

**ORIGINAL ARTICLE****COMPARISON OF OUTCOME OF LAPROSCOPIC APPENDECTOMY IN COMPLICATED AND UNCOMPLICATED APPENDICITIS- A CLINICAL STUDY**

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**ABSTRACT:**

**Background:** Acute appendicitis is the most common emergent abdominal condition requiring surgical intervention. Appendicitis is inflammation of the appendix. The present study was conducted to assess the results of laproscopic appendectomy for treatment of complicated appendicitis. **Materials & Methods:** This study was conducted in department of general surgery in between January 2014 to December 2015 on patients who had undergone laproscopic appendectomy for complicated appendicitis. Patients were diagnosed on the basis of physical examination, laboratory tests and ultrasound examination (USG). Patients were divided into 2 groups. Group I (Uncomplicated appendicitis) included 278 patients and group II (Complicated appendicitis) included 102 patients. **Results:** Group I consisted of 278 and group II consisted of 102 patients. The difference was significant ( $P = 0.01$ ). Group I consisted of 166 males and 112 females and group II consisted of 64 males and 38 females. The difference was significant ( $P = 0.01$ ). The number of patients with operation time (45-60 mins) in group I was 146 and in group II was 46. The number of patients with operation time (60-90 mins) in group I was 98 and in group II was 24. The number of patients with operation time (90-120 mins) in group I was 34 and in group II was 20. The number of patients with operation time  $<120$  mins in group II was 12. The difference was significant ( $P < 0.05$ ). Mean  $\pm$  S.D of complications were wound infections (12.37) in group I and (21.23) in group II, incisional hernia (1.18) in group I and (5.8) in group II, intra- abdominal abscess (13.64) in group I and (20.5) in group II and lleus (7) in group I and (2) in group II. The difference was significant ( $P < 0.05$ ). Appendiceal specimen was catarrhal (190), phlegmonous (95), perforated (55), gangrenous (22) and normal (20). The difference was significant ( $P < 0.05$ ). **Conclusion:** Acute appendicitis is quite common nowadays. The management is also very challenging as complications such as wound infections, incisional hernia, intra-abdominal abscess and lleus are common.

**Key words:** Acute appendicitis, laproscopic appendectomy, wound infections

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**INTRODUCTION**

Acute appendicitis is the most common emergent abdominal condition requiring surgical intervention. Appendicitis is inflammation of the appendix.

Symptoms commonly include right lower abdominal pain, nausea, vomiting, and decreased appetite. However, approximately 40% of people do not have these typical symptoms. Severe complications of a ruptured appendix include widespread, painful inflammation of the inner lining of the abdominal wall and sepsis.<sup>1</sup>

Appendicitis is caused by a blockage of the hollow portion of the appendix. This is most commonly due to a calcified "stone" made of feces. Inflamed lymphoid tissue from a viral infection, parasites, gallstone, or tumors may also cause the blockage. This blockage leads to increased

pressures in the appendix, decreased blood flow to the tissues of the appendix, and bacterial growth inside the appendix causing inflammation.<sup>2</sup> The combination of inflammation, reduced blood flow to the appendix and distention of the appendix causes tissue injury and tissue death. If this process is left untreated, the appendix may burst, releasing bacteria into the abdominal cavity, leading to severe abdominal pain and increased complications.<sup>3</sup> Perforated appendicitis may be seen in 20-30% of patients with acute appendicitis. Perforation is associated with a high risk of postoperative complications, including wound infection and intra-abdominal abscess. Laproscopic appendectomy (LA) has become a common intervention worldwide in recent years. The use of laproscopic appendectomy for complicated appendicitis is

controversial, especially with regard to the rate of postoperative infectious complications including wound infection and abscess formation in abdominal cavity.<sup>4</sup> The present study was conducted to assess the results of laproscopic appendectomy for treatment of complicated appendicitis.

**Materials & Methods**

This study was conducted in department of general surgery between January 2014 to December 2015 on patients who had undergone laparoscopic appendectomy for complicated appendicitis. Patients were informed regarding the study and consent was taken. Patient information such as name, age, gender etc. was recorded on case history performa. Patients were diagnosed on the basis of physical examination, laboratory tests and ultrasound examination (USG). Patients were divided into 2 groups. Group I (Uncomplicated appendicitis) included 278 patients and group II (Complicated appendicitis) included 102 patients. For laparoscopic appendectomy patients were put on prophylactic antibiotics (Cephazolin Sodium 1 gram IV) preoperatively. The procedure was performed under general anaesthesia. 3 trocars were used, a 10-mm umbilical, a 5-mm suprapubic, and a 10-mm port in the right hypochondrium. An infraumbilical incision of 2-3 cm in length was performed. Intraabdominal pressure of approximately 12 mm-Hg was provided by CO<sub>2</sub> insufflations. A 10-mm optic trochar was placed through this port. The mesoappendix was divided using ligature. The root of the appendix was ligated twice with 2/0 vicryl sutures. The appendix was cut out with scissors or ligature.

The appendix was removed from the abdominal cavity with a plastic bag through the 10-mm trochar site. Peritoneal irrigation and aspiration with normal saline solution was performed in every patient with intra-abdominal purulent fluid including perforated and abscess cases. Results thus obtained were subjected to statistical analysis using chi-square test. P value < 0.05 was considered significant.

**RESULTS**

Table I shows that group I consisted of 278 and group II consisted of 102 patients. The difference was significant (P – 0.01). Table II shows that group I consisted of 166 males and 112 females and group II consisted of 64 males and 38 females. The difference was significant (P – 0.01). Table III shows that number of patients with operation time (45-60 mins) in group I was 146 and in group II was 46. The number of patients with operation time (60-90 mins) in group I was 98 and in group II was 24. The number of patients with operation time (90-120 mins) in group I was 34 and in group II was 20. The number of patients with operation time <120 mins in group II was 12. The difference was significant (P < 0.05). Graph I shows that mean± S.D of complications were wound infections (12.37) in group I and (21.23) in group II, incisional hernia (1.18) in group I and (5.8) in group II, intra- abdominal abscess (13.64) in group I and (20.5) in group II and lleus (7) in group I and (2) in group II. The difference was significant (P < 0.05). Graph II shows that appendiceal specimen was catarrhal (190), phlegmonous (95), perforated (55), gangrenous (22) and normal (20). The difference was significant (P < 0.05).

**Table I** Distribution of patients

Total - 380			
Group	Group I	Group II	P value
Number	278	102	0.01

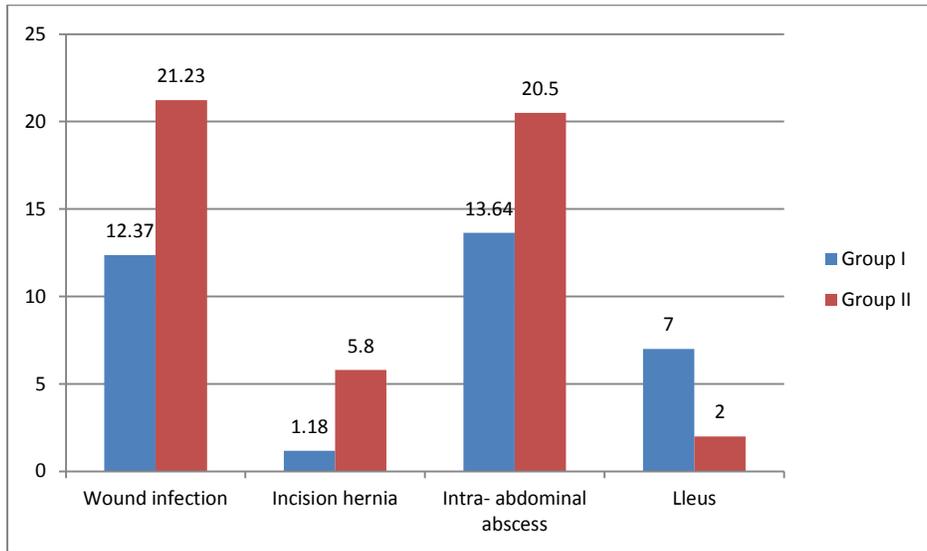
**Table II** Gender wise distribution of patients

Group I		Group II		P value
Male	Female	Male	Female	
166	112	64	38	0.01

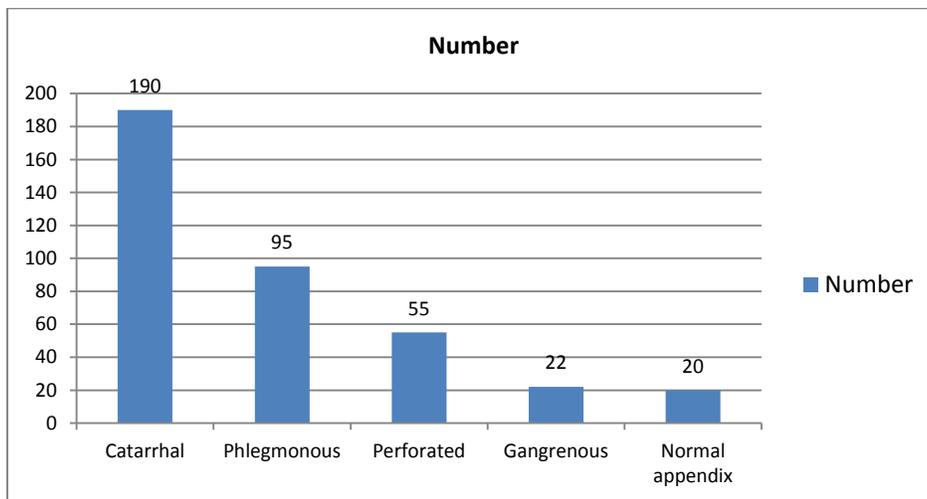
**Table III** Comparison of parameters in both groups

	Group I	Group II
Operation time		
45-60 mins.	146	46
60-90 mins.	98	24
90-120 mins.	34	20
<120 mins.		12

**Graph I** Postoperative complications in both groups



**Graph II** Pathologic results of the appendiceal specimen



**DISCUSSION**

The standard treatment for acute appendicitis is surgical removal of the appendix. This may be done by an open incision in the abdomen (laparotomy) or through a few smaller incisions with the help of cameras (laparoscopy). Surgery decreases the risk of side effects or death associated with rupture of the appendix. Antibiotics may be equally effective in certain cases of non-ruptured appendicitis.<sup>5</sup>

Laparoscopic appendectomy has become an increasingly prevalent intervention for acute appendicitis since its introduction in 1983.. Laparoscopic appendectomy has several advantages over open appendectomy, including a shorter post-operative recovery, less post-operative pain, and lower superficial surgical site infection rate. However, the occurrence of intra-abdominal abscess is almost three

times more prevalent in laparoscopic appendectomy than open appendectomy.<sup>6</sup> The present study was conducted to assess the results of laproscopic appendectomy for treatment of complicated appendicitis.

In this study, we included 380 patients who underwent laproscopic appendectomy. We divided them in 2 groups. Group I consisted of 278 (166 males and 112 females) and group II consisted of 102 patients (64 males and 38 females). The number of patients with operation time (45-60 mins) in group I was 146 and in group II was 46. The number of patients with operation time (60-90 mins) in group I was 98 and in group II was 24. The number of patients with operation time (90-120 mins) in group I was 34 and in group II was 20. The number of patients with operation time <120 mins in group II was 12. This is in agreement with Addis DG et al.<sup>7</sup>

Laparoscopic technique also provides a clear view of the whole abdominal cavity in case of acute abdomen. Although LA has become a common procedure for the treatment of acute appendicitis in recent years, its role in patients with complicated appendicitis is controversial. Some reports claimed that performing LA in complicated appendicitis may be associated with higher rates of intraabdominal infections.<sup>8</sup>

We reported common complication such as wound infections, incisional hernia, intra- abdominal abscess and ileus. Group II had more complications as compared to group I. Pokala et al.<sup>9</sup> also reported an intraabdominal abscess formation rate of 14% after LA and 0% after conventional surgery. In a recent study by Chang<sup>10</sup> the intraabdominal abscess rate was found 3% in children with perforated appendicitis and treated with LA. The intraabdominal abscess rate was 2% in open group. Wound infection and long term intestinal obstruction rates were higher in patients treated with open surgery as compared to LA. Our study also revealed similar results.

We found that appendiceal specimen were catarrhal in 50% of cases followed by phlegmonous, perforated, gangrenous and normal appendix.

#### CONCLUSION

Acute appendicitis is quite common nowadays. The management is also very challenging as complications such as wound infections, incisional hernia, intra- abdominal abscess and ileus are common.

#### REFERENCES

1. Krisher SL, Browne A, Dibbins A, Tkacz N, Gurci M. Intraabdominal abscess after laparoscopic appendectomy for perforated appendicitis. Arch Surg. 2001; 136: 438-441.
2. Ortega AE, Hunter JG, Peters JH, Swanstrom LL, Schirmer B. A prospective randomized comparison of laparoscopic appendectomy with open appendectomy. Laparoscopic Appendectomy Study Group. Am J Surg. 1995; 169: 208-212.
3. Tang E, Ortega AE, Anthonie GJ, Beart RW Jr. Intraabdominal abscesses following laparoscopic and open appendectomies. Surg Endosc. 1996; 10: 327-328.
4. Horan TG, Andrus M, Dudeck MA. GDG/NHSN surveillance definition of health care associated infection and criteria for specific types of infections in the acute care setting. Am J Infect Control. 2008; 36: 309-332.
5. Williams NM, Everson NW, Jackson D, Johnstone JM. Is the incidence of acute appendicitis really falling? Ann R Coll Surg Engl. 1998; 80: 122-124.
6. Semm K. Endoscopic appendectomy. Endoscopy. 1983; 15: 59-63.
7. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendectomy in the United States. Am J Epidemiol. 1990; 132: 910-925.
8. Guller U, Hervey S, Purves H, Muhlbaier LH, Peterson ED, Eubanks S, Pietrobon R. Laparoscopic versus open appendectomy: outcomes comparison based on a large administrative database. Ann Surg. 2004; 239: 43-52.
9. Pokala N, Sadhasivam S, Kiran RP, Parithivel V. Complicated appendicitis-is the laparoscopic approach appropriate? A comparative study with the open approach: Outcome in a community hospital setting. Am Surg. 2007; 73: 737- 741.
10. Chang HK, Han SJ, Choi SH, Oh JT. Feasibility of a laparoscopic approach for generalized peritonitis from perforated appendicitis in children. Yonsei Med J. 2013; 54: 1478-83.

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