Effectiveness of Laparoscopic Cholecystectomy

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Abstract

Background: To observe and compare the postoperative morbidity in terms of pain, fever, tolerance to oral feed, wound infections and duration of hospital stay in patients undergoing laparoscopic and open cholecystectomy.

Methods: In this randomized controlled study, the patients were divided into open and laparoscopy groups and their age, sex, operative time, complications, time of discharge and pain scores were compared and analyzed.

Results: Total of 174 patients were included in the study, 97 underwent laparoscopy whereas 77 underwent open cholecystectomy. Female to male ratio of patients was 2:1. Mean age was 44 years (±10.3). Operative time was 55.9 minutes in the open and 54.2 minutes in the laparoscopic group. Wound infection was 5% in open and 2% in laparoscopic surgery. Postoperative pain scores, time of discharge and nausea and vomiting were significantly less in laparoscopic group (p<0.001).

Conclusion: Laparoscopic cholecystectomy is superior in terms of less morbidity and shorter post operative stay.

Key Words: Laparoscopy, Cholecystectomy

Introduction

Laparoscopic Cholecystectomy has been the cornerstone of this era of surgical revolutionisation which has its roots in Minimal invasive surgery. Carl August Langerbach in 1882 performed the first open cholecystectomy and it remained the gold standard for at least 100 years until it was overshadowed by Laparoscopic cholecystectomy which is the most common laparoscopic procedure performed in the world today.1-3

The astounding success of laparoscopic cholecystectomy has raised concerns about the safety of the new procedure. In addition, one wonders whether the availability of a less invasive approach to cholecystectomy has led to a change in the spectrum of patients undergoing the procedure and in the threshold for performing it.4 5

The current research review shows clear benefit of laparoscopic cholecystectomy over open cholecystectomy in terms of intra operative, intra hospital and long term morbidity.6-8 It is highly appreciated by patients due to less pain, shortened hospital stay and diminished disability. Laparoscopic Cholecystectomy eliminates the trauma and transient ileus that follows open surgery, thus patients are free of postoperative pain and there is less requirement of analgesia.9 This procedure has minimal impact on the immune system, produces minimal exposure to external environment and offers better visualization of tissues for dissection and haemostasis. Thus it markedly reduces the frequency of infections and other morbidity in patients undergoing laparoscopic cholecystectomy.10

Patients and Methods

This study was conducted in Surgical unit I Holy Family hospital, Rawalpindi from 1st January to 31st December 2009. The study was approved by the hospital ethics committee. All patients who had a liking for either laparoscopic or the open cholecystectomy were offered the procedure of their choice but were not included in the study. The rest of the patients were randomly assigned to either the open or the laparoscopic group. Only the patients fulfilling the laid criteria were included in this study.

Patients between the age of 20 to 70 years, without any co morbid illnesses, with a BMI less than morbid obesity and non pregnant women were included in the study. Patients with previous abdominal surgery, with other co morbid illness and patients who were planned for cholecystectomy but had to undergo additional procedures like transduodenal sphincteroplasty or choledochoduodenostomy were also excluded.

All operations were performed by senior consultant surgeons. Postoperatively the patients were followed for their pain scores, tolerance of oral feeds, signs of infection (e.g. fever, chest infection, wound infection) and their date of discharge from hospital. The patients were followed for up to 4 weeks for any complications. From this data mean hospital stay, difference in pain scores, post operative complications mobilization and discharge with return to activity
were calculated to compare the difference between the two groups. The t-test was applied to analyse the significance of the results.

Results

During the study period of one year 269 cholecystectomies were performed. Out of these 162 underwent laparoscopic cholecystectomies and 90 underwent open cholecystectomies. There were seventeen laparoscopic procedures that were converted to open.

After excluding the patients not fulfilling the criteria’s and the ones who had choice for a certain procedure, 174 patients were included in the study. The mean age of presentation was 44 years (±10.3) and of these, males comprised 33 % (n=57) whereas females were 67 % (n=117). Of all these patients 97 underwent laparoscopic repair whereas 77 underwent open repair. The open group had an average age of 43 years whereas in the laparoscopic group it was 45 years. In both the groups the ratio between male and female patients was 2:1.

The time taken for surgery in minutes was compared between the two groups; the laparoscopic procedure took 54.2 minutes (±14.2) whereas the open procedure took 55.9 minutes (±9.5) with a p-value of 0.36. The mean time for discharge, in the laparoscopic group was 31(±5.9) hrs compared to 49(±6.7) hrs in the open group and this result was found to be statistically significant (p<0.001). The pain scores two hours after surgery and at the end of 24 hrs were also significantly less in the laparoscopic group. Also the nausea and vomiting were significantly less in the laparoscopic as compared to the open group (p<0.001). The wound infection rates were less in the laparoscopic group but the results were not statistically significant. (Table 1).

Discussion

Laparoscopic cholecystectomy has become the torchbearer for the overwhelming success that minimal access surgery has gained all over the world. According to local literature prevalence of gall stone disease in Pakistan is 15% and gall stones are responsible for about 22% admissions on the surgical floor. 11, 12

The mean age of the patients in our study was 44 years which is consistent with the data coming out of Pakistan with various other studies. Mufti et al showed an average age of 40 years in their study, Muqim et al also showed that the majority of patients were found in the fourth decade of their lives.13, 14

Steiner et al in a western study showed most of the patients to be from late fourth and early 5th decade of life. 15 The stress on the age group is due to the fact that with minimally invasive surgery even extremes of age do not affect the patient in terms of morbidity and mortality. In our series there were some patients nearing 70 who had an eventful postoperative course after laparoscopic procedure. As shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Comparison between Open and Laparoscopic Cholecystectomy</th>
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<td><strong>Parameter</strong></td>
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</tr>
<tr>
<td>Age (in years)</td>
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<td>Sex</td>
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<td>Time in surgery (in min)</td>
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<td>Pain scores at 2 hours</td>
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<td>Pain scores at 24 hours</td>
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<td>Wound infection</td>
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<td>Nausea and Vomiting</td>
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<td>Discharge time (hrs)</td>
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Present series had twice as many females in both open and laparoscopic group, but this has varied in both local and western literature, Muqim et al had the female to male ratio around 5:1 whereas Steiner et al had a ratio of 4:1 females.

Diclofenac sodium was the commonly used analgesic in both open and laparoscopic groups. The results clearly showed a statistically significant advantage in pain scores both immediately after surgery and 24 hrs later. This is also consistent with both local and western literature, Muqim et al, Steiner et al have also showed laparoscopic surgery to be better in terms of postoperative pain intensity.

Wound infection is another aspect where laparoscopic surgery has proved to be better than the open technique, though not statistically proven by our series, Mufti et al, Muqim et al and a number of other studies have also shown this finding to be consistent. Other immediate postoperative complications like nausea and vomiting were also significantly less in the laparoscopic group. 

The time of discharge after surgery was significantly less in the laparoscopic group and this has added to the immense advantages that this technique has to offer and this has been proved time and again by a number of local and foreign studies.

Conclusion

Laparoscopic cholecystectomy is by far the safest and most effective method of treatment for gallstone disease.

References

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