ORIGINAL ARTICLE

Compare the Outcomes of Single Incision Laparoscopic Appendectomy Vs Conventional Three Port Laparoscopic Appendectomy

MUHAMMAD AQIL RAZZAQ[1], MAAZ-UL-HASSAN[2], AMNA SHAHAB[3]
[1]Associate Professor, Department of General Surgery, Central Park Medical College, Lahore
[2]Assistant Professor, General Surgery Shalamar Medical & Dental College Lahore
[3]Associate Professor, Department of General Surgery, CMH Lahore Medical College, Lahore
Correspondence: Dr. Muhammad Aqil Razza, e-mail: dr_aqilrazzaq@hotmail.com Cell 0331-4102910

ABSTRACT

Aim: To compare the post-operative outcomes of single incision versus conventional three port laparoscopic appendectomy.
Study Design: Randomized controlled trial
Place and Duration: Department of Surgeries, Central Park Teaching Hospital and Shalamar Hospital, Lahore from 1st June 2018 to 31st December 2018.
Method: Total 170 patients of both genders with ages 20 to 60 years were included in this study. Patients were equally divided into two groups. Group I consist of 85 patients and received single incision laparoscopic appendectomy and Group II with similar patients received conventional three port laparoscopic appendectomy. Post-operative outcomes were examined and compare the findings between both groups.
Results: In Group I, 48(56.47%) and 37(43.53%) patients were males and females with mean age 38.56±10.48 years and in Group II 43(50.59%) patients were males and 42(49.41%) patients were females with mean age 39.65±12.42 years. No significant difference was observed between both groups regarding operative time (P>0.05). No significant difference was found between both groups regarding wound infection [Group I, 3(3.53%), Group II, 7(8.24%)]. Patients received single incision laparoscopic appendectomy had shorter hospital stay as compared to Group II patients (1.25±0.80 Vs 2.90±1.05 days) with p-value 0.003. Group I patients had better cosmetic results after 3 months as compared to Group II patients with p-value < 0.05.
Conclusion: Single incision laparoscopic appendectomy is safe and effective treatment modality with better cosmetic results and less hospital stay and low rate of wound infection as compared to conventional laparoscopic appendectomy.
Keywords: Single incision, Conventional, Laparoscopic appendectomy, Operative time, Wound infection, Hospital stay, Cosmesis

INTRODUCTION

Appendicitis is a common disease, and surgical appendectomy is currently the most widely accepted treatment approach.[1] The first report on resection of the appendix was published in 1735.[2] The procedure was performed on an 11-year-old boy with an inguinal hernia containing an inflamed appendix. Conventional open appendectomy through a right iliac fossa incision was described by McBurney in 1894[3] and the first laparoscopic appendectomy was reported by Semm in 1983.[4]

The advantages of minimally invasive surgical techniques include quick and less painful recovery, few postoperative complications and good cosmetic results.[5] Conventional laparoscopic appendectomy has now become the standard for the treatment of suspected appendicitis in many countries.[6]

Laparoscopic appendectomy has proven to result in decreased pain, fewer postoperative complications, and shorter hospitalization compared with conventional open appendectomy. Single-incision laparoscopic surgery, which emphasizes reducing the number and/or size of incisions that leads to better cosmesis, has been proposed recently.[7] Other studies have produced conflicting reports about these advantages.[8] Management of acute appendicitis has been reported as one of several advancements in the single-incision method. Single incision laparoscopic appendectomy has been shown to be effective and safe for un-complicated appendicitis. The concept of inline viewing is utilized in single-port laparoscopy. This technique is more demanding than conventional three-port laparoscopic appendectomy. Retraction is compromised and there is difficulty in manipulating the instruments.[9,10]

The present study was conducted aimed to examine the outcomes of single incision laparoscopic appendectomy versus conventional laparoscopic appendectomy.

MATERIALS AND METHODS

This prospective randomized controlled trial was conducted at Department of Surgery, Central Park Teaching Hospital Lahore from 1st June 2018 to 31st December 2018. A total 170 patients of both genders with ages 20 to 60 years presented with acute appendicitis were included. Patients detailed demographic including age, sex, BMI, pathology examination and leukocyte count were recorded. Patients with diabetes mellitus, history of abdominal surgery and give no consent were excluded. All the patients were equally divided into two groups. Group I consist of 85 patients and received single incision laparoscopic appendectomy and Group II with similar patients received conventional instrumental laparoscopic appendectomy. Procedural outcomes such as operative time, hospital stay, post-operative pain, post-operative complications (wound

infection, ileus) and cosmetic results. Cosmetic results were examined by scoring system 1 to 10 at 3 months post-operative follow-up. Data was analyzed by SPSS 24. Chi-square test was applied to compare the outcomes between both groups with p-value <0.05 was taken as significant.

RESULTS

In Group I, 48(56.47%) were males and 37(43.53%) patients were females with mean age 38.56±10.48 years and in group II, 43(50.59%) patients were males and 42(49.41%) patients were females with mean age 39.65±12.42 years. Regarding body mass index (BMI) no significant difference was observed between both groups Group I and II (23.36±3.13 and 23.48±3.28 kg/m^2). As per pathology examination in Group I, 8(9.41%) patients had acute perforated appendicitis, 14(16.47%) patients had single appendicitis and 63(74.12%) patients had acute suppurative appendicitis. In Group II, 11(12.94%), 17(20%) and 57(67.06%) patients had acute perforated, acute single and acute suppurative appendicitis. No significant difference was observed between both groups regarding pathology examination. In group I, mean leukocyte count was 15.542±3.47 and in Group II, it was 14.436±3.258 (x10^9/L) (Table 1).

Table 1: Demographic information of all the patients

Variable	Group I	Group II	P value
Age (years)	38.56±10.48	39.65±12.42	>0.05
Gender			
Male	48 (56.47%)	43 (50.59%)	>0.05
Female	37 (43.53%)	42 (49.41%)	N/S
BMI	23.36±3.13	23.48±3.28	N/S
Diagnosis (Appendicitis)			
Perforated	8 (9.41%)	11 (12.94%)	>0.05
Single	14 (16.47%)	17 (20%)	>0.05
Suppurative	63 (74.12%)	57 (67.06%)	>0.05
Leukocyte Count (x109/L)	15.542±3.47	14.436±3.258	>0.05

Table 2: Comparison of outcomes between both groups

Variable	Group I	Group II	P value
Operative Time(min)	48.46±6.27	47.92±7.88	0.08
Hospital stay (days)	1.25±0.80	3.24±1.05	0.004
Mean VAS	3.15±0.45	3.08±0.76	0.42
Complication			
Wound infection	3 (3.53%)	7 (8.24%)	>0.05
Ileus	0	2 (2.35%)	>0.05
Cosmetic Result	2.03±1.35	3.85±1.76	0.02

According to the outcomes of both procedures, no significant difference was observed between both groups regarding operative time (48.46±6.27 Vs 47.92±7.88 minutes) p-value 0.08. No significant difference was found between both groups regarding wound infection [Group I, 3 (3.53%), Group II, 7 (8.24%)], none of patients in Group I had ileus while 2(2.35%) had ileus in Group II. Patients received single incision laparoscopic appendectomy had shorter hospital stay as compared to Group I patients (1.25±0.80 Vs 3.24±1.05 days) with p-value 0.02. No significant difference was observed regarding post-operative pain by VAS between Group I and Group II, (3.15±0.45 and 3.08±0.76) p-value 0.42. Group I patients had better cosmetic results after 3 months as compared to Group II patients (2.03±1.35 Vs 3.85±1.76) with p-value <0.05 (Table 2)

DISCUSSION

Appendicitis is one of the most common diseases and appendectomy is one of the most performing surgical procedures in all over the world.[11] The present study was conducted to determine the outcomes of single incision laparoscopic appendectomy and compare with conventional instrumental laparoscopic appendectomy. Mostly patients in the present study were males 56.47% in Group I and 50.59% in Group II while 43.53% were females in Group I and in group II, 49.41% patients were females. No significant difference was observed regarding ages of patient's 38.56±10.48 years and 39.65±12.42 years. These results were similar to many of other studies n which male patients were predominant 55 to 70% as compared to females and majority of patients were ages 30 to 50 years.[5,12] However, a study conducted by Koo et al[13] regarding single incision versus conventional laparoscopic appendectomy and they reported female patients were high in numbers 56.3% as compared to male patients population 43.7%.

In our study we found no significant difference regarding BMI, leukocyte count and pathology examination of appendicitis between both groups (p-value >0.05). A study conducted by Chen et al[14] reported no significant difference regarding BMI, age, gender, leukocyte count between both groups (p-value >0.05).

This study showed no significant difference was observed between both groups regarding operative time (48.46±6.27 Vs 47.92±7.88 minutes) p-value 0.08. A study by Koo et al[13] regarding comparison of SILA and CLA and they reported that CLA was significantly superior to SILA with reduced operating time (mean difference 5.81 [2.01, 9.62] P = 0.003). In our study we found no significant difference between both groups regarding wound infection [Group I, 3(3.53%) Group II, 7(8.24%)], none of patients in Group I had ileus while 2(2.35%) ileus in Group II. Patients received single incision laparoscopic appendectomy had shorter hospital stay as compared to Group II patients (1.25±0.80 Vs 3.24±1.05 days) with p-value 0.02. No significant difference was observed regarding post-operative pain by VAS between Group I and Group II (3.15±0.45 and 3.08±0.76) p-value 0.42. These results showed similarity to several previous studies n which single incision LA had shorter hospital stay and lesser morbidity as compared to conventional instrumental laparoscopic appendectomy[15,16].

In this study we found that patients treated with single incision had better cosmetics outcomes as compared to conventional instrumental LA (2.03±1.35 Vs 3.85±1.76). These results were similar to many of previous studies in which majority of patients were satisfied regarding cosmetic results who were treated with single incision laparoscopic appendectomy[17,18].

CONCLUSION

Single incision laparoscopic appendectomy is safe and effective treatment modality with better cosmetic results and less hospital stay and low rate of wound infection as compared to conventional laparoscopic appendectomy. However, no significant difference was observed between both procedures regarding post-operative pain and operating time.

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