Original Research Article

Effectiveness of early take-up of emergency appendicectomy in reducing the operative and postoperative complications

G. Vinayagam[1], S. P.Venkatesh[2*], Gokila. M[3]

[1]Assistant Professor, Department of General Surgery, Sri Venkateshwaraa Medical College and Research Centre, Ariyur, Pondicherry, India
[2]Associate Professor, Department of General Surgery, Sri Venkateshwaraa Medical College and Research Centre, Ariyur, Pondicherry, India
[3]Post Graduate, Department of General Surgery, Sri Venkateshwaraa Medical College and Research Centre, Ariyur, Pondicherry, India

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Abstract

Background: One of the most common abdominal emergency encountered in surgical casualty is acute appendicitis, emergency laparoscopic or open appendectomy is the commonest emergency procedure performed all over the world. When the patient presents late to the hospital or when there is a delay in diagnosis, the common complications that occur are appendicular gangrene or perforation. In our study, we are measuring the effectiveness of reducing the complications based on the patient's contribution and early in the diagnosis of appendicitis and its treatment.**Methods:** Retrospective study conducted between February 2020 to April 2020 of all Acute appendicitis Patient who underwent Emergency open/laparoscopic appendectomy in our hospital.**Results:** Out of 66 patients, 12 patients had surgical site infection among which 9 were female and 3 were male. 6 patients presented after 2 days of onset of symptoms, 3 patients presented after 3 days, 3 patients presented after 4 days. All patients were operated within 12 hours of hospital admission. All patients underwent open appendicectomy and intra-operatively 9 patients had gangrenous appendix and 3 patients had appendicular mass.**Conclusion**: This study revealed that complication rates were more in patients who presented late to the hospital and all had gangrenous appendix intra-operatively and all underwent an open appendectomy. Therefore, we suggest that surgeons would decide the appropriate timing of appendectomy from the time of admission without any delay even though patients delay in presentation.

Keywords: Acute appendicitis, Emergency appendicectomy, surgical site infection, Gangrenous appendicitis, Perforated appendix.

Introduction

One of the most common abdominal emergency encountered in the surgical casualty is acute appendicitis, emergency laparoscopic or open appendectomy is the commonest emergency procedure performed all over the world [1, 2]. Men have the higher risk of developing acute appendicitis 8.6% as compared to a female who has a lower risk 6.7% [3, 4].

**Correspondence*
Dr. S. P. Venkatesh
Associate Professor, Department of General Surgery, Sri Venkateshwaraa Medical College and Research Centre, Ariyur, Pondicherry, India.
E-mail: drvenkateshsp@gmail.com

Any delay in the diagnosis and operative intervention will lead to an increase in morbidity and mortality rate. There are Controversies concerning pre-admission and post-admission a delay in diagnosing a case of acute appendicitis and how it increases the rate of morbidity. When the patient presents late to the hospital or when there is delay in diagnosis, the common complications that occur are appendicular gangrene or perforation. In the case of children, perforation occurs within 8-24 hrs, 36 hrs in case of adults [5]. The common causes for delayed presentation in the hospital include delaying at home (home remedies, initial treatment with local doctors, homeopathic, quacks) [6]. When the patient presents late to the hospital, it can lead to complicated appendicitis which has high morbidity and

mortality rate, including prolonged duration of hospital stay.In young children perforation rate ranges from 10-75% when there is a delay [7, 8]. Failure in timely diagnosis due to overlapping other conditions like gastroenteritis, UTI and PID can also be the reason for delayed surgical interventionthere is no single diagnostic test that can accurately diagnose appendicitis [9, 10, 7]. This study was done to find out:

1. The effectiveness of reducing the complications based on the patient's contribution and early in the diagnosis of appendicitis and its treatment.
2. The outcome of intra-operative and postoperative complications of patients who underwent emergency appendectomy due to late presentation to the hospital and delay in diagnosis and treatment of appendicitis.

Materials and Methods

This is a retrospective study done by the Department of General Surgery of Sri Venkateshwaraa Medical College and Hospital, Ariyur, Pondicherry. All patient's including pregnancy who underwent emergency appendectomy both (open and laparoscopic) between February 2020 to April 2020 of all age groups were included in the study. The patient who underwent incidental appendicectomy, while operated for some other pathology was excluded in this study.The Main outcome measures which are given due importance and studied and analysed were patient delay in presentation, willingness for surgery and delay in diagnosis based on clinical findings and investigation reports, surgeon delay in performing the operation; operative findings; and postoperative complications.

The ethical clearance was obtained from the institute ethics committee. Hospital medical records and operative records of all patients with a discharge diagnosis of acute appendicitis were retrieved and studied with permission from the Medical Superintendent. The following data were extracted from Hospital's Medical Record Department: sex, age, chief complaint,duration of symptoms before the hospital visit, time of hospital admission, the provisional diagnosis, date and time of operation, operative findings, type of operationand postoperative complications. The time interval from the onset of symptoms to an initial presentation to the hospital was regarded as patient delay; this figure was entered in units of days. This approach was used because, unlike other time data retrieved from the hospital records, the information onthe onset of symptoms was often imprecise. A patient who comes late for admission is considered as patient delay, (which was calculated as the interval between the onsets of symptoms to the time of admission to the hospital). The time interval from first registration at the hospital to admission was regarded as delay(due to investigational dues or errors). The time interval from hospital admission to the start of the operation was regarded as surgeon delay (due to pre-anesthetic workup). All the data collected were entered and analyzed using SPSS version 20.

Results

Table 1: Gender wise distribution

Total appendicectomy cases (66 patients)	
Male	Female
36	30

Out of 66 cases underwent emergency appendicectomy 54.5% were males and 45.5 % were females.

Table 2: Type of Operative procedure

Laparoscopic	Open
15	51(3 cases were midline vertical Laparotomy)

Among 66 cases, 77.28% underwent emergency appendectomy by open method and 22.72% by laparoscopic approach.

Table 3: Age group

Adult	Pediatric
63	3

Out of 66 cases adult contributes 95.45% and pediatric age group contribute 4.5%

Table 4: Duration of symptoms at the time of presentation

Duration	No. of patient
Within 24 hrs	9
With in 2 days	27
Within 3 days	24
One week and above	6

Table 5: Presentation to casualty symptom-wise

Symptoms	No. of patients
Right iliac fossa pain (1)	66
Nausea/ vomiting (1)	51
Anorexia (1)	51
Signs	
Rif tenderness (2)	66
Rebound tenderness in rif (1)	45
Elevated temperature (1)	36
Lab findings	
Leucocytosis (2)	36
Shift to left of neutrophils (1)	42

Table 6: Alvaerado score

Alvaerado score	No. of patient
Possible(5-6)	24
Probable(7-8)	21
Very probable(>9)	21

Table 7: Time interval between admission and operative procedure performed

Time interval	No. of patients	Open	Laparoscopic
Within 12 hrs	60	45(3 midline Laparotomy)	15
12-24hrs	3	3	0
>24hrs	3	0	0

Out of 66 patients 60 patients were posted with in 12 hrs of admission, 3 patients were posted within 12-24 hrs and 3 patients posted after 24 hrs

Table 8: Complications related with time interval between admission and surgery performed

Time interval between admission and surgery	no. of patients	Inflamed	Perforated	gangrenous	Mass formation
Within 12hrs	60	36	12 (3midline laparotomy)	9	3
12-24hrs	3	3	0	0	0
>24hrs	3	0	3	0	0

Out of 66 patients 60 patients were operated within 12 hours of admission among which intra operative findings showed inflamed appendix for 36 patients, 12 perforated, 9 gangrenous and 3 appendicular mass. Within 12-24 hrs of surgery.3 patients were operated and all had inflamed appendix. 3 patients operated after 24 hours and all had perforated appendix.

Table 9: Complications related toduration of presentation from onset of symptom

Duration of presentation from onset of symptom	Inflamed (39)	Perforated (15)	Gangrenous (9)	Mass formation (3)
With in 24hrs	9	0	0	0
24-48hrs	12	12	3	0
2-3 days	12	3	6	3
1week and above	6	0	0	0

Out of 66 patients 9 of them presented within 24 hours to the hospital and underwent surgery and intra-operatively appendix found to be inflamed. 27 patients presented with in 24 to 48 hours among which 12 had inflamed, 12 had perforated and 3 had gangrenous appendix. 24 patients presented with in 2 to 3 days among which 12 had inflamed, 3 had perforated and 6 had gangrenous appendix, 3 patients had mass formation. 6 patients presented after 1 week and above hours among which all had inflamed appendix.

Table 10: Post operative complications (surgical site infection) based on delayed presentation and intra-operative findings

No.of patient	3	3	3	3
Age	30-40	50-60	40-50	20-30
Sex	Female	Female	Male	Female
Duration of symptoms	2 days	4days	2days	3days
Co morbidities	Nil	Nil	Nil	Nil
Time interval between admission and surgery	3 hrs	10hrs	7hrs	5 hrs
Type of surgery	Open	Open	Open	Open
Intraop findings	Gangrenous	Gangrenous	Gangrenous	Mass formation
Hospital stay	9days	9days	9days	7days

Out of 66 patients 12 patients had surgical site infection among which 9 were female and 3 were male. 6 patients presented after 2 days of onset of symptoms, 3 patients presented after 3 days, 3 patients presented after 4 days. All patients were posted within 12 hours of admission. All patients underwent open appendicectomy and intra-operatively 9 patients had gangrenous appendix and 3 patients had appendicular mass.

Discussion

It is proved that early diagnosis and treatment of acute appendicitis is associated with good clinical outcome and low complication rate [11, 12]. Men having a lifetime risk of acute appendicitis is about 8.6% and female having 6.8% is correlating with our study [3,4]. The laparoscopic approach is safe and effective operative procedure in appendicectomy and it provides clinically beneficial advantages over open method including shorter Hospital stay, decreased need for postoperative analgesia, early food tolerance, early return to work, the lower rate of wound infection, against only marginally higher Hospital cost [13]. In our study we have conducted more of open appendicectomy rather than laparoscopic approach because of lack of timely availability of operation theatre technicians, non-availability of Laparoscopic well-trained surgeons in emergency duties, patient unwillingness for laparoscopic to open conversion. In children, perforation occurs within 8-24 hours and in adults, perforation occurs within 36 hours from the onset of symptoms [5]. In children presenting late the perforation rate ranges from 10-75 percentage [7, 8]. In our study 3 children underwent Laparoscopic appendicectomy within 12 hours of admission without any intra-operative and postoperative complications, due to early presentation to the hospital from the onset of symptom and early take-up of surgery that too in

laparoscopic approach. In our study complications were mainly for adults rather than children. Almost 91% of acute appendicitis underwent emergency surgery within 12 hours from the time of admission in our study. Inspite of early appendicectomy almost 15 patient got perforated appendix, 9 patient found to have a gangrenous appendix and 3 patient became inoperable due to appendicular mass formation. The complications were due to late presentation to the hospital from the onset of symptoms, delay in diagnosis due to decreased ALVARDO score that made the delayed decisions. The reason for low ALVARADO score could be due to Laboratory error in diagnosing Leucocytosis and neutrophil shift, first aid done in other hospitals (analgesic and antipyretics) which masked the clinical findings like fever, rebound tenderness and guarding. Delayed surgical intervention which could be due to patient willingness and preference to Laparoscopic surgery when there was non availability of well trained laparoscopic surgeon during emergency time. The symptoms of appendicitis overlap considerably with other clinical conditions, which include gastroenteritis, urinary tract infection and pelvic inflammatory disease.In our study, 3 patients were takenup for delayed surgery due to overlapping of symptoms because of which they got admitted in other department and later found to be appendicitis and transferred to the surgery ward. In our study out of 66 patients, 12 patient had surgical site infection among these 12 patients 9 patients had gangrenous appendix intra-operatively (in these 3 patient presented on 2nd day and 6 patient presented on 3rd day of onset of symptoms) and 3 patients had appendicular mass formation and all 3 presented on 3rd day of symptoms.

Conclusion

Acute appendicitis is a surgical emergency condition. As per the guidelines acute appendicitis cases should be operated within 24-48 hrs from the onset of symptoms. This study revealed that complication rates were more in patients who presented late to the hospital and all had gangrenous appendix intra-operatively and all underwent an open appendectomy. Especially children and old age group early emergency appendectomy are advisable since the high risk of gangrenous and perforation. Even those who presented after one week underwent laparoscopic appendectomy had no postoperative complications. Therefore, we suggest that surgeons would decide the appropriate timing of appendectomy from the time of admission without any delay even though patients delay in presentation. Laparoscopic appendectomy is advised for the patients with late presentation to reduce the postoperative complications.

Conflict of Interest: Nil **Source of support:Nil**

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