



“LAPAROSCOPIC VERSUS OPEN APPENDICECTOMY IN COMPLICATED APPENDICITIS : A COMPARATIVE STUDY IN A TERTIARY CARE CENTRE”

General Surgery

Dr. Yakkali Gowtham Sandeep Post Graduate Department Of General Surgery Allurisitaramaraju Academy Of Medical Sciences Eluru, Andhra Pradesh-534005, India

Dr. D. Lokanadham Professor Department Of General Surgery Allurisitaramaraju Academy Of Medical Sciences Eluru, Andhra Pradesh-534005, India

ABSTRACT

Aim And Objectives: The study aimed to compare laparoscopic appendectomy and open appendectomy in the management of complicated appendicitis. The objectives included assessing postoperative pain, surgery duration, postoperative complications, and hospital stay for both approaches. **Materials And Methods:** The study Conducted as a prospective study at ASRAM Medical Hospital over 12 months (FEB 2023 - FEB 2024), the study involved 50 patients diagnosed with complicated appendicitis, who were randomly assigned to either laparoscopic or open appendectomy groups. **Results:** Results indicated no significant differences in age, gender distribution, or mean days of symptoms between the two groups. However, the mean duration of surgery was notably longer for open appendectomy. Laparoscopic surgery required fewer intra-operative drains (12% vs. 40%) and showed no significant differences in bleeding or ileal injury. Postoperative complications were higher in the open appendectomy group, including paralytic ileus, intra-abdominal abscess, and surgical site infections. Consequently, the open appendectomy group had a longer hospital stay and higher readmission rates. **Conclusion:** Laparoscopic appendectomy demonstrated advantages over open appendectomy, including fewer complications, shorter hospital stay, faster recovery, and lower readmission rates. Despite the small sample size, the findings support laparoscopic appendectomy as a superior and reliable option for managing complicated appendicitis.

KEYWORDS

laparoscopic appendectomy, open appendectomy, complicated appendicitis

INTRODUCTION

The appendix is a small, vestigial tube, 8-10 cm long and 1.3 cm wide, attached to the cecum. Its main function is to expel its contents into the cecum. Appendicitis, an inflammation of the appendix, is a common cause of acute abdominal pain and often requires emergency surgery, with about 12% of men and 25% of women needing an appendectomy during their lifetime.

While appendicitis can sometimes resolve on its own, it often leads to complications like necrosis, gangrene, abscesses, or perforation, which require immediate surgery. Until 1981, open surgery via McBurney's incision was the standard. Since 1983, laparoscopic appendectomy has become popular for its minimally invasive nature and quicker recovery.

Despite its advantages, laparoscopic surgery is debated for complicated appendicitis due to concerns about its effectiveness in such cases. Perforation, occurring in about 30% of appendicitis cases, is a serious complication. Some surgeons prefer open surgery for complicated cases to reduce risks like morbidity and mortality. Although laparoscopic surgery has shown benefits, including reduced incision size and better cosmetic outcomes, it may have higher costs and risks of postoperative complications.

This study aims to compare laparoscopic and open appendectomy for complicated appendicitis to assess the effectiveness and safety of each approach.

Aim Of The Study:

- The Aim of this study is to compare between Laparoscopic appendectomy to my and openappendicec to my uncomplicated appendicitis.
- To evaluate the effectiveness and safety of laparoscopic approach uncomplicated appendicitis.

Objectives Of The Study:

- To Measure Post operative pain in both laparoscopic and open approach uncomplicated appendicitis.
- To record duration of surgery in minute sin both laparoscopic and open approach
- To compare the post operative complications in both approaches
- To determine the post operative length of hospital stay in number of days in both approaches.

MATERIALS AND METHODS

- Study method:** Prospective Study
- Study area:** ASRAM medical hospital

- Study period:** FEB2023–FEB 2024(12 MONTHS)
- Data collection:** 12months
- Study population:** Patients presenting to ASRAM medical college hospital with clinical diagnosis of complicated appendicitis.
- Sample size:** 50patients

Inclusion Criteria:

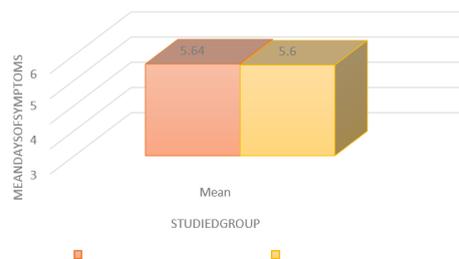
- Patients presenting with symptoms of complicated appendicitis supported by clinical evidence and radiological investigations.
- Patients above 15yearsof age.

Exclusion Criteria:

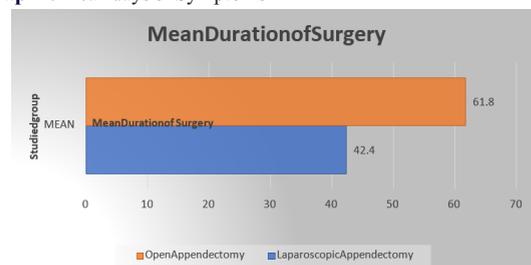
- Pregnan twomen.
- Patients less than 15 years of age
- Uncomplicated appendicitis.
- Patients having Contraindication for laparoscopic surgery.
- Patients greater than 70 years of age.

OBSERVATIONS AND RESULTS

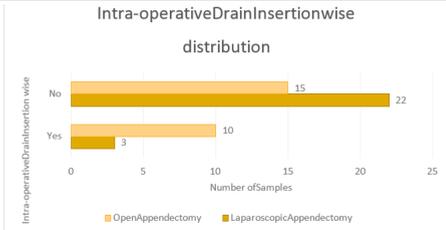
MeandaysofSymptoms



Graph 1: Mean days of Symptoms



Graph 2: Mean Duration of Surgery:



Graph 3: Intra-operative Drain Insertion wise distribution:

Table 1: Intra operative Complication wise distribution:

Intra-Operative Complication	Laparoscopic Appendectomy	Open Appendectomy	P value
Bleeding	Yes	2(8%)	0.1228(NS)
	No	23(92%)	
Ileal Injury	Yes	1(8)	0.1573(NS)
	No	24(92%)	

Chi square test applied; NS=Not Significant

Table 2: Post-Operative Complication wise distribution:

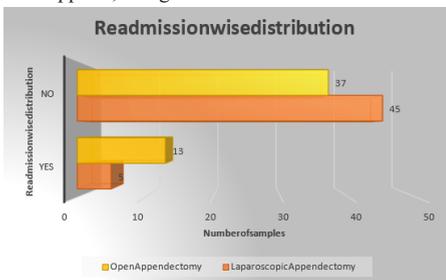
Post-Operative Complication	Laparoscopic Appendectomy	Open Appendectomy	P value
Chest Infection	Yes	3(12%)	0.4404(NS)
	No	22(88%)	
Paralytic Ileus	Yes	2(8%)	0.0169(S)
	No	23(92%)	
Intra-Abdominal Abscess	Yes	4(16%)	0.0308(S)
	No	21(84%)	
Surgical Site Infection	Yes	5(20%)	0.036(S)
	No	20(80%)	

Chi square test applied; NS=Not Significant; S=Significant

Table 3: Duration of Stay in Hospital wise distribution:

Duration of Stay in Hospital	Laparoscopic Appendectomy	Open Appendectomy
3-5 days	22(84%)	14(66%)
>5 days	3(16%)	11(34%)
Mean	1.96	5.32
Standard deviation	1.72	1.49
P value	<0.0001(S)	

Student t test applied; S=Significant



Graph 4: Readmission wise distribution:

DISCUSSION

- The Aim of this study is to compare between Laparoscopic appendectomy and open appendectomy in complicated appendicitis and to evaluate the effectiveness and safety of laparoscopic approach in complicated appendicitis.
- It's a comparative study done at ASRAM medical college from FEB 2023 to FEB 2024. Sample size is 50 patients and the study population included are the patients who are presenting to ASRAM medical college with the clinical diagnosis of complicated appendicitis.
- By random sampling technique, 25 patients are selected for laparoscopic appendectomy and 25 patients are selected for open appendectomy.
- Parameters between two surgical methods checked are:

1. Age wise distribution:

There was no statistically significant difference in age wise

distribution of acute complicated appendicitis is treated with laparoscopy and open conventional surgical method when student t test is applied. (p>0.05).

2. Gender wise distribution:

There was no statistically significant difference in sex wise distribution among the groups underwent laparoscopic or open appendectomy. Chi square test was applied to determine this inference of no significance. (p>0.05)

3. Me and ays of Symptoms:

There was no statistically significant difference between two groups related to symptoms. (p>0.05), Here the no significance was determined by student t test.

4. Mean Duration of Surgery:

There was a statistically significant difference in duration of surgery explaining the increased duration of surgical time for open appendectomy. (p<0.05).

5. Intra-operative Drain Insertion:

In this present study, among 25 patients who underwent laparoscopy intraoperative drain placement required only in 3 patients (12%). In open appendectomy my group of 25 people total 10 patients (40%) required intra operative drain placement. Here the difference among two groups was statistically significant. (p<0.05). This is explaining the need of drain placement is more for open appendectomy than laparoscopic technique.

6. Intra operative Complication:

- Bleeding:** Laparoscopic appendectomy and open appendectomy both had noticeable bleeding intra operatively. The difference was statistically not significant.
- Intra operative ileal injury:** Intra operative ileal injury was seen in very few cases of open and laparoscopic appendectomy and the difference is not statistically significant.

7. Post-Operative Complications:

- Chest infection:** No significant difference in both the methods.
- Paralytic ileus:** Higher in open appendectomy to my patients and is statistically significant
- Intra-abdominal abscess formation:** Higher in open appendectomy patients and is statistically significant
- Surgical site infection:** Higher in open appendectomy patients and is statistically significant

8. Duration of Stay in Hospital:

In increased hospital stay required for open appendectomy to my patients and is statistically significant

9. Readmission:

Open appendectomy to my patients required higher readmissions than for laparoscopic surgery patients. Difference is statistically significant.

CONCLUSION

The present study found that patients who underwent laparoscopic appendectomy experienced fewer surgical site infections, lower intraoperative and postoperative complications, reduced hospital stay, quicker return to normal diet, faster recovery, earlier discharge, and fewer readmissions compared to those who had open surgery.

Despite the limited sample size, laparoscopic appendectomy demonstrated clear benefits. It is a safe, effective, and reliable option for managing complicated appendicitis.

REFERENCES

- Markides G, Subar D, Riyad K: (2010) Laparoscopic versus open appendectomy in adults with complicated appendicitis: systematic review and meta-analysis. World JSurg 2010; 34:2026-40.
- Sun Gu Lim, Eun Jung Ahn, Seong Yup Kim, Il Yong Chung et al. A Clinical Comparison of Laparoscopic versus Open Appendectomy for Complicated Appendicitis. J Korean Soc Coloproctol 2011; 27(6):293-297.
- Horvath P, Lange J, Bachmann R, Struller F, Königsrainer A, Zsichavsky M (2017) Comparison of clinical outcome of laparoscopic versus open appendectomy for complicated appendicitis. Surg Endosc 31(1):199-205.
- G. Suman & M. Srikanth. (2018). Open Appendectomy versus Laparoscopic Appendectomy in my Complicated Appendicitis: A Comparative Study. SASJ. Surg., Dec 2018; 4(12):324-327.
- Soltan, H. M., El-Tatawy, A. G., & Alsegaey, A. H. (2019). Laparoscopic versus open appendectomy in complicated acute appendicitis. Menoufia Medical Journal, 32(2), 554.
- Nazir A, Farooqi S, Chaudhary N A, et al. (July 09, 2019) Comparison of Open

- Appendectomy and Laparoscopic Appendectomy in Perforated Appendicitis. *Cureus* 11(7):e5105. DOI10.7759/cureus.5105
7. Seqsaqa, M., Rozeik, A. E., Khalifa, M., & Ashri, H. N. A. (2020). Laparoscopic versus open appendectomy in complicated appendicitis in children: a single center study. *Egyptian Pediatric Association Gazette*, 68(1), 1-5.
 8. Priyanka Patel, Jaimini Jaiswal, Assessment of the role of Laparoscopic Management in Patients with Complicated Appendicitis. *Academia Journal of Surgery* 99 Volume 3 99 Issue 2 99 July-December 2020
 9. Poprom N, Wilasrusmee C, Attia J, McEvoy M, Thakkinstian A, Rattanasiri S: Comparison of postoperative complications between open and laparoscopic appendectomy: an umbrella review of systematic reviews and meta-analyses. *J Trauma Acute Care Surgery* 2020; 89: 813-20.
 10. IBRAHEEM, M., SAYED, A. A. A., & RAAFAT, I. (2021). A Comparative Study of Laparoscopic and Open Appendectomy. *The Medical Journal of Cairo University*, 89(March), 155-161.
 11. E.A. Sadek, G.E. Saleh M.T. Youness and S.A. El-gazzar. (2021). Comparative study between Open and Laparoscopic Appendectomy in Complicated Cases. *Benha Journal of Applied Sciences (BJAS)* print: ISSN 2356-9751 Vol. (6) Issue (5) Part (1) (2021), (37-44).
 12. Syed Farhadrasuli, Jasmine Naz, Nabeel Hussain et al. (2022) Laparoscopic versus open appendectomy for patients with perforated Appendicitis. *Cureus* 14(6): e26265. DOI 10.7759/cureus.26265.
 13. Neogi S, Banerjee A, Panda SS, Ratan SK, Narang R: Laparoscopic versus open appendectomy for complicated appendicitis in children: a systematic review and meta-analysis. *J Pediatr Surg* 2022; 57: 394-405.