

FREQUENCY OF CONVERSION TO OPEN CHOLECYSTECTOMY IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY: - A RETROSPECTIVE ANALYSIS

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ABSTRACT

Objective: To determine the frequency of conversion to open cholecystectomy in elective cases that underwent laparoscopic procedure.

Material and Methods: This was a retrospective study conducted in surgical department of Northwest General hospital and research center, Peshawar-Pakistan. All the cases were performed by a single experienced general and laparoscopic surgeon. All patients who underwent Laparoscopic Cholecystectomy (n =531) from September 2012 to April 2018 were identified from the medical records maintained in the Health Information and Management System. They were considered as 'converted' if Laparoscopic Cholecystectomy was started initially but due to any reason it could not be continued safely and a conversion to open was necessitated. Cases that required conversion to open procedure in laparoscopic cholecystectomy were analyzed. the frequency of conversion to open and the factors responsible for such conversion were also noted.

Results: A total of 531 patients were included in the study. The mean age was 48.82 years with a standard deviation (SD) of 15.06 years. Gender distribution of patients was analyzed and showed that 115(21.7%) of those recruited were male and the majority 416 (78.3%) were female. All patients were given standard laparoscopic surgery protocol under general anaesthesia. Fifty four [n=54(10.2%)] patients were converted to open cholecystectomy whereas, 477(89.8%) ended up with planned laparoscopic procedure.

Conclusion: The conversion rate to open cholecystectomy in laparoscopic cholecystectomy in our study was 10.2%. The most common cause of conversion was gall bladder empyema and adhesion around gall bladder.

Key Words: Laparoscopic, cholecystectomy, Open, Cholecystectomy.

This article may be cited as: Ummair M, Khan MF, Khalil A, Waheed R, Shah AA. Frequency of conversion to open cholecystectomy in patients undergoing laparoscopic cholecystectomy: - a retrospective analysis. J Med Sci 2019; 27: (2) 120-124.

INTRODUCTION

Laparoscopic cholecystectomy is the most common, minimal invasive procedure in general

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Date Received: 06 November, 2018

Date Revised: 05 May, 2019

Date Accepted: 20 May, 2019

surgery and has replaced the invasive procedure of open cholecystectomy in the treatment of gall stones. Gallstone disease is a major health problem worldwide, particularly in the adult population. Its prevalence rate varies in different populations^{1,2}. Since the performance of the first open cholecystectomy by Carl Langebuch of Germany (1846–1901) and the first laparoscopic cholecystectomy by Prof. Erich of Germany (1882), the management of cholelithiasis and cholecystitis has undergone a major breakthrough^{3,4}. Numerous studies have since then proven the supremacy of laparoscopic

cholecystectomy over open cholecystectomy in terms of lesser degrees of surgical stress and inflammatory response, shorter hospital lengths of stay, lower morbidity, and substantially lower overall costs⁵. Laparoscopic cholecystectomy being a newer method of surgery has its own limitations in terms of steep learning curve, availability of instruments and dependence of sight only etc, sometimes becomes less efficient way of operating on patients with gall stones disease. So there come the need for conversion to open method, which being one the most common procedures performed by a surgeon is more reliable and has more options available in cases of complications in laparoscopic technique. The conversion rates depend on the acuteness of gall stone disease, skill level of surgeon and anatomy of the biliary tract^{6,7}. There has been a lot research done by different people about the rates of conversions in different areas of the world. We wanted to know our hospitals rates of conversion for elective cases with presumed less acuteness of the disease.

MATERIAL AND METHODS

To determine the frequency of conversion from laparoscopic cholecystectomy to open cholecystectomy, this retrospective cross sectional study was conducted in surgical department of Northwest General Hospital and Research centre Peshawar. All the cases were performed by a single experienced general and laparoscopic surgeon. All patients who underwent Laparoscopic Cholesystectomy (n =531) from September 2012 to April 2018 were identified from the medical records maintained in the Health Information and Management Systems. Patient-specific characteristics that were retrieved included age, sex, co-morbidities and a history of prior abdominal surgery. All patients over 20 years of age with diagnosis of choletithiasis is and having no contra-indication for general anesthesia were included and Patients data with pathologically detected malignancies or gallbladder polyps, Cirrhosis, massive ascites and bleeding diathesis were excluded from the study. Patients were admitted through out-patient clinic, preoperative fitness assessment was done before surgery. All routine laboratory tests including complete blood count, Blood Sugar random, Liver Function Tests, renal profile, and Hepatitis B and C virology were performed. Ultrasound abdomen and pelvic was performed in all patients and used as a tool for exclusion criteria done in every patient to confirm gallstones and to assess the common bile duct (CBD) diameter. In addition ECG and Chest X-ray were also carried out in all patients above forty.

They were considered as 'converted' if Laparoscopic Cholecystectomy was planned but due to

difficult anatomy, presence of empyema, severe Adhesions, gangrene gall bladder, perforation, difficulty in extraction or perioperative complications conversion was necessitated and the reason for conversion was retrieved from the patient's medical record maintained in health information system .

RESULTS

All patients who underwent Laparoscopic cholecystectomy (n =531) from September 2012 to April 2018 were identified from the medical records maintained in the Health Information and Management Systems. Patient-specific characteristics that were retrieved from medical record were analyzed by Statistical Package for the Social Sciences (SPSS) version 16. A total of 531 patients were recruited from the period of September 2012 to April 2018. The age distribution was between 20 years to 80years. Gender distribution among the 531 patients was analyzed and showed that 115(21.7%) of those recruited were male and the majority 416 (78.3%) were female(Figure:-1). Further analysis revealed that 58(10.9%) patients were between the ages of 20-29 years, 107 (20.1%) patients were between 30-39 years, 110(20.7%) patients were between 40-49 years, 120(22.5%) patients were between 50-59 years and 136(25.6%) patients were above the age of 60 years (Figure :2) The male to female ratio being 1:3. The mean age for both sexes was 48.82 ± 15.06 years. Further elicited history indicated that nobody had previous abdominal surgeries. All patients underwent standard laparoscopic surgery protocol under general anaesthesia. Fifty four 154 (10.2%) patients were converted to open cholecystectomy where as 477(89.8%) ended up with planned laparoscopic procedure(Figure: 3). Further analysis showed that among 54 patients who were converted to open procedure 21 (15.4%) patients out of 136 total patients in above 60 years old age group were converted to open procedure , 14 (11.6%) patients out of 120 total patients were converted in 50-59 years of age group, 11 (10%) patients out of total 110 patients in 40-49 years, 5(4.6%) patients out of 107 in 30-39 years old and only 3(5.1%) patients out of 58 patient of 20-29 years of age group were converted to open cholecystectomy (Figure : 5) Moreover analysis revealed that among 54 (10.2%) cases who were converted to open procedure 30 (7.2%) patients out of total 416 were from group female while 24(20.8%) patients out of total 115 were from male group(Figure: 4). Analysis regarding the reasons of conversion to open procedure in total 54(10.2%) converted cases showed that 20 (3.7%) patients had severe adhesions, 15 (2.8%) patients had gall bladder empyema/gangrene, 10 (1.8%) patients had difficult dissection due to difficult anatomy. 05 (0.94%) patients had gall bladder perforation and 04(0.7%)

Frequency of conversion to open cholecystectomy in patients undergoing laparoscopic cholecystectomy....

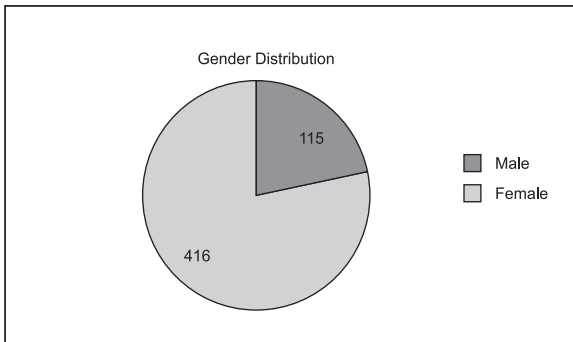


Fig 1: Gender distribution in total number of patients with gall bladder stones

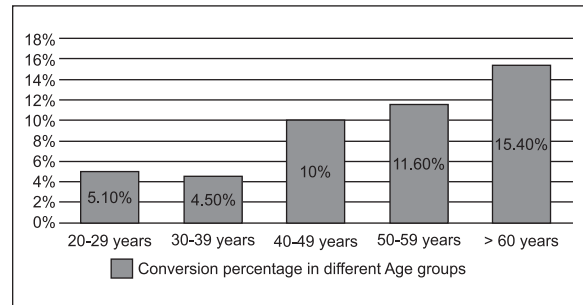


Fig 5: Percentage of conversion rate in different age groups

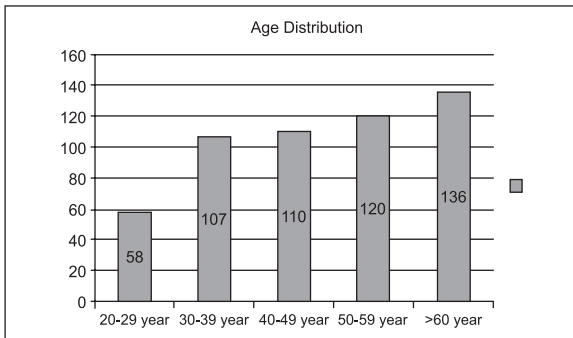


Fig 2: Age distribution in total 531 patients

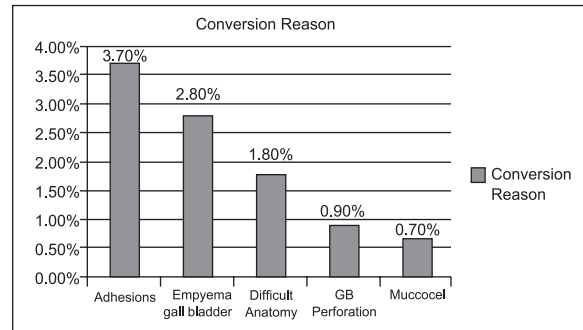


Fig 6: Percentage of various reasons for conversion to open cholecystectomy

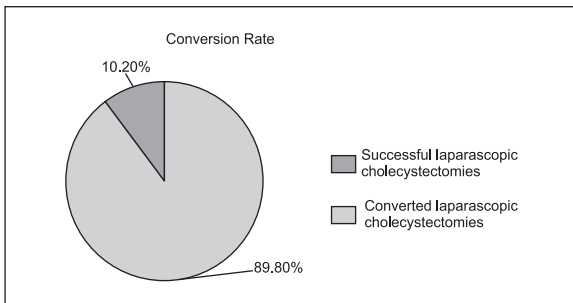


Fig 3: Percentage of laparoscopic cholecystectomies converted to open procedure and the percentage of Successful laparoscopic cholecystectomies

patient had Mucocoele gallbladder. (Figure:-6)

DISCUSSION

Laparoscopic cholecystectomy is the most common minimal invasive procedure in general surgery and has replaced the invasive procedure of open cholecystectomy in the treatment of gall stones. It has less procedure associated complications, less hospital stay, early mobilization, and early hospital discharge^{8,9}. Conversion from laparoscopic cholecystectomy to open cholecystectomy is sometime required for the safety of patient and prevention of complications. This study was undertaken to look at the rate of conversions from laparoscopic cholecystectomy to open cholecystectomy when this was indicated in some of these patients and then to compare the reasons for these conversions to other reported series in literature.

Out of a total of 531 patients undergoing laparoscopic cholecystectomy, the majority 416 (78.3%) were female and 115(21.7%) were males combining a male to female ratio of 1:3, which is similar to various national and international studies¹⁰⁻¹². Memom MR et al, Abdulhussein BJ et al and Awan NA et al observed a male to female ratio of 1:4, 1:3.59 and 1:3.8 respectively¹³⁻¹⁵. In our study the conversion rate was 10.2% of total 531 patients undergoing laparoscopic cholecystectomy, by a single experienced surgeon.

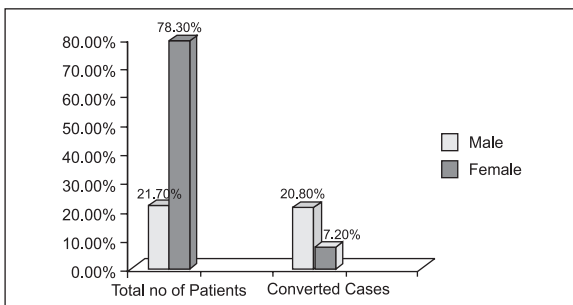


Fig 4: Percentage gender distribution in total number of patients with gall bladder stones and Percentage of conversion rate in male and female

We also observed that conversion rate in male was 20.8%, comparatively higher than 7.2% conversion rate in females. The male gender is associated with a higher likelihood of conversion, which may be due to the more frequent association of pathologically severe disease^{16,17}. In addition it was also noted that laparoscopic cholecystectomy was converted to open procedure more often in patient over 50 years age as compare to patients less than 50 years of age i.e 35(6.6%) patients versus 19 (3.6%) patients.

Similar to other national and international studies, our study also proves that patient specific risk factors such as male gender and old age are predictor of unsuccessful laparoscopic cholecystectomy¹⁸⁻²⁰.

The most common reason for the conversion was severe adhesions seen in 20 (3.7%) patients. 15 (2.8%) patients having gall bladder empyema/gangrene. 10 (1.8%) patients had difficult dissection due to difficult anatomy. 05 (0.94%) patients had gall bladder perforation and 04(0.7%) patients had mucocele gallbladder.

Various conversion rates have been reported in literature ranging from 1.6%-19%^{21,22}. However the rate of conversion is higher in developing countries as compared to developed and western countries Our conversion rate is 10.2% which is similar to most of the conversion rate in developing countries²³. The reason for high conversion rates in Asians and developing countries is lack of availability of latest laparoscopes, lack of proper training in field of laparoscopic surgeries, lack of trained staff to assist surgeons and new laparoscopic setups²⁴.

It is also seen that with increase in experience of a surgeon in laparoscopic surgery, conversion rate decreases in the skilled phase of surgery as compared to the learning curve. Mattioli et al in his study reported a decrease in conversion rate from 10% (learning curve) to 2.8% (skill curve)⁹.

The most common cause of conversion reported in local and international literature was seen dense adhesions around the gall bladder^{2, 3, 4, 9}. In our study adhesions were seen in 3.7%, as the most common cause which is consistent with most of the local studies, In the national studies Jan H et al²² reported 2.38% , Tanveer et al reported 1.78% and Rashid et al reported (2.67%) conversions because of adhesions^{9,21}, However in majority of the international studies the reported rate is low comparatively and it is second or third most common cause followed by acute cholecystitis. The cases of acute cholecystitis were not included in our study

CONCLUSION

High open conversion rate of laparoscopic cho-

lecystectomy was noted in this study. The common reason for conversions was adhesions due to recurrent or severe attacks of cholecystitis, followed by empyema of the gall bladder, anomalous anatomy of biliary tree, perforation resulting in contamination and mucocele gall bladder. Though many of the above are no more indications for conversion but in face of unfavourable factors a relative indication may be sufficient to convert keeping safety of patient in view. It must be kept in mind that conversion is not a complication.

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CONFLICT OF INTEREST: Authors declare no conflict of interest
GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

- Ummair M:** Data retrieving and statistical analysis.
Khan MF: Performed all laparoscopic cholecystectomy cases included in this study.
Khalil A: Manuscript writing.
Waheed R: Bibliography, proof reading.
Shah AA: Assisted cases of laparoscopic cholecystectomy.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.