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ORIGINAL ARTICLE

Compare the Outcomes of Laparoscopic and Open Appendectomy

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ABSTRACT

Aim: The aim of this study is to compare the surgical site infection, hospital stay and time duration of procedure in patients undergoing laparoscopic and open appendectomy.

Study Design: Prospective/ Observational

Place & Duration: Department of Surgery, Pak Red Crescent Medical and Dental college, Dina Nath, during from Jan 2020 to March 2021**.**

Methods: In this study 240 patients of both genders with ages >10 years presented with acute appendicitis were included. Patients demographic including age, sex and body mass index were recorded after written consent. Patients were equally divided into two groups. Group I consist of 120 patients and received laparoscopic appendectomy and Group II with 120 patients received open appendectomy. Outcomes such as surgical site infection, hospital stay and time duration of procedure were examined and compare the results between both groups. Data was analyzed by SPSS 23.0. P-value <0.05 was set as significant.

Results: There were 140 (58.3%) patients (70 Group I, 70 Group II) were male with mean age 25.7+6.54 years while 100 (41.7%) patients (50 Group I, 50 Group II) were females with mean age 26.9+3.12 years. No significant difference regarding BMI between both groups p=>0.05. There was a significant difference in term of surgery time duration between both groups 48.24+9.59 minutes Vs 35.74+6.86 minutes; P=0.001. No significant difference observed in term of hospital stay (p=0.345). 11 (9.2%) patients in Group II in which 5.83% had Superficial SSI and 3.7% had Deep SSI. 9 (7.5%) patients 5% superficial and 2.5% Deep SSI in Group I had developed surgical site infection with no significant difference (p=0.41).

Conclusion: We concluded in this study that open appendectomy is better in term of operative time as compared to laparoscopic appendectomy. We found no significant difference regarding surgical site infection and hospital stay.

Keywords: Acute appendicitis, Appendectomy, Laparoscopic, Open, Outcomes

INTRODUCTION

Appendicitis is one of the most common surgical emergencies requiring appendectomy, with a life-time risk of 6%. The overall mortality rate for open appendectomy (OA) is around 0.3% and morbidity about 11%.[1] Open appendectomy has been the treatment of choice for more than a century since its introduction by McBurney in 1894, and the procedure is standardized among surgeons. Kurt Semm was the first to describe laparoscopic appendectomy (LA) in 1983. Encouraged by the success of laparoscopic cholecystectomy, which has become the gold-standard treatment for gallstone disease in a short span of time, laparoscopic surgery has gained in popularity and found application in almost every surgical speciality.

Laparoscopic appendectomy has been shown to be feasible and safe in randomized comparisons with open appendectomy. Laparoscopic appendectomy has improved diagnostic accuracy along with advantages in terms of fewer wound infections,[2] less pain,[2,3] faster recovery and earlier return to normal activity.[2–4]

On the contrary, laparoscopic appendectomy consumes more operating time[2,3] and is associated with increased hospital costs.[4] The laparoscopic approach has been supported as an alternate to open appendectomy by many comparative studies.[5] Some studies failed to demonstrate clear advantages for laparoscopic over open appendectomy.[6,7] No consensus exists as to whether laparoscopy should be performed in select patients or routinely for all patients with suspected acute appendicitis.

The present study was conducted to determine the outcomes of laparoscopic and open appendectomy in term of Surgical site infection, hospital stay and operative duration.

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METHODS

This prospective study was conducted at Department of Surgery, Pak Red Crescent Medical and Dental college, Dina Nath, during from Jan 2020 to March 2021. In this study 240 patients of both genders with ages >10 years presented with acute appendicitis were included. Patients demographic including age, sex and body mass index were recorded after written consent. Histopathology findings of the patients were recorded. Pregnant women, patients with history of abdominal surgery, patients with recurrence and those with no consent were excluded.

Patients were equally divided into two groups. Group I consist of 120 patients and received laparoscopic appendectomy and Group II with 120 patients received open appendectomy. Outcomes such as surgical site infection, hospital stay and time duration of procedure were examined and compare the results between both groups.

Data was analyzed by SPSS 23.0. Chi-square test and student t test was used to compare the findings between both groups. Data was recorded in the form of tables. P-value <0.05 was considered as significant.

RESULTS

There were 140 (58.3%) patients (70 Group I, 70 Group II) were male with mean age 25.7+6.54 years while 100 (41.7%) patients (50 Group I, 50 Group II) were females with mean age 26.9+3.12 years. No significant difference regarding BMI between both groups p=>0.05, Group I and II (23.17+8.4 Vs 23.16+6.8). According to the histopathology findings 100 (83.3%)patients had inflammation, 5 (4.2%) had phlegmonous, 2 (1.7%) had gangrenous, 9 (7.5%)had perforated and 4(3.3%) had normal appendicitis in Group I. In Group II 94 (78.3%) had inflamed, 7 (5.83%) had phlegmonous, 3 (2.5%) had gangrenous, 12 (10%) had perforated and 4(3.3%) had normal appendicitis. (Table 1)

There was a significant difference in term of surgery time duration between both groups 48.24+9.59 minutes Vs 35.74+6.86 minutes; P=0.001. No significant difference observed in term of hospital stay (p=0.345) between both groups 3.08+1.21 Vs 3.40+1.09 days.

11 (9.2%) patients in Group II in which 5.83% had Superficial SSI and 3.7% had Deep SSI. 9 (7.5%) patients 5% superficial and 2.5% Deep SSI in Group I had developed surgical site infection with no significant difference (p=0.41). (Table 2)

Table 1. Baseline characteristics of all the patients

Characteristics	Group I	Group II	Total
	n=120	n=120	
Mean age (yrs)	25.7+6.54	26.9+3.12	
Gender			
Male	70 (58.3%)	70 (58.3%)	140 (58.3%)
Female	50 (41.7%)	50 (41.7%)	100 (41.7%)
BMI	23.17+8.4	23.16+6.8	
Histopathology			
Inflamed	100 (83.3%)	94 (78.3%)	194(80.8%)
Phlegmonous	5 (4.2%)	7 (5.83%)	12 (5%)
Gangrenous	2 (1.7%)	3 (2.5%)	5 (4.2%)
Perforated	9 (7.5%)	12 (10%)	21 (8.75%)
Normal	4 (3.3%)	4 (3.3%)	8 (3.3%)

P-value >0.05

Table 2: Comparison of outcomes

Characteristics	Group I	Group II	P-value
	n=120	n=120	
Operative Time (Min)	48.24+9.59	35.74+6.86	0.001
Hospital Stay	3.08+1.21	3.40+1.09	0.89
Surgical Site Infection			0.41
Superficial	6 (5%)	7 (5.83%)	
Deep	3 (2.5%)	4 (3.7%)	

DISCUSSION

With a lifetime incidence of 6.7 percent to 8.6 percent[8,9], appendicitis is the most prevalent cause of acute abdominal pain. It's also the most prevalent abdominal surgery emergency[10]. Endoscopic procedures have been advocated because they are less intrusive, have less problems, and produce better overall results than open appendectomy approaches.[11-12] We presented this study to examine the outcomes of laparoscopic and open appendectomy in term of Surgical site infection, hospital stay and operative time duration. Total 240 patients were included and divided into two groups, I and II 120 each. 140 (58.3%) patients were male (70 Group I, 70 Group II) while 100 (41.7%) patients (50 Group I, 100 Group II) were females. Mean age in group I was 25.7+6.54 years with mean BMI 23.17+8.4 and in group II mean age and BMI was 26.9+3.12years and 23.16+6.8kg/m^2.In present study we found no significant difference regarding Body Mass Index (BMI) between both groups. Our findings were similar to other previous studies in which majority were male patients 54 %to 76% as compared to females and most of the patients were between 20 to 35 years of age[13,14].

We found that inflamed was among 83.3%, 4.2% cases had phlegmonous, 1.7% had, gangrenous in 7.5% and 3.3% patients had, , perforated and normal appendicitis in laparoscopic treated patients according to the histopathology findings. In Group II 78.3% had inflamed, 5.83% had phlegmonous, 2.5% had gangrenous, 10% had perforated and 3.3% had normal appendicitis. These results were comparable to some other studies[15,16].

In our study significant difference in term of surgery time duration between both groups 48.24+9.59 minutes Vs 35.74+6.86 minutes; P=0.001. Different previous studies presented that laparoscopic appendectomy took longer to perform as compared to open appendectomy, these findings were shared by Ortega AE et al, Hellberg A et al and Katkhouda N et al.[2,3,7]

In present study we found no significant difference observed in term of hospital stay between both groups 3.08+1.21 Vs 3.40+1.09 days. These were comparable to some previous researches in which no significant difference observed in term of length of hospital stay in laparoscopic and open appendectomy[17]. But many different studies presented that laparoscopic technique resulted shorter hospital stay.[18,19] We found in our study that 11 (9.2%) patients in Group II in which 5.83% had Superficial SSI and 3.7% had Deep SSI. 9 (7.5%) patients 5% superficial and 2.5% Deep SSI in Group I had developed surgical site infection with no significant difference (p=0.41). Between both groups no significant difference was observed (p=>0.05). These results were similar to many other studies in which no significant difference reported in term of SSI between laparoscopic and open technique[20,21]. Katkhouda N et al[23] reported the same rate of complications in both groups[22].

CONCLUSION

In this research we found that open appendectomy is better in term of operative time as compared to laparoscopic appendectomy. We found no significant difference regarding surgical site infection and hospital stay.

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