Original Article

A comparative study of open versus laparoscopic cholecystectomy

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Abstract

Introduction: Acute cholecystitis is a serious surgical emergency for elderly patients. Laparoscopic cholecystectomy (LC) is the gold standard operation for uncomplicated cholecystolithiasis. **Aims and Objectives:** To Study Open versus Laparoscopic Management of Cholecystectomy. **Methodology:** This is a prospective study conducted at Tertiary Care Hospital during the period March 2013 to March 2014 after obtaining approval from the Institutional Ethics Committee. All the patients between the ages of 17 to 70 yr. who were having chronic bile stones disease, who required surgical intervention in the form of cholecystectomy were included into study while patients with asthma, those who didn't give consent, COPD, obese, immuno-compromised diseases were excluded from the study. Total 42 patients who were eligible for the cholecystectomy surgery, out them randomly 21 were enrolled into Laparoscopic cholecystectomy surgery Group (Group A) and Open cholecystectomy surgery (Group B) randomly, by computer generated random numbers. The statistical analysis done by unpaired t-test test and Z-test (Difference between two Proportions). **Result:** Mean Age was 45.62± 10.2 Yrs. In Group A and 47.5 ± 9.8 Yrs. Group B they were comparable to each other ($p>0.05$). Mean time required for surgery in Group A was 90± 12 min. and in Group B was 45±11min. which was significantly higher ($p<0.05$). Post operatively Pain was more in Group B i.e. Visual Analogue Score was 7.5±2.2 and 5.4±1.2 in Group A which was significantly higher ($p<0.05$). Average Hospital Stay was more in Group B as compared to Group A i.e. 4±2days and 2± 1 days which is statistically significant ($P<0.05$) Bleeding was more common in Group B i.e. 23.80% as compared to Group A 14.28%) which was statistically significant ($P<0.05$). CBD injury was more common in Group A as compared to Group B i.e. 33.33% and 4.76%respectively. Wound infection was also more common Group B i.e. 19.04% and 4.76% respectively which was significant ($P<0.05$). **Conclusion:** Post operatively Pain, Average Hospital Stay, Bleeding and infection rate were less in Laparoscopic surgeries while Mean time required for surgery and Bile duct injuries were more common for Laparoscopic Cholecystectomy surgeries. These advantage and disadvantages of each group should be considered while treating the patients.

Key Words: Laparoscopic Cholecystectomy, Open Cholecystectomy, Bile Duct Injuries.

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INTRODUCTION

Acute cholecystitis is a serious surgical emergency for elderly patients. Laparoscopic cholecystectomy (LC) is the gold standard operation for uncomplicated cholecystolithiasis.[1] Several studies have also found that LC is a safe and efficient treatment approach for acute cholecystitis compared with open cholecystectomy (OC).[2,3] The prevalence of cholelithiasis and the incidence of complications would be expected to increase with age, therefore biliary surgery is performed more frequently for elderly patients. There is no doubt that LC is the treatment of choice for elderly patients with symptomatic cholelithiasis since the outcomes are better than those of OC in terms of lower morbidity rate and shorter hospital stay.[4] A clear advantage of LC over OC for acute cholecystitis has been demonstrated in a randomised trial.[5] There is, however, quite marked regional and international variation in the practice of LC for acute

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cholecystitis. In clinical practice, patients with acute cholecystitis are substantially less likely to undergo LC than those with non-acute disease.[6]Such a low LC rate may be a reflection of the technical difficulty of the procedure, concern about increased risks of bile duct injury, and inexperience with advanced laparoscopic surgery. Given this background and the high prevalence of co-morbidity, elderly patients admitted in an emergency are less likely to undergo LC.[7] Gall stones are one of the major causes of morbidity and mortality all over the world. Until the end of 1980's, open Cholecystectomy was the gold standard for treatment of stones in gall bladder. First Cholecystectomy performed in 1882 by Karl Langenbuch[8]. In the early 1990s, the laparoscopic approach rapidly replaced open surgery as the standard procedure. The laparoscopic procedure was found to cause less scarring, shorter hospital stay and faster recovery than the open procedure, but probably at the expense of a higher rate of bile duct injuries [9]. We live in an era of surgical innovation that has seen the development and expansion of various types of laparoscopic surgery in which the incisions made are increasingly small. It is well established that laparoscopic surgery, in comparison with more traditional methods, results in fewer post-operative complications and leads to earlier patient mobility and recovery of the normal activities of daily life . The safety of laparoscopic cholecystectomy for the elderly has also been confirmed in many studies as an acceptable procedure and is now the preferred method for cholecystectomy[10]. The major complications are significantly less in laparoscopic cholecystectomy and it has become the mainstay of management of uncomplicated gallstone disease. However 20 years after its inception, uncertainty persists about the application of laparoscopic techniques to the management of patients with complicated gallstone disease[11]. Post-operative pain, cosmesis and later complication like incisional hernia, intestinal obstruction should help to decide which technique are better [12]

MATERIAL AND METHODS

This is a prospective study conducted at Tertiary Care Hospital during the period March 2013 to March 2014 after obtaining approval from the Institutional Ethics Committee. All the patients between the ages of 17 to 70 yr. who were having chronic bile stones disease who requires surgical intervention in the form of cholecystectomy were included into study while patients with asthma, those who didn't give consent, COPD, Obese, Immuno-compromised disease were excluded from the study. Total 42 patients who were eligible for the cholecystectomy surgery out them randomly 21 were enrolled into Laparoscopic cholecystectomy surgery Group (Group A) and Open cholecystectomy surgery (Group B) randomly by computer generated random numbers. The statistical analysis done by unpaired t-test test and Z-test (Difference between two Proportions).

RESULT

Table 1: Distribution of the Patients in two groups as per various Study parameters

Study parameters	Group A)(n=21) (Mean± SD)	Group B (n=21) (Mean± SD)	p-value
Average Age	45.62± 10.2 Yrs.	47.5 ± 9.8 Yrs.	p>0.05
Time required for Surgery	90± 12 min.	45± 11min.	P<0.05
Post-Operative Pain (VAS)	5.4± 1.2	7.5± 2.2	P<0.05
Average Hospital Stay	2± 1 days	4±2days	P<0.05

Mean Age was 45.62±10.2 Yrs. In Group A and 47.5±9.8 Yrs. Group B they were comparable to each other (p>0.05). Mean time required for surgery in Group A was 90± 12 min. and in Group B was 45±11min. which was significantly higher (p<0.05). Post operatively Pain was more in Group B i.e. Visual Analogue Score was 7.5±2.2 and 5.4±1.2 in Group A which was significantly higher (p<0.05). Average Hospital Stay was more in Group B as compared to Group A i.e. 4±2 days and 2±1 days which is statistically significant (P<0.05)

Table 2: Distribution of the Patients in Groups as per the Postoperative complications

Complications	Group A N0. (%)	Group B N0. (%)	p-value
Bleeding	3(14.28%)	5 (23.80%)	P<0.05
CBD injury	7(33.33%)	1(4.76%)	P<0.05
Wound infection	1 (4.76%)	4(19.04%)	P<0.05

Bleeding was more common in Group B i.e. 23.80% as compared to Group A 14.28%) which was statistically significant (P<0.05). CBD injury was more common in Group A as compared to Group B i.e. 33.33% and 4.76%respectively. Wound infection was also more common Group B i.e. 19.04% and 4.76% respectively which was significant (P<0.05).

DISCUSSION

Open cholecystectomy has been the gold standard of treatment for cholelithiasis for more than 100 years with the mortality rate that have declined to 0-1% in most recent reports and the rate of major complications of overall complication rate of 8.6% and 2% in laparoscopic cholecystectomy respectively. In our study we have observed that Mean Age was 45.62±10.2 Yrs. In Group A and 47.5±9.8 Yrs. Group B they were comparable to each other (p>0.05). Mean time required for surgery in Group A was 90± 12 min. and in Group B was 45±11min. which

was significantly higher (p<0.05). Post operatively Pain was more in Group B i.e. Visual Analogue Score was 7.5±2.2 and 5.4±1.2 in Group A which was significantly higher (p<0.05). Average Hospital Stay was more in Group B as compared to Group A i.e. 4±2days and 2±1 days which is statistically significant (P<0.05). Bleeding was more common in Group B i.e. 23.80% as compared to Group A 14.28%) which was statistically significant (P<0.05). CBD injury was more common in Group A as compared to Group B i.e. 33.33% and 4.76% respectively. Wound infection was also more common Group B i.e. 19.04% and 4.76% respectively which was significant (P<0.05). In some the studies the observations were; the time taken for laparoscopic surgery was found to be more than open cholecystectomy according to Supe AN *et al.*[13] According to Waldner H *et al.;* there was no significant time difference between both the procedures[14]. 12% of patients according to author's study, who had undergone laparoscopic cholecystectomy only had minimal bleeding (< 50ml), whereas only 8% of patients who underwent open surgery had about 50-200 ml of bleeding and 4% in the open cholecystectomy group had more than 200ml of blood loss Patients who underwent open cholecystectomy need antibiotics coverage for at least 4 to 5 days more than the patients who underwent laparoscopic cholecystectomy according to Supe AN *et al.*[14] Antibiotic requirement was found to be less in laparoscopic surgery according to Foster D.S *et al* and Phillips E *et al*[15,16]. In Carbajo Caballero *et al*'s study the rate of complications was more in the open procedure than in laparoscopic cholecystectomy.[17] Complication rate is higher in open than in laparoscopic surgery.[13, 18] Patients who underwent open cholecystectomy had longer in-hospital stay than those who underwent laparoscopic cholecystectomy. According to Verma G *et al* 18 96% of patients in the authors study had a hospital stay of less than 5 days but all patients who underwent open surgery were hospitalized postoperatively for more than 5 days.

CONCLUSION

Post operatively Pain, Average Hospital Stay, Bleeding and infection rate were less in Laparoscopic surgeries while Mean time required for surgery and Bile duct injuries were more common for Laparoscopic Cholecystectomy surgeries these advantage and disadvantages of each group should be considered while treating the patients.

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