Original Research Article

Evaluation of predictive factors determining conversion to open cholecystectomy in patients undergoing laparoscopic Cholecystectomy

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Abstract

Aim: Detecting the causes of conversion of laparoscopic cholecystectomy to open cholecystectomy. **Materials and Methods:** The present study has been carried out in a series of 150 cases of chronic calculus cholecystitis that underwent operative interventions in the Department of Surgery, Nalanda Medical College and Hospital, Patna during the period of August2011 to August 2013.**Result:** In the present study of 150 cases, 20 cases (8.3%) were converted to open cholecystectomy. The highest incidence of conversion rate was observed in age group of 61-70 years.Female dominated in the series with the ratio of 2.75%. The presenting features of the cases were mainly flatulent dyspepsia 76% and episodes of pain abdomen 62%. It has been found that patients with features of episodes of pain abdomen have higher incidence of conversion rate of 17.39% than that of flatulent dyspepsia 12.17%.

Conclusion: Our main aim should be to send the patient home in a good healthy status. As the margin of error in our biliary surgery is very narrow, so without increasing postoperative morbidity it will be our better surgical judgment to convert the case to open surgery if laparoscopic surgery is not feasible due to dense adhesion or bleeding.

Keywords: cholescystectomy, gall stone, predictor, risk factor.

Introduction

Cholecystitis is a global phenomenon prevailing more or less all over the world. With the few exception of acute appendicitis, biliary tract disorders are the commonest abdominal condition that the surgeons, gastroenterologists and radiologist encounter. Among the biliary tract disorders, chronic cholecystitis associated mostly with cholelithiasis is the frequently encountered entity which recalls the paraphrase of the dictum – "known gall stones and all else will come to you in biliary surgery' is close to truth.

The epidemiology of chronic cholecystitis mostly parallels with that of cholelithiasis. Specific data on this disease entity is limited. Gallstone disease is very common.

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About 10-20% of the world population will develop gallstones at some point in their life and about 80% of them are asymptomatic[1]. Women of reproductive age or on estrogen-containing contra-ceptives have a two-fold increase in gallstone formation compared to males. People with chronic illnesses such as diabetes also have an increase in gallstone formation as well as reduced gallbladder wall contractility due to neuropathy[2].

At present, laparoscopic cholecystectomy (LC) is considered the treatment of choice for symptomatic cholelithiasis. It has many advantages over open cholecystectomy in terms of minimal postoperative pain, shorter hospital stay, better cosmetics and early recovery. As the experience with LC is increasing throughout the world, selection criteria have become more liberal. Most of the factors like morbid obesity and previous upper abdominal surgery which were considered as absolute contraindication for attempting LC have no longer remained as absolute

contraindications. The number of contraindications has come down significantly over time. Attempts can be made in all cases of gall stone diseases with laparoscopic procedure except for patients with bleeding diathesis, carcinoma gallbladder and patients not fit for general anaesthesia[3]. However, of all laparoscopic cholecystectomies, 1-13% requires conversion to an open for various reasons.[4] Thus, for surgeons it would be helpful to establish criteria that would assess the risk of conversion preoperatively. This would be useful for informing patients and a more experienced surgical team could be assembled when risk for conversion appears significant. Thus this study is conducted at our hospital to detect the predictive factors determining conversion of laparoscopic cholecystectomy to open cholecystectomy.

Materials and methods

The present study has been carried out in a series of 150 cases of chronic calculus cholecystitis that underwent operative interventions in the Department of Surgery, Nalanda Medical college and Hospital, Patna during the period of August 2011 to August 2013.

Inclusion and exclusion criteria

The patients who were suspected of having carcinoma gall bladder and those with severe comorbid conditions making them unfit for general anaesthesia and Laparoscopic surgery (as chronic obstructive pulmonary disease and congestive cardiac failure), were excluded from study.

Ethical approval and informed consent

Ethical approval was taken from the concerned institutional committee for the commencement of the study. Informed written consent was taken from all patients.

Operative technique

Anaesthesia: General Anaesthesia (N2O, O2, Isoflurane), Relaxant, Endotracheal tube with Peri-operative cardiac multiparameter monitoring).

Standard Laparoscopic cholecystectomy technique was used for all patients. A pneumoperitoneum was established by either closed (Blind Puncture) method or open. Use of open technique was surgeon's choice and was preferred in patients with intra-abdominal surgery near umbilicus. All adhesions which impair visualization and retraction of the gall bladder are divided by diathermy. A grasping forceps inserted through the midaxillary trocar grasps the fundus of the gallbladder and firmly retracts it headwards, pointing towards the right shoulder, exposing the body of the gallbladder and the adhesions around the neck of gallbladder. The assistant holds the forceps maintaining the desired degree of traction on the fundus. The left hand forceps (from the subcostal port) grasps the Hartman's pouch and retracts it laterally and outward. With traction on the fundus headwards towards right shoulder, on Hartmann's pouch laterally and upward, and with the duodenum displaced medially by the right hand forceps through the epigastric port, the peritoneal fold of the cystic duct and the cystic artery is placed on the stretch. Anatomy of calot's triangle exposed, cystic artery and cystic duct were dissected from each other clipped separately and divided in between the clips. Gall Bladder was dissected from its bed by electrosurgical hook, spatula and scissors. With diathermy dissection, the stretched areolar tissues with occasional vessels or ductules were divided. The traction of the forceps on the fundus as also the direction and degree of traction of the left hand were constantly altered to keep the area under dissection on the stretch, permitting smooth dissection of the gallbladder. While dissecting the gallbladder from its bed, one may enter a deeper plane going into the liver tissue, or conversely, the gallbladder wall is nicked. Sometimes hepatic venous ooze is difficult to stop with diathermy. Under these circumstances, the dissected gallbladder was used as a tampon and compressed against the liver bed for a few minutes, stopping the bleeding, and a drain was put in sub hepatic fossa.

In all cases Gall bladder was extracted through 10mm epigastric port with the help of extractor. Some big stones were crushed or incision was enlarged to fascillitate extraction. Inflammed G.B was placed into retrieval bag (Inner sterile polythene bag present in Ryle's tube packing before extraction. All ports were removed after complete exit of CO2 and ports sites were closed.

Statistical analysis

Statistical Analysis was performed with help of Epi Info (TM) 7.2.2.2. EPI INFO is a trademark of the Centers for Disease Control and Prevention (CDC). Using this software, basic cross-tabulation, inferences and associations were performed. Chi-square test was used to test the association of different study variables with the study groups.

Results

Table 1: incidence of conversion in the present study

Total no of cases	No of conversion	Percentage
150	20	13.3

Table 2: Dense adhesions around gallbladder obscuring Calot's triangle

Preoperative causes of conversion	Male N (%)	Female N (%)	Total
Dense adhesions around gallbladder obscuring Calot's triangle	2 (1.4%)	10 (6.6%)	12 (8.0%)
Anatomical Variation of Cystic Duct With Distortion of Calot's Triangle	1 (0.6%)	2 (1.2%)	3 (2.0%)
Slippage of Clips From Cystic Artery Lead To Bleeding	1 (0.6%)	1 (0.6%)	2 (1.2%)

Table 3: incidence of conversion according to age

Age	No of patients	No of conversion	Relative probability	Adjusted probability (p value)
0 –10	0	0	-	-
11 –20	5	1	0.2	0.2242
21 –30	18	1	0.0556	0.623
31 –40	36	3	0.0556	0.0623
41 – 50	47	8	0.1702	0.1908
51 –60	29	4	0.1379	0.1546
61 –70	11	3	0.2727	0.3058
71 –80	3	0	0	0
Total	150	20	0.892	1.0000

Table 4: Flatulent Dyspepsia, Episodes of Pain Abdomen, Diabetic patients

Gender	Number of Patients	Number of conversion	Percentage
Flatulent Dyspepsia			
Male	33	2	6
Female	82	12	14.6
Total	115	14	12.17
Episodes of Pain Abdomen			
Male	15	2	13.3
Female	77	14	18.1
Total	92	16	17.39
Diabetic patients			
Male	1	0	0
Female	16	2	12.5
Total	17	2	11.7

Discussion

Chronic calculus cholecystitis is indeed a very common disease and the incidence of the disease is on the rise. Cholecystectomy is the second most common operation performed in the United Kingdom, being only marginally exceeded by appendicectomy (Maingot 1774).[5] Now Laparoscopic procedure has been performed on a regular basis for less than two decades and has become GOLD STANDARD treatment for calculous cholecystitis all over the world. Laparoscopic technique has been increased from 59% in 1992 to 79% in 1999. In Nalanda Medical College and Hospital also it is one of the most common operations performed during the last two years. In the series 150 cases of calculus cholecystitis, the range of age group of the patients was 11-78 years. The disease showed increase prevalence after the age of 40 years the maximum between 41-50 years. But the incidence of conversion rate is higher in the age group of 61–70 years; incidence of conversion in this age group is 27.7%. Our finding of increase prevalence of disease tallies with that of Vijay Pal et al[6,7]. Therefore Old age is one of high risk factors as it is clinically significant. Female dominated in the series with the ratio of 2.75%. This high ratio correlates with the finding of the study conducted by Jaffy in 1933 who found the female: male ratio as 2.5:1

The presenting features of the cases were mainly flatulent dyspepsia 76% and episodes of pain abdomen

62%. It has been found that patients with features of episodes of pain abdomen have higher incidence of conversion rate of 17.39% than that of flatulent dyspepsia 12.17%. Our study tallies with study of Sanabria JRet al. who documented multiple attack (>10) biliary colic P (< 0.01) had great risk of conversion. In our series 11%of patients have long standing history of diabetes mellitus[8]. Though controlled by drugs and insulin, but still the incidence of conversion is higher 11.7%. Our study correlates with study of Cagir Bet al. and is detected to be significant risks factors of conversion due to recurrent inflammation as diabetics are more prone to infection, resulting in dense adhesion calot's triangle[9].In the present study of our 150 cases, the incidence of conversion of laparoscopic cholecystectomy to open cholecystectomy is 13.3%. Over all rate of conversion is 8.3%. The rate of conversion in various studies are Southern Surgeons (1991)[10]; 4.7%, Cuscheieri et al[11] (1991) 3.6%, Soper et al[12] (1992) 2.9%, and Wolfe et al[13] (1991) 3% respectively. Our finding is not similar to the following studies and is quite high as comparable to above studies. But in our institution, we follow the rule of National Institute of Health Consensus Conference on Gallstones and Laparoscopic Cholecystectomy. They have stated that the outcome of Laparoscopic cholecystectomy is influenced to a large extent by the training, experience skill and judgment of the surgeon performing the procedure. Also recommended the laparoscopic cholecystectomy should be promptly converted to open cholecystectomy if there was uncertainty about anatomy, if excessive bleeding occurred or if other problems arose. Conversion under these circumstances should not be viewed as a complication or failure of laparoscopic cholecystectomy, but rather as a reflection of sound surgical judgment.

Conclusion

From the entire gamut of the research work conducted it may be aptly stated here with that in the tenure of two year study on 150 selected cases of chronic calculus cholecystitis, it is not practicable to furnish a definite and concrete conclusion on all aspects. But it is evident that the incidence of disease is quite prevalent, clinical features and operative findings were more or less similar to those as has been established by various research scholars. Conversion to open cholecystectomy should not be viewed as a complication or failure of laparoscopic cholecystectomy but rather as reflection of sound surgical judgment.

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Conflict of Interest: Nil

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