

Hospital Based Retrospective Assessment of the Efficacy of Laparoscopic Appendectomy as Well as Conversion Rate of Laparoscopic Appendectomy to Open Appendectomy

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Abstract

Aim: Our main objective was to study the efficacy of laparoscopic appendectomy as well as conversion rate of laparoscopic appendectomy to open appendectomy.

Methods: A Hospital based retrospective study of patients who had undergone laparoscopic appendectomy at emergency theatre of department of General Surgery Jawaharlal Nehru medical college and hospital, Bhagalpur, Bihar, India for the period of 12 month were included for this study irrespective of age and sex. This hospital based retrospective study was carried among 50 patients who had undergone emergency laparoscopic appendectomy.

Results: 26 patients out of 50 patients who had undergone emergency laparoscopic appendectomy were between 20 years to 40 years of age. Among them 18 (36%) were male and 32 (64%) were female with mean age of 28 years±12.88 years standard deviation (range=13-58 years). During this, it was found that most of cases (43 out of 50, i.e., 86%) were diagnosed as acute appendicitis, 1 (2%) case as appendicular lump, 2 (4%) cases as appendicular abscess, 4 (8%) cases as appendicular perforation peritonitis. The duration of hospital stay was shorter as 3 days for most of the patients (34%) under study. Conversion rate from laparoscopic appendectomy to open appendectomy was only 12% with cause being uncontrolled bleeding, perforation of base of appendix and appendicular lump, without any known mortality and case of redo during period of this study.

Conclusion: Laparoscopic appendectomy is safe and efficient procedure with shorter hospital stay and less post-operative complication.

Keywords: Appendectomy, Appendicitis, Conversion, Emergency, Laparoscopic, Mortality

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Introduction

Acute appendicitis is the most common cause of acute abdomen in almost all age groups. [1,2] Ever since Charles McBurney described traditional appendectomy in 1894 for acute appendicitis, open appendectomy (OA) flourished as gold standard treatment for

appendicitis. [3] OA was considered safe, effective, and standard modality of treatment in appendicitis for almost a century. Though easy to perform, OA had a plethora of drawbacks due to variability in the inflammatory process and position of appendix, increased postoperative pain, prolonged hospital stays, delayed return to

normal activities, wound- and scar-related complications, and inability to visualize the concomitant pathologies.

There is evidence that minimal surgical trauma through laparoscopic approach resulted in significant shorter hospital stay, less postoperative pain, faster return to daily activities in several settings related with gastrointestinal surgery. [4,5] Appendix is worm shaped vestigial structure attached to caecum of large intestine. Despite of having any important role in human body, it is very notorious site for many medical conditions most common being appendicitis which may sometimes surge for medical emergency. Appendicitis is an inflammation of the appendix, a finger-shaped pouch that projects from your colon on the lower right side of your abdomen. [6] Simply, appendectomy is surgical removal of appendix. Two types of procedure are practiced, open and laparoscopic appendectomy. The laparoscopic approach to appendectomy has gained wide acceptance over the last 15 years as a means of improved diagnostic accuracy and wound complication rate over open surgery. [7]

As laparoscopic technology advances and surgeons' expertise increases, many surgeons have successfully performed a multitude of laparoscopic procedures in presence of these relative contraindications. In a study comparing laparoscopic and open appendectomy for complicated appendicitis in adult patients, Taguchi et al found that the minimally invasive approach was safe and feasible in this setting, though it did not significantly reduce complications. [8] If intraoperative

complications that cannot be handled with laparoscopy arise during laparoscopic appendectomy, conversion to open appendectomy is indicated. It is crucial to understand the circumstances in which such conversion is warranted. [9,10]

Our main objective was to study the efficacy of laparoscopic appendectomy, patients' demographic profile as well as conversion rate of laparoscopic appendectomy to open appendectomy.

Materials and methods

A Hospital based retrospective study of patients who had undergone laparoscopic appendectomy at emergency theatre of department of General Surgery Jawaharlal Nehru medical college and hospital, Bhagalpur, Bihar, India for the period of 12 month were included for this study irrespective of age and sex. This hospital based retrospective study was carried among 50 patients who had undergone emergency laparoscopic appendectomy. The files of the patients were collected from the medical record section of hospital and studied. Sample size was not based on any standard sample calculation technique as all the patients who had undergone laparoscopic appendectomy at emergency theatre of Jawaharlal Nehru medical college and hospital were recruited for this study. Categorical variables were presented as frequency. Chi-square test was performed to compare between the categorical variables using SPSS. Ethical approval was approved by department research unit, department of surgery, Jawaharlal Nehru medical college and hospital.

Results

Table 1: Patient details

Age groups in years	N%
<20 years	14 (28)
20-40 years	26 (52)
40-60 years	10 (20)
Gender	
Male	18 (36)

Female	32 (64)
Diagnosis	
Acute appendicitis	43 (86)
Appendicular lump	1 (2)
Appendicular abscess	2 (4)
Appendicular perforation peritonitis	4 (8)

26 patients out of 50 patients who had undergone emergency laparoscopic appendectomy were between 20 years to 40 years of age. Among them 18 (36%) were male and 32 (64%) were female with mean age of 28 years±12.88 years standard deviation (range=13-58 years). During

this, it was found that most of cases (43 out of 50, i.e., 86%) were diagnosed as acute appendicitis, 1 (2%) case as appendicular lump, 2 (4%) cases as appendicular abscess, 4 (8%) cases as appendicular perforation peritonitis.

Table 2: Duration of hospital stay

Duration of hospital stay	N%
1 day	4 (2)
2 days	13 (26)
3 days	17 (34)
4 days	10 (20)
5 days	6 (12)

The duration of hospital stay was shorter as 3 days for most of the patients (34%) under study.

Table 3: Conversion rate (from laparoscopic appendectomy to open appendectomy)

Conversion rate	N%
Yes	6 (12)
No	44 (88)

Conversion rate from laparoscopic appendectomy to open appendectomy was only 12% with cause being uncontrolled bleeding, perforation of base of appendix and appendicular lump, without any known mortality and case of redo during period of this study.

Table 4: Post-operative complications

Post-operative complications	N%
Pain at surgical site	5 (10)
Mild abdominal pain	4 (8)
Loose stool	2 (4)
Vomiting	1 (2)
Abdominal distension	1 (2)
Termination of pregnancy	1 (2)
Fever	1 (2)

There was no mortality and any case of redo. Pain at surgical site was most common postoperative complication presented in 5 participants (10%) followed by mild abdominal pain in 4 participants (8%). Other's complications were loose

stool (4%), vomiting (2%), abdominal distension (2%), termination of pregnancy (2%) and fever (2%).

Discussion

Appendicitis is the most common cause of surgical abdomen in all age groups. [11,12] Approximately 7–10 % of the general population develops acute appendicitis with the maximal incidence being in the second and third decades of life. [13] Acute appendicitis is the most common intra-abdominal condition requiring emergency surgery. [14] The possibility of appendicitis must be considered in any patient presenting with an acute abdomen, and a certain preoperative diagnosis is still a challenge. [15,16] Some authors consider emergency laparoscopy as a promising tool for the treatment of abdominal emergencies able to decrease costs and invasiveness and maximize outcomes and patients' comfort. [17,18] Several studies [19-22] have shown that laparoscopic appendectomy is safe and results in a faster return to normal activities with fewer wound complications.

A study for outcomes and cost analysis of laparoscopic versus open appendectomy conducted at division of general surgery of civil hospital of Ragusa, Italy revealed that the overall incidence of minor and major complications was significantly lower after laparoscopic appendectomy (2.9%) than after open appendectomy (13.2%), rate of intra-abdominal abscess being similar. Also, length of hospital stay was significantly shorter in laparoscopic group than open group. [23] Another study on laparoscopic versus open appendectomy, a prospective randomized double-blind study has shown that there was no any mortality and some early complications in the laparoscopic group required a reoperation. Physical health and general scores on the short-form 36 (SF36) quality of life assessment forms were significantly better in the laparoscopic group. [24]

26 patients out of 50 patients who had undergone emergency laparoscopic appendectomy were between 20 years to 40 years of age. Among them 18 (36%) were male and 32 (64%) were female with mean age of 28 years±12.88 years standard

deviation (range=13-58 years). During this, it was found that most of cases (43 out of 50, i.e., 86%) were diagnosed as acute appendicitis, 1 (2%) case as appendicular lump, 2 (4%) cases as appendicular abscess, 4 (8%) cases as appendicular perforation peritonitis. Most of participants (38%) had hospital stay of 3 days with mean duration of hospital stay 3.19 days±1-day standard deviation (range=1-5 days). The present findings of rate of conversion from laparoscopic appendectomy to open appendectomy were 12%. Likewise, the previous study by Gupta et al also showed the decrease trend from laparoscopic appendectomy to open appendectomy. [25,26]

There was no mortality and any case of redo. Pain at surgical site was most common postoperative complication presented in 5 participants (10%) followed by mild abdominal pain in 4 participants (8%). Other's complications were loose stool (4%), vomiting (2%), abdominal distension (2%), termination of pregnancy (2%) and fever (2%).

Conclusion

Laparoscopic appendectomy is associated with fewer post-operative complications, shorter hospital stays, less operative time. Laparoscopic appendectomy is safe and feasible without risk of mortality.

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