Original Article

Retrospective observational study of performance in outcome of emergency appendicectomy

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Abstract

Objective: The present study is aimed to investigate variations in outcome of Emergency Appendectomy being conducted in Surgery Unit- II at ESIC Medical College, Joka, Diamond Harbour Road, Kolkata, West Bengal. The main outcome interest was the normal Histopathology rate, secondary outcomes and thirty (30) days adverse events rate with varied parameters like different timings of operation, presence or absence of consultant etc. **Method:** The study was performed in Surgery UNIT II in ESIC Medical College, Joka, Kolkata, and West Bengal. The trainee level Investigator was responsible for identifying patients, entering DATA in the prespecified database and ensuing completeness of data. Patients undergoing appendectomy for suspected Acute Appendicitis between Aug 2015 to Aug 2016 inclusive of all age & sex are included in this study. The study was approved by the Institutional ethical committee. The post operative complications were followed for 30 days after surgical appendectomy during day time, evening hours and night time and compared in terms of percentage of evidence. **Results:** A total number of fifty (50) Emergency appedidectomy cases were studied by open surgery. Histologically Normal appendix was removed in 10 numbers of cases i.e. 20%.It was observed that the outcome percentage of daytime operation with requisite duration and by specialist consultant is far better than that of night time or evening time operation by senior trainee . It was also observed that adverse effects after 30days post operative period were significantly reduced in case of day time operation. **Conclusions:** This study reveals the wide variations in practice patterns and outcome which should be addressed to improve performance.. The surgical procedure done in day time by expertise consultant can effectively reduce the adverse post operative complications.

Key words: Emergency appendectomy, post appendectomy complications, Adverse affects of appendectomy

Introduction

Emergency appendectomy is the most common performed Acute General Surgical Operations [1]. Differing Hospital policies, financial constraints, clinical burdens and a conflicting evidence base may result in variation in the provision and outcome of appendectomy [2].

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Mortality following appendectomy is low and is unsuitable as a quality marker. Several controversies remain surrounding the management and outcome of appendicitis including the best investigation for diagnosis, optimal surgical approach and strategies to limit adverse post-operative events [3-5]. The aim of the present study is to identify retrospectively and investigate the variations in the provision and outcome of Emergency Appendectomy. While taking into account the various

measures and working mode of performing acute emergency appendectomy the study aims at measures which can be modified to achieve more favourable result.

Method

The study was performed according to a prespecified protocol which were tested and modified in Surgery Unit II in Esic Medical College, Joka, Kolkata, West Bengal. The trainee level Investigator was responsible for identifying patients, entering DATA in the prespecified database and ensuing completeness of data. Patients undergoing appendectomy for suspected Acute Appendicitis between Aug 2015 to Aug 2016 inclusive of all age & sex are included in this study.

Patients in which surgical appendectomy was planned electively or was a part of another procedure (such as a part of elective Right Hemi colonectomy) were excluded from this study design. The study was approved by the Institutional ethical committee.

Outcome Measures: The main outcome of interest was the histopathologic normal appendectomy rate. Other adverse events were wound infection, intra-abdominal abscess, readmission, unscheduled postoperative ultrasound scan, or computerised tomography and further radiological or surgical intervention within 30 days. Wound infection was defined according to the definition provided by the Centre for disease control [6]. The detail outcome measure for the operation is tabulated along with the result in table 1.

Data Collection: Data domains were collected relating to the patient, surgeon, operation, hospital, operative method and post-operative period. The details of the operative protocol is given in table 1 along with the results.

Results

Normal Appendix was removed in 10 patients which was significantly higher in females than in males and lower in those aged between 16 – 50 yrs. or less than 16 yrs.

Table-1: Experimental protocol along with the outcome in terms of percentage

Parameters	Number	Timing	Percentage
1 No of cases	50 (Fifty)		
2 Alvardo scoring	I – II - 20 III – IV – 30		40% 60%
3 Age in yrs	8 – 65 yrs		
4 Sex	Male – 25 Female – 25		50% 50%
5Pre-operative imaging	X-Ray – 50 USG – 50 CT – Nil		100% 100% NA
6 Timing of Operations	25 15 10	Day timing – 8.00 -1800 Evening Timing - 1800-2200 Night Timing - 2200 – 8.00	50% 30% 20%
7 Earlier Antibiotics	50 50	Pre-operative/ Induction Intraoperative / Postoperative	100% 100%
8 Operative Method --	50	Open appendectomy	100%
9. Operating Surgeon ---	30 20 Nil	Consultant Senior Trainee Junior Trainee	60% 40% NA

Parameters	Number	Timing	Percentage
10 Consultant Surgeon in theatre	30	Yes	60%
	20	No	40%
11. Duration of Surgery	40	< 60 mins	80%
	20	> 60 mins	20%
12. Abdominal washout -	40	No	80%
	10	Yes	20%
13. Drain	10	Yes	80%
	40	No	20%
14. Skin Closure	40	Subcutaneous Suture	80%
	10	Interrupted suture	20%
15. Histopathology	10	Normal appendix	20 %
	15	Simple appendicitis	30%
	25	Complicated appendicitis	50%
16. 30-Day adverse events	8	Wound Infection	16%
	2	Pelvic abscess	4%
17. Post – operative Imaging	10		20%
18. Surgical / Radiological Intervention	NA		NA

The Table-1 shows that the outcome percentage of daytime operation with requisite duration and by specialist consultant is far better than that of night time or evening time operation by senior trainee. As evident from the fact that the wound infection is observed only in 16% cases in case of daytime operation with presence of senior consultant and abscess formation is reduced to only 4% cases.

It was also observed that adverse effects after 30 days post operative period were experienced by only 10 patients (10 of 50). Hospital Characteristics is also significantly associated with a reduced rate of adverse events.

Discussion

Daytime surgery, higher volume, consultant presence in theatre was organizational factors associated with improved provision and outcome from emergency appendectomy in the present study. These factors could be addressed to ensure high quality delivery of acute surgical care with appendectomy potentially acting as a quality marker of this care.

The present study shows a clear association between higher volume, consultant presence and day time surgery thereby showing a reduction in 30 day morbidity rates.

Daytime surgery further reduced normal appendectomy rate and there is increasing evidence that short delays to allow operation within normal hours does not increase the rate of perforation [7,8] but the impact of surgical site infection (SSI) requires further research.

As it is found that a short delay will improve the outcome by performing during day time in presence of consultants without causing any morbidity on patients.

Improvements to standardize variation could be drawn from the markers of provision identified including imaging, Laparoscopy, and Consultant supervision rates. Increased use of laparoscopy may reliably reduce normal appendectomyrate [6], although this analysis was beyond the scope of this study. Although a high rate of CT use was not associated with a reduction in normal

appendectomy rate, the overall use of CT was low [9] and non-randomized.

The low rate suggests that there may be underutilization especially in comparison with the higher Imaging rates used elsewhere. In the USA pre-operative imaging rate of 91% (predominantly CT) with associated normal appendectomy rate 5.6% have been reported [9].

Both randomized and population based studies (cite reference) also support the effectiveness of CT in reducing the Normal appendectomy rates.

The strength of the present study is the generalized ability and the detail DATA collection. This study used the original pathology report as the marker of final histopathology, although differing criteria between pathologists regarding the definition of appendicitis is controversial [4,10].

Although the SSI rate in this study (3-4 %) was in keeping with that from randomized trials and meta-analysis these rates still may significantly underestimate the true incidence. When properly defined an assessed the rate following abdominal operations may be as high as 20%.

The limitation of using this composite end point includes its inability to identify specific benefits or risks for a particular intervention.

The association of abdominal washout, drains and various skin closure techniques was variable and often high with little robust evidence to guide their practice. Their association within this non-randomized study is more likely as marker of severity than as causative factors.

The above observation concludes that if Emergency operations are performed in Daytime and in presence of Consultants than the rate of associated complications are low.

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