



## A PROSPECTIVE STUDY OF LAPAROSCOPIC APPENDICECTOMY IN PATIENTS WITH ACUTE APPENDICITIS WITH PERFORATION

**Dr. Maddikatla Kalyan Venkat Siva Sai Kumar**

Post Graduate 3rd Year

**Dr. V. Vijaya Lakshmi**

Associate Professor

**Dr. G Venkata Naidu**

Assistant Professor

**Dr. L Manohar Reddy\***

Assistant Professor \*Corresponding Author

**ABSTRACT** **Background:** Laparoscopic Appendicectomy is the preferred way of managing an appendicitis with perforation. **Aims & objectives:** This prospective study aims at knowing the role of laparoscopic appendicectomy in acute appendicitis with perforation. **Materials & Methods:** Study design: Prospective study. **Source of study:** General Surgery In patients, Government General Hospital, Anantapur. Duration Of study 18 months starting from December 2020 to May 2022. **Number of patients:**50. **Inclusion criteria-** Both males and females of age 12-60 years presenting with signs and symptoms of acute appendicitis with radiological confirmation of appendicular perforation through USG/CT and consenting for treatment. **Exclusion criteria:** Age above 60 years, acute appendicitis with diffuse peritonitis features and with mass formation, Pregnant females, Patients not giving consent. **Results:** Data were presented in the form of graphs, tables, pie charts, and bar charts in the form of signs symptoms, radiological evidence, intraoperative findings, complications and length of stay in hospital. **Conclusion:** - LA has been more frequently used for perforated appendicitis in adults and children by surgeons experienced in laparoscopy. laparoscopic appendicectomy in patients with perforated appendicitis is advantageous in reducing post operative morbidity and early recovery of the patient. Study proved laparoscopic appendectomy is the BEST approach in perforated appendicitis.

### KEYWORDS :

#### INTRODUCTION

Appendicitis is the most common intra-abdominal disease requiring emergency surgeries, with a lifetime risk of 6%.<sup>1</sup> Appendectomy remains one of the most common procedures in general surgery, accounting for approximately 1% of all surgical procedures.<sup>2</sup>

Modern diagnostic facilities, surgical techniques, fluids, and antibiotic therapy have reduced mortality from 50% (before 1925) to less than 1/1,00,000, but morbidity still exceeds 5-8% because of wound infection due to delay in diagnosis and treatment<sup>3</sup>

Laparoscopic appendicectomy was first reported by Semm. Minimal access technique has better visualization of the pathology and the surrounding anatomy with more accessibility in comparison to open surgery. Some authors suggested that complicated appendicitis could be better managed with laparoscopy.

The open approach results in larger incisions, more tissue incision, obscured surrounding anatomy, excessive traction from the laparotomy, longer operative time, more surgical stress on the patient, and higher infection rate more at the surgical site. However, several studies have also examined the role of laparoscopy in complicated appendicitis, and the results are controversial.

With experience accumulated with simple appendicitis, LA is being tried more frequently to treat perforated appendicitis. In our retrospective comparative study, 91 of 99 perforated appendicitis patients were successfully treated with LA and the wound infection rate (15.2%) was lower than in his OA group (30.7%).<sup>4</sup> Similar favorable results have been shown in patients with perforated appendicitis with respect to wound infection rates of LA as LOS, antibiotic use, resumption of oral feeding, than OA.<sup>5-7</sup>

The choice of surgical approach is currently largely at the discretion of the surgeon. Golbe et al.<sup>8</sup> reported lower wound infections, longer operative time, and higher incidence of intra-abdominal abscess (IAA) with LA than with OA in a meta-analysis of 16 prospective randomized studies; Sauerland<sup>9</sup> also reported in his Cochrane review of 45 studies. Similarly, Yau et al.<sup>10</sup> and Pokhara et al.<sup>11</sup> reported lower wound infection rates and higher IAA rates with compared with OA.

The purpose of the present study was to evaluate the efficacy of Laparoscopic appendectomy in patients with Appendicular Perforation in our setup.

#### MATERIALS AND METHODS

This was a prospective study conducted during the period of 2020 to 2022 in Department of General Surgery, Government General Hospital, Anantapur. 50 cases of appendicitis with perforation which were diagnosed, admitted, investigated, treated and followed up in Government General Hospital, Ananthapuram during the period of November 2020 to November 2022. These patients are treated laparoscopically and the collected data was analyzed

#### Sample Size:

50 cases were included in the present study.

#### Inclusion Criteria:

Age 18-60 Both male and female Patients presenting with signs and symptoms of acute appendicitis Patients with radiological confirmation of appendicular perforation through USG/CT. Patient consenting for treatment

#### Exclusion Criteria

Age >60 years Patients of acute appendicitis with diffuse peritonitis features. Patients of acute appendicitis with mass formation. Pregnant females Patients not giving consent

#### Selection Of Cases:

Patients who presented to the General Surgery Outpatient Clinic and the casualty during the period of the study were diagnosed and admitted for investigations and follow up. A total of 50 cases meeting the diagnostic criteria were examined and agreed to participate in the study.

#### Ethical Issue:

Institutional Ethics committee issued ethical clearance for the study.

#### OBSERVATION AND RESULTS

In present study 20(40%) patients are between age of 12 years to 20 years and 16(32%) patients were about 21 years to 28 years and

12(24%) of patients are of 29-36 years and two (4%) are between 37-44 years of age. Majority (72%) of patient's age group lies in 2nd and 3rd decade of life and are more prone for appendicular perforation. Sex distribution is about 54% (27) males and 46%(23) females.



Bar Chart-1-symptoms Of Appendicular Perforation



Bar Chart-2-signs Of Appendicular Perforation

Table-1-diagnosis Of Appendicular Perforation By Usg.

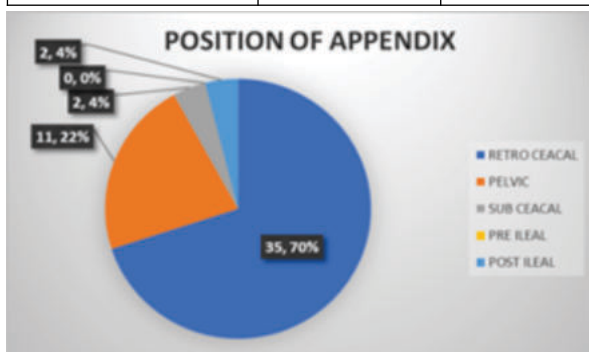
Ultrasound Abdomen	Detected	Not Detected	Total
Number Of Patients	35	15	50
Percentage	70%	30%	100%

Table-2-diagnosis Of Appendicular Perforation By Cect.

Cect Abdomen	Detected	Not Detected
Number Of Patients	14	1
Percentage	93.33%	6.66%

Table-3- Time Of Presentation

Time Of Presentation After Onset Of Symptoms	Number Of Patients	Percentage
<24 Hours	11	22%
>24 Hours	39	78%



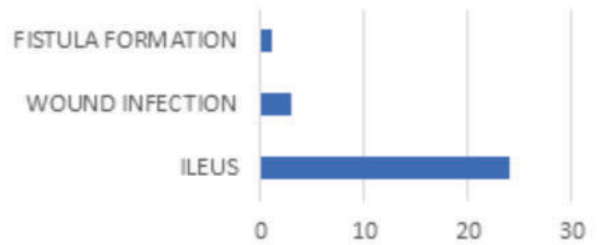
Pie Chart-1- Positions Of Appendix Intra Operatively

In this study intra operative findings of presence of appendicular mass and abscess are taken where the patients with appendicular mass is 7 (14%) and abscess are 13(26%) and rest of the patients 30(60%) of them are without mass or abscess formation.

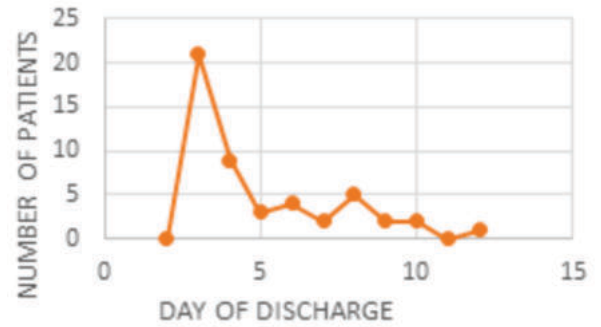
Depending on the place where the perforation has undergone cases has been distributed into perforation at tip in 40(80%) of cases and at base in 6(12%) cases and at the middle in 4(8%) of cases.

Conversion of laparoscopic procedure to open procedure is seen only in 2(4%) of cases. The rest of the cases has been managed through laparoscopic approach.

## POST OP COMPLICATIONS



Bar Chart-3-post Op Complications



Graph-1-day Of Discharge Of The Patients.

## DISCUSSION

In present study , Laparoscopically treated patients aged between 12-60 years with mean age group of 23.48 is seen and when compared to *c.p garg et al* where 49 patients have undergone LA for appendicular perforation and which has been an average age group of 23 years. Another study i.e., *Sattar, et al* has a mean age group of 28.56 years.

### Sex Distribution:

male to female ratio is about 27:23 when compared to *sattar et al*, the distribution is like 56% and 44% and in *C. P. garg et al* the males are about 57.14% and 42.86%

### Total Count:

Study	Total Count
Sattar Et Al.	14040 Cells/Cumm
Present Study	12622 Cells/Cumm

### Ultrasonography:

Ability of the USG to detect appendicular perforation is controversial in *sattar et al* there is 100% detection of appendicular perforation by USG but in our study USG diagnosis of perforation of appendix is in 70% of the individuals and the other individuals are subjected to Contrast Enhanced CT.

CECT abdomen is the gold standard for diagnosing appendicular perforation and the patients who are not diagnosed by USG are subjected to CECT and out of 15 (30%) of the patients 14 were diagnosed with appendicular perforation and the probability of diagnosing appendicular perforation is 93.33% and remaining 6.66% is detected intra operatively.

### Intra Abdominal Abscess

Study	Intra Abdominal Abscess
Tuggle Et Al	6.74%
Masoomi Et Al	1.65%
Oyetunji Et Al	4.9%
Present Study	2.0%

In present study there is only 2% of the patient having fistula formation after recovering from an intra-abdominal abscess IAA. where in *tuggle et al* 6.74% and *masoomi et al* 1.65% and *oyetunji et al* 4.9% of IAA is present.

### Appendicular Mass:

Study	Appendicular Mass
Sattar, Et Al	32%
Present Study	14%

Intra operative appendicular mass with perforation is seen in 14% of the patients in this study where in appendicular perforation with mass is seen in 32% in sattar et al.

#### Day Of Discharge /length Of Hospital Stay

These depend on factors of intra operative findings like mass formation and abscess and post operative ileus and wound infection hence the length of stay is considered in evaluating the morbidity and outcome of the individual. Majority of the patients has been discharged by day 3 (42%), 18% on day 4 and patients with complications like abscess and drain placement has been discharged by day 5(6%) to day 8(10%). 4% each on day 9 &10. Individual with fistula formation has been discharged on day 12(2%).

#### CONCLUSION

LA has been more frequently used for perforated appendicitis in adults and children by surgeons experienced in laparoscopy. Most studies have concluded that LA has a faster recovery and less morbidities. LA is associated with a shorter hospital LOS, a lower mortality rate, a lower overall complication rate. Conversion procedure from LA to OA is minimal though the access of appendix is easy with LA in a perforated appendix. For perforated appendicitis, on analyzing data, we have a satisfactory outcome with laparoscopic procedure in perforated appendicitis. Laparoscopic appendectomy has higher success rates in complicated appendicitis like in early mass, perforated, gangrenous appendicitis and with dense adhesions. Outcome parameters like peritonitis, fistula formation, intra-abdominal abscesses, were nil except wound infection at the port site through which perforated appendix taken out which is of negligible significance. Our study certainly proved that laparoscopic appendectomy in patients with perforated appendicitis is advantageous in reducing post operative morbidity and early recovery of the patient. Study proved laparoscopic appendectomy is the BEST approach in perforated appendicitis.

#### REFERENCES

- Guller U, Herve S, Purves H, Muhlbaier L, Peterson E, Eubanks S, et al. "Laparoscopic database". *Ann Surg* 2004; 239: 43-52.
- Telfor G, Wallace J, "Appendix" chapter 13 in Oxford text book of surgery, Morris PJ., Wood WC, Eds. Vol.2, 2nd Edn, Oxford Medical Publications, 2000; 180-189.
- Palanivelu C. "Laparoscopic appendicectomy" chapter 53 in Text book of surgical laparoscopy, Shrinivas Fine Art Limited, 2002; 411-424.
- Lin HF, Wu JM, Tseng LM, Chen KH, Huang SH, Lai IR. Laparoscopic versus open appendectomy for perforated appendicitis. *J Gastrointest Surg* 2006; 10: 906-910 [PMID: 16769550 DOI: 10.1016/j.gassur.2005.12.012]
- Fukami Y, Hasegawa H, Sakamoto E, Komatsu S, Hiromatsu T. Value of laparoscopic appendectomy in perforated appendicitis. *World J Surg* 2007; 31: 93-97 [PMID: 17180555 DOI: 10.1007/s00268-006-0065-x]
- Sleem R, Fisher S, Gestring M, Cheng J, Sangosanya A, Stassen N, Bankey P. Perforated appendicitis: is early laparoscopic appendectomy appropriate? *Surgery* 2009; 146: 731-737; discussion 737-738 [PMID: 19789033 DOI: 10.1016/j.surg.2009.06.053]
- Masoomi H, Mills S, Dolich MO, Ketana N, Carmichael JC, Nguyen NT, Stamos MJ. Comparison of outcomes of laparoscopic versus open appendectomy in adults: data from the Nationwide Inpatient Sample (NIS), 2006-2008. *J Gastrointest Surg* 2011; 15: 2226-2231 [PMID: 21725700 DOI: 10.1007/s11605-011-1613-8]
- Golub R, Siddiqui F, Pohl D. Laparoscopic versus open appendectomy: a meta-analysis. *J Am Coll Surg* 1998; 186: 545-53.
- Sauerland S, Lefering R, Neugebauer EAM. Laparoscopic versus open surgery for suspected appendicitis. *Cochrane Database Syst Rev* 2004; 18(4): CD001546.
- Yau KK, Siu WT, Tang CN, Yang GP, Li MK. Laparoscopic versus open appendectomy for complicated appendicitis. *J Am Coll Surg* 2007; 205: 60-5.
- Pokala N, Sadhasivam S, Kiran RP, Parthivel V. Complicated appendicitis—is the laparoscopic approach appropriate? A comparative study with the open approach: outcome in a community hospital setting. *Am Surg* 2007; 73: 737-41.