LAPAROSCOPIC CHOLECYSTECTOMY AT RAWALPINDI GENERAL HOSPITAL – A CLINICAL PRACTICE AUDIT

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ABSTRACT

Laparoscopic cholecystectomy has been the procedure of choice for the treatment of calculous cholecystitis for over a decade now. In order to evaluate the practices at our own surgical settings, a prospective, clinical practice audit of laparoscopic cholecystectomy was carried out. We described the operating time, duration of hospital stay, frequency of conversion to open cholecystectomy and frequency of intra- and post-operative complications, among 1000 patients undergoing laparoscopic cholecystectomy at Surgical Unit-I, Rawalpindi General Hospital and at the author's Surgical Clinics from January 1998 to December 2007.

Results: There were 883 females and 117 males. Mean age was 45.0 ± 11.0 years. 66.6% patients had chronic cholecystitis with cholelithiasis and were admitted through Out Patient Department whereas 33.4% were admitted through Accident and Emergency Department with acute cholecystitis. Abdominal ultrasound showed multiple calculi in 745 (74.5%) patients and 255 (25.5%) patients had single calculus preoperatively. Empyema was found in 60(6%) cases whereas adhesions were present in 403(40.3%) patients. In our study conversion rate was 4.8% and frequency of injury to common bile duct was 1.4%. Mean operating time was 40 minutes. 92.0% of the patients were discharged within 48 hrs of operation. In our study, there was no mortality while post-operative complications were seen in 6% patients.

Conclusion: Laparoscopic Cholecystectomy in our set up proved to be a safe procedure (post-operative complications 6%), having short duration of surgery(mean 40 min) and short hospital stay(92.0% being discharged in less than 2 days).

Keywords: Laparoscopic Cholecystectomy, calculous Cholecystitis.

INTRODUCTION

Cholelithiasis or gall stone disease is a common surgical condition causing significant morbidity to patients, and burden on surgical practices worldwide[1]. Classically, the standard treatment for symptomatic gall stones was open operation through abdominal incisions to remove the gall bladder. Open cholecystectomy needs a five day hospital stay and a 3-6 weeks period of convalescence[2,3].

After significant improvements in the design and optics of the laparoscopes in the late 1980s, laparoscopic cholecystectomy progressively replaced open cholecystectomy as the preferred treatment for symptomatic gall stone disease[4,5]. Presently, more than 80% of cholecystectomies world wide are carried out laparoscopically[5]. Avoidance of an upper abdominal incision resulting in less pain, and improved pulmonary function tests, are proven benefits of laparoscopic cholecystectomy as compared to small incision cholecystectomy[6-9]. Laparoscopic cholecystectomy is associated with low incidence of complications, however, incidence of bile duct injuries is increased as compared with open cholecystectomy[10,11]. Due to its superiority over open cholecystectomy, laparoscopic cholecystectomy is the gold standard procedure for treatment of symptomatic gall stone disease[12].

At Rawalpindi General Hospital and at the surgical practice of the author (JSK), laparoscopic cholecystectomy was first introduced in early 1998 and the procedure has been in use ever since. In order to evaluate the practices at these institutions, the present study was conducted, which was a 10 year clinical practice audit of laparoscopic cholecystectomy, exploring the operating time, duration of hospital stay, frequency of conversion to open cholecystectomy and frequency of intra- and post-operative complication in patients undergoing laparoscopic cholecystectomy at these surgical floors.

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METHODS

The data for the present clinical practice audit was collected prospectively between January 1998 to December 2007 at Rawalpindi General Hospital and at the author's surgical clinics. 1000 patients, selected through non probability purposive sampling, undergoing laparoscopic cholecystectomy were included in the study.

All the patients having a clinical diagnosis of acute and chronic cholecystitis underwent a detailed pre operative workup including history, physical examination, laboratory investigations, abdominal ultrasound and pre anesthetic evaluation.

Patients who had previously undergone abdominal operations, were ASA grade III or IV, were immunosuppressed or were receiving radiotherapy were excluded from the study. Patients with evidence of common bile duct pathology on clinical, biochemical or ultrasonological basis, having bleeding disorders or intra hepatic gallbladder were also excluded.

Variables on which information was collected were baseline and preoperative (age, gender, mode of admission, diagnosis, hemoglobin, total leukocyte count and ultrasound findings with emphasis on the number of calculi), operative variables (operating room time, status of gall bladder, presence of adhesions, perforation of gallbladder with spillage of stones, common bile duct injury, conversion to open cholecystectomy and the reasons behind it) and postoperative variables (death of patient, surgical site infection, post operative shoulder pain, port site hernia, surgical emphysema, missed stones, length of hospital stay and the need for re intervention).

In all the laparoscopic cholecystectomy procedures, standard four port technique was used. All operations were performed by the same surgeon (JSK).

As per policy of the institutions, patients were discharged on next day except those patients developing complications.

All the data was analyzed using the MS Excel 2007 software package (Microsoft Corp., WA, USA). For categorical variables, frequencies were calculated while for continuous variables, mean and standard deviation were calculated.

RESULTS

Amongst the cohort of 1000 patients, 883 (88.3%) were females and 117 (11.7%) males, with female to male ratio of 7.5:1. The mean age of study participants was 45.0 ± 11.0 years. It ranged from the youngest patient who was 20 years old to the oldest who was 70.

In the present study, six hundred and sixty six (66.6%) patients were admitted through Out Patient Department and were labeled as having chronic cholecystitis, whereas three hundred and thirty four (33.4%) were admitted through Accident and Emergency department, diagnosed with acute cholecystitis. At presentation, 370 patients (37.0%) had a leukocyte count raised above the normal range. On ultrasonography, 225 (22.5%) had a single calculus, presumed to be the cause of the disease, while the rest of the patients (n=775) had multiple calculi in their gall bladder.

The mean operating time in the present cohort was 40 minutes. Results of the analysis of the operating room duration, the status of gallbladder, presence of adhesions and perforation of gallbladder with spillage of stones are summarized in table I. Intraoperatively, 48 cases (4.8%) were converted from laparoscopic cholecystectomy, to open cholecystectomy due to dense adhesions in 32 (3.2%) cases, bleeding obscuring the view in 5 (0.5%), and duodenal injury in 1 (0.1%) case. We had to convert 1 case (0.1%) just at the start of the surgery due to port site injury. Common bile duct injury became the cause of conversion in 9 cases (0.9%) cases.

Amongst our 1000 patients, 92.0% patients got discharged within 48 hours. Mortality was nil and frequency of post operative complications was 6% (n=60). The length of hospital stay and frequency of re-intervention are presented in table II.

In our study, 14 out of 1000 patients (1.4%) had common bile duct injury of which 9 were diagnosed intra operatively while in 5 cases it

was detected in the post operative period and needed re intervention.

DISCUSSION

Ever since Philips Mouret performed the first video-laparoscopic cholecystectomy in Lyons, France[13], this procedure has been gaining popularity day by day and has become treatment of choice for symptomatic gallstones[14,15].

It is imperative that surgical practices be documented and audited for proper comparison with institutions around the world. Our surgical audit shows a low frequency of complications and a brief post operative stay after laparoscopic cholecystectomy.

In the present cohort, the age range was 20 years to 70 years which was comparable to findings in the published literatute[16,17] 88.3% of our patients were females whereas 11.7% were males, with female to male ratio of 7.5 : 1 which was higher than reported previously[16,17].

In comparing mode of admission with existing literature, we found subtle differences. We admitted 66.6% patients via Out Patient department and 33.4% through Accident & Emergency while a study from South Australia showed 83.1% admissions through Out Patient Department and 16.8% through Accident and Emergency[16].

An important aspect of any study on laparoscopic cholecystectomy is conversion rate to open cholecystectomy. In the present study, it was 4.8% whereas different studies have quoted figures ranging from 2.4% - 10%.[18-20]. If the reasons for conversion are considered, in the present cohort, adhesions were the cause of conversion in 3.2% and bleeding in 0.5%, which are comparable to the figures published in literature[21]. Common bile duct injury occurred in 1.4% of cases and this complication had a higher rate compared to 0.35% and 0.16% reported in two studies[20,21]. but comparable to two other studies being 2.6% in one study[22] and 1.6% in another study.23 Duodenal and port site injury occurred in 0.1%, which is less than reported in the study conducted by Markis et al[20].

An important complication encountered during laparoscopic cholecystectomy is gall bladder perforation, converting it into a lengthy procedure as it becomes important to retrieve all stones followed by irrigation to clear the spilled bile so that chances for abscess formation are decreased. In our study, frequency of gall bladder perforation with stone spillage was 4.9% whereas in literature, a wide range is seen, such an injury having been noted in 1.5 – 17% of cases undergoing laparoscopic cholecystectomy in various case series[17,16].

Long operating time is often cited as a drawback of laparoscopic cholecystectomy but despite initial lengthy procedures in stage of learning curve, our average operating time was only 40 minutes with 31.3% cases completed within 30 minutes, shorter than the average duration reported in literature[16,24].

An important benefit of laparoscopic cholecystectomy is short post operative hospital stay and early return to work. In our study, post operative hospital stay had a range of 6 hours to 7 days with 72.9% of patients being discharged within 24 hours comparable to the earlier conducted studies[16,24].

The frequency of post operative complications in our study was 6%. This frequency has generally been reported be around 6%,[17,24,25] which closely conforms to the findings of the present study. Mortality rate of 1% has been reported in literature[26]. however, in our cohort, there were no deaths.

Among the post operative complications, the incidence of wound infection was only 2.8% in our patients while other studies have reported an incidence of 0.5 to 7%[1,26].

Port site hernia was noted in only 0.2% of our cases, while published literature documents this complication taking place in 1-8% patients[27,28]. In our study, surgical emphysema was noted in 0.2% patients which is less as compared to one of the published studies[21]

CONCLUSION

Our surgical practice audit of 1000 cases of laparoscopic cholecystectomy indicates that laparoscopic cholecystectomy in our set up has comparable results to the studies describing results of the procedure at other surgical facilities around the world, in terms of operating time, duration of hospital stay,

frequency of conversion to open cholecystectomy and frequency of intra- and post-operative complication. Therefore, it would be reasonable to recommend use of laparoscopic cholecystectomy as the preferred procedure for the treatment of gall stone disease in Pakistani surgical settings.

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Table-1: Intra Operative Findings

Condition of gall bladder		**Patients with finding Number (%)**
	Normal	417 (41.7%)
	Moderately distended	145 (14.5%)
	Severely distended	203 (20.3%)
	Shrunken	80 (8.0%)
	Mucocele	95 (9.5%)
	Empyema	60 (6.0%)
Adhesions		403 (40.3%)
Perforation with stone spillage		49 (4.9%)
Conversion to open cholecystectomy		48 (4.8%)
Operating time		
	<30 min	313 (31.3%)
	30 - 60 min	589 (58.9%)
	> 60 min	98 (9.8%)

Table-2: Post Operative Findings

Length of hospital stay		**Patients with finding Number (%)**
	< 24 hrs	729 (72.9%)
	≥ 24 hrs - < 48 hrs	191 (19.1%)
	≥ 48 hrs - <72 hrs	71 (7.1%)
	≥ 72 hrs - <168 hrs	9 (0.9%)
Post operative complications		
	Wound infection	28 (2.8%)
	Shoulder pain	28 (2.8%)
	Surgical emphysema	02 (0.2%)
	Port site hernia	02 (0.2%)
Missed stones		0 (0%)
Re-intervention		05 (0.5%)