



Three Years Experience of Laparoscopic Appendectomy in United Arab Emirates

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Introduction

Acute appendicitis is one of the most common causes of acute abdomen and appendectomy is one of the commonest general surgical procedures [1]. It may occur from the time of infancy to old age, but the peak age of incidence is in the second and third decades of life. Charles Mc Burney in 1889 presented a report on early operative intervention in acute appendicitis to the New York Surgical Society and five years later he formalized the procedure and described Mc Burney's incision [2,3]. First Laparoscopic Appendectomy (LA) was reported almost after a century in 1983 by a German Gynecologist, Kurt Semm [4]. Today even after a quarter century laparoscopic appendectomy has not been able to gain the popularity and acceptance earned by laparoscopic cholecystectomy. Many early randomized trials failed to show any overall benefit for laparoscopy, the increased operation time, comparable hospital stay and increased risk of intra-abdominal collection or postoperative ileus with LA outweighed any improvement in wound complication, recovery time or cosmesis. With the experience of time recent studies indicate a shift in favor of laparoscopy, probably due to the increase in laparoscopic exposure at all levels of surgical training. They present evidence of reduction in operating time, faster recovery, and lower wound complication rate, and reduces the risk of developing ileus in favor of laparoscopy [5]. Laparoscopic Appendectomy (LA) has become a common intervention worldwide in recent years. But the use of laparoscopic appendectomy for complicated appendicitis (perforated appendicitis) is controversial, especially with regard to the rate of postoperative infectious complications including wound infection and abscess formation in abdominal cavity [6,7]. The aim of this study was to evaluate the clinical results of Laparoscopic Appendectomy (LA) for the treatment of acute appendicitis.

Material and Methods

A retrospective analysis of all the patients who underwent laparoscopic appendectomy for acute appendicitis between May 1st, 2016 to September 30th, 2019 has been performed. All the laparoscopic appendectomy procedures done by me personally with the help of a nursing assistant in Phoenix Hospital Abu Dhabi, United Arab Emirates. Phoenix hospital is a 50 bed private hospital and I am working here as a specialist general surgeon with fifteen years experience of post fellowship in general surgery but I started doing laparoscopic appendectomies independently in 2015 as earlier I was working in remote area in Saudi Arabia where proper laparoscopic setup was not available.

The diagnosis of acute appendicitis was established with physical examination, elevated white blood cell count and ultrasound examination, CT abdomen was also done in patients where ultrasound was not conclusive but clinically patients has signs and symptoms of acute appendicitis with high white cell count.

The operation was performed under general anesthesia. The patient was encouraged to empty the bladder immediately prior to the procedure. All the patients received pre-operative antibiotic continued post operatively as indicated. The operative technique used for procedure was similar to those described in the laparoscopic literature. The patients was placed in a Trendelenburg position rotated right side up and a three-trocar technique was used at the supraumbilical, suprapubic, and left lower quadrant positions. A 10 mm, 30 degree video laparoscope was introduced at supraumbilical fold by open Hassans technique and pneumoperitoneum achieved, under video guidance another 10 mm port was introduced in left lower quadrant and 5 mm port at the midline suprapubic area. The appendix was identified, retraction and dissection done by two hand technique, the mesoappendix was dissected by using bipolar diathermy or sometimes by harmonic scalpel, two endoloops applied at the base of appendix and one endoloop at the distal site of appendiceal lumen, the appendix was divided by scissor in between the endoloop ligatures, endobag was used for removal of the thick appendix through umbilical port whereas the thinner appendix was removed through the reducer

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sleeve of the umbilical port. The fluid in the cavity was aspirated and local wash was done with normal saline and aspirated. The umbilical incision was closed by vicryl 2/0 and all skin wound with prolene 3/0 sutures.

Results

A total number of 130 patients were included in this study that underwent laparoscopic appendectomy during this three year period. Most of the patients are in the age group of 21 to 40 years, ranging from 07 to 58 years. In the study male patients were found to be more (86) 66.15% as compared to female (44) 33.84%. The mean operative time was 42 min, ranging from 23 min to 110 min and the mean hospital stay was 1.7 days, ranging from 1 to 4 days (majority of the patients got discharged within 48 h). Only two of the patients converted to open surgery, one because of the difficult high retrocecal position of the appendix which was not feasible with laparoscopic procedure and the other because of sloughed off appendix and the appendix was not found and even after conversion also the appendix not found but some friable necroses tissue removed from the friable base at cecum and pursting suture applied at the base and the histopathology confirmed the appendix tissue. Eight of the patient were found perforated appendix with localize collection which was managed by good wash and drain placement. Drain was placed in total of 12 patients and removed after 48 h. The wound infection was only in 3 patients at umbilical wound site which was managed conservatively, 2 patients had persistent postoperative pain because of the pelvic collection (confirmed by ultrasound) which was managed also conservatively, none of the patient had clinical sign and symptoms of pelvic or abdominal abscess. No negative appendectomy was found during the study period.

Discussion

Acute appendicitis is the most common cause of acute abdomen, and appendectomies are the most commonly performed emergency abdominal surgery in adults [1]. Open Appendectomy (OA) has remained the gold standard for more than a century since Mc Burney's incision was described in 1894 [3]. After Semm et al. [4] performed the first LA; the path for a much wider application of minimally invasive surgery was opened. LA was revealed to be an effective procedure that could be performed in a short time with less painful recovery, fewer complications, superior cosmesis and better assessment of other intra abdominal pathologies.

Over the years, many studies have compared OA and LA [8-12]. In a prospective randomized study conducted by Hansen et al. [8] on the effectiveness of LA, it was found that LA resulted in less wound infection, decreased analgesic need, and earlier Return to Normal Activity (RTNA) but had a longer operation time. In a meta-analysis conducted by Temple et al. [9] it was shown that LA had an early RTNA but had longer operation and hospital stay times. In addition, Korndorffer [10] and Reiertsen [11] reported lower misdiagnosis rates, decreased analgesic need, and less wound infection with LA. However, LA does have some drawbacks, such as increased rate of intra-abdominal abscess and the requirement for costly instruments, such as endostaplers, endoclips, and endoloops [12-17].

In many studies, LA has been attributed with a relatively low incidence of complications compared with OA [18]. In this study too, there were no major complications at post-operative period, only those patients with drain stays for a longer period in Hospital. Drain was place intra operatively in view of intra-operative finding

like perforated appendix, gangrenous or with fluid/abscess collection.

In this study the acute appendicitis in male patients were found to be more (86) 66.15% as compared to female (44) 33.84%, which is consistent with the other studies [19,20].

The operative time for LA is reported to be longer than open appendectomy but it has been shown to decrease with increasing experience [21]. The reported average operative time varies considerably from 18 min reported by Hussain et al. [22] to 110 min [23]. The mean operative time in this study was 42 min, ranging from 23 min to 110 min is comparable to many published studies. Mustafa Kamal from Multan has also reported mean operative time of 55 min [24].

Conversion to open appendectomy was required in 2 (1.53%) patients. only two of the patients converted to open surgery, one because of the difficult high retrocecal position of the appendix which was not feasible with laparoscopic procedure and the other because of sloughed off appendix and the appendix was not found and even after conversion also the appendix not found but some friable necroses tissue removed from the friable base at cecum and pursting suture applied at the base and the histopathology confirmed the appendix tissue. Different authors have reported conversion rates varying from 0.55% to 21.5% [25,26]. Ng et al. from Hong Kong using the same technique have reported conversion in 8.7% of their 795 patients [27]. The main reasons for conversion reported in the literature are difficult anatomy and complicated appendicitis (perforation, gangrene and abscess) [28]. The conversion rate in our study is low as compared to the other studies possibly because of the early presentation of the patient with less inflammation and adhesions of the appendix; this is all because of the good health care system and insurance policy coverage in United Arab Emirates.

The length of hospital stay and RTNA are important indicators of patient recovery, many studies have shown that the length of hospital stay and RTNA are shorter in patients who underwent LA than in those who underwent OA [29-32]. In a study on LA conducted by Shaikh et al. [29], the hospital stay time and RTNA were found to be 1.7 and 12.6 days, respectively. Additionally, in a meta-analysis consisting of prospective randomized studies conducted by Li et al. [30], it was reported that the length of hospital stay was less than 0.6 days and the RTNA was earlier than 4.5 days in patients who underwent LA. In our study, the mean hospital stay was 1.7 days, ranging from 1 to 4 days (majority of the patients got discharged within 48 h) which is consistent with other studies as mentioned above. Most of our patients were given 1 week sick leave and then they return to work, although return to work parameter was not observed in our study but it is assumed that the patient went to their normal work after the end of the sick leave.

Surgical-site infection can be seen in laparoscopic appendectomy but deep surgical-site infection is more common in patients who undergo LA than in patients who undergo OA. In a study on LA conducted by Ay et al. [17], 10.7% surgical-site infection and 7.1% small bowel obstruction rates were reported. In a study on LA conducted by Katsuno [33], 6.4% surgical-site infection, 4.3% intra-abdominal abscess, and 2.1% small bowel obstruction rates were reported. In this study, the wound infection was only in 3 patients (2.3%) at umbilical wound site which was managed conservatively by antibiotics and wound dressings, but there was no intra-peritoneal deep surgical site infection found. The rate of infection is less in our study as compared to the other studies mentioned above, possibly

because of the good irrigation and complete suction of fluid from the cavity. Our 2 patients had persistent postoperative pain because of the pelvic collection (confirmed by ultrasound) which was managed also conservatively; none of the patient had clinical sign and symptoms of pelvic or abdominal abscess.

It is observed that the postoperative pain was very less in our patients and all the patients was given routine analgesia by injection paracetamol one gram three times a day during hospital stay and non steroidal anti-inflammatory drugs as oral medications for five days after discharge from hospital, majority of the patients did not demanded further analgesia. It means that the pain is less and well tolerable in patient with laparoscopic surgery.

In this study no negative appendectomy was found, possibly because of the easy availability of the radiological access in the presence of good health care system and insurance policy coverage in United Arab Emirates and all the patient were confirmed the diagnosis of acute appendicitis by ultrasound or by CT scan abdomen preoperatively.

Conclusion

Laparoscopic appendectomy is a safe and better option for acute appendicitis. The operative time is decreasing with the increasing experience of surgeons which is good and acceptable. It leads to faster recovery, less postoperative pain, lower wound complications and early return to work.

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