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Original Research Article

Laparoscopic versus open appendectomy retrospective study

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ABSTRACT

Background: Laparoscopic cholecystectomy is taken into account as a standard method of performing cholecystectomy and has substituted the old method throughout the world, while laparoscopic appendectomy still not attaining that reputation. In this paper, a retrospective study was done to compare between both laparoscopic and open appendectomy.
Methods: Two hundred eighty-five patients were analyzed after appendectomy using either open or laparoscopic procedures. The data was compared over a period of 36 months. Surgical technique was the same among 6 surgeons, standard postoperative care for all patient groups. The outcome measures included comparing of mean operative time, days of hospitalization, postoperative pain and rate of wound infection.
Results: Concerning open appendectomy the mean time was 28 minutes with 2 days of hospitalization. The postoperative pain extent was for 36 hours and rate of wound infection was 8/159. While in laparoscopic appendectomy the mean time was 55 minutes with one day hospitalization. The postoperative pain was for 12 hours and zero rate of wound infection.
Conclusions: In general laparoscopy has plenty of gains over open surgery as discussed before but laparoscopic appendectomy is not easier, nor does it avoid general anesthesia. The cost for laparoscopic appendectomy is higher than for open appendectomy. The operative and post-operative complications are more critical (e.g.: intra-abdominal abscesses & perforation of bowel) as compared to open appendectomy. We have to assess the advantages and disadvantages, indications and contraindications when taking a decision for laparoscopic surgery. We suppose it would be very early to say that laparoscopic appendectomy is superior or can replace open appendectomy.

Keywords: Appendicitis, Appendectomy, Laparoscopy

INTRODUCTION

Laparoscopic surgery is now thoroughly instituted and progressed approach of executing general surgical procedures. In certain teaching hospitals, every patient with right iliac fossa pain has to go through laparoscopy before continuing to appendectomy.[1,2] Laparoscopic appendectomy is not as prevalent as Laparoscopic Cholecystectomy. Quite a lot of surgeons recommended that the recent practice of laparoscopic appendectomy should be the chosen management for acute appendicitis. Some surgeons have plenty of reports about this new technique. This study evaluated open to laparoscopic appendectomy.

METHODS

Patients experienced laparoscopic appendectomy (N=126) had an average age of 25.7±1.5 (range 16-59). These patients were compared to 159 patients underwent

open appendectomy had an average age of 25.5±2.3 (range 17-57).

There are no important demographic differences between the two groups related to age, sex, and WBCs count, as briefly summarized in Table 1.

Patients with appendicitis were involved in the study achieved from June 2013 to June 2016 the following standards were utilized to diagnose the clinical condition:

Record of right iliac fossa pain (or periumbilical pain shifting to the right iliac fossa with nausea and/or vomiting), fever of more than 38°C and/or leukocytosis above 10,000 cells per ml, right iliac fossa guarding, and tenderness upon examination. Patients were disregarded when diagnosis was not clinically proven and if symptoms last for more than 5 days and/or a palpable mass in the right iliac fossa (those treated with antibiotics and possible percutaneous drainage for supposed abscess).

Table 1: Demographic data of the patients (n=285).

Characteristics		Laparoscopic appendectomy (N=126)	Open appendectomy (N=159)
Age (years)		25.7±1.5 (range 16-59)	25.5±2.3 (range 17-57)
Sex	Male	92 (73.01%)	107 (67.29%)
	Female	34 (26.98%)	52 (32.70%)
White blood cell count (×109 /L)		12.4±1.4	13.1±1.9

Patients with the respecting situations were also discounted: history of coagulation disorders, generalized peritonitis, shock on admission, absolute contraindication to laparoscopic surgery (story of laparotomies for small bowel obstruction, ascites with abdominal distension), incompetent to general anesthesia (severe cardiac and/or pulmonary disease).

Surgery

Laparoscopic appendectomy

The patient is positioned supine with arms at the side. The surgeon stands on the left side of the patient with his assistants.

A pneumoperitoneum started as usual. Three trocars are inserted: one trocar 5mm at right iliac fossa(RIF), 10mm trocar at Umbilicus and one 5 mm Suprapubic. A traumatic grasper is inserted via the RIF trocar. The cecum is withdrawn upward toward the liver; this movement elevates the appendix in the visual field of the telescope. The appendix is grasped at its tip with a 5mm grasper through the suprapubic trocar and kept in upward position. Division of meso-appendix using endoligature 5mm. Ligation of appendicular Base using endoloop.

At the end of procedure, the appendix is pulled into the right upper trocar. Both the appendix and trocar are removed in a way that the appendix not touching the abdominal wall.

Open appendectomy

It is done by a traditional grid Iron Incision (opening in layers' muscle splitting till reaching peritoneal cavity and identification of cecum and appendix then ligation and division of mesoappendix then crushing ligation and division of appendix at bas, hemostasis secured and closure in layers).

RESULTS

Variables assessed were operating room time, days until patient accepted a regular diet, days of hospitalization, postoperative pain and wound infection rate. Concerning open appendectomy, the mean time was 28 minutes with 2 days of hospitalization. The postoperative pain extent was for 36 hours and rate of wound infection was 8/159.

Table 2: Comparison of the group's variables.

Feature	Open appendectomy	Laparoscopic appendectomy
Mean time	28 minutes	55 minutes
Days of hospitalization	2 days	one day
Postoperative pain	36 hours	12 hours
Wound infection	8/159	zero

While in laparoscopic appendectomy the mean time was 55 minutes with one day hospitalization. The postoperative pain was for 12 hours and zero rate of wound infection. The variables between two groups are summarized in the Table 2.

DISCUSSION

A number of surgeons suppose that laparoscopy has the advantage as if a patient who has laparoscopic cholecystectomy and his appendix was found to be inflamed so he can have appendectomy at the same time with no any extension of incision or instruments.[3,4] Wide

field visions of appendix with more space to movement through a small hole like incision are enormous advantages of laparoscopic surgery.

Laparoscopy participates in evaluating acute abdomen. And had a major role in young females when it is difficult to distinguish between acute appendicitis and gynecological clinical conditions like "Pelvic Inflammatory disease", "Twisted ovary" and ectopic pregnancy etc.[5-7]

Laparoscopic procedures had rarer postoperative respiratory complications compared to open surgery.[8,9] Advantages of laparoscopic appendectomy are its better visualisation of organs, shorter hospital stay, fewer wound infection, less post-operative pain and rapid coming back to work. The results of the study show that laparoscopic appendectomy gives rise to significantly less post-operative pain, shorter hospital stay and quick recovery.[10]

Initially laparoscopic appendectomy had a very high cost compared to open. The operative cost is additionally very high if the disposable staplers are used. This cost can be reduced by using extra corporeal knotting. Early return of patient to normal life is a great benefit for the patient in our Asian countries.

Mean operation time was longer in laparoscopic appendectomy (55 minutes) compared to open (30 minutes). We observed that the delay was not during operation rather than before starting the real operation in positioning the patient, application of different tubes, cables and video apparatus around the patient.

Wound infection concerning skin was almost zero, as the appendix was pulled into the trocar before removing. This action minimizes the risks of wound infection to the skin.

It was difficult to calculate post-operative pain. So, we indirectly measure it by calculating how many days took to mobilize freely and how long the patient used analgesics. On average after 12 hours the patients were fully mobilized and did not need any analgesics where as in open appendectomy group this average time was 36 hours. This finding is common in almost all the studies done up to date.[11-13]

The patients were discharged home after 24 hours in laparoscopic appendectomy while in open group the patient discharged on the second day.

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Ethical approval: The study was approved by the institutional ethics committee

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