COMPARISON OF LAPAROSCOPIC AND OPEN APPENDECTOMY IN TERMS OF OPERATIVE TIME, HOSPITAL STAY AND FREQUENCY OF SURGICAL SITE INFECTION

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ABSTRACT

Objective: To compare laparoscopic and conventional open appendectomy in terms of operative time, hospital stay and frequency of surgical site infection (SSI).

Study Design: Quasi-experimental study.

Place and Duration of Study: Combined Military Hospital, Quetta from 6th Jun 2010 to 1st Sep 2011 and Combined Military Hospital, Multan, Pakistan from 2nd Sep 2011 to 5th Jun 2012 over a period of 2 years.

Patients and Methods: A total of 417 patients underwent appendectomy during this period. 137 patients underwent laparoscopic appendectomy (group A) while 280 patients had open appendectomy (group B). The sample includes all patients who were operated upon, between the time-span of June 2010 to September 2011. A chi square-test was performed to compare the data for statistical significance.

Results: Mean operative time for group A was 79.21 ± 23.42 minutes whereas in group B, the mean operative time was 41.49 ± 20.86 minutes. Group A patients had a shorter hospital, l stay (3.6 ± 1 day) but in group B, it was (5.2 ± 3 days). Seven patients (5.1%) developed surgical site infection (SSI) in group A and 34 patients (12.14%) developed postoperative SSI in group B ($p < 0.05$).

Conclusion: Laparoscopic appendectomy is superior to open appendectomy because of shorter hospital stay and lesser post-operative SSI, but requires longer operative time.

Keywords: Hospital stay, Laparoscopic appendectomy, Open appendectomy, Surgical site infection, Operative time.

INTRODUCTION

Appendectomy, being the most common surgical procedure performed in general surgery, is still being performed by both open and laparoscopic methods[1]. Whether or not there is a benefit to laparoscopy versus open surgery in the management of acute appendicitis remains a subject of controversy despite the publication of numerous randomized studies[2]. Some studies favor laparoscopy whereas others show no statistical difference[3,4]. Open appendectomy has been a safe and effective operation for acute appendicitis for more than a century. Recently, several authors proposed that the new technique of laparoscopic appendectomy should be the preferred treatment for acute appendicitis. However, unlike laparoscopic cholecystectomy, laparoscopic appendectomy has not yet gained popularity[5]. Proponents of laparoscopy believe that it is better in term of post op complications and cosmetics[6].

The objective of the study was to compare laparoscopic and open appendectomy surgical approches to assess differences in time taken for the procedure, duration of patients' hospital stay and the frequency of surgical site infection.

PATIENTS AND METHODS

A total of 417 patients were included in the study, who underwent appendectomy in 1 year from 6th June 2010 to 5th June 2012. Patients who had laparoscopic appendectomy were grouped as group A (n=137) while others undergoing open appendectomy were grouped as group B (n=280). Inclusion criteria was based on making all patients as part of the study who had been operated upon for appendectomy between June 2010 and June 2012; patients who underwent any

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other laparoscopic surgery were excluded. Patients of all age groups and both genders were included in the study. All patients were given injection metronidazole 500 mg 8 hourly and Inj. Ceftriaxone 12 hourly. All wounds were closed primarily using prolene sutures. Patients were observed for development of SSI post operatively. Modern instrumentation (Digital insufflation, HD video imaging technology, Ultrasonic/harmonic cutting/ energy device) was utilized for all these cases.

Data of patients available at the Central Operation Theater (OT) of CMH Multan was used for study. The data was analyzed by SPSS version 12. Mean and standard deviation (SD) for the quantitative variable i.e. age, operative time and duration of hospital stay was calculated. Frequency and percentages were presented for all the categorical variables including gender and SSI in both groups. Chi-square test was used to compare the frequency of SSI in two groups keeping the significance level as $p < 0.05$.

RESULTS

Out of 417 patients in the study, group A comprising of 137 patients underwent laparoscopic appendectomy and Group B comprising of 280 patients had open appendectomy. The age distribution ranged from 14-63 years in the study. The overall mean age of all the patients was 28.3 ± 13.7 years. Mean age in group A was 29.2 ± 14.7 years. Mean age in group B was 27.5 ± 12.8 years. Mean age of males in the study population was 27.9 ± 13.8 years. Mean age of the females was 28.8 ± 13.7 years. Out of 417 patients, 59.2% (n=247) patients were males and 40.8% (n=170) were females. Mean operative time for group A was 79.2 ± 23.4 minutes whereas in group B, the mean operative time was 41.4 ± 20.8 minutes (p value = < 0.05).

Group A patients had a shorter hospital stay i.e. 3 ± 1 days but in group B, it was 5 ± 3 days (p value <0.05). Seven (5.10%) patients developed surgical site infection (SSI) in group A and 34 (12.14%) patients developed post-operative SSI in group B with a statistically significant p value of < 0.05.

In the comparison for infection, the Southampton grade 0 was regarded as no infection and any grade more than 0 accounted for the presence of infection. When examined within 10 postoperative days, 94.9% (n=130) patients in group A and 87.86% (n=246) patients in Group B did not have any signs of infection. 2.1% (n=3) patients had a Southampton Grade I infection in group A compared with 3.92% (n=11) infection in group B. Three (2.1%) patients had a Southampton grade II infection in group A compared with 6.7% (n=19) infection in group B. One (0.7%) patients had a Southampton grade III infection in group A compared with 1.07% (n=3) infection in group B. However, none of the patients had a Southampton Grade IV infection in group A as compared to 0.36% (n=1) infection in group B. There was no patient documented with a Southampton grade V infection in both the study groups. A p value was found to be less than 0.05 and revealed a statistical significance.

DISCUSSION

Although appendectomy is one of the most commonly performed general surgery procedure, yet the best method of performing appendectomy is still not clear as determined in certain international studies. The publication of studies as recently as 2011[3,4] suggest that there is still some controversy regarding the choice of best method for appendectomy.

In this study, laparoscopic appendectomy was calculated to take more time than open appendectomy which is in accordance with most randomized trials conducted world over[2-8]. Duration of hospital stay was shorter (3 versus 5 days). This finding is also observed in other studies[2-8].

In this study we observed 5.1% (7 cases) of infection in the group A in comparison to 12.14% (34 cases) in the group B. This was also in accordance with another study showing laparoscopic appendectomy to be superior to open appendectomy in postoperative

complications[1]. Another randomized trial also showed similar results. However, in some studies, no significant difference was found after comparing both methods of appendectomy[2,3,7,8].

CONCLUSION

On the basis of the results obtained in the study, it can be concluded that laparoscopic appendectomy is superior to conventional open appendectomy since it leads to shorter hospital stay and significantly lesser frequency of post-operative SSI. However it takes longer time per operatively.

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