

## Experience of Laparoscopic Appendicectomy at a Tertiary Care Centre: A Retrospective Case Study Analysis

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### ABSTRACT

**Background:-** laparoscopic/ minimally invasive surgery since starting has been a prime focus for surgeons for performing various surgeries. First documented laparoscopic appendicectomy being performed 1982 and since then with gaining experience, the laparoscopic appendicectomy is gaining preference. Our study, which has been held at a tertiary care centre in north India is done to prove the same.

**Methods:-** this study was done over 5 years period ( june 2014 to june 2019). A total of 120 patients were treated by laparoscopic appendicectomy and were followed up for 3 months post operatively. Restrospective data was collected from outpatient and inpatient clinical records compiled and tabulated. Post operative morbidity record in the form of pain, bleeding, fistula formation, wound infection, etc was noted and documented.

**Results:-** a total of 120 patients underwent laparoscopic appendicectomy over a duration of 5 years ( june 2014 to june 2019). Mean age of patients was 29 years ranging from 13 years to 59 years. Male to female ratio was 1.1: 1. A total of 78 patient (65%) had retrocaecal, 30(25%) pelvic, 10(8.3%) preileal and 2(1.66%) post ileal. Intraoperative dense adhesions were seen in 20( 16.67%) patients. Pus collection was seen in 5 patients (4.2%). Acute bleeding was seen at time of adhesiolysis but was uncomplicated. Gangrenous appendix tip and body with healthy base was seen in 8(6.67%) patients. 3 patients underwent conversion to open appendicectomy in view of distorted anatomy in two and retrocaecal appendix extending upto subhepatic region. Post operative fever (>100 ° F) and Leukocytosis(>11, 000/ ml) was seen in 10(8.33%) patients and in all patients in which pus was the finding. No post operative wound dehiscence was seen but wound infection was seen in umbilical port in 3(2.5%) patients. Post operative pus collection was seen in 4 patients (3.33%). Mean hospital stay was 1.86 days with minimum of 1 days and max of 4 days. There was no post operative mortality and there was no faecal fistula formation.

**Conclusion:-** laparoscopic appendicectomy is an effective technique in dealing with acute Appendicitis with low post operative morbidity..

**Keywords:** Standard three port appendicectomy, adhesions

### INTRODUCTION

Acute appendicitis is a common cause of acute abdomen with maximum incidence in second to third decade of life<sup>1,2,3</sup>. Since centuries open technique using gridiron incision, rutherford morris incision, paramedian or midline Incision, etc has been used as standard care for appendicitis. With advent of minimal invasive surgery, the post operative morbidity in the form of pain, wound infection and duration return to normal work has decreased<sup>4,5,6</sup>.

First laparoscopic appendicectomy was done in 1982 by Dr. Kurt Semms. Before that, in some places in India, laparoscopic assisted appendicectomy was done by use of incision in right iliac fossa.<sup>1,4,6</sup>

Many studies have been performed in comparing laparoscopic vs open as well as to access the efficacy of laparoscopic appendicectomy. But leaving some studies, others have not given any clearcut benefit of preferring laparoscopic technique over open.<sup>4,7,8</sup>

In this study of ours, we have taken laparoscopic appendicectomy as the preferred treatment of choice and demonstrated our results regarding the same in the form of post operative duration and course. Also patient is being followed up for 3 months postoperatively to look for any delayed morbidity.

#### METHODS:-

A retrospective study was carried out for a period of 5 years ( June 2014 to June 2019) on 120 patients who presented to emergency surgery department as a case of acute abdomen and diagnosed as a case of acute appendicitis at Safdarjung Hospital, New Delhi.

#### Inclusion criteria:

- Age > 12 years
- Presented with right iliac fossa pain
- Tenderness in right iliac fossa on palpation
- Leucocytosis (counts > 11,000/ ml)

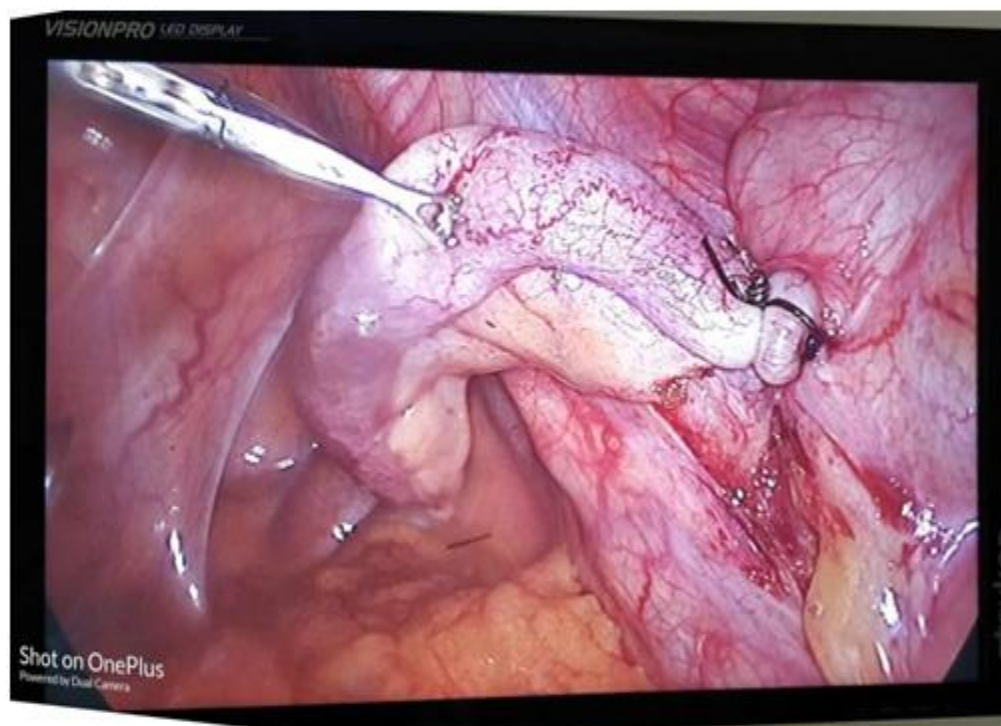
#### Exclusion criteria:-

- Age < 12 years.

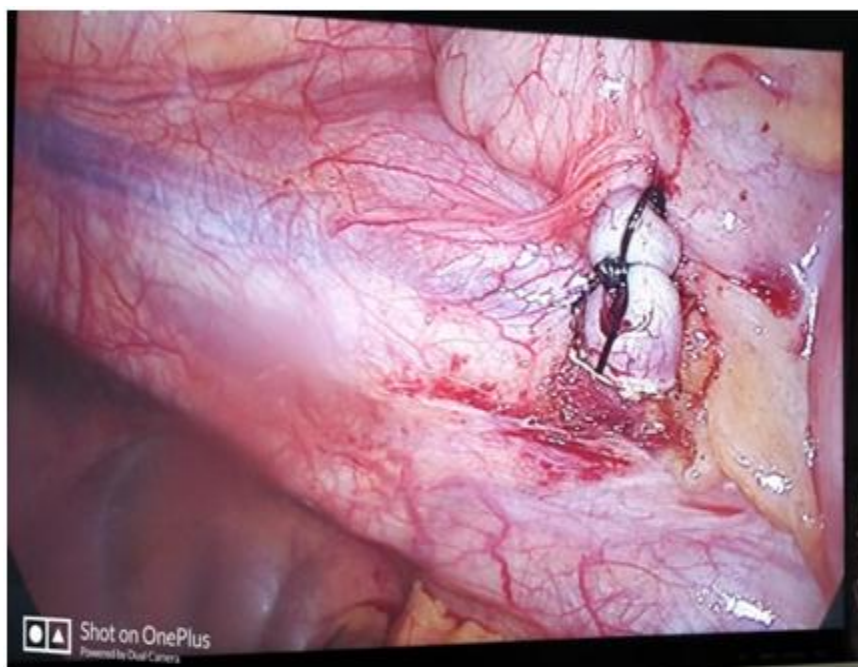
- Generalized peritonitis
- Appendicular lump on palpation.

For laparoscopic appendicectomy, a three port procedure was performed using 10 mm umbilical port and two 5mm ports one suprapubic and second midway between umbilicus and left anterosuperior iliac spine. Appendix was visualized using confluence of taenia coli (figure 1). Appendicular artery was separated from appendix and was ligated using loop suture knot. Appendix was ligated at the base using the same loop, excised and removed via 10 mm port after using ureteroscope through 5mm port (figure 2). All the ports were closed using port closure and skin closed using nylon 2-0.

Post operatively patient was followed up till 3 months and morbidity was noted in the form of post operative pain, fever/ leukocytosis, wound dehiscence/wound infection, fistula formation, etc. All the record was collected from inpatient and outpatient department and evaluated using SPSS software 17.0.



**Figure 1:-** appendix visualized as confluence of taenia coli and ligated using loops.



**Figure 2:- view after excising and removal of appendix laparoscopically**

## RESULTS:-

**Table 1:- male: female ratio**

Male	Female
63	57

Hence, the male to female ratio is 1.1: 1

**Table 2:- showing the age noticed of the patients.**

Mean age	Maximum age	Minimum age
29 years	59 years	13 years

The mean age of patients was 29 years; ranging from 13 to 59 years.

**Table 3:- intraoperative appendicular types and their frequency.**

Intraoperative appendix type	Frequency	% age
Retrocaecal	78	65
Pelvic	30	25
Preileal	10	8.33
Post ileal	2	1.67

Hence, most common type is retrocaecal type , followed by pelvic, preileal and post ileal respectively.

**Table 4:- intraoperative findings and frequency**

Intraoperative findings	Frequency	%
Uncomplicated acute appendicitis	86	71.67%

Gangrenous appendix with healthy base	8	6.67%
Dense adhesions with uncomplicated intraoperative bleeding	20	16.67%
Pus	5	4.17%
Retrocaecal appendix extending upto right subhepatic region	1	0.833%

In two cases of dense adhesions and 1 case of retrocaecal high lying( subhepatic) appendix, laparoscopy was converted to open.

**Table 5:- mean time duration of surgery.**

Mean duration of appendicectomy
48 minutes+/- 15 minutes.

Uncomplicated acute appendicitis took time a little above half hour whereas complicated cases or those who required conversion to open maximum took 63 minutes.

**Table 6:- post operative morbidity incidence noted over 3 months**

Morbidity	Frequency	%age
Fever with leukocytosis	10	8.33%
Intra abdominal collection	4	3.33%
Wound dehiscence	0	0
Wound infection	3	2.5%
Faecal fistula formation	0	0

Intra abdominal collection was seen 4 patients who presented to the out patient department with diahorrea and fever. Two patients got resolved by giving prolonged antibiotics. The other two had to go ultrasound guided aspiration followed by course of antibiotics.

**Table 7:-**

Duration of stay	Minimum	Maximum
1.86 days	1 day	4 days

## DISCUSSION:-

Since the first laparoscopic appendicectomy done in 1983, the procedure has become a preferred choice for surgeons. There are comparative studies favouring laparoscopic appendicectomy over open

technique and there are other studies which show no significant difference between two procedures.<sup>1,4,6</sup>

In our study, which is done on 120 patients operated by laparoscopic technique it was seen that patient selection, duration of surgery and intraoperative



findings play an important role in the outcome of the patient.

Male to female ratio in our study was 1.1:1. Goswami et al had M:F ratio of 1:1.86<sup>6</sup>. Biondi et al performed a comparative study between open and laparoscopic appendicectomy in which, laparoscopic patients operated was 283 with M: F ratio of 1:1.33<sup>1</sup>. Hence in our study, more male patients were present but this difference is not significant( $p = 0.1$ ).

Mean age of our study was 29 years as compared to 27.75 years in laparoscopic group of study performed by Biondi et al, 29 years in study performed by kathkouda et al. As such, age has no significance in result( $p = 0.3$ )

Intraoperatively we found that most common position of appendix is retrocaecal(65%) which is similar to other studies like Goswami et al which showed incidence of 66.67%.<sup>6</sup>

Mean operative time in our study was 48 minutes +/- 15 minutes. This is less than Biondi et al which had operative time of 55+/- 15 min. Patients assigned laparoscopic appendicectomy had significantly higher time ( 80 minutes) than our study. Maximum time.in our study was 63 minutes which was seen in patients with conversion. Hence, with increasing experience, time of surgery is decreasing.

Uncomplicated appendicitis was the most common finding in our study(71%) followed by dense adhesions(16.67%), gangrenous appendix(6.67%) and pus collection(4.4%). Uncomplicated appendicitis was also most common finding (85%) in study by Biondi et al and Goswami et al( 85%).

Mean postoperative stay in our study was 1.86 days. Goswami et al had mean stay of 3 days; Biondi had 1.4+/- 0.6 days and kathkouda of 2 days. Hence the result is almost similar.

Most common post operative morbidity in our study was fever with leukocytosis(8.33%) followed by intra abdominal collection( 3.33%). Biondi et al showed

intra abdominal collection incidence of 13.8% in laparoscopic group<sup>1</sup> and 6.1% in Kathkouda et al<sup>4</sup>. Wound infection incidence was 2.5% in our study and 5% in kathkouda et al study.

## CONCLUSION:-

Appendicectomy performed laparoscopically with good patient selection and following good surgical technique is a highly effective technique for treating appendicitis.

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