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Clinical Research

# A PROSPECTIVE STUDY OF LAPAROSCOPIC INTERVENTION IN ACUTE APPENDICITIS

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**ABSTRACT** Acute appendicitis is one of the commonest surgical emergencies. Simple appendicitis can progress to perforation, which is associated with a much higher morbidity and mortality, and surgeons have therefore been inclined to operate when the diagnosis is probable rather than wait until it is certain. In the present study 100 cases of acute appendicitis those attended king George hospital from November 2014 to November 2016 were included. All cases were undergone for laparoscopic appendicectomy. Mean age of presentation is 25.92 years, ranging from 14 to 62 years. Pain abdomen was the commonest symptom (100%) with which patient presented. The other symptoms were nausea/vomiting (72%), fever (63%). Seven patients presented with diarrhea. Laparoscopic appendicectomy was done in all cases. Acute inflamed appendicitis(48 cases) was more common in patients with early presentation. Late presentation leads to mass formation in 12% of cases. Our study reveals that the, laparoscopic surgery for suspected appendicitis has diagnostic and therapeutic advantages as compared to conventional surgery. However, conventional appendectomy should not be considered 'wrong', because the difference between the two techniques is rather small and strongly depends on patient characteristics and the treating surgeon's expertise.

**KEYWORDS :**

## Introduction

In the right lower part of the abdomen there is a small blind ending intestinal tube, called appendix. Inflammation of the appendix is called appendicitis and is usually acute in onset (1). Appendicitis is most frequent in children and young adults. Acute appendicitis is essentially a clinical diagnosis. About 6% of the population is expected to have appendicitis in their lifetime (2). Routine history and physical examination still remain the most practical diagnostic modalities. Absolute diagnosis of course is only possible at operation and histopathologic examination of the specimen (3).

Most cases require emergency surgery, in order to avoid rupture of the appendix into the abdomen. During the operation, called appendectomy, the inflamed appendix is surgically removed (4). The traditional surgical approach involves a small incision (about 5 cm or 2 inches) in the right lower abdominal wall. Alternatively, it is possible to perform the operation by laparoscopy (2). This operation, called laparoscopic appendectomy, requires 3 very small incisions (each about 1 cm or 1/2 inch). The surgeon then introduces a camera and some instruments into the abdomen and removes the appendix as in the conventional operation (5&6).

In the present study 100 cases of acute appendicitis those attended king George hospital from November 2014 to November 2016 were included. The objective of this study is to compare the management strategies of acute appendicitis presented within 3 days of onset of symptoms vs more than 3 days of onset of symptoms and to study the various factors responsible for conversion to open technique and to compare the clinical outcomes between open appendectomy and laparoscopic appendectomy (8). All cases were undergone for laparoscopic appendicectomy. Laparoscopic surgery for suspected appendicitis has diagnostic and therapeutic advantages as compared to conventional surgery. However, conventional appendectomy should not be considered 'wrong', because the difference between the two techniques is rather small and strongly depends on patient characteristics and the treating surgeon's expertise (9).

An additional benefit of the laparoscopic approach is the possibility to inspect the inside of the abdomen. Especially in women of childbearing age, in whom many other conditions can mimic appendicitis, laparoscopy therefore reduces the risk of an unnecessary appendectomy (2, 11).

## Methodology

### II.1. Laparoscopic Appendicectomy Method

Placement of a 10-mm port sub-umbillically, followed by 5-mm port in supra pubic midline and a 10-mm port midway between the first two ports and to the left of the rectus abdominis muscle(12). Identification of appendix, adhesiolysis if adhesions present. Identification of mesoappendix and its division using a liga-sure. Placement of an absorbable Endoloop encircling the base of appendix Division of appendix between Endoloops. Placement of appendix into a specimen bag before removal of the appendix or removal through one of the port. placement of a 10-mm port sub-umbillically, followed by 5-mm port in supra pubic midline and a 10-mm port midway between the first two ports and to the left of the rectus abdominis muscle (13). Identification of appendix, adhesiolysis if adhesions present. Identification of mesoappendix and its division using a liga-sure. Placement of an absorbable Endoloop encircling the base of appendix. Division of appendix between Endoloops Placement of appendix into a specimen bag before removal of the appendix or removal through one of the port(14).

### II.2. Open Appendicectomy Method

Mc-Burney"s incision made. Identification of Inflamed appendix . Adhesiolysis and division of mesoappendix in between clamps and ties. Base of appendix is skeletonized at its junction with caecum and placement of absorbable tie around base of appendix. Specimen is clamped and divided above the ligature and closure of abdomen(15).

## III. Results

In this study the mean age of study subjects was 25.92 years ranging from 14 to 65 years. Majority of patients belongs to age groups 14-20 years who had delayed presentation to hospital , in contrast to patients who presented early involved the age groups of 21-30 years. In this study there was male preponderance ( 62%) and female 38% with male to female ratio 1.6 :1. In early presentation males are 60%, females 40% compared to 64% males, 36% females in late presentation.

**Table-1 : Shows the Age and Gender distribution of the cases**

| - | Early presentation | | Late presentation | | Early Presentation | | Late Presentation | |
|---|---|---|---|---|---|---|---|---|
| YEARS | No. | % | No. | % | Male | Female | Male | Female |
| <20 yrs | 17 | 34 | 22 | 44 | 10 | 7 | 13 | 9 |
| 21-30 yrs | 24 | 48 | 18 | 36 | 15 | 9 | 13 | 5 |
| 31-40 yrs | 6 | 12 | 8 | 16 | 4 | 2 | 5 | 3 |
| >40 yrs | 3 | 6 | 2 | 4 | 1 | 2 | 1 | 1 |
| TOTAL | 50 | 100% | 50 | 100% | 30 | 20 | 32 | 18 |

**Figure -1: shows the graphical distribution of Age and Gender wise**

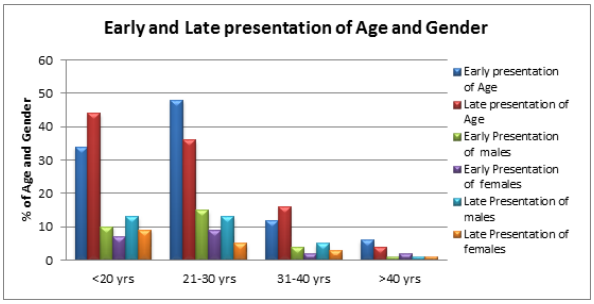


**Table-2: Shows the operative findings**

| | Early presentation | | Late presentation | |
|---|---|---|---|---|
| Operative findings | Number | % | Number | % |
| Acute inflamed appendix | 48 | 96 | 39 | 78% |
| Local Adhesions | 2 | 4% | 5 | 10% |
| Appendicular mass | 0 | 0% | 6 | 12% |
| Total | 50 | 100% | 50 | 100 |

In this study acute inflamed appendix was found in 89 cases, adhesions in 5 patients. Appendicular mass present in 6 cases. Acute inflamedappendicitis was more common in patients with early presentation. Late presentation leads to mass formation in 12% of cases.

**Figure-2 shows the Operative findings**

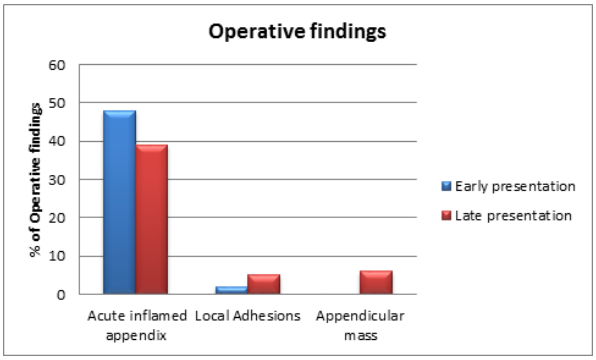


**Table-3 : shows the Post-operative outcome**

| | Laparoscopic procedure(mean± standard deviation, SD) | Open procedure(mean± standard deviation, SD) | t-value | P-VALUE |
|---|---|---|---|---|
| Duration of post-operative analgesia both oral and Intravenous in days | 5.36 ± 0.60 | 8 ± 0.7 | -9.4 | P<0.001 |
| Resumption of oral feeds(days) | 1.56 ± 0.57 | 3.2 ± 0.44 | -6.2 | P<0.001 |
| Operative time (min) | 52.89 ± 10.5 | 83 ± 8.3 | -6.2 | P<0.001 |
| Hospital stay (days) | 3.47 ± 0.79 | 6.4 ± 0.89 | -7.9 | P<0.001 |

Duration of post-operative analgesia required in laparoscopic procedure ( 95 cases) is less compared to open procedure ( 5 cases) . Mean of 5.36 days in laparoscopic compared to 8 days in open procedure, ranging from 4 to 9 days. In this study, the mean ± standard deviation (SD) resumption of oral feeds of 1.56± 0.57 days for the laparoscopic group was shorterthan the mean resumption of oral feeds of 3.2 ± 0.44 for open appendectomy (P <0.001)

## IV. Discussion

Acute appendicitis is the most common intra-abdominal condition requiring emergency surgery. The possibility of appendicitis must be considered in any patient presenting with an acute abdomen, and a certain preoperative diagnosis is still a challenge (15). Although more than 20 years have elapsed since the introduction of laparoscopic appendectomy. In the present study 100 cases of acute appendicitis those attended king George hospital from November 2014 to November 2016 were included. All cases were subjected to laparoscopic appendicectomy. Acute appendicitis is common in males. Clinical examination and Ultrasound abdomen were necessary for the diagnosis of acute appendicitis. Mean age of presentation was 25.92 years, ranging from 14 to 62 years. Pain abdomen was the commonest symptom (100%) with which patient presented. The other symptoms were nausea/vomiting (72%), fever (63%). Seven patients presented with diarrhea. Laparoscopic appendicectomy was done in all cases. Acute inflamed appendicitis (48 cases) was more common in patients with early presentation. Late presentation leads to mass formation in 12% of cases.

The major operative problem was difficulty in localization of appendix in late presentation cases( 20%), Difficulty in adhesiolysis in 4 patients. Conversion to open appendicectomy done in 5 cases.2 patients in early presentation, 3 cases in late presentation group. Factors responsible for conversion to open procedure in this study are dense local adhesions, previous tubectomy with adhesions, appendicular mass and faecolith at the base of appendix.

Most of surgeries (81%) was done in between 30-60 min. Time ranged from 30 min to 100 min. The major complications were post-operative ileus in 4 patients, wound infection in one patient. No patient developed faecal fistula. No mortality noted. In this study , the majority (89%) of patients in both groups had total duration of hospital stay </=5 days with a mean of 3.62 days. Post-operative analgesia requirement, operative time and time to resumption of oral feeds are less in laparoscopic group which are statistically significant (p<0.001).

These findings have been challenged by other authors who observed no significant difference in the outcome between the two procedures, and moreover noted higher costs with laparoscopic appendectomy. Anyway, a recent systematic review of meta-analyses of randomised controlled trials comparing laparoscopic versus open appendectomy concluded that both procedures are safe and effective for the treatment of acute appendicitis (12).

Laparoscopic appendicectomy confers advantages in terms of fewer wound infections ,less pain, faster recovery and earlier return to work (13,16). In accordance with other studies there were significantly fewer wound infections in the laparoscopy group. A reduction in wound infection can be achieved by extraction of the specimen through a port or with the use of anendobag, or leaving a non-inflamed appendix in place (17). Our study highlights the feasibility and effectiveness of early laparoscopic appendicectomy in patients even with delayed presentation and the results are consistent with a number of similar studies. claiming early laparoscopic appendicectomy to be a more appropriate and effective way of managing acute appendicitis(12-16).

## V. Conclusion

Laparoscopy, as a minimally invasive technique, has unique advantages in several areas. Laparoscopic surgery for suspected appendicitis has diagnostic and therapeutic advantages as compared to conventional surgery. However, conventional appendicectomy should not be considered wrong, because the difference between the two techniques is rather small and strongly depends on patient characteristics and the treating surgeon"s experience.

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