

A 5 year clinical experience of Laparoscopic Appendicectomy

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ABSTRACT

Background: Although laparoscopic appendicectomy is now a common practice, it has not become the gold standard like in cholecystectomy. Aim of our study is to compare with operation time and hospital stay found in available literatures.

Methods: All laparoscopic appendicectomies performed between January 2004 and February 2009 were retrospectively reviewed for age, sex and operation time length and hospital stay. Appendicitis with signs of perforation was treated by open midline laparotomy and the ones with lump formation were treated conservatively.

Results: A total of 48 patients underwent laparoscopic appendicectomies during this period (female 26 and male 22) and mean age was 27.2 years (6-77). The mean operating time was 56.6 minutes (40-120 minutes). The mean hospital stay was 4.7 days (3-8 days).

Conclusions: Laparoscopic appendicectomy is a feasible and safe in simple appendicitis. Although the number of cases of laparoscopic appendicectomies is a small for five year period, the mean operation time and mean hospital stay is comparable to the literatures.

Key words: appendicectomy, laparoscopy, operation time, hospital stay

INTRODUCTION

The advantages of the laparoscopic appendectomy include shorter hospital stay, less wound infection and shorter recovery time.¹ Studies have tried to define the role of laparoscopy in acute appendicitis.² The laparoscopy has the advantage of superior diagnostic yield than open surgery.³ It also provides the basic knowledge of the laparoscopic techniques before going to complex operations.⁴ Laparoscopic appendicectomies in elderly patients have advantages in terms of hospital stay and mortality. In children, this is considered as an accepted procedure.⁵ The categories who benefit from laparoscopy include female patients and obese.⁶

Patients who underwent laparoscopic appendicectomies needed less analgesics.⁷ Most of the criticism has focused on the increased technical difficulties, which has not yielded any significant improvements in hospital stay.⁸ Many surgeons have questioned the advantages because the recovery from open appendicectomy is brief. The role of laparoscopy in complicated appendicitis remains unidentified.^{7,9}

So our aim is to review our experience with laparoscopic appendicectomy mainly in respect to operation time and hospital stay and to compare it to the literature.

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METHODS

An observational study was conducted retrospectively in patients who underwent laparoscopic appendicectomy in the department of surgery, Kathmandu Medical College from January 2004 to February 2009. Ethical approval was taken. The diagnosed cases of appendicitis that were done laparoscopically as usual routine working hours from 9 am to 3 pm were included in the study. The suspected perforated appendicitis were treated by conventional midline open technique. Appendix masses were treated conservatively and were done interval laparoscopic appendicectomy and were excluded from the study. The variables studied were age, sex, operation time and hospital stays. Two sample t-tests were done to compare sex and operation time; sex and hospital stay using SPSS software.

All patients underwent total count and differential count of blood and routine examination of urine. In doubtful cases and especially female of child bearing ages ultrasonography were performed to rule out the other urological and gynaecological pathologies. CT scan was not done in any of the cases.

In all cases we started intravenous fluids and antibiotics of ciprofloxacin of 200 mg and metronidazole 500 mg prophylactically and continued till the oral intake started.

All the laparoscopic appendicectomies were done by general surgeons of our department who have done several laparoscopic cholecystectomies.

All laparoscopic appendicectomies were done under GA under supine position with a 30 degree right tilt up and 30 degree tredelenberg position. Surgeons stand on the left side of the patient and the camera person on the right side of surgeon. Single medical monitor was placed in right side of the patient. All patients were catheterized for more space and in case; procedure becomes longer duration, to prevent distention of bladder. We made central umbilical port by Hassan's open technique for 0 degree laparoscope, 5 mm supra pubic port for left hand instrument and another 10 mm incision for right hand instrument in left lower pararectal area. For the mesoappendix we used vicryl 2/ 0 in single tie in small mesoappendix and multiple ties for large fatty mesoappendix. Base was also tied in the same manner with double ligature. We used 10 mm port for retrieval of appendix without using a bag. Irrigation of the operation area was done by 500 ml of normal saline and aspirated. We didn't keep any drain after laparoscopic appendicectomy. We closed 10 mm umbilical port with vicryl 2/0 continuous stitches. Skin incisions were closed with interrupted staplers.

RESULTS

A total of forty eight patients who underwent laparoscopic appendicectomy because of clear diagnosis of uncomplicated appendicitis were included. Median age of the patients was 27.2 years. The age ranged from 6 to 77 years. There were twenty two (45.8%) males and 26 (54.2%) females with the median age of 26.2.

Mean duration of surgery was 56.6 minutes (40 minutes for simple appendicitis and 120 minutes for difficult appendicitis) (standard deviation- 16.4) (Table 1). The time from cutting the skin at the umbilicus until putting the last skin stapler was defined as the operating time. The mean hospital stay was 4.7 days (standard deviation - 1.02) (Table 2). The length of hospital stay ranged from three to eight days.

Table 1. Results of operating time and hospital stay

Parameters	N=48	Standard deviation
Operating time (minutes)	56.6 (40-122)	16.4
Duration of hospital stay (days)	4.7 (3-8)	1.02

The mean difference by sex in relation to hospital stay was 0.29 days (standard deviation 0.8) (Table 2). The mean difference of operation time by sex is - 1.5 minutes (standard deviation -11.2) (Table 3).

Table 2. T-test hospital stay by sex

Sex	Observation	Mean (day)	Standard Deviation
Female	26	4.6	0.87
Male	22	4.8	1.16
Difference	-	0.29	0.8

Table 3. T-test operation time by sex

Sex	Observation	Mean (minutes)	Standard Deviation
Female	26	55.9	17.2
Male	22	57.5	0.24
Difference	-	-1.5	-11.2

None of the patients presented with intra-abdominal infections or trocar site infection postoperatively. There was no mortality in our study. The follow up period was up to four weeks.

DISCUSSION

In Hussain et al studies mean operation time for laparoscopic appendicectomy was 18 minutes while in Frazee et al study it was 87, minutes and ours is comparable that is 56.6 minutes. The mean length of

hospital stay was 4.7 days in our study, 1.2 in Konstantinidis et al study and 7 in Hussain et al study.

This study was initiated to review our experience with laparoscopic appendicectomy which is a frequently performed procedure. However our operating time showed slightly longer than that of other published series.^{1-5,7}

The mean hospital stay was longer than many series but shorter than in Hussain et al study (Table 4).¹⁻⁷

Table 4. Comparison of a study with other literature

	Number	Mean operation time (minutes)	Mean hospital stay (days)
Suman et al	48	56.6	4.7
Shalak et al	151	58.7	2.8
Konstantinidis et al	908	26	1.2
Agresta et al	26,836	-	2.5
Chiu et al	506	56.3	2.9
Hussain et al	200	18	2.5
Hussain et al	283	36	7
Fraze et al	38	87	2

Laparoscopic appendicectomy for simple appendicitis can be performed safely with many techniques. The intracorporeal procedure allows for shorter operating time but increases dramatically the cost of required disposable materials.¹⁰ Laparoscopic appendicectomy

is also a safe and feasible procedure for the treatment of suspected appendicitis in pregnancy in all trimesters. A simple modified technique for the insertion of ports can lower the risk of accidental injury to the gravid uterus. Further investigations and long term follow up are necessary to evaluate the potential influence of this procedure on fetal development.¹¹ Most cases of acute appendicitis with suspected perforation could be managed laparoscopically. Laparoscopic appendicectomy significantly reduces length of stay and hospital cost in all patients with perforated appendicitis.¹² Laparoscopic appendicectomy can be recommended as a safe operation with the advantage of allowing faster post operative recovery than open appendicectomy.¹³ However it doesn't decrease the rate of post operative infective complications.¹⁴ Differences in outcome between open and laparoscopic appendicectomy are minimum. More difficult cases with gangrenous appendicitis were likely to require open appendicectomy whereas milder forms of appendicitis especially in women were more likely to be treated laparoscopically. Savings from the slightly shorter hospital stay after laparoscopic appendicectomy are offset by the higher surgical cost of laparoscopic intruments.¹⁵ Laparoscopic appendicectomy results in

higher costs and increase morbidity for patients with uncomplicated appendicitis. Nevertheless laparoscopic appendicectomy is increasingly used. Patients undergoing laparoscopic appendicectomy benefit from slightly shorter hospital stay in general, open appendicectomy may be the preferred approach for patients with acute appendicitis, with indication of laparoscopic appendicectomy in selected subgroups of patients.¹⁶ Laparoscopic appendicectomy is feasible and safe. It can be performed in complicated appendicitis with no added risk to the patients. It shortens patient stay in the hospital and results in less post operative pain. It is less costly than open technique if done with expertise.¹⁷ Two Trocar laparoscopic assisted appendicectomy is fast and easy to perform, and it is expected to decrease the overall cost of laparoscopic appendicectomy. It's only contraindication is excessive body weight, it remains to be evaluated in the settings of perforated appendicitis and retrocaecally located appendices.¹⁸ Laparoscopic appendicectomy is associated with shorter length of stay, few open wounds, equivalent hospital charges and intraabdominal abscess rates and should be considered the procedure of choice for obese patients with appendicitis.¹⁹ Laparoscopic appendicectomy is more expensive than open appendicectomy but doesn't reduce the length of hospital stay nor change the time to return to work. However wound complications are less common.²⁰

In conclusion, despite in retrospective nature and the small number of patients included in our study, it confirms the safety and feasibility of the laparoscopic approach in most cases of appendicitis. Operation time and hospital stay compares favorably with the literature. Laparoscopic appendicectomy also helps developing surgeons' skills and provides optimal exploration of the abdominal cavity.

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