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To Study Comparison between the Outcomes of Laparoscopic Appendectomy and Open Appendectomy in Terms of Post-Operative Pain

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Abstract

Background & Methods: Laparoscopic appendectomy is safe and less post-operative pain and morbidity as compared to open appendectomy. Laparoscopic appendectomy is a useful procedure for reducing the hospital stay, return to work early, less complications encountered. The aim of the study is to study comparison between the outcomes of Laparoscopic appendectomy and Open appendectomy in terms of Post-operative pain. Intravenous fluid should be begun. Monitoring of urine output, blood pressure, pulse. Electrolyte abnormalities should be corrected. Antibiotics should be given before 30 minutes of induction of anaesthesia. Antibiotic should cover both gram negative bacteria and anaerobes.

Results: A higher proportion of patients who underwent Laparoscopy had no infection (97%), with only a small number (3 patients) developing an infection. In contrast, Open surgery had a lower percentage of patients without an infection (73%), and a notably higher number (27 patients) developed a wound infection. Level I: Both laparoscopic and open surgeries had 62 patients reporting no pain. Level II: In both surgeries, 38 patients reported mild pain.

Conclusion: After analysing the all the data's, we found the difference between open and laparoscopic appendectomy. Laparoscopic appendectomy was better than open appendectomy in a properly prepared and selected patient in terms of Post-operative complications like nausea vomiting, wound infection, fever.

Keywords: Laparoscopic, appendectomy, Post-operative & pain.
Study Design: Comparative Study.

1. INTRODUCTION

The life time rate of appendectomy is 12% for men and 25% in women, with approximately 7% of all people undergoing appendectomy for acute appendicitis during their lifetime [1]. It has been observed that males had higher rates of appendicitis than females for all age groups with an overall ratio of 1.2:1.3.

Even though modern diagnostic facilities, surgical skills, antibiotic therapy have brought down the mortality from 50% (before 1925) to less than 0.001% persons, still the morbidity is around 5-8% mainly due to delayed diagnosis & treatment, with the resultant complications[2].

Acute non obstructive appendicitis is caused by mucous membrane inflammation with secondary infection without obstructive causes [3-4]. It may lead into resolution, fibrosis, recurrent appendicitis, or even into the obstructive appendicitis.

Luminal obstruction leads to mucus and inflammatory fluid collects inside the lumen which increases intraluminal pressure leads to blockage of lymphatic and venous drainage resulting in increased oedema of mucosa and causes mucous ulceration and ischemia, along with bacterial spread through submucosa and muscularis propria leads into the acute obstructive appendicitis [5-7].

Thrombosis of appendicular artery along with obstructive appendicitis leads into the ischemic necrosis of full thickness of the wall and gangrene of appendix sets in, which leads into perforation of tip or base leads into peritonitis [8]. After perforation, localization by greater omentum and dilated ileum occurs leads to suppuration and pus inside –appendicular abscess

2. MATERIAL AND METHODS

Present study was conducted at **Osmania medical College, Hyderabad** for 01 Year on 100 cases, from july2023 until august 2024 involved 60 Cases that were consecutively selected, where the investigator was a part of the surgical team managing the patients, by using random sampling technique.

In spinal or general anaesthesia Open appendectomy was performed, through the muscle splitting incision in the right iliac fossa. The base of the appendix was crushed and ligated and the stump of the appendix was not invaginated. In general anaesthesia, Laparoscopic technique performed using the Standardized approach involving the closed technique for the trocar insertion and by 3- port technique. The appendix is divided after double ligation of the base. Extraction of the appendix was performed using trocar sleeve to protect the wound from Contamination during removal.

INCLUSION CRITERIA

1. Patients presenting with acute appendicitis.

EXCLUSION CRITERIA

1. Patients with delayed presentation leading to appendicular mass, abscess.
2. Patients who do not consent for the study.
3. Patients less than 12 years of age.

3. RESULT

Table No. 1: Gender Distribution

S. No.	Gender	Laparoscopy		Open		P Value
1	**Male**	**37**	**37**	**64**	**64**	.000134
2	**Female**	**63**	**63**	**36**	**36**	
		100	**100**	**100**	**100**	

In the study, (37%) males and (63%) females underwent laparoscopic appendectomy. (64%) males and (36%) females underwent open appendectomy. The mean age for undergoing laparoscopic appendectomy was 28.13 years and open appendectomy was 29.36 years. The chi-square statistic is 14.5815. The *p*-value is .000134. The result is significant at $p < .05$.

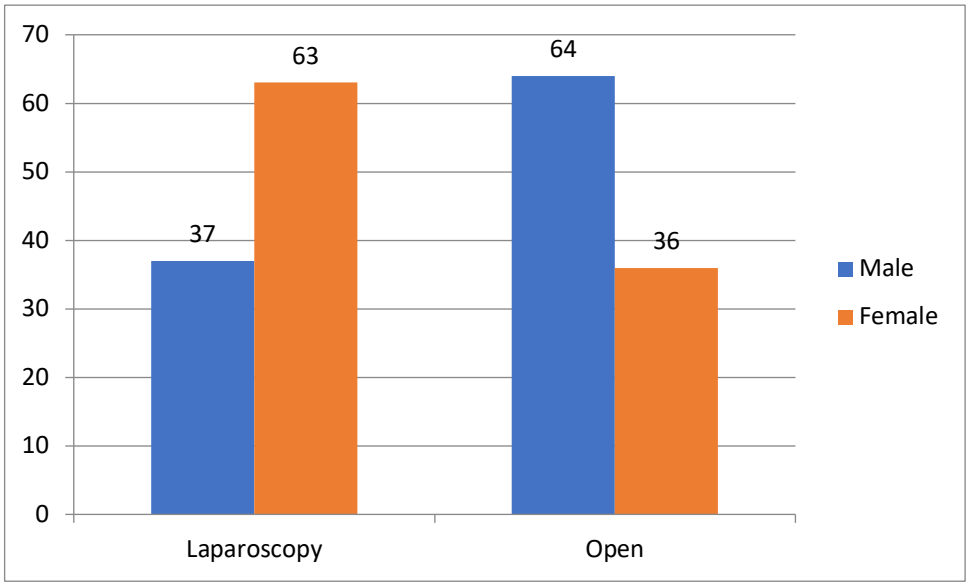


Table No. 2: Nausea and Vomiting

S. No.	Nausea and Vomiting	Laparoscopy		Open		P Value
1	Absent	**41**	**41**	**33**	**33**	.041331
2	Present	**59**	**59**	**67**	**67**	
		100	**100**	**100**	**100**	

In the study, (59%) patients had nausea and vomiting in laparoscopic appendectomy.(67%) patients had nausea and vomiting in open group. (41%) patients had fever in laparoscopic group, (33%) had fever in open group. The chi-square statistic is 3.3728. The *p*-value is .041331. The result is significant at $p < .05$.

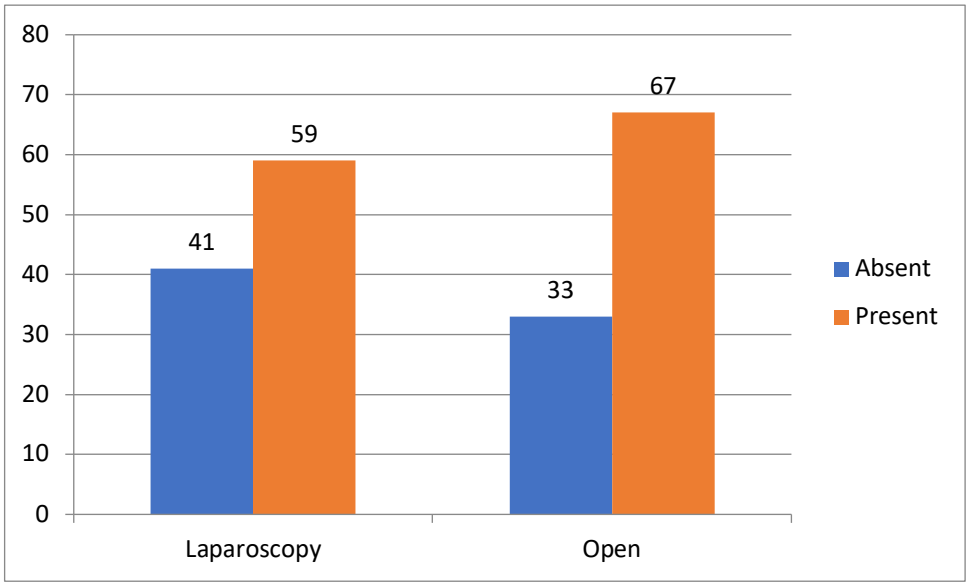


Table No. 3: Post Operative Pain

S. No.	Post Operative Pain	Laparoscopy		Open		P Value
1	I	62	62	00	00	< .00001
2	II	38	38	23	23	
3	III	00	00	27	27	
4	IV	00	00	50	50	
		100	100	100	100	

Level I: Both laparoscopic and open surgeries had 62 patients reporting no pain.
Level II: In both surgeries, 38 patients reported mild pain.
Level III: No patients from the laparoscopic group experienced moderate pain (0), but 27 patients in the open surgery group did.
Level IV: Again, no patients in the laparoscopic group experienced severe pain (0), while 50 patients in the open surgery group reported severe pain. The chi-square statistic is 31.1202. The *p*-value is < .00001. The result is significant at $p < .05$.

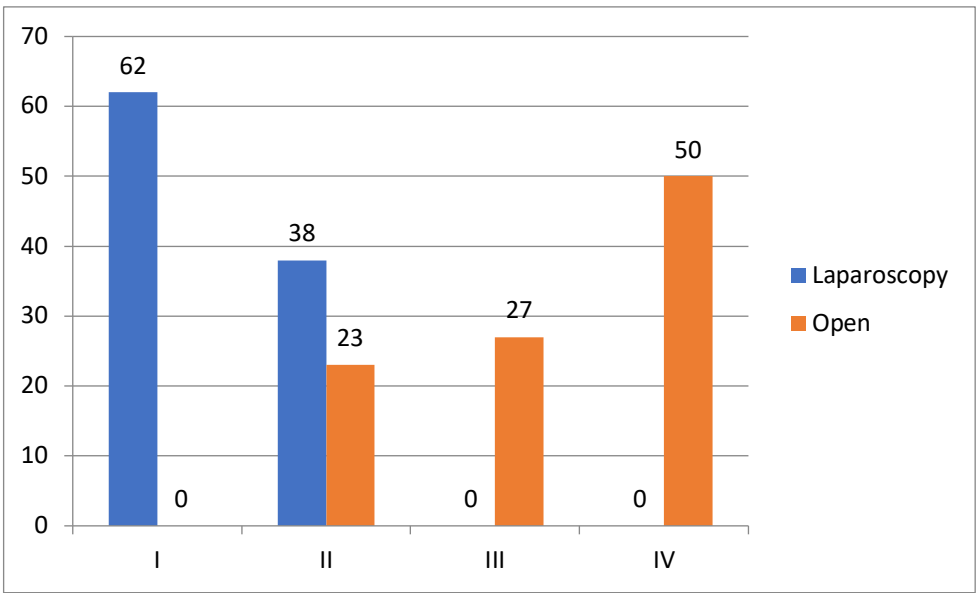
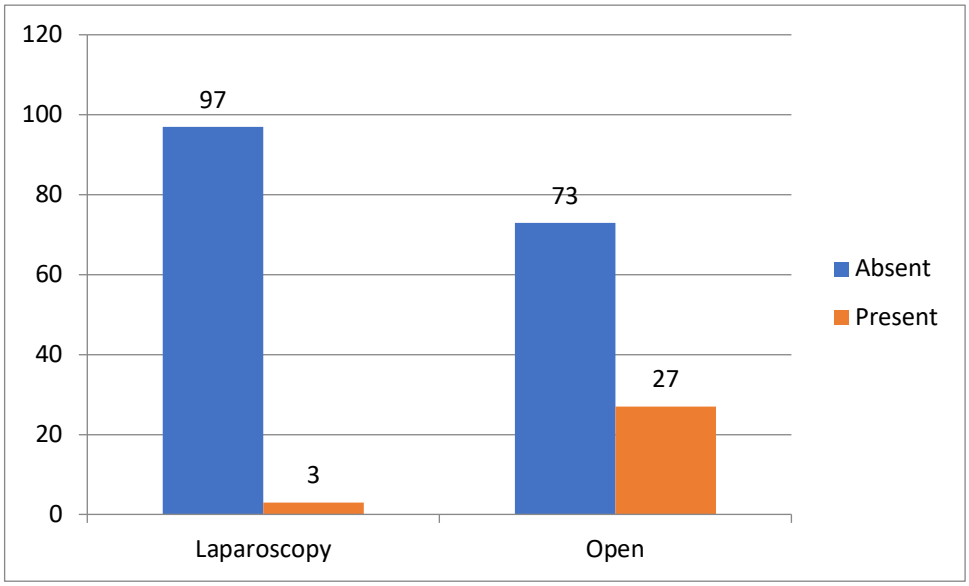


Table No. 4: Wound Infection

S. No.	Wound Infection	Laparoscopy		Open		P Value
1	Absent	**97**	**97**	**73**	**73**	.00501
2	Present	**03**	**03**	**27**	**27**	
		100	**100**	**100**	**100**	

A higher proportion of patients who underwent Laparoscopy had no infection (97%), with only a small number (3 patients) developing an infection. In contrast, Open surgery had a lower percentage of patients without an infection (73%), and a notably higher number (27 patients) developed a wound infection. The chi-square statistic is 22.5882. The *p*-value is .00501. The result is significant at $p < .05$.



4. DISCUSSION

Most cases of acute appendicitis can be treated by laparoscopy. Laparoscopic appendectomy is safe and less post-operative pain and morbidity as compared to open appendectomy. Laparoscopic appendectomy is a useful procedure for reducing the hospital stay, return to work early, less complications encountered. With better training now in minimal access surgery now, laparoscopy has been popular now [9]. Laparoscopic procedures decrease the loss of earning days by an early return to work and shorter hospital stay. Hence it's useful in India where most of them are daily wages workers. Hence laparoscopic appendectomy may replace open appendectomy in the near future in both elective and emergency conditions. In the study, patients in the laparoscopic group (59%) and 16 patients in the open group (67%) have nausea vomiting [10].

In the study, 27 patients in the open group (27%) and 1 patients in the laparoscopic group (03%) had wound infection. The study shows that post-operative complications like fever, vomiting, wound infection was higher in open group compared to laparoscopic group [11]. Several studies like Ortega A E et al, Geeta K R et al was supported in favour of laparoscopic group in terms of wound infection

Number of cases had post op wound infection in Ortega A E et al study for open group was 11 and laparoscopic group was 4. Number of cases had post op wound infection in Geeta KR et al study for open group was 11 and laparoscopic group was 0.

The one serious disadvantage to LA is the possibly greater incidence of intra-abdominal abscess formation. In a retrospective review, Tang and coauthors5 evaluated the incidence of postoperative intra-abdominal abscess formation after LA and OA. In patients with perforated appendicitis, they found a strong trend toward an increased rate of abscesses in the patients treated laparoscopically [12]. We were not able to analyse the incidence of intra-abdominal abscesses in the subset of patients with perforation because such data were not reported. This meta-analysis did not show a statistically significant increase in the rate of intra-abdominal abscess formation in the LA group.

5. CONCLUSION

After analysing the all the data's, we found the difference between open and laparoscopic appendectomy. Laparoscopic appendectomy was better than open appendectomy in a properly prepared and selected patient in terms of Post-operative complications like nausea vomiting, wound infection, fever.

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