

Study of Laparoscopic Appendicectomy in Complicated Appendicitis

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A B S T R A C T

Introduction: Appendectomy is the most common surgical procedure performed in emergency surgery. Laparoscopic appendectomy (LA) for acute appendicitis has several advantages over open appendectomy (OA). The aim of the present work was to study of Laparoscopic Appendicectomy in complicated appendicitis in a teaching hospital.

Material and methods: The study was conducted at Government General Hospital attached to attached to Siddhartha Medical college, Vijayawada, from September 2015 to August 2017. 25 patients who undergo appendectomy were included in this study. The variables analyzed included patient's data (age, gender, previous abdominal surgery, preoperative WBC count, and duration of symptoms), rate of uncomplicated or complicated appendicitis, operative time, postoperative complications, and length of hospital stay.

Results: Out of 25 patients, 14 were males and 11 were females. Most of the patients (12) were between the 20-30 yrs age group. All patients had abdominal pain, vomiting and fever. Past history of episodes of pain was in 8 patients. All patients had tenderness in right iliac fossa and abnormal ultrasonic pathology. Intraoperative findings observed were perforation in 18 patients, gangrene in 6 patients, mass with perforation in 7 patients and only mass in 1 patient.

Conclusion: On analyzing the data, we found satisfactory outcome with laparoscopic procedure in complicated appendicitis. Laparoscopic appendectomy has higher rates of success in complicated appendicitis like in early mass, perforated, gangrenous appendicitis and with dense adhesions.

Keywords: Appendicitis, Appendectomy, Laproscopic Appendectomy,

INTRODUCTION

Minimal invasive surgery has had a considerable impact on common surgical techniques and has almost replaced established operative procedures such as in cholecystectomy. The laparoscopic approach for the treatment of acute appendicitis is becoming very popular. The main advantage of the laparoscopic surgery in abdominal surgery is related to the avoidance of a laprotomy wound and its infection, less pain, short stay in hospital, early return to normal work and cosmetic.¹⁻⁵ More than 2 decades later, the benefits of LA are still controversial. Despite numerous case series and small, single-institutional randomized clinical trials comparing LA versus OA, a consensus concerning the relative advantages of each procedure has not yet been reached.⁶⁻⁸

The objective of this study was to make awareness and to clear some of the issues and to provide satisfactory results of laparoscopy in complicated appendicitis. The aim of the present work is Study of Laparoscopic Appendicectomy in complicated appendicitis in a teaching hospital.

MATERIAL AND METHODS

The present study was conducted at Government General Hospital attached to Siddhartha Medical college, Vijayawada, from September 2015 to August 2017 consists of 25 patients who have undergone Laparoscopic appendectomy. Informed consent was taken for all patients.

Patient's diagnosis was based on clinical findings, blood counts, and abdominal ultrasonography. The variables analyzed included patient's data (age, gender, previous abdominal surgery, preoperative WBC count, and duration of symptoms), rate of uncomplicated or complicated appendicitis, operative time, postoperative complications, and length of hospital stay.

Inclusion criteria: Patients with appendicular abscess/ non-palpable mass, gangrenous appendix, perforated appendicitis, appendicitis with peritonitis, appendicitis with dense adhesions were included.

Exclusion criteria: Patients with laparoscopic appendectomy without any complication, any suspicion of

malignancy and pregnant with complicated appendicitis were excluded.

Data was collected on combining the clinical examination; preoperative findings as well as post operative recovery and incidence of complications during three months follow up.

For this study, patient's age, sex, history of previous abdominal surgery, concomitant illness and chronic medication usage etc. were recorded. Pre operative right lower quadrant pain, right lower quadrant tenderness, nausea, vomiting, anorexia and fever, leucocytosis, urine examination and USG abdomen were recorded.

Post operatively early and late complications like

- Peritonitis
- Wound infection
- Intra abdominal abscesses
- Fistula formation
- Appendicitis in the stump
- Port site hernia
- Adhesions leading to intestinal obstruction were recorded.
- Patients followed up for three months.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the analysis. Descriptive statistics like mean and percentages were used for data interpretation.

RESULTS

Patient Demographics

Study outcome on analysis of data of 25 patients who underwent Laparoscopic appendectomy was as follows. 14 patients were males (56%) and 11 patients were females (44%) out of 25 patients. The mean age of the patients in the groups was 24.28 and 23.96 years, respectively (table-1).

Table No. 2 gives the details of presenting complaints and past history. All the patients 25(100%) complained of abdominal pain, vomiting and fever. Less commonly constipation, diarrhea observed one each in the group.

None of the patients had history of diabetes mellitus, tuberculosis, in the past. 8% in the group had history of episodes of abdominal pain in the past (Table no. 2).

General and Systemic Examination

The findings of systemic examination of the patients in the group in terms of built and nutrition, anemia, vital stats are given in Table No. 3. Patients were almost similar with not much of difference with respect to these parameters.

Local Examination

All patients in the group had right iliac fossa tenderness (100%). Others sites of tenderness other than rt. iliac fossa were umbilical 8 (32%), epigastric 5(20%), lumbar 1 (4%) and hypo gastric 1 (4%) in the group.

Variable	Number	Percentage
Total number	25	100
Sex distribution		
Male	14	56%
Female	11	44%
Age(years) distribution		
<20	4	16%
20-30	12	48%
31-40	7	28%
41-50	2	8%
5 1 and Above	0	0
Mean Age(yrs)	28.56	

Table-1: Age and sex distribution

Variable	Number	Percentage
Total	25	
Presenting complaints		
Abdominal pain	25	100
Vomiting	25	100
Fever	25	100
Past history		
Tuberculosis	0	0
Diabetes mellitus	0	0
Episodes of pain	8	32

Table-2: Presenting complaints and past history

Variable	Number	Percentage
Total number	25	100
General and systemic examination		
Built and nutrition		
Good	10	40
Moderate	13	52
Poor	2	8
Tachycardia	25	100
Anemia		
- Ve	23	92
+ Ve	2	8
c.v.sNormal	25	100
R.S.Normal	25	100
Local examination		
RIF tenderness		
Present	25	100
Absent	0	0
Others		
Umbilical	8	32
Epigastric	5	20
Lumbar	1	4
Hypogastrium	1	4

Table-3: General, Systemic examination and local examination

Lab Parameters

Table No. 4 shows the mean and standard deviation of the various lab parameters of the patients. Mean Hb was 11.71 and mean TWBC was 14040.

Abdominal Ultrasonography

Abdominal Ultrasonography revealed abnormal pathology

in all the patients in the form of either of the following noted as; Inflamed appendix, Paralytic ileus, Minimal free fluid in RIF and Early mass (table-5).

Perforation was observed in 18 patients, gangrene in 6 patients, mass with perforation in 7 patients and only mass in 1 patient (table-6).

Wound Infection and Medication

2 of the study group patients had port site infection, treated with opening of the port site suture, dressing and antibiotics and increase in hospital stay (table-7).

Post Operative Recovery

Oral feeds were resumed on an average on 2nd day.

Duration of hospital stay

Duration of hospital stay was 3 days in laparoscopic surgery.

DISCUSSION

Laparoscopic appendicectomy gained lot of attention around the World. Laparoscopic appendectomy is very safe and effective and is excellent alternative for patients with acute appendicitis and with its complications. Laparoscopic appendectomy is very widely available. All surgeons agree that for women of child bearing age Laparoscopic appendicectomy is unquestionably the method of choice as a safe procedure, providing less postoperative morbidity and reducing the postoperative hospital stay, complications, return to normal activity and is cosmetically better. Outcome measures primarily in terms of generalized peritonitis, wound infection, intraabdominal abscesses, fistula formation, stump appendicitis, port site hernia and adhesions leading to intestinal obstruction involved in the group were studied. In our study we included the patients who presented with signs of peritonitis/ appendicular mass/ abscess/ gangrene/ appendicitis with dense adhesions/ perforated appendix and those with gangrenous and perforated appendix.

In our group of 25 patients, 7 patients presented with early mass and dense adhesions and none of the patients developed any complications like wound infection, intestinal obstruction during post operative and follow up period of three months. This was similar with PSP Senapathi et al 2002⁹ who operated on appendicular mass in 10 patients and generalized peritonitis in 2 patients and outcome was without complications. Similar outcomes were reported by BK Goh¹⁰, LR Padankatti-2008¹¹, and R. Rai-2007.¹²

In our study group of 25 patients, 18 presented with perforated appendix either at the base, tip or in the middle and 6 patients presented with gangrenous appendix and none of the patients had intra abdominal abscess and 2 patients with port site wound infection during the post operative period or during the 3 months follow up period. Frazee RC et al- 1996¹³ - In his study reported that 5

Variable	Mean
Hb (g%)	11.71
TWBC (cells/cm)	14040

Table-4: Lab Parameters

Variable	Number	Percentage
Normal	0	0
Abnormal pathology	25	100

Table-5: Ultrasonographic findings

Intra operative findings	Number
Perforation	18
Gangrene	6
Mass with perforation	7
Only mass	1

Table-6: Intra Operative Findings

Variable	Number	Percentage
Wound infection	2	
Nil		8
Moderate	23	92
Severe	Nil	Nil
Antibiotic use		
Parental and oral (days)	5	

Table-7: Wound infection and medication

(26%) of 19 patients with perforated appendix operated laparoscopically developed intra abdominal abscesses and 2(10%) patients developed wound infection. 15 gangrenous patients operated and 1(7%) patient developed intra abdominal abscess.

K. Kathouda et al- 2000¹⁴ reported 1 patient with intra abdominal abscess of 46 laparoscopic appendectomy cases and nil intra abdominal abscess patient in 60 perforated patients.

Pokala N et al 2007¹⁵ has reported 6 cases of intra abdominal abscesses in 43 patients operated laparoscopically for gangrenous appendix.

Khalili TM et al 1999¹⁶ has reported 1 intra abdominal abscess for 77 gangrenous appendix patients. Our study had similar outcome as in other studies¹⁷⁻²¹ with nil intra abdominal abscesses complications

Yao CC et al 1999²² performed laparoscopic appendectomy in 10 patients with perforated appendix with local peritonitis and 15 cases of perforated appendix with diffuse peritonitis and 9 patients with appendicular abscesses. None of the patients had complications like peritonitis, adhesive intestinal obstruction or fistula formation and study correlates with our study.

Our Study has close similarity with the study of Mohammed Saquib Mallick et al 2007²³ who operated upon 34 perforated, 12 ganrenous and 13 appendicular mass, total 59 and 4 (7.3%) patients developed port site infection. In comparison with the study our study has

near similar outcome. Our study group has 18 perforated (Appendicular mass together with perforation 7), 6 gangrenous and 1 appendicular mass, total of 25 and we reported 2 (8%) patients with wound infection. Maria Manazes et al 2008²⁴ reported 13(6%) cases of port site infection out of 213 cases who presented with appendicular perforation, abscesses and peritonitis. Similar outcome were reported when comparing with the study by Peter S Paik et al 1997.²⁵

Stump appendicitis also not seen in any one of our patients, but which was reported and treated 1 each according to LK Shin 2005²⁶ and E. Topal 2006²⁷

The best outcome in our group was possible because of precautionary measures taken during the procedure:

The small bowel, large bowel and omental inflammatory adhesions were freed by blunt dissection. Pus, inflammatory exudates should be removed with suction and thorough irrigation of the area should be given which will certainly prevent adhesive intestinal obstruction. After defining the appendix the base should be double ligated with 2-0 vicryl. Third ligature we apply distal to the second ligature with a space to cut in between. Third ligature is very useful in preventing the spillage of infected material into the peritoneal cavity. Cut edge of the base should be cauterized to clear off the infection at the exposed base and to prevent post operative adhesions. Appendix will be collected in impermeable plastic bag which was practiced in our early cases. Later, we practiced removing the appendix through the Camera port cannula (10mm) which completely took the appendix without touching the tissues of port area, preventing wound infection. If needed another thorough irrigation was given. We never thought of stump appendicitis as we have ligated the base at appropriate length.

CONCLUSION

On analysing the data, we found satisfactory outcome with laparoscopic procedure in complicated appendicitis. Laparoscopic appendectomy has higher rates of success in complicated appendicitis like in early mass, perforated, gangrenous appendicitis and with dense adhesions. Outcome parameters like peritonitis, fistula formation, intra abdominal abscesses, stump appendicitis and adhesive intestinal obstruction were nil except wound infection at the port site through which gangrenous and perforated appendix taken out which is of negligible significance.

Our study certainly proved that every new emerging technology should be learned and practiced with dedication. Study proved laparoscopic appendectomy is the BEST approach in complicated appendicitis.

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