WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A Comparative Study on Laparoscopic Versus open Appendicectomy in Complicated Appendicitis

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ABSTRACT

AIM AND OBJECTIVES

The study aimed to compare laparoscopic appendicectomy and open appendicectomy incomplicated appendicitis. The objectives included assessing and comparing postoperative pain, surgery duration, postoperative complications, and hospital stay in 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 appendicectomy 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 appendicectomy as a superior and reliable option for managing complicated appendicitis.

KEY WORDS : laparoscopic appendicectomy, open appendicectomy, 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.

AIMOFTHESTUDY:

- The Aim of this study is to compare between Laparoscopicappendicectomy and open appendicectomy in complicated appendicitis.
- To evaluate the effectiveness and safety of laparoscopic approach in complicated appendicitis.

OBJECTIVESOFTHE STUDY:

- To Measure Postoperative pain in both laparoscopic and openapproach in complicated appendicitis.
- To record duration of surgery in minutes in both laparoscopic and openapproach
- To compare the postoperative complications in both approaches
- To determine the postoperative length of hospital stay in number ofdays in both approaches.

MATERIALS AND METHODS

- **Study method:** Prospective Study
- **Study area:** ASRAM medical hospital
- **Study period:** FEB 2023 – FEB 2024(12 MONTHS)
- **Data collection:** 12 months
- **Study population:** Patients presenting to ASRAM medical collegehospital with clinical diagnosis of complicated appendicitis.
- **Sample size:** 50 patients

INCLUSIONCRITERIA:

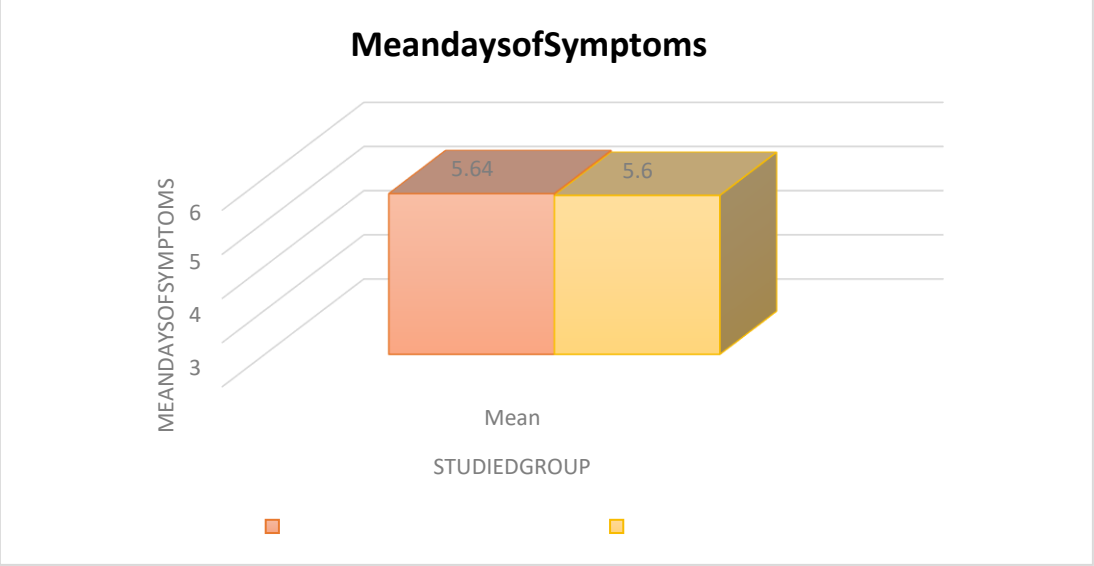
- Patients presenting with symptoms of complicated appendicitis supported by clinical evidence and radiological investigations.
- Patients above 15 years of age.

EXCLUSIONCRITERIA:

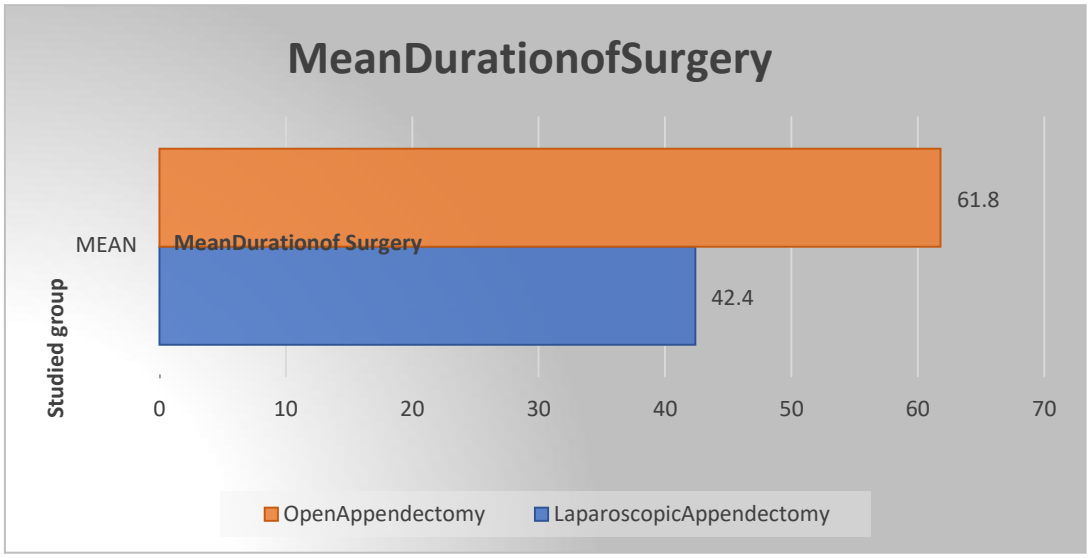
- Pregnantwomen.
- Patientslessthan15 yearsofage
- Uncomplicatedappendicitis.
- PatientshavingContraindicationforlaparoscopicsurgery.
- Patientsgreaterthan70yearsof age.

OBSERVATIONS AND RESULTS

Graph1: MeandaysofSymptoms



Graph2: MeanDurationofSurgery:



Graph3:Intra-operative Drain Insertion wise distribution:

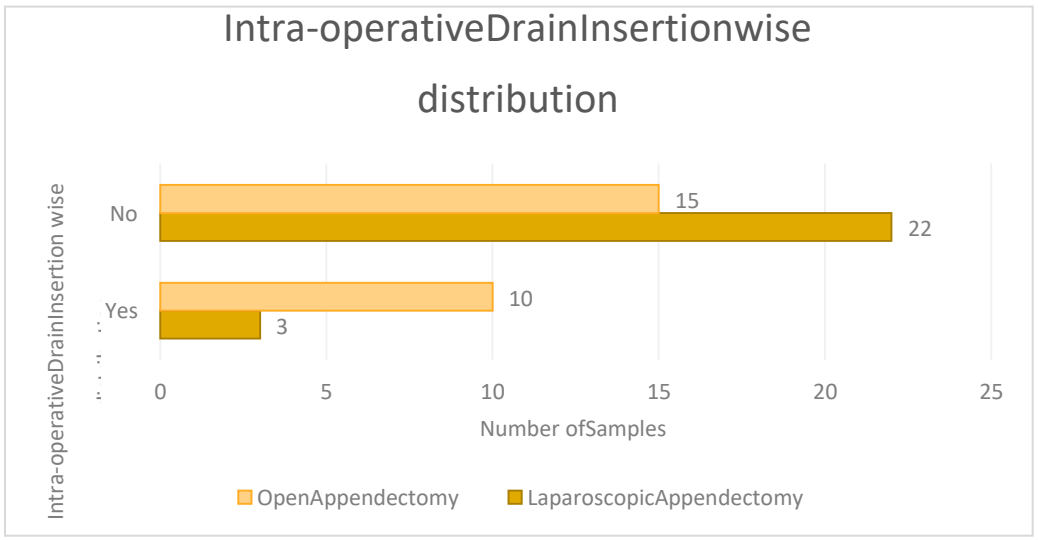


Table1:Intraoperative Complication wise distribution:

Intra-OperativeComplication		**LaparoscopicAppendicectomy**	**Open Appendicectomy**	**Pvalue**
Bleeding	**Yes**	**2(8%)**	**6(24%)**	**0.1228(NS)**
	No	**23(92%)**	**19(76%)**	
Ileal Injury	Yes	1(8)	4(14%)	0.1573(NS)
	No	24(92%)	21(86%)	

Chi square test applied; NS=Not Significant

Table2:Post-Operative Complication wised istribution:

Post-Operative Complication		Laparoscopic Appendicectomy	Open Appendicectomy	Pvalue
Chest Infection	Yes	3(12%)	5(20%)	0.4404(NS)
	No	22(88%)	20(80%)	
ParalyticIleus	Yes	2(8%)	9(36%)	0.0169(S)
	No	23(92%)	16(64%)	
Intra-Abdominal Abscess	Yes	4(16%)	11(44%)	0.0308(S)
	No	21(84%)	14(56%)	
Surgical Site Infection	Yes	5(20%)	12(48%)	0.036(S)
	No	20(80%)	13(52%)	

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

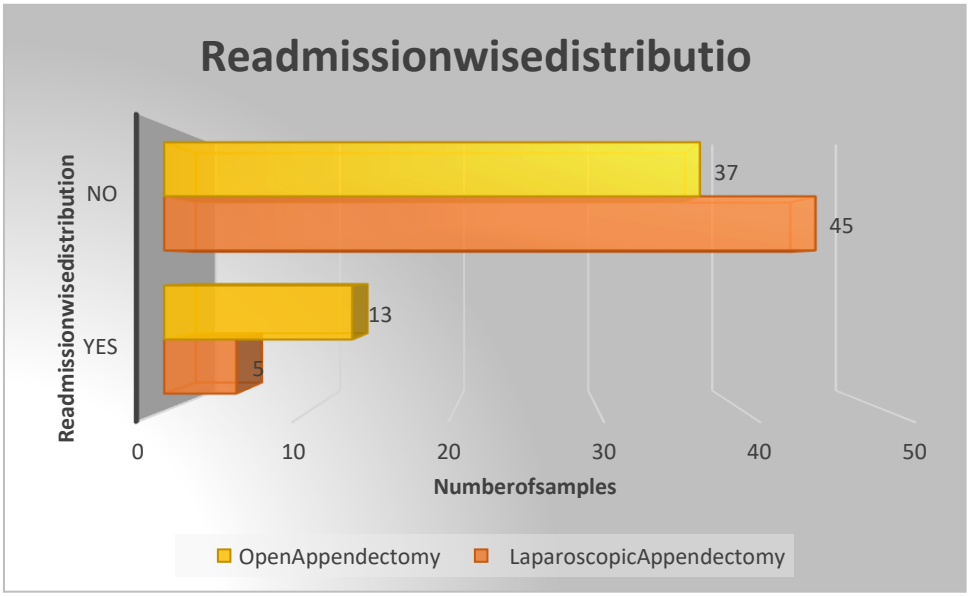
Table3: Duration of Stayin Hospital wise distribution:

Duration of Stayin Hospital	Laparoscopic Appendicectomy	Open Appendicectomy
3-5days	22(84%)	14(66%)
>5days	3(16%)	11(34%)
Mean	1.96	5.32

Standard deviation	1.72	1.49
Pvalue	<0.0001(S)	

Students t test applied; S=Significant

Graph4:Readmission wisedistribution:



DISCUSSION

- The Aim of this study is to compare between Laparoscopic appendicectomy and open appendicectomy in complicated appendicitis and to evaluate theeffectiveness and safety of laparoscopic approach in complicatedappendicitis.
- 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 appendicectomy and 25 patients are selected for open appendicectomy.

- 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 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 appendicectomy. Chi square test was applied to determine this inference of no significance. (p>0.05)

3. **Mean days of Symptoms :**

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

appendicectomy.($p<0.05$).

5. **Intra-operative Drain Insertion:**

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

6. **Intra operative Complication:**

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

7. **Post-Operative Complications:**

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

8. **Duration of Stay in Hospital:**

Increased hospital stay required for open appendicectomy patients and isstatistically significant

9. **Readmission:**

Open appendicectomy patients required higher readmissions than forlaparoscopic 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.

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