 patients were male. The present study shows gallstones diseases are a common problem in the female population. The female to male ratio is 3:2.

Table-1: showing the profile of patients involved in the study

Age in years	Number of patients	percentage
11 - 20	1	2%
21 -30	5	10%
31 -40	9	18%
41 - 50	17	34%
51 - 60	11	22%
>60	7	14%

In present study pain was the commonest symptom presenting in 49 patients, 28 patients had nausea and vomiting, 7 patients had jaundice, dyspepsia was present in 12 patients and fever was present in 4 patients, 48 patients had tenderness in the right hypochondrium and pain was the predominant sign, 15 patients had guarding and 4 patients had mass in the right hypochondrium shown in table 2. Ultrasound scanning of the abdomen was done in all patients. 43 patients had a stone in the gallbladder, 7 patients had a stone in both gallbladder and common bile duct (table 3). In the study, 26 patients underwent laparoscopic cholecystectomy and 24 patients underwent open cholecystectomy. Out of 26 patients who underwent open cholecystectomy, 17 patients were operated through a right subcostal incision, 8 patients were operated through the right paramedian incision and 1 patient through a right transverse incision. The operating room time for open cholecystectomy was 65 min and lap cholecystectomy was 115 min.

Table-2: Presenting symptoms/signs of the patients

symptoms/signs	No of cases	%
Pain	49	98
Nausea/Vomiting	28	56
Jaundice	7	14
Dyspepsia	12	24
Fever	4	8
Tenderness	48	96
Guarding	15	30
mass	4	8

Table-3: Ultrasound findings in the patients

Finding on ultrasonography	Number of cases	percentage
Stones in gallbladder	50	100
Solitary stone	12	24
Multiple stones	38	76
Bile duct stones	7	14
Thickening of gallbladder	40	80
Dilated bile duct	6	12
Mass	4	8

In the Study 48 patients were reported has to have chronic cholecystitis, 2 patients had acute cholecystitis and no case of malignancy was noted on histopathology examination. Three patients had wound infection. 1 patient had postoperative bile leak which was managed conservatively and the patient recovered. 2 patients had bile duct injury which was repaired on the T-tube table 4.

Table-4: Intraoperative and postoperative complications

Intraoperative complication	Open cholecystectomy	Lap cholecystectomy	Total
Bile duct injury	1	1	2
Postoperative complication			
Wound infection	2	1	3
Hemorrhage	0	0	0
Retain stone	0	0	0
Bile leak	1	0	1
Prolong ileus	0	0	0
Total complications	4	2	6

DISCUSSION

In this study, most of the cases were from 15 – 72 Yrs age group. There is an increased incidence in the 5th & 6th decade with the maximum incidence in the 5th decade. Similar incidence is seen in the studies of Herman *et al*. [8], Hanif G [9] series showed peak incidence in the 5th decade. In western countries, the peak incidence is usually in the 5th & 6th decades. The rise in the peak age of incidence is due to change in the dietary factor. Similar findings are noted in the studies of Ganey *et al*. [10], Moreaux *et al*. [11]. In the present study, 30 out of 50 cases were female while the rest 20 were male. Bhattacharya R [12] series showed 71.4% were female, 28.6% were male. Similar sex preponderance in the favor of females was noted by A.P Tamhankar *et al*. [13], Ganey *et al*. [10]. The pain was the predominant symptoms in the present study with 98%. The commonest site of pain was in the Rt. Hypochondrium, & the next commonest site was Epigastria. 5 patients complained of pain radiating to the back. 48 patients had chronic recurring pain, 2 patients had acute onset of pain, and the pain was colicky in nature. 13 patients had dull aching pain, 33 patients had Colicky pain. Similar presentations were noted in the other studies [10, 14, 15]. 28 patients (56%) of cases in the present series had nausea/ vomiting. Vomiting was spontaneous, occurred mostly during the attack of pain. Vomiting in this study was similar to Ganey *et al.* [10] series. In the present study 7 patients had jaundice. Fever was present in 4 cases in the present study. Fever was secondary to cholangitis due to Billary obstruction. The fever occurred as a part of Charcot's triad. Fever was of moderate degree. All the patients were treated conservatively. In the present study 26 patients underwent open cholecystectomy & 24 patients underwent Lap cholecystectomy. The conversion rate from lap to open cholecystectomy was 4%. This was similar to Sujit VS who found 5% conversion rates [16]. The operative room time for open cholecystectomy was ranged from 55min to 100 min, with approximate average time being 65 min, & lap cholecystectomy was ranged from 100 min to 130 min, with approximate average time being 115 min. Which were similar to study of Balazs IL *et al*. [17] for open cholecystectomy, 100 min for lap cholecystectomy? Operating room time for open cholecystectomy in this study was also similar to the other studies. In the present study wound infection was the most common complication, which was 6%. The wound infection rate in the study of Chesley R *et al*. [18] in 554 cases found SSI was 1% the increase in percentage in our study may be because of small sample size. 1 patient had bile leakage through the drain tube, the patient was managed conservatively and the patient improved. In this case drain was removed on the 7th day. There was no problem in the follow up period in any patient.

CONCLUSION

Within the limitations of the present study, it can be concluded that Laparoscopic cholecystectomy is now becoming the choice of treatment for cholelithiasis because of advantages like minimal complications and minimal duration of postoperative stay in the hospital. However, this does mean that open cholecystectomy should not be undertaken whenever there is an indication for it.

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