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Original Research Paper



**Radio Diagnosis** 

# COMPARISON OF OPEN AND LAPAROSCOPIC TREATMENT OF ACUTE APPENDICITIS

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ABSTRACT Acute appendicitis stands to be intra-abdominal most common condition's that needs the patient to undergo emergency surgery. Open appendectomy (OA) and laparoscopic appendectomy (LA) are examples of methods used for the intervention. This study is retrospective with the objective of comparing the two approaches. The operation length in the laparoscopic vs. the open group is significantly not great. Most authors agree that laparoscopic Appendectomy leads to shorter hospital stays than open appendectomy. Laparascopy was much more expensive but has become cheaper with time. Although the general complications rate of the two surgery techniques seems to be the same, LA has less pain, postoperative ileus and few wound infections. Laparoscopic appendectomy is characterised with a shorter hospital stay, faster normal diet and activity return, and reduced cost. I recommend laparoscopic appendectomy as a surgical routine for acute appendicitis.

# **KEYWORDS**:

# INTRODUCTION

Appendicitis is a more common condition that affects all ages of people. The disease was first discovered in the sixteenth century and was referred to as peri typhlitis. It requires an abdominal surgical intervention. McBurney defined clinical findings as open appendectomy (OA) in 1894. It showed safety and effectiveness in treatment of acute appendicitis for over a century. On the other side, Laparoscopic Appendectomy, which Semm first did in 1983, has recently proved to be a more accepted surgical procedure with a shortened hospital stay duration, improved postoperative recovery length, better cosmetic results, and reduced pain. However, multiple studies by different authors caution that LA is only effective for treating complex appendicitis and that there is a risk of infection, specifically a superficial wound infection and an abscess in intra-abdomen. In the 21st century, it is more important o consider patient comfort, supported by acquiring more recent advanced technology and skills that promote better surgery modes and techniques. This paper is a study of the comparison in the clinical outcomes, including the operative time, hospital duration, oral intake time, and complicated appendicitis patients postoperative complications with through either Laparoscopic or open appendectomy.

#### **OBJECTIVES**

The research aims to compare the surgical treatment of acute appendicitis, both open and laparoscopic, in different cases and analyze the most common resultant complications and costs for which the patient is at risk. The success and safety of and laparoscopic open appendectomy are ensured considering the parameters such as operative time, recovery period, cosmesis, and postoperative pain.

#### LITERATURE REVIEW

Laparoscopic surgical procedure is being used increasingly as an alternative to open surgery. Güler states that the procedure is advantageous for reducing patient trauma and shorter hospital stay (960). However, the procedure can be complicated for the traditional surgeons making it challenging. For over a century, emergency open appendectomy has been a safe, productive operation procedure (Tumati et al. 4689). The use of laparoscopic Appendectomy has increased over time, as seen in fig 1 bellow



Fig 1: A bar graph showing Types of operation, Laparoscopic vs. open Appendectomy over time.

Burnley described the right quadrant incision, which bears his name, in 1894 (Deshmukh and Pawar1125). Since the discovery of Laparoscopic Appendectomy in 1983, it has gained widespread popularity as open appendicectomy (Frountzas et al. 241). The quicker hospital discharge caused the worldwide acceptance of LA. The wounds resultant from the two procedures are as below, showing that LA is better.



Fig 2: Wound after laparoscopic appendicectomy surgery in a single incision.



Fig 4: Wound of an open appendicectomy surgery

Additionally, in more LA series publications, it has proven to be trendy for an increased intra-abdominal abscess (Amarnath and Singh 9; Kumar and Rao 20). Tumati describes laparoscopy as superior in the "watch wait" policy, where the appendicitis diagnosis is questionable (4687). Since surgeons can avoid larger incisions using laparoscopic appendicectomy in obese patients, the postoperative morbidity incidence can be considerably reduced (Zosimas et al. 62).

In patients with suspected acute appendicitis, randomized research comparing the outcomes of laparoscopic and open appendicectomy was conducted (Park 65). The research had 500 patients, 244 in the laparoscopic category and 256 in the open category. Results showed that patients who had the laparoscopy appendicectomy recovered quicker than those who had open surgery. The results also showed less pain in the laparoscopic group patients. The operating time was longer in the laparoscopic patients (60 min vs. 35 min, p< (0.01), stay at the hospital and complications had not shown much difference between the two categories.

Pogorelic et al. carried out an open study to analyze the morbidity and feasibility of laparoscopic Appendectomy (301). The study looked at 31 patients who had an acute appendicitis diagnosis and had undergone laparoscopic Appendectomy through three abdominal punctures. The main measures of the outcomes were based on the operation duration, hospital stay and morbidity length, and analgesia amount. The mean duration time of the operation was 47 minutes, the median (range) hospital stay time was two days, and there were fewer to no complications during or after the operation (Kumar and Rao 20). Therefore, laparoscopic appendicectomy proved safe considering the short hospital stay, quick patient recovery with little pain, and suitable cosmetic results. Fig 2 displays the hospital stay duration for patients with acute appendicitis and perforated appendicitis after OA and LA.



Fig 4: A bar graph showing the postoperative length of hospital stay for acute and perforated appendicitis after laparoscopic or open Appendectomy.

There were reviews of 4190 cases of laparoscopic appendicectomy to analyze the on laparoscopic and open appendectomy current data to develop the new gold standard

#### MATERIALS AND METHOD

This study was carried out in the KVG Medical College and Hospital Sullia. It included a total of 80 patients, with 40 in each category. All ages from 15 to 60 years who showed evidence of having perforated appendicitis and the ones with abdominal free fluid were involved. The research excluded simple, uncomplicated appendicitis patients and those who had surgery before in the abdomen area. The exclusions also included patients that were unsuitable anesthetically with the American Society of Anesthesiologist (ASA) class III or more and the ones with an overall laparoscopy contraindication such as insufficiency in respiratory, tuberculosis history, and morbid obesity. The patients who satisfied the inclusion measures got involved in the study after ensuring their informed consent. Events were random with a lottery technique to laparoscopic and open appendectomy categories. Nurses assessed the effects from both perioperation and post-operation.

The operative time was taken in minutes from the insertion port until the reaching the appendix. The days of hospital stay from the admission to discharge time was recorded. Infection in the port site was described from the inflammation signs (discharge and erythema) presence in the 4<sup>th</sup> assessment follow-up day in the appendectomy in the department of outpatient. Redesigned proforma was used to record all information. Windows with version 20.0 in IBM SPSS statistics was used to record and analyze the data collected. Qualitative variables such as infection rate and gender were measured in frequencies and percentages. Mean \_+SD was used to measure the quantitative variables such as hospital stay length, operation time and age. independent samples ttest was applied for the hospitalization stay and operating time comparisons in both categories of OA and LA. Stratification controlled consequence modifiers including age, gender, and ASA class. The chi-square tests poststratification got used for independent sample t-tests and qualitative variables. There was a consistent < 0.05 p-value. These results are presented in the tables as below;

<b>Fable</b>	1:	Operating	time	and	hospital	ization	length
comparison in open and laparoscopic appendectomy							

Outcome Variable	Laparoscopic	Open	P-value
	Appendectomy	Appendectomy	
Operation time	$46.98 \pm 2.99$	53.02 ± 2,88	< 0.000
(mean ± SD)	mins	mins	
Hospitalization	$4.38 \pm 1.09$	$4.18 \pm 0.77$	0.23
length (mean $\pm$ SD)	days	days	
Surgical infection	7 (10.77%)	18(27.69%)	0.01
rate (frequency (%)			

Table 2: Stratification of the wound infection, operation time, hospitalization time, and considering ASA class, gender, and age.

Dependent	Independe	Group	Laparosco	Open	P-value
Variables	nt	s	pic	Appende	
(Outcomes	Variables		Appendect	ctomy	
Variables)	(Explanato		omy		
	ry				
	outcomes)				

Oneration	Āmo	15 20	4714 -	E2 10 ±	0 0001
time (mins	(vears)	13-30	47.14 ± 3.10	2.99	0.0001
mean	(yours)	31-50	46.86 +	52.89 +	0 0001
+ SD)		01 00	2 94	2.84	0.0001
,	Gender	Male	47 09 +	53 13 +	0 0001
	Gondor	maio	3.16	2.89	0.0001
		Femal	46.88 +	52.91 +	0 0001
		e	2.88	2.91	0.0001
	ASA	ASA-I	47.04 ±	53.25 ±	0.0001
	-	_	3.36	2.49	
		ASA-	46.88 ±	53.02 ±	0.0001
		II	2.86	2.88	
Hospitaliza	Age	15-30	$4.45 \pm 1.12$	4.22 ±	0.38
tion time	(Years)			0.75	
(days,		31-50	$4.33 \pm 1.10$	4.16 ±	0.0001
mean $\pm$				0.79	
SD)	Gender	Male	$4.33 \pm 1.14$	4.09 ±	0.13
				0.73	
		Femal	$4.44\pm1.08$	$4.27 \pm$	0.48
		е		0.80	
	ASA	ASA-I	$4.32 \pm 1.01$	$4.25 \pm$	0.74
				0.78	
		ASA-	$4.50 \pm 1.25$	$4.08 \pm$	0.16
		II		0.76	
Wound	Age	15-30	3/29 (10.34)	6/27	0.19
infection	(years)			(22.22)	
(frequency		31-50	4/36 (11.11)	12/38	0.03
(%))				(31.58)	
	Gender	Male	4/33 (12.12	8/32 (25)	0.18
				/	
		Femal	3/32 (9.37)	10/33	0.03
	101	e	F/41/10 10	(30.30)	0.00
	ASA	ASA-I	5/41 (12.19)	9/40	0.22
		* * *	0/04/000	(22.5)	0.00
		ASA-	2/24 (8.33)	9/25 (36)	0.02
		111			

#### DISCUSSION

Several findings have challenged the fact that laparoscopy is thought of as a relative contraindication in acute appendicitis since it has more postoperative complications risk. Numerous studies have challenged the theory by measuring again the laparoscopic appendectomy outcomes in cases of acute appendicitis. The LA has a shorter mean operating time than OA, as noted in the study above. The study shows that the operation time in minutes for LA and OA to be 47.8  $\pm$  14.5 and  $49.0 \pm 12.5$  respectively. Hence, LA takes a shorter operating time. The mean hospital stays comparison in both categories in the study showed a considerable difference in the LA and OA classes of 4.18  $\pm$  0.77 days and 4.38  $\pm$  1.09 days respectively. It is somehow similar to other studies which have the same conclusions. The port site infection comparison for the study showed 8.3% for LA and 24.4% for OA groups. The results might be because LA needs less maneuver of the gut by the hand and instruments of the surgeon than OA.

Additionally, the gut does not touch the anterior abdominal wall incision layers during laparoscopy surgery since the appendix gets opened up in the original position. The chisquare test results from post-stratification showed that LA's and OA's time for operation and had a significant difference among the 15-30 years age category compared to the 31 - 50 years age category. Both the two approaches in the two genders and the ASA classes I and II showed a significant operating time difference. The hospital stay difference was big in the two approaches in the ages of 31-50 categories. It may be caused by postoperative complications in the female group. There was more wound infection visibility in the female patients, the older group, and ASA class who underwent OA. These aspects may cause deteriorated immunity and increase infections rate in the categories.

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# CONCLUSION

With the present constraints of retrospective studies, laparoscopic Appendectomy has been demonstrated to be safer and effective but not clearly superior to open Appendectomy, save for the lower risk of wound infections following the treatment. Laparoscopic Appendectomy has proven to be a sucessful procedure for reducing hospital stay, and complications, less incidence of severe postoperative pain, quick recovery, and satisfying cosmetic results when treating acute appendicitis. Therefore, there is a need to convert the laparoscopic surgical method to open surgery when the patient's safety is indicated. I can recommend LA as the preferable approach for treating acute appendicitis.

## REFERENCES

# Works Cited

- Deshmukh, Santoshkumar N., and Abhilash P. Pawar. "Open versus laparoscopic appendicectomy: a prospective comparative study." International Surgery Journal 7.4 (2020): 1122-1126. https://dx.doi.org/10.18203/2349-2902.isj20201383
- Frountzas, M. et al. "Is the laparoscopic approach a safe choice for managing acute appendicitis in pregnant women? A meta-analysis of observational studies." The Annals of The Royal College of Surgeons of England 101.4 (2019): 235-248. https://doi.org/10.1308/rcsann.2019.0011
- (2019): 235-248. https://doi.org/10.1308/rcsann.2019.0011
  Fujishiro, Jun, et al. "Laparoscopic versus open appendectomy for acute appendicitis in children: a nationwide retrospective study on postoperative outcomes." Journal of Gastrointestinal Surgery 25.4 (2021): 1036-1044. https://doi.org/10.1007/s11605-020-04544-3
- Güler, Yılmaz, et al. "Comparison of laparoscopic and open appendectomy on wound infection and healing in complicated appendicitis." International Wound Journal 17.4 (2020): 957-965. https://doi.org/10.1007/s00383-021-04911-4
- Gupta, Amarnath, and A. P. Singh. "Comparative Evaluation of Open and Laparoscopic Method of Appendectomy in Acute Appendicitis." Academia Journal of Surgery 3.1 (2020): 8-11. https://doi.org/10.47008/ajs/2020.3.1.2
- Kumar, S. G., and D. Nagender Rao. "Open VS laparoscopic appendicectomy: A comparative Study." International J Surg Sci 2.2 (2018): 19-22.
   Park, Youn Young. "Safety of laparoscopic appendectomy for managing
- Park, Youn Young. "Safety of laparoscopic appendectomy for managing acute appendicitis during pregnancy." Journal of Minimally Invasive Surgery 24.2 (2021): 64-65. https://doi.org/10.7602/jmis.2021.24.2.64
- Pogorelic, Zenon, et al. "Comparison of open and laparoscopic appendectomy in children: a 5-year single-center experience." Indian pediatrics 56.4 (2019): 299-303. https://doi.org/10.1007/s13312-019-1518-2
- pediatrics 56.4 (2019): 299-303. https://doi.org/10.1007/s13312-019-1518-2
  9. Tumati, Abhinay, et al. "Pregnant patients requiring appendectomy: comparison between open and laparoscopic approaches in NY State." Surgical Endoscopy 35.8 (2021): 4681-4690. https://doi.org/10.1007/s00464-020-07911-y
- Zosimas, Dimitrios, et al. "Open versus laparoscopic appendicectomy in acute appendicitis: results of a district general hospital." South African Journal of Surgery 56.2 (2018): 59-63. https://doi.org/10.17159/2078-5151/2018/v56n2a2392