

Original article**Laparoscopic versus open appendectomy Randomized study in king Hussien Medical Centre Amman/Jordan.**

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Abstract

Laparoscopic appendectomy is a new procedure as compared to laparoscopic cholecystectomy. Laparoscopic cholecystectomy is now considered a standard method of performing cholecystectomy and has replaced the old method generally throughout the world, while appendectomy could not achieve the similar popularity. In this paper a randomized study was done to compare between both laparoscopic and open appendectomy.

PATIENTS AND METHOD; In order to compare the two techniques, patients undergoing laparoscopic appendectomy were compared to patients undergoing open appendectomy over a period of 36 months. Those patients who had perforated appendicitis were excluded.

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

RESULTS; Variables evaluated were operating room time, days until patient tolerated a regular diet, days of hospitalization, postoperative pain and wound infection rate.

Mean operative time was 55minutes for lap. Appendectomy (LA) and 25 minutes for open appendectomy (OA). One day hospitalization in LA and two days in OA.

Postoperative pain continued for 12 hours in LA while in OA for 36 hours.

Rate of wound infection was 9 out of 159 in OA while none in LA.

CONCLUSION; We have to analyze very critically that do we need a procedure which gives us a small scar which is more cosmetic and acceptable with minimum, hospital stay & off work BUT serious postoperative complications or should we stick to the previous gold standard and well established method of open appendectomy with lesser chances of intra-abdominal abscesses / perforation of bowel.

We believe it would be very early and immature to say that laparoscopic is superior or can replace open appendectomy.

Key Words; appendicitis, appendectomy, laparoscopy.

1. Introduction

Spontaneous bacterial peritonitis (SBP) is a frequent Appendicitis was first recognized as a disease entity in sixteenth century and was called perityphlitis. McBurne in 1889 described the clinical features of acute appendicitis. Open appendectomy is used since last century. In 1983, a German Gynecologist Semm performed the first laparoscopic appendectomy. Laparoscopic surgery is now a well

established and advanced method of performing general surgical procedures. In some teaching

hospitals all patients with pain right iliac fossa have to undergo laparoscopy before proceeding to appendectomy^{1,2}. Laparoscopic appendectomy has gained some ground but is not as popular as Laparoscopic Cholecystectomy. Some surgeons purposed that the new technique of laparoscopic

appendectomy should be the preferred treatment for acute appendicitis. Another group of surgeons have a lot of reservations about this new technique. This study compared open to laparoscopic appendectomy.

2. Material and Methods

In order to compare the two techniques, patients undergoing laparoscopic appendectomy were compared to patients undergoing open appendectomy over a period of 36 months. Those patients who had perforated appendicitis were excluded.

PATIENTS

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

Inclusion Criteria

Patients with appendicitis were included in the study performed at king Hussein medical centre (amman) from june 2011 to june 2014 .the following criteria were used to diagnose the clinical condition:

History of right lower quadrant pain or periumbilical pain migrating to the right lower quadrant with nausea and/or vomiting, fever of more than 38°C and/or leukocytosis above 10,000 cells per mL, right lower quadrant guarding, and tenderness on physical examination.

Exclusion Criteria

Patients were excluded if the diagnosis of appendicitis was not clinically established and if they had a history of symptoms for more than 5 days and/or a palpable mass in the right lower quadrant, suggesting an appendiceal abscess treated with antibiotics and possible percutaneous drainage. Patients with the following conditions were also excluded: history of coagulation disorders, generalized peritonitis, shock on admission, absolute contraindication to laparoscopic surgery (large ventral hernia, history of laparotomies for small bowel obstruction, ascites with abdominal distension), contraindication to general anesthesia (severe cardiac and/or pulmonary disease).

METHODS

The Position: The patient is in supine position, arms tucked at the side. The surgeon stands on the left side of the patient with the scrub nurse-camera holder-assistant. A pneumoperitoneum is obtained in the usual fashion. Three trocars are inserted: Two trocars 5mm–10mm at right lower quadrant and Umbilicus respectively and one 5 mm (Suprapubic). A traumatic grasper is inserted via the RLQ trocar. The cecum is retracted upward toward the liver; this maneuver

elevates the appendix in the optical field of the telescope. The appendix is grasped at its tip with a 5 mm grasper via the suprapubic trocar. It is held in upward position. Division of mesoappendix using endoligature 5-mm. Ligation of appendicular base using endoloop.

At the end of procedure the base of the appendix is inspected for homeostasis. The appendix is pulled into the right upper trocar. Both the appendix and trocar are removed in such a fashion that the appendix should not touch the abdominal wall.

Open appendectomy

It is done by standard grid Iron Incision as usual (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 base ,hemostasis secured and closure in layers).

3. Results

Variables evaluated were operating room time, days until patient tolerated a regular diet, days of hospitalization, postoperative pain and wound infection rate. Results are tabulated below:

Features	Lap. Appendectomy	Open appendectomy
Mean OT time	55minutes	25 minutes
Days of hospitalization.	One day	2 days
Postoperative pain	12 hours	36 hour
Wound infection	None	9/159

4. Discussions

Laparoscopic appendectomy is relatively a new procedure as compared to laparoscopic cholecystectomy. A lot of discussion and analysis are being performed through out the world regarding laparoscopic versus open appendectomy. Unlike LC, LA is not regarded as “Gold standard”. Some surgeons believe that laparoscopy has the advantage that if a patient who has LC and his appendix was found to be inflamed, he can have appendectomy at the same time without any extension of incision or instruments^{3,4}. Clear and magnified visions of appendix with more space to maneuver through a small hole like incision are great advantages of laparoscopic surgery^{5,6}.

Laparoscopy has a great diagnostic value specially in acute abdomen .It plays a significant role in young females where at times it is nearly impossible to

differentiate between acute appendicitis and gynecological clinical conditions like "Pelvic Inflammatory disease", "Twisted ovary " and ectopic pregnancy etc.

Generally laparoscopic procedures carry less postoperative pulmonary complications as compared to open surgery on abdomen^{7,8,9,10}. To adopt a new technique and leave the old one, which is well established since more than a century one needs to show clearly some outstanding advantages, which are lacking in the old technique. Possible advantages of LA are its better vision of organs, shorter hospital stay, fewer wound infection, less post operative pain and less days off work. The results of the study comparing LA and OA shows clearly that LA results in significantly less post operative pain, shorter hospital stay and quick resumption to work.

To have a setup to perform LA at least one million rupees are required whereas OA can be done in an environment with no special equipment at even at basic health unit. Hence the initial cost is very high as compared to OA. The operative cost is also very high if the disposable staplers are used. This cost can be reduced to the cost of OA by using extra corporeal knotting and a knot pusher or disposable catgut loops with knot pusher.

In our Asian society early return of patient to normal productive life is a big advantage for the patient.

Operating time is the period, which starts from the moment the patient is anesthetized till the patient comes out of anesthesia. Mean operation time was longer in LA (55minutes) as compared to OA (30 minutes). Main reason for the delay, which we noted, was not during operation rather before starting the actual operation in position the patient. Adjusting different tubes, cables and video apparatus around the patient.

Wound infection regarding skin was almost zero, as the appendix was pulled into the trocar before removing. This maneuver minimizes the chances of wound infection to the skin. On the other hand the incidence of intra abdominal abscesses was higher (2 cases) as compared to none in OA.

Post operative pain and discomfort is difficult to measure. We used an indirect method by noting how many days took to mobilize freely and how many days the patient used narcotic analgesics. Our study showed that on average after 12 hours the patient were fully mobilized and did not require any narcotic analgesic where as in OA group this average time was 36 hours. This finding is common in almost all the studies done up to date.

Mean hospital stay was nearly 1/3rd in LA. The patients were discharged home after 24 hours in LA

where as in OA the patient left the hospital on the second day.

CONCLUSION

Laparoscopic surgery is a well established branch of general surgery. It is beyond doubt that in coming times it may emerge as a separate specialty. The results and satisfaction that was achieved in LC cannot be reached in LA. In general laparoscopy has a lot of advantages over open surgery as discussed before but LA is not easier, quicker or safer, nor does it obviate general anesthesia^{11,12,13,14}. Furthermore the operating room cost for LA is considerably higher than for OA. The operative and post operative complications are more serious (e.g.: intra abdominal abscesses & perforation of bowel) as compared to OA.

We have to analyze very critically that do we need a procedure which gives us a small scar which is more cosmetic and acceptable with minimum, hospital stay & off work BUT serious postoperative complications or should we stick to the previous gold standard and well established method of OA with lesser chances of intra-abdominal abscesses / perforation of bowel.

We believe it would be very early and immature to say that LA is superior or can replace OA.

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