Clinical Outcomes of Laparoscopic Appendectomy: A Retrospective Study

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ABSTRACT

Introduction: Appendectomy, being the most common abdominal surgery performed in emergency basis, is performed by open or laparoscopic approach. The aim of this study was to evaluate the clinical outcomes of laparoscopic appendectomy.

Methods: This is a retrospective observational study from November 2018 to September 2020 involving 408 cases who underwent laparoscopic appendectomy. The outcomes evaluated were length of the hospital stay, intraoperative and postoperative complications like wound infection, intraabdominal abscess and conversion rate.

Results: A total of 408 cases, 218 males and 190 females were included. The conversion rate was 6(1.4%), the average length of the hospital stay was 2.27 days. The incidence of port site infection was 3 (0.7%) and intraabdominal abscess 2(0.5%).

Conclusion: Laparoscopic appendectomy is feasible, safe procedure with less postoperative complications and shorter hospital days.

Keywords: Appendectomy, Laparoscopic appendectomy, Open appendectomy,

INTRODUCTION

Acute appendicitis remains the most common intraabdominal condition requiring emergency surgery, with a lifetime risk of about 8%.[1] Open appendectomy remained the gold standard for the treatment of acute appendicitis for more than a century. However with the advent and widespread acceptance of laparoscopic surgery, laparoscopic appendectomy has gained popularity. Semm, a German gynaecologist in 1983 performed laparoscopic appendectomy for the first time.[2] There is evidence that minimal surgical trauma through laparoscopic approach resulted in less postoperative pain, faster return to daily activities and hospital stay.[3] The other advantages of laparoscopic approach include ability to explore the entire peritoneal cavity, easy peritoneal toileting, decreased incidence of wound infection, better cosmesis. However, several retrospective studies, randomized trials and meta-analysis comparing laparoscopic with open appendectomy have provided conflicting results.

Taking into consideration that laparoscopic appendectomy, unlike other laparoscopic procedures, has not been found superior to open surgery for acute appendicitis, this study was designed to determine the possible benefits of laparoscopic approach. The aim of this study was to evaluate the safety and outcome of laparoscopic appendectomy in terms of postoperative complications and hospital stay.

MATERIALS AND METHODS

A retrospective observational study of patients admitted at Fishtail Hospital and Research Center Pvt. Ltd between November 2018 and September 2020 with the diagnosis of appendicitis was conducted. The ethical clearance was obtained from the Institutional Review Committee of Pokhara Academy of Health Sciences with the reference number 41.

Patients who opted for open approach and who couldn't tolerate general anesthesia were excluded.

All consecutive patients who underwent laparoscopic appendectomy were identified using operating theatre and inpatient records. The medical records of the patients were reviewed for demographic data, clinical presentation, physical findings and investigations, peroperative findings and postoperative complications.

Collected data were compiled in Microsoft excel sheets, coded and analyzed. Categorical data were presented as frequencies and percentage. Data display was done with the help of tables and various charts.

Surgical Procedure

Pneumoperitoneum was created either via open technique or via a Veress needle. The approach of creating pneumoperitoneum varied because of two performing surgeons with their respective preference. A standard 3 port approach was used, one 10mm in supraumbilical and two 5mm port in right paraumbilical and suprapubic region after placing the patient to Trendelenburg and left lateral position. The right paraumbilical port was placed after inspecting the position of cecum sometimes this needed to be placed high up. Intraabdominal pressure was maintained at 8 – 12 mm of hg with respect to age of the patient. The appendix was identified and mesoappendix was coagulated and divided using monopolar cautery. Base of the appendix was secured by using chromic catgut endo – loop. The specimens were retrieved through 10 mm supraumbilical port either through trocar sleeve or retrieval bag according to the peroperative findings. A 30ºTelescope of a cystoscope was inserted through a 5mm right paraumbilical port to visualize the abdomen during retrieving the specimen.

All patients received preoperative antibiotics as per the departments protocol (third generation Cephalosporin and Ornidazole), and postoperative antibiotics varied according to intraoperative findings.

The dressing was changed on 2nd postoperative day. Most of the patients were started with liquid diet within 12 hours of surgery excluding patients with intraoperative findings of perforated appendix with unhealthy base and pyoperitoneum. Patients were discharged home once they were afebrile, had good pain control and tolerated soft diet.

The parameters examined in this study included patient's age, gender, intraoperative findings, conversion to open procedure and postoperative complications like surgical site infection, intraabdominal abscess.

The length of the hospital stay was determined as the number of nights spent at the hospital postoperatively.

RESULTS

In the above mentioned time period, 408 cases with the diagnosis of acute appendicitis underwent laparoscopic appendicectomy.

The age of the patient ranged between 5 – 80 years with 218 males and 190 females.

Table 1 Shows demographics of the patients.

Table 1.
Demographic profile of the patients (n=408)

Age range	
≤15 years	134
16 - 30 years	166
31 - 45 years	60
46 - 60 years	32
≥ 60 years	16)
Sex	
Male	218 (53%)
Female	190 (47%)

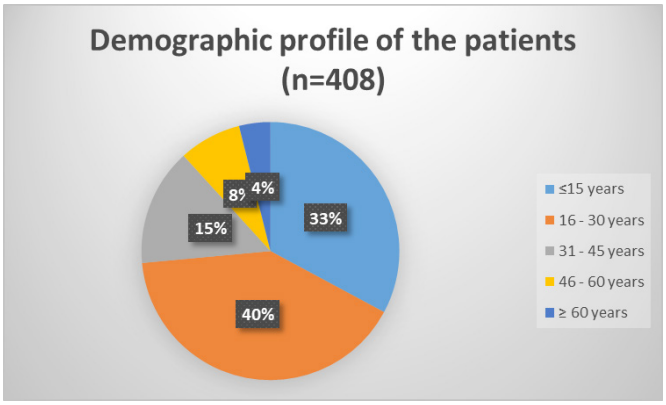

Table 2. Peroperative findings	
Inflamed appendix	328 (80%)
Gangrenous appendix	32 (8%)
Inflamed/gangrenous appendix with lump formation	27 (7%)
Perforated appendix with pyoperitoneum	21 (5%)

Table 3 Operative outcome	
Intraoperative complications	0
Conversion	6 (1.4%)
Mean length of hospital stay (days)	2.27
Postoperative Complications	
Port site infection (umbilical)	3 (0.7%)
Intraabdominal abscess	2 (0.5%)
Stitch granuloma (umbilical port)	2 (0.5%)

Out of 408 cases 6 (1.4%) patients required conversion to open approach due to gross adhesions with difficult dissection in cases with lump formation. These patients are included in the study sample based on an intention-to-treat principle. The average duration of the hospital stay was 2.27days ranging between 2 – 7 days.

Three (0.7%) patients developed port site infection which were diagnosed at follow up during dressing change. Two patients recovered with drainage and simple dressing while one patient needed secondary suturing. Two (0.5%) patients developed pelvic abscess of which one patient was treated with ultrasound guided aspiration during the same admission while other patient was diagnosed during follow-up for fever and was surgically managed with re-laparoscopic drainage and lavage. Two patients (≤15 years age group) developed stitch granuloma in 3rd week of surgery, both of them improved with suture knot removal.

DISCUSSION

Minimal invasive surgery has revolutionized the approach to patients needing surgery justifying many advantages this method provides: minimal surgical trauma, less postoperative pain, rapid postoperative recovery, exploration of entire abdominal cavity, management of unexpected findings, better cosmetic results with early return to normal activities.

Amayand in 1735 reported the first appendectomy, and little has changed in the management of acute appendicitis,[4] except for the approach ie open or laparoscopic. Laparoscopic appendectomy in cases with acute appendicitis has been superior to open appendectomy in randomized comparisons,[5] but still has not been well defined. And in country like ours there is scarce data due to few studies and lesser centers practicing laparoscopic procedures.

Wound infection may not be a serious complication but can result in a major inconvenience to the patient regarding recovery time and quality of life. One of the reported advantages of laparoscopic appendectomy is decreased incidence of surgical site infection. In accordance with other studies,[6,7,8,9,10] in our study there were only 3(0.7%) cases with port site infection which recovered with minor procedures. Though we have not compared, we have experienced higher incidence of wound infection in open appendicectomy group.

Intraabdominal abscess formation is a major complication which can be fatal if timely intervention is not done. In this study 2 (0.5%) developed localized pelvic abscess, both with complicated appendicitis. Increase in intraabdominal pressure with pneumopeirtoneum has been attributed as a possible cause for diffusion of infection.[11] The incidence of intraabdominal abscess was found to be 3 fold higher in laparoscopic group than open group.[5] Simple suctioning of the infected area has been advised rather than thorough irrigation which might lead to difficult aspiration later leading to higher chance of intraabdominal abscess formation.[7]

The average duration of hospital stay in our study was 2.27 days. The longer hospital stay in open group in comparison to laparoscopic group has been reported by many studies[4,12,13,14]

The rate of conversion is variable in various studies. Several reasons like peroperative findings, surgeons or technical factors have been postulated.[15]In our study the conversion rate was 6 (1.4%).Conversion rate (0 – 3.3%) have been reported.[14]

A major advantage of laparoscopic appendectomy we found is that it has got cosmetically better results in cases with high up/ subhepatic appendix where open technique would have needed a large and muscle cutting incisions.

Our study has some limitations. We could not assess the operating time and do a cost analysis. As our hospital is a private hospital the cost of laparoscopic and open appendectomy is comparable considering the use of reusable laparoscopic instruments, hospital stay, medications used.

The popularity of laparoscopic appendectomy has increased since it was first started though it is still far from getting practiced in every institutes especially in country like ours. Every surgeons should think laparoscopic and open appendectomy as being complimentary to each other and be comfortable with both the procedures.

CONCLUSION

Laparoscopic appendectomy is a feasible, safe and clinically beneficial surgical procedure with less postoperative complications, short hospital stay. Laparoscopic appendectomy should be undertaken as the operative procedure of choice for acute appendicitis where feasible.

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