

Original Research Article

A comparative study between laparoscopic and open appendicectomy in KAPV Government Medical College, Trichy


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	International Archives of Integrated Medicine, Vol. 6, Issue 3, March, 2019. Copy right © 2019, IAIM, All Rights Reserved. Available online at http://iaimjournal.com/ ISSN: 2394-0026 (P) ISSN: 2394-0034 (O)
	Received on: 03-03-2019 Accepted on: 09-03-2019 Source of support: Nil Conflict of interest: None declared.
	How to cite this article: Yeganathan Rajappan, Anandan Kanthan, Mahalakshmi Ashok Kumar, Manimaran Thangavelu. A comparative study between laparoscopic and open appendicectomy in KAPV Government Medical College, Trichy. IAIM, 2019; 6(3): 259-265.

Abstract

Background: Vermiform appendix, though a vestigial organ in a human without much purpose forms. The most common cause of acute abdomen and also the most common surgical intervention by a general surgeon. Open appendicectomy has been practiced for more than 130 years all over the world with a good outcome. But laparoscopic appendicectomy grabbed the attention of not only surgeons but also the patients after the pioneering efforts of Kurt Semm in 1982. Although our hospital has been practicing open appendicectomy for many decades laparoscopic appendicectomy was introduced in recent past.

The aim of the study: Aim was to compare the laparoscopic against open appendicectomy based on the following parameters: Post-surgical pain, Return of bowel sounds, Return to eating, Post-operative complications, Post-operative antibiotics duration.

Materials and methods: Patients who come to the outpatient and emergency clinic of the Department of General Surgery, KAPV Government Medical College between January 2016 and June 2017. Among the patients who had come to General Surgery OP clinic and emergency clinic, after thorough examination patients with features of appendicitis were included as subjects for study. Patients were allotted as subjects in each group by simple random sampling. Blood investigation, Chest X-ray, X-ray abdomen, USG abdomen, CT abdomen were done and assessment obtained for

those patients after sufficient resuscitation with iv fluids, antibiotics, and analgesics. Patients who were diagnosed with appendicitis were explained about the diagnosis, need for surgery, surgical procedure planned and its complications and then informed written consent obtained.

Results: In our study, mean operation duration for LA was 61.54 min and 51.62 min for open appendectomy. The p-value was 0.022 which was significant statistically. Operation duration was short in laparoscopic appendectomy. Our study also shows less pain for lap group which was calculated using a pain rating scale, with mean in OA as 3.16 and 2.32 in LA group and the p-value was p-0.000 which was statistically significant. Diet was started earlier in lap appendectomy group in our study. Postoperative complication and postoperative antibiotics duration were less in LA group as like in earlier studies.

Conclusion: Laparoscopic appendectomy is better than open appendectomy in selected patients with acute or recurrent appendicitis.

Key words

Appendectomy, Laparoscopic appendectomy, Open appendectomy.

Introduction

Appendicitis is the most common reason for acute abdominal pain with a lifetime risk of 8.6% for males and 6.7% for females. The human vermiform appendix is usually referred to as “a vestigial organ with no known function”. Currently, available evidence suggests that appendix is a highly specialized part of the alimentary tract [1]. Acute appendicitis is one of the most common causes of an abdominal emergency. The laparoscopic appendectomy is increasingly employed, particularly in young women of childbearing age in whom the differential diagnosis of right lower quadrant pain is extensive and includes gynecologic pathology [2]. The modern era of laparoscopic surgery has evoked remarkable changes in approaches to surgical diseases. That trend towards minimally invasive surgery has prompted general surgeons to scrutinize nearly all operations per possible conversion to laparoscopic techniques [3]. Vermiform appendix, though a vestigial organ in a human without many purposes forms the most common cause of acute abdomen and also the most common surgical intervention by a general surgeon [4]. Open appendectomy has been practiced for more than 130 years all over the world with a good outcome. But laparoscopic appendectomy grabbed the attention of not only surgeons but also the patients after the

pioneering efforts of Kurt Semm in 1982 [5]. Although our hospital has been practicing open appendectomy for many decades laparoscopic appendectomy was introduced in recent past [6]. Hence, we consider this an opportune moment to conduct a comparative study between laparoscopic and open appendectomy in our hospital to infer about postoperative complications, duration as an inpatient in a hospital, rapidity of postoperative recovery and effectiveness of both the procedures [7].

Materials and methods

Patients who came to the outpatient and emergency clinic of the Department of General Surgery, KAPV Government Medical College between January 2016 and June 2017. Among the patients who had come to General Surgery OP clinic and emergency clinic, after thorough examination patients with features of appendicitis were included as subjects for study. Patients were allotted as subjects in each group by simple random sampling. Blood investigation, Chest X-ray, X-ray abdomen, USG abdomen, CT abdomen was done and assessment obtained for those patients after sufficient resuscitation with iv fluids, antibiotics, and analgesics. Patients who were diagnosed with appendicitis were explained about the diagnosis, need for surgery, surgical procedure planned and its complications and then informed written consent obtained.

Inclusion criteria

- Patient with clinical features of appendicitis
- Patients aged >12 years
- Patients who were willing to enroll in the study
- Patients with no other systemic illness

Exclusion criteria

- Patients <12 years
- Patients were not willing to enroll in the study
- Patients were medically unfit for pneumoperitoneum
- Patients with previous abdominal surgery
- Pregnant patients
- Patients with systemic illness
- Patients with appendicular mass or abscess
- Patients were not fit for GA

For every surgical procedure, intraoperative findings, operation duration, post-surgical pain, the return of bowel sounds in days, the return of eating in days, postoperative complications from a rating scale, postoperative antibiotics in days and inpatient duration in days were marked properly. Follow up was done after one week and once in a week for one month. During the follow-up visit, postoperative surgical site infection, return to regular activity in days and

relief of symptoms were noted. Data thus generated was analyzed with statistical tools and the results obtained.

Statistical analysis

The collected information of all selected cases was recorded in a Master Chart. Data analysis was done with the help of computer using SPSS software and with the help of a statistician. Using the software Range, Mean, Percentage, Standard Deviation, Chi-square test, t-test, and p-values calculated. Pearson Chi-square test was used to test the significance of variables. A p-value of less than 0.05 was taken as significant.

Results

In our study, mean operation duration for LA was 61.54 min and 51.62 min for open appendicectomy. The p-value was 0.022 which was significant statistically. Operation duration was short in laparoscopic appendicectomy. Our study also shows less pain for lap group which was calculated using a pain rating scale, with mean in OA as 3.16 and 2.32 in LA group and the p-value was p-0.000 which was statistically significant. Diet was started earlier in lap appendicectomy group in our study. Post-operative complication and postoperative antibiotics duration were less in LA group as like in earlier studies. Results were depicted as per **Table – 1 to 9.**

Table – 1: Age distribution.

Age Group	Type of appendicectomy			
	OA		LA	
	No	%	No	%
13-19 years	7	14	21	42
20-29 years	22	44	18	36
30-39 years	15	30	7	14
40-49 years	3	6	1	2
50 years and above	3	6	3	6
Total	50	100	50	100
Range	13-55		13-61	
Mean	28.32		24.12	
SD	10.104		10.501	

Table – 2: Clinical features.

Clinical features	Type of appendectomy			
	OA		LA	
	No	%	No	%
Right iliac fossa tenderness	31	62	30	60
Mc burney's tenderness	15	30	14	28
Chronic pain right iliac fossa	4	8	6	12
Total	50	100	50	100

Table – 3: USG findings.

U/S-findings	Type of appendectomy			
	OA		LA	
	No	%	No	%
Inflamed appendix	12	24	12	24
Probe tenderness	25	50	27	54
Non-compressible luminal structure	13	26	11	22
Total	50	100	50	100

Table – 4: CT findings.

CT findings	Type of appendectomy			
	OA		LA	
	No	%	No	%
Fecolith	23	46	24	48
Distended appendix	13	26	13	26
Circumferential wall thickening	14	28	13	26
Total	50	100	50	100

Table – 5: Intraoperative findings.

Intraoperative findings	Type of appendectomy			
	OA		LA	
	No	%	No	%
Appendicular inflammation	17	34	15	30
Turgid Appendix	15	30	16	32
Adherent Appendix	9	18	9	18
Suppurative Appendix	4	8	6	12
Gangrenous appendix	5	10	4	8

Table – 6: Operation duration.

Types of appendectomy	Operation Duration (in minutes)		
	Range	Mean	SD
OA	28-108	51.62	19.160
LA	26-118	61.54	23.148
p	0.022		

Discussion

In our study, 100 patients with acute appendicitis were selected for study and allotted to laparoscopic and open appendectomy groups with 50 subjects in each group by simple random sampling [8]. Though many studies were

conducted comparing lap and open appendectomy, the studies done after 2010 have shown favorable outcome for laparoscopic appendectomy in terms of less operating time, short hospital stay, early return to normal activity and less postoperative complication [9]. Our

study is consistent with this trend among the patients coming to our hospital. In our study, a p-value of age distribution between the two groups is p-0.158, thus there is no significant difference in age distribution. The two groups have fewer females than males and there is no significant variation in sex distribution between groups [10]. In a study by Katkhouda N, et al., the operation duration is longer for laparoscopic appendectomy [11]. In our study mean operation duration for LA is 61.54 min and 51.62 min for open appendectomy, the p-value is 0.022 which is significant statistically. Operation duration is short in laparoscopic appendectomy [12]. Postoperative pain was studied by Chung RS, et al. in 2011 and Rajab Ali, et al. in 2010 which show less pain for lap group. Our study

also shows less pain for lap group which was calculated using a pain rating scale, with mean in OA as 3.16 and 2.32 in the LA group and p-value is p-0.000 which is statistically significant [13]. A RCT by Fengzerog have shown early bowel sounds for the LA group. In our study the p-value of Return of bowel sounds is p-0.000 which is significant and consistent with early studies [14]. Diet is started earlier in lap appendectomy group in our study which is similar to study by Sain AH, et al. Postoperative complication and postoperative antibiotics duration are less in LA group in earlier studies like [15]. The consistent outcome is found in our study also. Hospitalization is less for LA group in our study with a mean of 3.44 for the LA group and 5.12 for the OA group [16].

Table – 7: Post-surgical pain score.

Post-surgical pain score	Type of appendectomy			
	OA		LA	
	No	%	No	%
1	0	0	6	12
2	9	18	28	56
3	24	48	10	20
4	17	34	6	12
Total	50	100	50	100
Range	2-4		1-4	
Mean	3.16		2.32	
SD	0.710		0.844	
P	0.000			

Table – 8: Bowel sounds.

Type of appendectomy	Bowel Sounds (in days)		
	Range	Mean	SD
OA	2-4	3.18	0.774
LA	1-4	2.50	0.863
P	0.000		

Table – 9: Histopathological findings.

Histopathology Report	Type of appendectomy			
	OA		LA	
	No	%	No	%
Subacute appendicitis	31	62	32	64
Acute appendicitis	12	24	13	26
Gangrenous appendicitis	7	14	5	10

Conclusion

- The rate of negative appendectomy is less by laparoscopic method because of better exposure and visualization especially in women, we can better diagnose whether pathology is of appendix or uterus and adnexa.
- The parenteral analgesic requirement is for the shorter duration after laparoscopic appendectomy (1 day Vs 2 days).
- Reduced morbidity after laparoscopic appendectomy.
- The reduced postoperative hospital stay after laparoscopic appendectomy (1-3 days Vs 2-4 days).
- Early resumption of normal activities after laparoscopic appendectomy (4-14 days Vs 7-16 days).

Acknowledgments

The authors would like to thank the Professors, Associate Professor, and Postgraduate students, Department of General Surgery, KAPV Government Medical College, Trichy for helping with data collection and their support for completing the research.

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