

Outcomes of Laparoscopic Appendectomy; A Prospective Study Focusing On Gender Wise Comparison of Complications of the Surgery

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Abstract

Objective: To assess the postoperative outcomes of laparoscopic appendectomy in terms of complications and to compare them on gender basis.

Methods: This was the prospective observational study conducted at department of General Surgery Chandka Medical College Hospital Larkana with non-probability convenient sampling technique. The duration of study was one year from January 2013 till December 2013. 150 patients were selected that were diagnosed with acute appendicitis. Patients were followed up for 2 weeks and their complications were observed. All data was entered and analysed on SPSS version 20. Inferential analysis was performed using chi-square test whereas the significance level was set at 0.05.

Results: The study results showed that 14 male (18.7%) and 16 female (21.4%) patients developed complications ($p=0.094$). 5 male (6.6%) and 8 female (10.6%) patients developed paralytic ileus ($p=0.384$). 5 male (6.6%) and 3 female (4%) patients developed urinary retention ($p=0.471$) whereas 2 male (2.6%) and 6 female (8%) patients complained to have wound infection ($p=0.146$). The overall frequency of patients that did not develop any complications among 150 patients was 121 (80.6%) while 13 (8.6%), 8 (5.3%) and 8 (5.3%) were reported to develop paralytic ileus, urinary retention and wound infection respectively.

Conclusion: Laparoscopic appendectomy is safer and clinically advantageous technique. The difference in the complications of the laparoscopic appendectomy with respect to the gender was insignificant. However, significant difference existed on visual analogue pain scale.

Keywords: Appendectomy, appendicitis, pain, postoperative.

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Introduction

Globally, the most common reason for acute abdomen is appendicitis¹. The prevalence is recorded to be present greatly in second and third decade of life and among general population it is documented to be present in around 7-10% people,

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with a risk of 6% in a whole life span². The morbidity and mortality of open appendectomy (OA) is about 11% and 0.3% respectively³. Appendicitis is caused by an obstruction of the hollow segment of the appendix. This is mostly due to a calcified "stone" of faeces. Inflammation of lymphoid tissue from a viral infection, parasites, gallstone, or tumours may also result in the obstruction. This blockage results in augmented pressures in the appendix, reduced blood flow to the appendix, and bacterial expansion within the appendix that causes inflammation⁴. The diagnosis of appendicitis in the initial phase of presentation is challenging as the symptoms of appendicitis overlap with several of other conditions⁵. Symptoms usually comprises of

lower abdominal pain on right side, nausea, vomiting, and decrease appetite. Conversely, around 40% of people do not have these classical symptoms⁴. It is difficult to categorize the patient upon the basis of who will require surgical intervention instantly in comparison with those in which active observation will be beneficial even though patients presented with typical symptoms and physical finding while some also presented with atypical symptoms⁶. On the basis of symptoms, signs and accessible diagnostic test target disorder is quantified by Clinical Prediction Rules (CPRs), therefore it has reliable diagnostic or prognostic significance⁷. However, surgery and histopathology is supportive for the definite diagnosis⁸.

McBurney formerly described the open approach to appendectomy. It has turned out to be the standard treatment of choice for acute appendicitis, remained chiefly unaffected for 100 years due to its approving effectiveness and safety. Ever since the arrival of laparoscopy, appendectomy has progressively more been performed by means of a minimal invasive approach, subsequent the first report by Semm in 1983⁹. Laparoscopic appendectomy has speedily developed in recent years. Since Semm published the earliest absolute elimination of the appendix via laparoscopic surgery in 1983 and Schreiber performed the initial laparoscopic appendectomy in a patient with acute appendicitis in 1987, laparoscopic appendectomy has been incorporated practically in all hospitals globally as the common practice in emergency departments¹⁰. Currently, the advantage and efficiency of laparoscopic appendectomy (LA) in comparison with open appendectomy is the matter of much debate, which has been used as a gold standard approach for more than a century for treating acute appendicitis². In recent times a number of authors anticipated that the new practice of laparoscopic appendectomy should be the preferable treatment of acute appendicitis but unlike laparoscopic cholecystectomy, LA has not yet achieved popularity¹¹. The complications like periappendiceal abscess, perforated appendicitis or increase postoperative morbidity might be the result of delay in surgical intervention¹². LA

has several advantage over OA like shorter hospital stay, lesser postoperative pain, lower chances of wound infection and less postoperative pain which is why the frequency of conducting LA has been more than OA^{13,14}. Hence, the usage of LA remains controversial, in contrast to the broad approval of laparoscopic cholecystectomy since its innovation⁹. Nowadays, in health care setup outpatient surgery is among the largest rising areas, which is because of its capability to offer satisfactory and cost effective care with less time consumption. Concurrently, the provision of day care surgery has been achieved by laparoscopic approach. So by reducing the hospital stay of the patient and sending them home as early as possible, it not only minimizes the disturbance in routine life of whole family members but also reduces the considerable portion of hospital resources as it is one of the most common gastrointestinal surgical emergencies¹⁵.

Keeping in mind this background this study was carried out to assess the postoperative outcomes of laparoscopic appendectomy in terms of complications and to compare them on gender basis.

Subjects and Methods

A prospective observational study was conducted at department of General Surgery Chandka Medical College Hospital, Larkana. The sampling technique was non-probability convenient. The duration of study was one year from January 2013 till December 2013. The written informed consent was taken from all patients with complete confidentiality of the data. Using the frequency of post-operative complications of laparoscopic appendectomy to be 6.7%², with 95% confidence interval and 4% precision, the calculated sample size was 150 participants. Therefore, a total of 150 patients were selected that were diagnosed with acute appendicitis. The patients of both genders, diagnosed with acute appendicitis on the basis of history of severe periumbilical pain (Visual Analogue Pain Scale >8) shifting to right iliac fossa, nausea and vomiting,

and on examination fever (temperature more than 99°F), tenderness at right iliac fossa more pronounced at McBurney's point and increased leucocyte count (>11000/mm³) especially neutrophilia (>75% of leukocyte count) were included in the study. The presence of any two or more than two of above was diagnosed as case of acute appendicitis. The patients, unfit for general anaesthesia with comorbid conditions like major cardiac, respiratory, renal or liver dysfunction, uncontrolled diabetes and morbid obesity and with previous lower abdominal surgery were excluded. The demographic variables like name, age, gender and date of admission were recorded. Postoperatively patients were followed up for 2 weeks and their outcomes were measured in terms of complications at 48 hours like postoperative pain (using VAS), acute urinary retention, prolonged paralytic ileus and wound infection. The pain was classified according to the visual analogue pain scale with no pain to mild, moderate and severe as 0-3, 4-6, and 7-10 respectively. All information was recorded on proformas especially designed for this purpose.

Results

Total 150 acute appendicitis patients were selected for the study. Out of this the gender distribution was 75 (50%) each. The mean age of male patients was 33.8 ± 7.5 years while that of female patients was 37.57 ± 7.8 years. 14 male (18.7%) and 16 female (21.4%) patients developed complications (p=0.094). 5 male (6.6%) and 8 female (10.6%) patients developed paralytic ileus (p=0.384). 5 male (6.6%) and 3 female (4%) patients developed urinary retention (p=0.471) whereas 2 male (2.6%) and 6 female (8%) patients complained to have wound infection (p=0.146) (Table 1).

62 male (82.6%) patients and 49 female (65.3%) patients reported to develop no to mild pain while 10 male (13.3%) and 19 female (25.3%) patients complained to have moderate pain whereas 3 male (4.0%) and 7 female (9.3%) patients reported to develop severe pain (Table 2). The overall frequency of patients that did not develop any compli-

cations among 150 patients was 121 (80.6%) while 13 (8.6%), 8 (5.3%) and 8 (5.3%) were reported to develop paralytic ileus, urinary retention and wound infection respectively (Table 3).

Out of 150 patients 111 (74%) patients developed no to mild pain while 29 (19%) and 10 (7%) patients reported to develop moderate and severe pain respectively (Fig 1). The mean duration of hospital stay of the patients having no complications was 8.1 ± 0.4 hours whereas it was 26 ± 16.01 for the patients having complications.

Table 1. Outcomes according to the groups (n= 150)

	Yes N	%	No n	%	p-value
Complications Group 1	14	18.7	61	81.3	0.094
Group 2	16	21.4	59	78.6	
Paralytic Ileus Group 1	5	6.6	70	93.4	0.384
Group 2	8	10.6	67	89.4	
Urinary Retention Group 1	5	6.6	70	93.4	0.471
Group 2	3	4	72	96	
Wound Infection Group 1	2	2.6	73	97.4	0.146
Group 2	6	8	69	92	

*p<0.05 was considered significant using Pearson Chi Square test

Table 2. Pain grading in accordance with VAS (n= 150)

	Nopain-mildpain 0-3		Moderatepain 4-6		Severepain 7-10		p-Value
	N	%	N	%	N	%	
GROUP 1(n=75)	62	82.67	10	13.33	3	4	<0.001
GROUP 2(n=75)	49	65.34	19	25.33	7	9.33	

*p<0.05 was considered significant using Pearson Chi Square test

Table 3. Overall frequency of outcome: (n= 1 50)

	YES		NO	
	N	%	N	%
COMPLICATIONS	29	19.4	121	80.6
PARALYTIC ILEUS	13	8.6	137	91.4
URINARY RETENTION	8	5.3	142	94.7
WOUND INFECTION	8	5.3	142	94.7

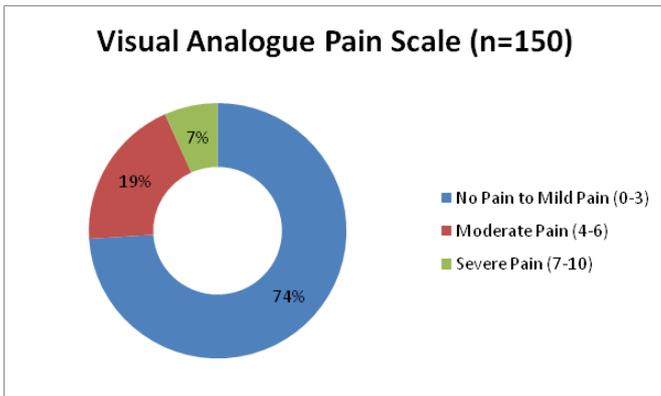


Fig 1. Overall pain assessment

Discussion

The patients that present with acute abdomen, the possibility of appendicitis should be taken in consideration but a definitive preoperative analysis is still a matter of dispute^{12,13}. In one of the study no major complication developed in any patient and it was found that accuracy of appendectomy is enhanced by laparoscopic approach thereby avoiding supplementary obstacle. For the detection of pathology or any septic foci and for the assessment of abdominal cavity, the laparoscopy provides full assessment¹¹. One of the study showed that the overall complication rate was 6.7% for laparoscopic appendectomy². Another study established that in many quarters laparoscopic appendectomy (LA) has minor advantages and takes longer operating time but has advantages that it is safe, there is lesser chances of wound complication and patient can return to do regular activities earlier³. The above findings are almost same as that of our study in which we observed the rate of wound infection in only 8% of the cases.

Surgical site infection rate was recorded to be 6.4% in LA². Numerous studies have noted that LA results in fewer wound complications and early return to normal activities¹⁴⁻¹⁶. Whereas, in our study the overall complications were 29% including wound infection, paralytic ileus, and urinary retention. However, no major differences were observed in terms of complications of male and female gender.

In laparoscopic group the hospital stay was recorded to be short that is 1.4 ± 0.6 days². However, significantly shorter hospital stay for LA was noted by some other studies^{3,17}. An earlier study reported the postoperative stay of patients who undergone LA to be 43 hours¹⁸. This is contradictory to our study in which we found that the hospital stay for all the patients regardless of the complications was 26 hours and for patients without any complications was 8 hours.

We conducted our study in a tertiary care hospital where surgeons with all levels of expertise were involved for the procedure therefore the complications of LA may be because of difference in skill in laparoscopic approach so the results can be generalized to other centres with similar demographics. In our study, we followed up patients for two weeks and minor complication were recorded. Undoubtedly, accuracy of diagnosis is enhanced by laparoscopic approach which not only provides abdominal cavity inspection but also supports the enlightening of any pathology or septic foci.

Conclusion

Laparoscopic appendectomy is safer and clinically advantageous technique. In most of the suspected cases of appendicitis, whenever possible, laparoscopy should be considered as procedure of choice. The difference in the complications of the laparoscopic appendectomy with respect to the gender was insignificant. However, significant difference existed on Visual Analogue Pain Scale.

Conflict of Interest

Authors have no conflict of interests and nongrant/funding from any organisation.

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