Original Article

Lap. VS Open Appendectomy

To Compare the Frequency of Superficial Surgical Site Infection After Laparoscopic Versus Open Appendectomy

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ABSTRACT

Objective: To compare the frequency of Superficial Surgical Site infection after laparoscopic versus open appendectomy.

Study Design: Randomized clinical trial study

Place and Duration of Study: This study was conducted at Surgical Department Jinnah Post Graduate Medical Centre Karachi and Dow University Hospital from August 2013 to January 2014.

Materials and Methods: The source of data was patients admitted in emergency. Patients were selected on the basis of clinical features. The data was collected with the help of Performa attached. It included demographic data of the patient, presenting complaints, operative findings, Surgical site infection. Random patients were placed in two groups. Surgical site infection by observation of pain, redness, tenderness and purulent discharge from the wound. Patients included were of both gender and age above 13 years presented to emergency department diagnosed as acute appendicitis on the basis of history and examination and exclusion of under 12 years of age, appendicular mass, CLD, I.H.D , DM and renal failure.

Results: Out of 270 patients, 153(56.7%) patients were males and 117(43.3%) patients were female. In Present study the different operative findings with their distribution among gender are shown in table. In other findings three patients with ruptured ovarian cyst and one with Mackel's Diverticulitis in which procedure was converted to open and resection and anastomosis of small intestine was done. SSSI is found to associated with operative finding with a significant P value 0.001.

Superficial Surgical Site Infection were observed in both procedure laparoscopic appendectomy allotted in 134 cases but four cases are converted to open procedure so they are excluded from the results. The reason for conversion in three cases was difficulty in mobilizing the appendix because of adhesion and in one case Mackel's Diverticulitis found which need open procedure for formal small intestine resection and anastomosis. Superficial Surgical Site Infection was observed in three cases of Laparoscopic appendectomy and in 15 cases of Open Appendectomy group with the P value 0.005.

Conclusion: Laparoscopic appendectomy is a better choice because of its reduced frequency of SSSI when compared with open procedure. SSSI is an important complication.

Key Words: Appendicitis, Laparoscopic Appendectomy, Open Appendectomy, SSSI

INTRODUCTION

Appendicitis is a most common surgical emergency, with a life time risk of 6%[1]. Diagnosis of appendicitis is very important in making the decision as there are other conditions presented with symptom alike appendicitis. Diagnosis depend on the clinical picture, Investigations and aided by imaging like Ultrasonography and CT Scan. Different scoring systems was advised to help in the decision making like Alvarado scoring system which was later on changed as Modified Alvarado Scoring. Laparoscopic appendectomy done first time by a German gynecologist Semm in 19811.After that a debate started regarding which procedure is better with a less rate of complication. Many studies have been conducted to compare the two procedure regarding operative time, postoperative wound infection, early mobilization, intra abdominal abscess, postoperative fever, and hospital stay[2]. Laparoscopic appendectomy was found superior than open appendectomy in most of the studies regarding the wound infection which is significantly reduced after laparoscopic appendectomy and statistically non significant increase in number of intra abdominal abscess formation after laparoscopic appendectomy [1,2] but according to other study there is no statistical difference between the out come of two procedure regarding the wound infection(6.2% versus 6.7%) but the intra abdominal abscess rate(5.3% versus 3%) and operative time(80 min. versus 60 min). is more after the laparoscopic than after open appendectomy [3].

Surgical site infection is one most common complication after open appendectomy. It has been observed by studies that wound infection is reduced (from 4-6 percent in open appendectomy to 0.4-0.6 percent) in laparoscopic appendectomy[2,4,5,6] It is because of this reason that in most centers of the world where facilities and expertise of Minimal Access Surgery are available, Laparoscopic appendectomy has become the standard procedure for this pathology. We have developed a new technique of manipulating appendix in laparoscopic appendectomy. This includes holding of appendix with endograsper while dissecting, coagulating mesoappendix and placing loop knot. Similarly with this technique the appendix is delivered through 10mm port without touching the skin wound. This study aims at evaluation of laparoscopic appendectomy and its comparison with open surgical technique. The outcome of this study would be a guide line and documented local reference for the surgeons who are working in the field

MATERIALS AND METHODS

This is randomized clinical trial study conducted at at Surgical Department Jinnah Post Graduate Medical Centre Karachi and Dow University Hospital from August 2013 to January 2014.

The patients were selected on the basis of clinical features. All patients were operated after informed consent by the senior registrar and consultant surgeon. Data were include demographic data of the patient, presenting complaints, operative findings, SSSI. Random patients are placed in two groups. Surgical site infection observation is pain, redness, tenderness and purulent discharge from the wound. Discharge criteria is when bowel sound audible and patient taking orally. Stitches are removed on 7th postoperative day. Follow up visits on day 3rd, 7th and 15th. Follow up were ensured by taking telephonic contact of patients. The findings were recorded by trainee researcher.

RESULTS

The results of the analysis of data on 270 patients underwent Appendectomy according to their allocated protocol. Patients were categorized into 2 groups; A: open appendectomy B: laparoscopic appendectomy. Our study population was in age group of 13 to 60 years. Mean age of patients in Laparoscopic group is 23.21 yrs, whereas it is 25.10yrs in Open group. (Table 1).

Out of 270 patients, 153(56.7%) patients were males and 117(43.3%) patients were female. In Present study the different operative findings with their distribution among gender are shown in table. In other findings three patients with ruptured ovarian cyst and one with Mackel's Diverticulitis in which procedure was converted to open and resection and anastomosis of small intestine was done. SSSI is found to associated with operative finding with a significant P value 0.001.

Superficial Surgical Site Infection were observed in both procedure laparoscopic appendectomy allotted in 134 cases but four cases are converted to open procedure so they are excluded from the results. The reason for conversion in three cases was difficulty in mobilizing the appendix because of adhesion and in one case Mackel's Diverticulitis found which need open procedure for formal small intestine resection and anastomosis. Superficial Surgical Site Infection was observed in three cases of Laparoscopic appendectomy and in 15 cases of Open Appendectomy group with the P value 0.005.

Table No.1: Showing Age in both groups

Procedure Performed	Mean age	N	Std. Deviation
Laparosopic	23.21	134	7.511
Open	25.10	136	8.654

Table No.2: Relation of SSSI with operative finding

Peropative Finding	SSSI			Chi-Square Test
	No	Yes	Total	
Acutely inflamed	213	13	226	0.024
Perforated	12	4	16	
Normal	23	1	24	
Others	4	0	4	

Table No.3: Incidence of SSSI among groups

Procedure performed	SSSI			Chi-Square Test
	No	Yes	Percentage	
Laparoscopic Appendectomy	3	127	2.30%	0.005
Open Appendectomy	15	121	11.02%	
Total	18	248	6.76%	

DISCUSSION

Appendectomy can be performed by open or laparoscopic. These are the two different techniques. Open appendectomy is done though different surgical incisions like McBurney's ,Lanz and Rutherford depending on the clinical assessment and the stage of inflammation of appendix. In Laparoscopic appendectomy different techniques are introduced like 3 port, 2 port and even with single port.

Superficial Surgical Site Infection is an important complication following any surgical procedure because it increase the morbidity of patients and increases the burden on the health resources. By reducing the SSSI we can improve the outcome of procedure and early recovery of patients.Despite the surgical procedure

there are different other factors responsible for the development of SSSI.

In our study showed the frequency of SSSI in Laparoscopic appendectomy is 3 out of 130 procedures. And 15 patients develop SSSI in open group out of 136. P value is 0.005 which is less than 0.05 means it is statistically significant value. The Probable reason of decreased in SSSI in Laparoscopic appendectomy are that the inflamed appendix did not make a direct contact with the skin incision which may be the case in open appendectomy. And the minimum tissue dissection at the incision site. I have followed the patients for 15 days postoperatively. There is a possibility of missing some of the cases of Superficial Surgical Site Infection because as per definition of Superficial Surgical Site Infection can occurs within 30 days of operation.

Result of my study is compatible with the Cochrane review which was published in 2010 which includes about 56 studies comparing the Laparoscopic versus open appendectomy and concluded that the wound infection is less after laparoscopic appendectomy (3.8% as compared to 7.6%) The other parameters were also compared like post operative pain, hospital stay and return to normal activity showed improve result in laparoscopic appendectomy. But some of the parameters like operative time, intra-abdominal abscesses formation and cost of procedure are not in favors of laparoscopic appendectomy[7].

Another study conducted at St. Joseph's Hospital in Edmonton. The study subject are 175 adult patients who were operated Laparoscopically with the diagnosis of appendicitis from 1995 to 2002. The infectious complications observed post operatively in which 1 is wound infection and other is intra-abdominal collection and the percentage of wound infection in this study was 0.57[8].

A study conducted over a period of 1 year in India also prove the lower incidence of wound infection after Laparoscopic appendectomy. In this study 100 patients with Laparoscopic appendectomy compared with 179 patients with open appendectomy. Wound infection develop in 4% of Laparoscopic group and 14% in open group[9].

Studies done in our country are also in favor of laparoscopic appendectomy in term of decrease in wound infection. A study conducted at Liaquat University of Medical and Health Sciences Jamshoro. A total of 100 patients studied in which 48 underwent laparosopic appendectomy and 52 were of open appendectomy. 3 patients in laparoscopic group develop wound infection as compared to 7 patients in open group but the P value is statistically not significant [10].

A study conducted at Lady Reading Hospital Peshawar. In which each group consisted of 60 patients. The parameters are Operative time, postoperative pain, intra and post operative complications including wound infection, hospital stay and return to normal daily activity. Wound infection was 8.3% in open group and 1.6% in laparoscopic group with the P value 0.005. other parameters also in favor of laparoscopic appendectomy[11].

The other aspect of cosmetic improvement in appendectomy is by decreasing the size of abdominal port and using the natural orifice like vagina but limited work has been done in these lines [12,13].

CONCLUSION

Laparoscopic Procedure is a better choice in case of appendectomy because of its reduced frequency of SSSI when compared with open procedure. SSSI is an important complication leading to delay in recovery of patient and increases burden on the economics of health. Laparoscopic Appendectomy should be a preferred approach where facilities and expertise are available.

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