

A 10 month Experience of the Laparoscopic-assisted Extra Corporeal Technique for Appendectomy at District Headquarter teaching Hospital /Sargodha Medical College, Sargodha

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ABSTRACT

Objective: To evaluate laparoscopic-assisted Extracorporeal technique in removing appendix.

Materials and Methods: It was a cross sectional study conducted at surgical unit of DHQ Teaching Hospital/ Medical College Sargodha. We evaluated the surgical time, operation cost, postoperative complications and postoperative hospital stay. The study group consisted of 79 patients operated over a 10 month period from October 2012 to July 2013.

Results: Laparoscopic-assisted extra corporeal appendectomy LAEA was successfully completed in 74 patients (93.67%). Five patients initially scheduled for laparoscopic-assisted extra corporeal appendectomy were converted to open appendectomy. The conversions were for difficulty in finding out appendix in 2 cases (2.53%), for perforated appendix in one case and for thick adhesions in 3 cases (1.26%).

Discussion: Acute appendicitis is the most common condition leading to emergency abdominal surgery in young adults. Conventionally performed open appendectomy sometime becomes very difficult due to technical difficulties ,particularly when appendix is not at its normal positions ,in very obese and in patients having peritonitis, this will require a larger incision, prolonged operating time, more pain and morbidity, and many problems of large size incision. Laparoscopic-assisted extra corporeal technique allows surgeons to use the advantages of the laparoscopic method including visual diagnosis, less postoperative pain, and quicker return to work and less operative time and low cost of traditional open appendectomy, so it offers the advantages of both the laparoscopic and the open techniques.

Keywords: Acute appendicitis, Appendectomy, Laparoscopy, Lap assisted appendectomy

INTRODUCTION

In 1886, acute appendicitis was revealed to be the first causative of right low quadrant (RLQ) pain by Reginald Fitz, and surgical treatment at the time of diagnosis became the common treatment mode. Acute appendicitis is the most common condition leading to emergency abdominal surgery in young adults. Traditionally, the treatment for appendicitis has been a right lower quadrant incision with removal of the appendix as described by Charles McBurney in 1889 and 1894¹. The incision should be centred over McBurney's point, one-third of the distance from the anterior superior iliac spine to the umbilicus². Conventionally performed open appendectomy sometime becomes very difficult due to technical difficulties, particularly when appendix is not at its

normal positions, in very obese and in patients having peritonitis, this will require a larger incision, prolonged operating time, more pain and morbidity, and many problems of large size incision. In 1981 Semm, a German gynaecologist performed the first laparoscopic appendectomy (LA)⁴. More than 2 decades later, the benefits of LA are still controversial. The laparoscopic appendectomy has allowed surgeons the diagnostic laparoscopy especially in child bearing age, and also treat appendicitis at the same time^{3,4,5}. There is also lower risk of adhesions, wound infection, dehiscence and hernia formations. Over the past decade, the outcomes of laparoscopic appendectomies have compared favourably to those for open appendectomies because of decreased pain, fewer postoperative complications, shorter hospitalization, earlier mobilization, earlier return to work, and better cosmetics^{6,14}. The conventional three-port technique for laparoscopic appendectomy has proven its worth in the management of appendiceal pathologies.

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The disadvantages of the laparoscopic procedure are longer operating time^{5,7,8,10,15,18}, higher cost^{19,20,21,22,23}. A technique to reduce operating time and cost is a combination of the laparoscopic and open technique called the laparoscopic-assisted technique^{11,13,24}. This technique allows surgeons to use the advantages of the laparoscopic method including visual diagnosis, less postoperative pain, and quicker return to work and less operative time and low cost of traditional open appendectomy, so it offers the advantages of both the laparoscopic and the open techniques.

MATERIAL AND METHODS

To evaluate the laparoscopic-assisted extra corporeal technique, we performed an evaluation of surgical approach for removing the appendix. The study was conducted at DHQ Teaching Hospital Sargodha. We evaluated the surgical time, operation cost, postoperative complications and postoperative hospital stay. All patients of either sex and of age ranging from 12yrs to 50 years having diagnosis of acute appendicitis were included in this study. Preoperatively suspected complicated acute appendicitis were excluded from this study (i.e. palpable mass, localised or generalized peritonitis), pregnant female, children less than 12 year of age and patients older than 50 year were excluded from the study.

The surgeon stands on the left side of the patient; the video monitor is on the right side of the patient, next to his legs. The insufflation of the abdomen is through an umbilical port, entry point is hidden within natural camouflage, the abdomen is inspected and the appendix is visualized. In laparoscopic assisted extra corporeal technique, 10-mm port is placed through the abdomen over the location of the appendix. Then patient is positioned in Trendelenburg with lateralization of 30° to the left. The mobility of the caecum, and appendix is carefully checked. A Babcock grasper is used to clamp the appendix that is then pulled within the trocar port; the abdomen is deflated, thus allowing the appendix to be pulled through the incision into the operating field. The mesoappendix is dissected and vessels are ligated as in the traditional open technique. The appendiceal stump is then ligated. Once the appendix is removed, the cecum and appendiceal stump are placed within the abdomen; the abdomen is again insufflated to check for hemostasis and to irrigate the abdominal cavity. The trocars are removed and skin is stitched.

If the appendix can't be exposed and mobilized, an additional 5 mm trocar is introduced in the left iliac fossa) for the second operative instrument. The

successful mobilization of the appendix is followed by the same steps described above. If the acute appendicitis proves intraoperatively to be complicated, conversion to either open is mandatory, depending on the aspect of the lesion. The study group consisted of 79 patients operated over a 10 month period. Technique was evaluated for operative time, operation cost and postoperative length of stay in Hospital and postoperative complications. All patients over the age of 12 and below 50 years with a diagnosis of acute appendicitis based on clinical findings, laboratory tests and imaging results were considered for the study. Informed written consent was obtained from each of the patient. The data were collected prospectively from Oct 2012 to Jul 2013. The preoperative diagnosis was established by clinical, laboratory and ultrasonographic evaluation.

RESULTS

Laparoscopic-assisted extra corporeal appendectomy LAEA was successfully completed in 74 patients (93.67%). Five patients initially scheduled for laparoscopic-assisted extra corporeal appendectomy were converted to open appendectomy. The conversions were for difficulty in finding out appendix in 2 cases (2.53%), for perforated appendix in one case and for thick adhesions in 3 cases (1.26%). An additional 5-mm trocar, infraumbilical or the left iliac fossa according to the preferences was inserted in another 13 patients for difficulty in finding out appendix in 5 cases (6.32%), for thick oedematous appendix in 3 cases (3.79%) to better mobilize appendices with strong adhesions – which imposed the use of a mono polar hook and for the treatment of associated pathology in six cases (7.59%) like ovarian cyst. There were no intra operative complication. Port site bleeding in three cases (3.79%), port site wound infection in 8 patient (10.12%) and port site granuloma in 2 (2.53%) patients. Using an additional 5mm operative channel does not represent the failure of this technique.

There were no wound infective complications, intraperitoneal sepsis or any other complications were observed. The port site infections and granuloma settled within two to three days after removing stitching. The mean operative time was of 30 min in LAEA group. The postoperative hospital stay of about one day in the LAEA. The time necessary to return to normal daily activity was of 6-9 days (mean 7 days) in LAEA. All the patients in this study were followed-up at an interval of one week and then four weeks after surgery. Cosmetic results were very satisfying, as appreciated clinically 30 days after operation. The cost was calculated in Pakistani Rupees for each patient and the cost of procedure

was same as that of open appendectomy. There were no readmissions or significant symptoms noted during follow-up visits. Finally to say that this procedure is associated with decreased operative time and more rapid return to normal activity.

Table I: Age distribution

Age in years	=n	Frequencies
12 to 15	14	17.73%
16 to 25	39	49.37%
26 to 35	17	21.52%
36 to 50	8	10.13%

Table II: Gender distribution

Gender	=n	Frequencies
Male	34	43.03%
Female	45	56.96%

Table III: Indications for accessory ports in 14 patients

Indication	=n	Frequencies
Thick oedematous appendix	3	3.79%
Difficulty in finding appendix	5	6.32%
Other associated pathology	6	7.59%

Table IV: Indications for open appendectomy

Indication	=n	Frequencies
Difficulty in finding appendix	2	2.53%
Inability to dissect difficult adhesions	3	3.79%
Perforated appendix	1	1.26%

Table V: Complications

Complication	=n	Frequencies
Port site bleeding	3	3.79%
Port site wound infection	8	10.12%
Port site granuloma	2	2.53%

Duration of operation (from incision to stitching):
 Median operative time is 25 minutes (15-32 min)
 Postoperative stay at hospital: 12 hours to 30 hours
 average 22 hours (Median length of stay)

DISCUSSION

The introduction of laparoscopic surgery has had a great impact in many areas of general surgery. The greatest influence has been in gallbladder surgery. Laparoscopic appendectomy has not been accepted by surgeons as quickly because of the longer operating time and greater cost of the laparoscopic technique when compared with the open technique. However, patients suffer less postoperative pain and have shorter hospital stays with the laparoscopic technique when compared with the open technique. Thus, in an era of cost-conscious medicine, the choice of technique must be weighed carefully.

The laparoscopic-assisted technique has an advantage over the open technique in that it can be utilized as a diagnostic tool. The laparoscopic-

assisted method is initially used to visualize the appendix, and thus diagnose appendicitis. If the cause of the abdominal pain is not appendicitis, the abdomen can be further explored laparoscopically to assess for another cause of abdominal pain without the use of any radiologic tests. If during an open appendectomy, the appendix appears normal, the abdominal exploration is more difficult to perform and, therefore, it is more difficult to determine the cause of the abdominal pain. In fact, the operation may even require a larger incision prolonging the operating time. In atypical presentation of appendicitis, diagnostic radiologic studies such as ultrasound and CT scan have a relatively high degree of accuracy, but not as great as direct visualization with the laparoscope

LAEA tries to combine in an ideal compromise advantages from both open appendectomy and laparoscopic appendectomy techniques. Because LA requires longer surgical time and is more expensive than the open technique, is performed using three-ports and require different types of intra corporeal knots. When successful, the overall cost is less with 2-port laparoscopic appendectomy because it is quicker to perform, requires less anaesthesia time and no endo-loops, endo-clips, or endo-GIA, and results in a shorter hospital stay and less postoperative analgesia. We evaluated a combination of the laparoscopic and open technique called the laparoscopic-assisted extracorporeal (LAEA) technique. Our results indicate that LAEA can be performed in approximately 25 minutes less operative time than the LA and in the same amount of surgical time as an open technique. We have shown in our study that a variation of the laparoscopic technique, the laparoscopic-assisted extracorporeal technique, can be performed in the same amount of operative time as the open technique.

Its indications are confined to acute uncomplicated appendicitis; therefore, a prospective correct evaluation and diagnosis (by means of clinical, laboratory and ultrasonographic findings) are mandatory. Suspicions of peritonitis (either generalised or localised), palpations of abdominal masses are reasonable contraindications for this technique. Since preoperative estimates of the appendix position or the extension of the processes are not always possible, an additional operative channel may prove necessary (especially in case of strong adhesions) to help mobilising the organ. The intra operative finding of internal genital organs pathology in girls (e.g. ovarian cysts) can be solved by inserting a new trocar for the second operative instrument.

Localised or generalised peritonitis misdiagnosed preoperatively, extensive strong

adhesions impose conversion either to LA or OA, according to the particular case and the experience of the surgeon. If LA is preferred, the thorough exploration of the abdominal cavity is the first step of this technique too. If OA is to be performed the patient benefits from the laparoscopic examination of the peritoneal cavity. The meantime, hospital stay and the time needed to return to normal daily activities are reduced. Nevertheless cosmetic results are better after LAEA compared to OA, which, together with the quicker recovery, contribute to diminish the negative psychological impact of the surgical intervention.

CONCLUSION

The LAEA technique has the advantage of a laparoscopic exploration, diagnosis, and treatment that is unavailable through an open technique. In addition, the LAEA technique provides a laparoscopic method that can be performed in the same amount of operating time as an open technique. The lap.-assisted extracorporeal technique has all the advantages of the laparoscopic method at less expense than the completely laparoscopic technique.

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