

Original Research Article


# A clinical study of post-operative complications of emergency and elective (open and laparoscopic) appendicectomy

R. Maheshwari<sup>1\*</sup>, Rakesh Fernando<sup>2</sup>

<sup>1</sup>Professor, <sup>2</sup>Assistant Professor

Department of General Surgery, Tirunelveli Medical College, Tirunelveli, India

\*Corresponding author email: [dr.maheswarisankar@gmail.com](mailto:dr.maheswarisankar@gmail.com)

	International Archives of Integrated Medicine, Vol. 5, Issue 7, July, 2018. Copy right © 2018, IAIM, All Rights Reserved. Available online at <a href="http://iaimjournal.com/">http://iaimjournal.com/</a>	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 27-06-2018	Accepted on: 02-07-2018
	Source of support: Nil	Conflict of interest: None declared.
<b>How to cite this article:</b> R. Maheshwari, Rakesh Fernando. A clinical study of post-operative complications of emergency and elective (open and laparoscopic) appendicectomy. IAIM, 2018; 5(7): 62-66.		

## Abstract

**Background:** Post-operative complications which follows appendicectomy are not common and it reflect the level of peritonitis that is present during the time of surgery and the diseases which may be predisposed to complications. There are various types of complications that occurred after the appendicectomy surgery. Of them, the commonest complications are fever and surgical site infection. Post-operative complications of appendicectomy have wide range of presentation from fever to fecal fistula. In this study, the patients presenting with features of post-operative complications of appendicectomy will undergo detailed history taking, clinical examination & investigations like complete blood count, blood sugar, urea and lipid profile, serum creatinine, X-ray chest and wound pus culture sensitivity. The study purpose was to assess the age distribution, sex distribution & to discuss various types of complication.

**Materials and methods:** 100 cases that had presented with features of post-operative complications of appendicectomy in the department of surgery, Tirunelveli Medical College and Hospital were evaluated during the study period from April 2012 to October 2013.

**Results:** Our study of 100 randomly selected patients who presented with postoperative complications of appendicectomy. The commonest post-operative complications of appendicectomy were fever (73%), followed by surgical site infection (37%). Most common age group, in which post-operative complications seen, was > 20 years, followed by the 20-30 age group. The surgical site infections were most commonly due to E.coli (64.86%) and Klebsiella species (8.1%). The common day of presentation of fever was 2<sup>nd</sup> POD with 57.3% cases. In this study 97% case of postoperative complications of appendicectomy occurred after emergency surgeries.

**Conclusion:** Major complications were rare in elective appendicectomies which may reflect the reduced virulence of organisms in those cases.

## Key words

Post-operative complications, Emergency and Elective appendicectomy, Fever, Surgical site infections.

## Introduction

Acute appendicitis is one of the commonest causes of acute abdomen in young individual and the associated symptoms and signs have become a paradigm for clinical teaching. Appendicitis is more common than appendicectomy is the most frequently performed urgent abdominal operation and is often the first major procedure performed by a surgeon in training. Approximately seven percentages of people in Western nations have appendicitis and about two lakhs appendectomies for acute appendicitis are performed per year in the United States [1]. The incidence, which steadily decreasing over the last 25 years in developed world. The incidence in the developing countries, which in the past was low, has been rising in proportion of economic gaining and lifestyle changes. The treatment of choice for acute appendicitis is appendicectomy. Urgent surgery is needed to reduce the increased morbidity and mortality of peritonitis [2]. Post-operative complications which following the surgery appendicectomy are not common and it shows the level of peritonitis that was present during the time of surgery and it may leads to complications [3]. Open appendicectomy is associated with higher wound complications compared with laparoscopic appendicectomy [4, 5]. Wound infection is the commonest of all the postoperative complication, occurring in 5–10% of all the patients. This presents with pain and erythema of the wound on the 4<sup>th</sup> or 5<sup>th</sup> postoperative day. Treatment is by drainage of wound and appropriate antibiotics when required. Intra-peritoneal abscess is uncommon complication after appendicectomy with the use of preoperative antibiotics. Post-operative complications such as fever, malaise and anorexia developing five to seven days after surgery are suggestive of an intraperitoneal

collection. Ileus for more than 4 or 5 days, especially with presence of fever, is indication for an intra-abdominal sepsis. With postoperative analgesia and physiotherapy, when appropriate, reduce the incidence of respiratory complications. The most common late complication of appendicectomy is intestinal obstruction.

## Aim and objectives

- Study of age distribution of appendicectomies post-operative complications.
- Study of sex distribution of appendicectomies post-operative complications.
- Discussion of various types of post-operative complications of appendicectomy.
- Discussion of various organisms involved in surgical site infections in post operatively in appendicectomy.
- To find out the most common post-operative complications of appendicectomy.
- To find out the most common post-operative complications of appendicectomy in various types of surgeries.

## Materials and methods

This study was a prospective clinical study of randomized selected 100 patients who presented with post-operative complications of appendicectomy in Department of Surgery, Tirunelveli Medical College and Hospital during the study period.

The patients who had presented with post-operative complications of appendectomy had undergone detailed history taking, clinical examination and investigations like CBC, blood sugar, urea, X-ray chest, X ray abdomen, USG abdomen and pelvis after getting the consent of the patient.

Standard proforma was used to collect the details of all the patients involved in the study. Cases included or excluded from the study based on inclusion or exclusion criteria.

#### Inclusion criteria

- Age group more than 12 years.
- All cases presenting with complications after appendectomy.

#### Exclusion criteria

- Age group less than 12 years.
- All cases of pregnant women.
- All cases with Diabetes mellitus.
- All cases with immune comprised state.

### Results

Age Distribution of Post-operative Complications was as per **Table – 1**. Sex Distribution of Post-operative Complications was as per **Table – 2**. Complications by type of Surgery were as per **Table – 3**. Type of Complications following appendectomy was as per **Table – 4**. Organisms causing Surgical Site Infections were as per **Table – 5**. The commonest post-operative complications of appendectomy were fever (73%), followed by surgical site infection (37%). Most common age group, in which post-operative complications seen, was > 20 years, followed by the 20-30 age group. The surgical site infections were most commonly due to E.coli (64.86%) and Klebsiella species (8.1%). The common day of presentation of fever was 2<sup>nd</sup> POD with 57.3% cases. In this study 97% case of postoperative complications of appendectomy occurred after emergency surgeries.

**Table – 1:** Age Distribution of Post-operative Complications.

Age (Years)	Number of Cases
<20	35
20-30	30
30-40	12
40-50	13
>50	10

**Table – 2:** Sex Distribution of Post-operative Complications.

Sex	Number of Cases
Male	58
Female	42

**Table – 3:** Complications by type of Surgery.

Emergency	Elective	
	Open	Laparoscopic
97	3	0

**Table – 4:** Type of Complications following appendectomy.

Complications	Number of Cases
Fever	73
Surgical Site Infections	37
Intra-abdominal abscess	2
Paralytic Ileus	3
Fecal Fistula	1

**Table – 5:** Organisms causing Surgical Site Infections.

Organisms Causing SSI	Number of Cases
No growth	10
E. coli	24
Klebsiella sp	3

### Discussion

In the current study, out of the 100 cases 73% of the cases were having fever and 37% of the cases were having surgical site infections. The diagnosis of complications of the patient was based on clinical examination and investigations. In cases of surgical site infections, there are 37 cases reported with SSIs. Among the 37 cases, 10 cases have no growth on culture, 24 cases have growth with E.coli and 3 cases have growth

of *Klebsilla* sp. All the 10 cases having no growth in culture are associated with either no fever or with fever in first and second POD. Among 24 cases having the growth with *E.coli*, All cases are presented with fever on 4 – 6 PODs. *E. coli* is the commonest facultative anaerobe in the colon and feces. In study *E. coli* was found to be the commonest cause of surgical site infection like study conducted by Schnuriger, et al. [8] found to be the most common isolated species in the presence of colonic injury was *E. coli* (64.7%). All the 3 cases presented with, culture showing *Klebsiella* sp. have fever on 5 – 7 PODs. Anvikar, et al. [9] documented that *Klebsiella pneumoniae* was one of the commonest bacteria causing SSI in general surgical wounds. Other investigations for fever such as widal, dengue antigen, blood culture, urine culture are negative for these patients with fever. All the cases of surgical site showing the organismal growth are treated with the appropriate sensitive antibiotics. Our study showed there is contamination of surgical wounds from the organisms of the bowel during appendicectomy surgery. It also shows the commonest organism causing infection is *E.coli*, which is a commonest anaerobic organism of bowel [6]. Most common complication of our study is the post-operative fever. Fever among the post-operative patients occurs more commonly on 2<sup>nd</sup> and 3<sup>rd</sup> POD, which shows the inflammatory reaction due to appendicitis itself. The fever which occurred on 5<sup>th</sup> or 6<sup>th</sup> POD is most commonly due to SSIs. There are 3 cases presented with paralytic ileus. The intraperitoneal infection which spreads among the coils of intestine is the first step in the development of paralytic ileus. The pre-operative diagnoses of the cases presented with paralytic ileus are perforative appendicitis with guarding and rigidity of the abdomen. Most probable cause of paralytic ileus is the peritonitis caused by the appendicular perforation and inflammation. There is no electrolyte imbalance noted in these patients. There are 2 cases reported to have intra-abdominal abscess. One case has a pre-operative finding of appendicular perforation with generalized peritonitis. For that,

after appendicectomy, a peritoneal lavage was given, in 8<sup>th</sup> POD; the patient has tachycardia, elevated temperature. Thus, USG abdomen was taken; there is an 8x4 cm collection of free fluid, which was drained later through rectal drainage. Another case of intra-abdominal abscess, presented also as a case of perforated appendicitis, after appendicectomy, on 5<sup>th</sup> POD, patient presented with continuous fever, abdominal pain. USG abdomen was done, which shows a 4x3 cm free fluid in the abdominal cavity in right iliac fossa, which was treated conservatively with antibiotics, on repeated USG abdomen, the free fluid reduced. A case of fecal fistula, which was presented pre operatively as a case of acute abdomen showing signs of peritonitis, per operatively, there is perforation of appendix with destroyed appendix. Extensive ceecal inflammation was seen. Appendicectomy was done, abdomen closed with an open drain. In 5<sup>th</sup> POD patient have fecal fistula through the drain; patient was passing stools via naturalis also. Patient was treated conservatively with antibiotics, intra venous fluids to correct the electrolyte imbalance. The fecal fistula reduced from 10<sup>th</sup> POD. The drain was removed after the drain becomes dry of fecal fistula [7].

## Conclusion

Acute appendicitis is one of the most common presenting problems in the surgery and emergency outpatient department of Tirunelveli Medical College and Hospital. For which appendicectomies were done as emergency and elective basis. For elective cases both open and laparoscopic appendicectomies are done. Major complications were rare in elective appendicectomies which may reflect the reduced virulence of organisms in those cases.

## References

1. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendicectomy in the United States. *Am J Epidemiol.*, 1990; 132: 910-25.

2. Kozar RA, Roslyn JJ. The appendix. In: Schwartz SI, Shires GT, Spencer FC, Daly JM, Fischer JE, Galloway AC (editors). Principle of surgery, 7<sup>th</sup> Edition, USA, McGraw Hill, 1999.
3. O'Connell PR. The vermiform appendix. In: Russell RCG, Normal WS, Christopher JKB (editors). Baily and Love short practice of surgery. 23<sup>rd</sup> Edition, London: Arnold, 2000, p. 1076-92.
4. McBurney C. The incision made in the abdominal wall in case of appendicitis with a description of a new method of operating. Ann Surg., 1894; 20: 38.
5. Semm K. Endoscopic appendectomy. Endoscopy, 1983; 15: 59-64.
6. Chiarugi M, Buccianti P, Celona G, Decanini Mastino MC, Goletti O, Cavina E. Laparoscopic compared with open appendicectomy for acute appendicitis: A Prospective study. Eur J Surg., 1996; 162: 385-90.
7. Hellberg A, Rudberg C, Kullman E, Enochsson L, Fenyo G, Graffner H, et al. Prospective randomized multicentre study of laparoscopic versus open appendicectomy Br J Surg., 1999; 86: 48-53.
8. Schnüriger B, Inaba K, Eberle B, Wu T, Talving P, Bukur M, et al. Microbiological Profile and Antimicrobial Susceptibility in Surgical Site Infections Following Hollow Viscus Injury. Journal of Gastrointestinal Surgery, 2010; 14(8): 1304-1310.
9. Anvikar A, Deshmukh A, Karyakarte R, Damle A, Patwardhan N, Malik A, Bichile L, Bajaj J, Baradkar V, Kulkarni J, Sachdeo S. One-year prospective study of 3280 surgical wounds. Indian J Med Microbiol., 1999; 17: 129-132.