

Compare the Complications of Laparoscopic versus Open Appendectomy

1. Muhammad Jawed 2. Khawar Saeed Jamali 3. Sadia Sana 4. Ubedullah Shaikh
5. Shazia Ubed Shaikh

1. Asstt. Prof. of Surgery & Bariatric Surgeon, Dow University Hospital OJHA Campus Karachi 2. Assoc. Prof. of Surgery, Civil Hospital Karachi 3. Postgraduate Student, Surgical Unit-2, LUH, Jamshoro 4. Senior Medical Officer of Surgery, Dow University Hospital Karachi 5. Medical Officer Radiology Dept. JPMC, Karachi

ABSTRACT5.

Objective: To compare the complications of laparoscopic versus open appendectomy.

Study Design: Retrospective study

Place and Duration of Study: This study was conducted at Dow University Hospital from June 2012 to June 2014.

Methodology: Data was analyzed by reviewing patient records, patients bills records and patient discharge sheet. Each data was double checked and thoroughly supervised by author himself to assure quality and validation of the data collected. The information reviewed of patients with diagnosis of acute appendicitis included, age, sex, time taken for bowel function restoration, use of analgesia, postoperative stay and its clinical evaluation and confirmed by USG of abdomen requiring operation and total charges. Patients included who were operated in surgical unit I. Patients who were identified with associated gynecological disease, to be at high risk for general anaesthesia, had a past history of lower abdominal surgeries, appendicular abscess were excluded. Data was analyzed through SPSS software.

Results: 73 patients who underwent appendectomy. Out of which 24(32.87%) patients operated laparoscopically and 49(67.12%) patients by open method. The mean age for open appendectomy was 26.53 ± 12.3 years whereas, for laparoscopic appendectomy it was 29.9 ± 13.3 years. Intraoperative findings were normal appendix 4(16.66%) in OA group and 2(4.08%) in LA group, Acute appendicitis 12(50%) in OA group and 31(63.26%) in LA group, Gangrenous appendicitis 3(12.5%) in OA group and 14(28%) in LA group, Appendiceal abscess 4(16.66%) in OA group and 5(10.20%) in LA group, Peritonitis 1(4.16%) in OA group and 3(6.12%) in LA group. Post operative complications were observed in both groups. Wound infection 5(20.83%) in OA group and 2(4.08%) in LA group, Intra-abdominal abscess 1(4.16%) in OA group and 1(2.04%) in LA group, Bowel obstruction 3(12.5%) in OA group and 2(4.08%) in LA group, Respiratory infection 2(8.33%) in OA group and 1(2.04%) in LA group.

Conclusion: This retrospective comparative assessment indicates that the patient chart reduces the incidence of complications in LA was wound infection, intestinal damage, intra-abdominal abscesses, intestinal obstruction and respiratory infections.

Key Words: Laparoscopic Appendectomy, Open Appendectomy, intraoperative complications, postoperative complications.

INTRODUCTION

Abdomen accommodates number of viscera and other anatomical structures, diseases of the abdomen which constitutes various clinical curiosity. A detailed abdominal examination is considered to be the best way to reach diagnosis. Acute appendicitis is one of the commonest causes of acute abdomen encountered in surgical practice, requiring emergency surgery^{1,2}.

It has been observed that males had higher rates of appendicitis than females for all age groups with an overall ratio of 1.2 to 1.3:1.3. Advance diagnostic tools, surgical skills, antibiotic therapy have decreased mortality from 50% to less than 1/1,00,000 persons. Morbidity is still around 5-8% just because of late diagnosis & treatment and leading to complications³.

The laparoscopic technique provides an opportunity to manage the suspected cases of the acute appendicitis. It combines the benefits of diagnosis and required treatment in same setting. Patients experience less post-

operative pain and return to daily activities of living earlier than those who underwent an open appendectomy. Better cosmesis, exploring full peritoneal cavity to reach pinpoint diagnosis and peritoneal wash without further incision are other advantages of laparoscopy and furthermore its effectiveness is increasingly being employed in young women of child bearing age in whom the differential diagnosis of right lower abdominal pain is extensively difficult^{4,5}.

Semm, a German gynaecologist who performed first laparoscopic appendectomy in 1981⁶. Unlike laparoscopic cholecystectomy, laparoscopic appendectomy has not yet gained same popularity. Open appendectomy (OA) has withstood the test of time for more than a century since its introduction by McBurney the procedure is standardized among surgeons. It is most common intraabdominal surgical emergency, with a lifetime risk of 6% +7.

The validation of a minimally invasive technique for appendectomy may improve the outcome in terms of patient management. Various studies and critical reviews in literatures published on LA revealed a general view that different measured variables and other weaknesses in the methodology have not allowed a concrete conclusion^{4,5}.

Bearing this concept, we designed a retrospective study (RS) comparing the effectiveness of LA to OA in the management of appendicitis.

MATERIALS AND METHODS

This is retrospective study conducted at Dow University Hospital from June 2012 to June 2014. Data was analyzed by reviewing patient records, patients bills records and patient discharge sheet. Each data was double checked and thoroughly supervised by author himself to assure quality and validation of the data collected.

The information reviewed of patients with diagnosis of acute appendicitis included, age, sex, time taken for bowel function restoration, use of analgesia, postoperative stay and its clinical evaluation and confirmed by USG of abdomen requiring operation and total charges. Patients included who were operated in surgical unit I. Both elective and emergency procedures were considered in this study. Complete data of all patients who were admitted through the Emergency Department for surgery, with no known co-morbidities, and no previous lower abdominal surgeries were included for chart review. Patients who were identified with associated gynecological disease, to be at high risk for general anaesthesia, had a past history of lower abdominal surgeries, appendicular abscess were excluded.

Open appendectomy was performed either under general anesthesia, through a muscle splitting incision in the right iliac fossa. The base of the appendix was crushed and ligated and the stump of the appendix was not invagilated. Laparoscopic technique performed under general anesthesia using a verse needle at Pomer's point for creating pneumoperitoneum and standardized 3 port approach. The appendix was divided after double ligation of the base. Appendix extraction was performed in glove made as endobag to protect the wound from contamination during removal.

RESULTS

The results of the analysis of data on 73 patients who underwent appendectomy. Out of which 24(32.87%) patients operated laparoscopically and 49(67.12%) patients by open method. The mean age for open appendectomy was 26.53 ± 12.3 years whereas, for laparoscopic appendectomy it was 29.9 ± 13.3 years. There were younger people in the group of open appendectomy compared to laparoscopic

appendectomy. Overall, there were more male patients who had undergone both the surgeries.

Among open appendectomy group, 29(59.18%) patients were males and 20(40.8%) patients were female, as compared to 15(62.5%) patients were male and 9(37.5%) patients were female in laparoscopic appendectomy group. Overall, there was no significant statistical difference in demographics and clinical presentation between laparoscopic and open appendectomy groups.

Out of the total 73 procedures, 24(32.87%) patients operated laparoscopically and 49(67.12%) patients by open method. Intraoperative findings were normal appendix 4(16.66%) in OA group and 2(4.08%) in LA group, Acute appendicitis 12(50%) in OA group and 31(63.26%) in LA group, Gangrenous appendicitis 3(12.5%) in OA group and 7(14.28%) in LA group, Appendiceal abscess 4(16.66%) in OA group and 5(10.20%) in LA group, Peritonitis 1(4.16%) in OA group and 3(6.12%) in LA group (Chart No.1).

Post operative complications were observed in both groups. Wound infection 5(20.83%) in OA group and 2(4.08%) in LA group, Intra-abdominal abscess 1(4.16%) in OA group and 1(2.04%) in LA group, Bowel obstruction 3(12.5%) in OA group and 2(4.08%) in LA group, Respiratory infection 2(8.33%) in OA group and 1(2.04%) in LA group (Chart No.2).

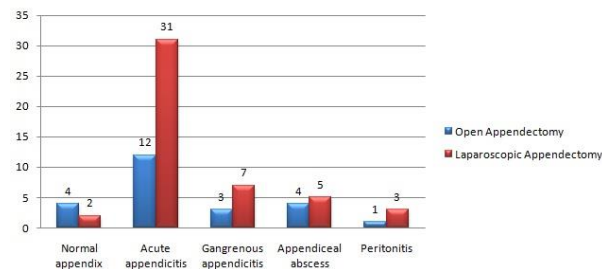


Chart No.1: Intraoperative findings

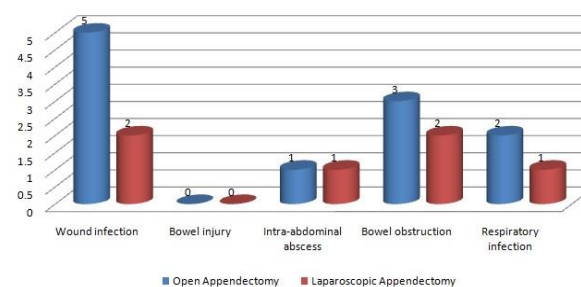


Chart No.2: Postoperative complications

DISCUSSION

In the past two decades, laparoscopic surgery has gained great popularity throughout world. Laparoscopic surgery has radically changed the field of surgery. With the improvement of equipment and increasing clinical experience is now possible to perform almost any type of procedures within the laparoscopic visualization⁸.

Early diagnosis and immediate surgery is the preferred treatment option for the prevention of complications such as perforation, which can lead to increased morbidity. Laparoscopic skills of experienced laparoscopic surgeons can be transferred to different tasks without increasing morbidity. Minimally invasive surgery requires different skills and technical knowledge⁹. Thus, the results of different studies are dependent upon experience and technique surgeons.

In our study mean age for open appendectomy was 26.53 ± 12.3 years whereas, for laparoscopic appendectomy it was 29.9 ± 13.3 years. However in the study of Yasmin Vellani¹⁰ showed that mean age for open appendectomy was 23.85 ± 13.3 years and laparoscopic appendectomy it was 32.9 ± 13.3 years.

Women in the high rate of misdiagnosis gynecological and women may be due to functional abnormalities. Therefore, patients with suspected appendicitis, LA, visible improvements in accuracy and unnecessary appendectomy¹¹. In our study 29(59.18%) patients were males and 20(40.8%) patients were female, as compared to 15(62.5%) patients were male and 9(37.5%) patients were female in laparoscopic appendectomy group. While in the study of Manish M. Tiwari¹² showed male 52.9% in LA and 59.9% OA and female 47.1% LA, 40.1% OA.

In our study intraoperative findings were normal appendix 4(16.66%) in OA group and 2(4.08%) in LA group, Acute appendicitis 12(50 %) in OA group and 31(63.26%) in LA group, Gangrenous appendicitis 3(12.5%) in OA group and (14.28%) in LA group, Appendiceal abscess 4(16.66%) in OA group and 5(10.20%) in LA group, Peritonitis 1(4.16%) in OA group and 3(6.12%) in LA group. While in the study of Ioannis Kehagias¹³, Of all the open procedures 165, 118 (71.5%) were for simple appendicitis and 47 (28.5%), including complicated appendicitis with perforation disease or extensive local peritonitis. In the laparoscopic group, 90 (70.3%) participated disease simple procedure and 38 (29.7%), complicated appendicitis. In addition, 16 (9.6%) open and 8 (6.2%) laparoscopic procedures, there was no pathology in the appendix and other structures in the abdomen.

Create an abscess in the abdominal cavity was more common after laparoscopic appendectomy in a complex disease. It was suggested that by passing carbon dioxide can promote the proliferation of bacteria in the mechanical peritoneal cavity, and especially in case of breakage of the additive. In order to reduce the bacterial load and thus the risk of abscess support a wide wash the abdominal cavity. However, in our practice, we can conclude that it was not necessary meticulous irrigation and even more dangerous, because it leads to contamination of the entire abdominal cavity. In our study we observed Intra-abdominal abscess 1(4.16%) in OA group and 1(2.04%) in LA group. However in the study of Ioannis Kehagias¹³, reported Intra-abdominal

abscess formation was more common after laparoscopic appendectomy (5.3% vs 2.1%).

The reduction of wound infection is a major advantage of wound infection LA. OA is greater partly because appendicitis was removed from the abdominal cavity through the wound directly, and LA is discharged through a bag or trocar. Furthermore, the wound site in the harbor of LA is smaller compared with OA majority of wounds, especially in obese patients¹⁴. In our study wound infection 5(20.83%) in OA group and 2(4.08%) in LA group. While in the study of Xiaohang Li¹⁴ Thirty studies reported a frequency of postoperative wound infection. The meta-analysis of the model of stable, showed 3.81% (76/1994), the incidence of infection in the LA, compared to 8.41% (174/2069) for OA.

Postoperative bowel obstruction was observed in patients with complicated disease in both study groups (10.6% after conventional appendectomy and 7.8% after laparoscopic appendectomy)¹³. However in our study observed bowel obstruction 3(12.5%) in OA group and 2(4.08%) in LA group.

CONCLUSION

Our research has found that a change in the surgical approach to suspected appendicitis management is safe and effective. This retrospective comparative assessment indicates that the patient chart reduces the incidence of complications in LA was wound infection, intestinal damage, intra-abdominal abscesses, intestinal obstruction and respiratory infections.

REFERENCES

1. Bennett J, Boddy A, Rhodes M. Choice of approach for appendicectomy: a meta-analysis of open versus laparoscopic appendicectomy. *Surg Laparosc Endosc Percutan Tech* 2007;17:245-255.
2. Katkhouda N, Mason RJ, Towfigh S. Laparoscopic versus open appendectomy: A prospective randomized double-blind study. *Ann Surg* 2005; 242(3):439-448.
3. Berger JBA. The appendix" "Chapter 30 in *Scnwarz's principle of surgery.*" In: Brunardi F, Anderson DK, Biliar TR, DUNNDL, Hunter JG, Pollock RE, editors. 9th ed. Mcgraw- Hill medical Publishing Division: New York; 2005.p. 1075-1092.
4. Varela JE, Wilson SE, Nguyen NT. Laparoscopic surgery significantly reduces surgical-site infections compared with open surgery. *Surg Endosc* 2010;24(2):270-6.
5. Moberg AC, Berndsen F, Palmquist I, Petersson U, Resch T, Montgomery A. Randomized clinical trial of laparoscopic versus open appendicectomy for confirmed appendicitis. *Br J Surg* 2005;92:298-304.

6. Semm K. Endoscopic appendectomy. *Endoscopy* 1983;15:59-64.
7. Kurtz RJ, Heimann TM. Comparison of open and laparoscopic treatment of acute appendicitis. *Am J Surg* 2001;182:211-4.
8. Swank HA, Eshuis EJ, Van Berge Henegouwen MI, Bemelman WA. Short and long term results of open versus laparoscopic appendectomy. *World J Surg* 2011;35:1221-26.
9. Park JM, Kim J, Kim CY, Choi DJ, Kim SH, Kim CS. Laparoscopic appendectomy: a safe procedure that can be performed by surgical residents. *J Korean Surg Soc* 2008;75:315-22.
10. Vellani Y, Bhatti S, Shamsi G, Parpio Y, Ali T. Evaluation of laparoscopic appendectomy vs. open appendectomy: a retrospective study at Aga Khan University Hospital, Karachi, Pakistan. *J Pak Med Asso* 2009;59(9):605-8.
11. Jamy LY, Lo C Y, Lam CM. A comparative study of routine laparoscopic versus open appendectomy. *JSLs* 2006;10:188-92.
12. Tiwari MM, Reynoso JF, Tsang AW, Oleynikov D. Comparison of Outcomes of Laparoscopic and Open Appendectomy in Management of Uncomplicated and Complicated Appendicitis. *Ann Surg* 2011:1-6.
13. Kehagias I, Karamanakos SN, Panagiotopoulos S, Panagopoulos K, Kalfarentzos F. Laparoscopic versus open appendectomy: Which way to go?. *World J Gastroenterol* 2008;14(31): 4909-4914.
14. Li X, Zhang J, Sang L, Zhang W, Chu Z, Li X1, et al. Laparoscopic versus conventional appendectomy - a meta-analysis of randomized controlled trials. *BMC Gastroenterol* 2010;10: 129-137.

Address for Corresponding Author:**Dr. Muhammad Jawed**

C-41 Refa-e-Am Society

Malir Halt Karachi.

Email: doctorjawed@yahoo.com

Cell No. 03322514095