

ORIGINAL RESEARCH

Comparative evaluation of efficacy of Surgical and Conservative Approaches for Acute Appendicitis Amidst the COVID-19 Pandemic

¹Dr. Maheshbhai Raghavbhai Kakadiya, ²Dr. Dhaval Jayantilal Panchal, ³Dr. Mayank Chugh

¹Assistant Professor, Department of Pathology, Pacific Medical College and Hospital, Udaipur, Rajasthan, India

²Assistant Professor, Department of Surgery, Mayo Institute of Medical Sciences, Barabanki, UP, India

³Associate Professor, Department of Medicine, Mayo Institute of Medical Sciences, Barabanki, UP, India

Corresponding Author

Dr. Mayank Chugh

Associate Professor, Department of Medicine, Mayo Institute of Medical Sciences, Barabanki, UP, India

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ABSTRACT

Objective:To compare complication rates among patients managed conservatively versus those treated surgically for acute appendicitis (AA) during the initial wave of COVID-19. **Materials & Methods:**A total of 40 patients were enrolled and were randomized into two study groups; Surgical group and conservative group. Diagnosis of AA was made on clinical grounds. Failure of antibiotic treatment in the conservative group was defined as: appendectomy in the follow-up; recurrence of right iliac fossa (RIF) pain; re-admission with RIF pain. Post-operative complications in the surgical group were classified as procedure-specific complications and general complications. Criteria for safe discharge used were as follows: pain improving and manageable in the community. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software. **Results:**Mean hospital stay was similar in surgical group and conservative group (2.9 days Vs 3.1 days). Complications rate was similar in surgical group and conservative group (30% Vs 35%). Recurrence was similar in surgical group and conservative group (10% Vs 15%). **Conclusion:**Conservative management of AA can be both safe and effective. The efficacy of this classification process will be assessed by analysis once it is implemented.

Keywords- COVID, Appendicitis, Surgical

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INTRODUCTION

The global COVID-19 pandemic, stemming from the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has brought about profound disruptions to healthcare provision worldwide¹. Originating in December 2019 in Wuhan, China, the virus rapidly spread across continents, with its first recorded case in Australia detected in travelers returning from Wuhan to Sydney and Melbourne on January 25, 2020². The surge in COVID-19 patients necessitated a significant strain on hospital resources, including beds, staffing, and personal protective equipment, as many individuals required hospitalization³. Furthermore, the pandemic has led to disruptions in supply chains and increased staff absenteeism due to illness or isolation, further exacerbating the challenges faced by the healthcare system.

Acute appendicitis (AA) stands as the foremost general surgical emergency worldwide, presenting a

lifetime risk ranging from 6% to 9%^{4,5}. For over a century, appendectomy has stood as the primary treatment for AA, with the procedure becoming commonplace and exhibiting a notably low mortality rate⁶. Early appendectomy is advocated to mitigate severe complications of appendicitis, including perforation, abscess formation, and fecal peritonitis^{7,8}. Nonetheless, akin to any surgical procedure, appendectomy carries inherent risks. A mounting body of evidence indicates that conservative treatment with antibiotics offers a viable management approach for non-complicated appendicitis⁹. Over the last decade, numerous meta-analyses and systematic reviews have been undertaken to compare surgical and conservative approaches to managing AA¹⁰.

The onset of the COVID-19 pandemic has underscored the significance of choosing between surgical and conservative management for AA. Concerns regarding viral transmission stemming from aerosol-generating procedures have become

widespread. Additionally, the redirection of surgical staff to critical care and medical wards to address the heightened demands of COVID-19 has led to diminished surgical capacity. In light of these challenges, analyzing this patient cohort can provide valuable insights that build upon previous studies comparing antibiotic therapy to surgery for AA.¹¹ This study sought to assess and compare complication rates among patients managed conservatively versus those treated surgically during the initial wave of COVID-19.

MATERIALS & METHODS

The present study was conducted for comparing complication rates among AA patients managed conservatively versus those treated surgically during the initial wave of COVID-19.

A total of 40 patients were enrolled and were randomized into two study groups; Surgical group and conservative group. Diagnosis of AA was made on clinical grounds. Failure of antibiotic treatment in the conservative group was defined as: appendectomy in

the follow-up; recurrence of right iliac fossa (RIF) pain; re-admission with RIF pain. Post-operative complications in the surgical group were classified as procedure-specific complications and general complications. Criteria for safe discharge used were as follows: pain improving and manageable in the community. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

RESULTS

Mean age of the patients of the surgical group and conservative group was 26.3 years and 27.1 years respectively. There were 15 males and 5 females in the surgical group and 13 males and 7 females in the conservative group. Mean hospital stay was similar in surgical group and conservative group (2.9 days Vs 3.1 days). Complications rate was similar in surgical group and conservative group (30% Vs 35%). Recurrence was similar in surgical group and conservative group (10% Vs 15%).

Table 1: Baseline details

Variable	Surgical group	Conservative group
Mean age (years)	26.3	27.1
Males	15	13
Females	5	7
Imaging		
• US	• 9	• 10
• CT	• 8	• 8
Both US & CT	• 3	• 2

Table 2: Comparison of outcome

Variable	Surgical group	Conservative group	p-value
Mean hospital stay (days)	2.9	3.1	0.82
Complications (%)	30	35	0.71
Recurrence	10	15	0.64

DISCUSSION

Amidst the COVID-19 pandemic, our healthcare system has faced unprecedented challenges. Surgery has undergone significant adaptations to navigate this period of uncertainty, focusing on emergency procedures while suspending elective surgeries to mitigate the spread of the virus. As a result, conservative management using antibiotics has emerged as a more prevalent approach to treating cases of AA nationwide.¹¹

The concept of managing AA with antibiotics is not new, with successful antibiotic treatment¹². Over the last decade, several large-scale systematic reviews and meta-analyses have compared the use of antibiotics to conservative management with surgical appendectomy¹³. A systematic review incorporating five randomized controlled trials encompassing 1430 patients found no significant difference in the length of hospital stay or probability of complication-free treatment between conservative and surgical management of AA¹⁴. However, despite no

significant difference in complication rates in the systematic review, of conservatively managed patients ultimately required appendectomy within one year, leading to the conclusion that appendectomy was more effective than antibiotic therapy as a definitive treatment. In contrast, a multicenter randomized clinical trial involving 529 patients demonstrated that only 27.3% of patients required appendectomy at one year following initial conservative therapy¹⁵.

Mean age of the patients of the surgical group and conservative group was 26.3 years and 27.1 years respectively. There were 15 males and 5 females in the surgical group and 13 males and 7 females in the conservative group. Mean hospital stay was similar in surgical group and conservative group (2.9 days Vs 3.1 days). Complications rate was similar in surgical group and conservative group (30% Vs 35%). Recurrence was similar in surgical group and conservative group (10% Vs 15%). Appendicitis can manifest in various forms, ranging from uncomplicated acute appendicitis to complicated

presentations such as perforation, intra-abdominal abscess, or appendicoliths. Therefore, treatment approaches must be tailored to the specific presentation of the disease¹⁶. The most severe complications of appendicitis include diffuse peritonitis resulting from perforation and the formation of intra-abdominal abscesses^{17,18}. Remarkably, none of the patients treated with antibiotics in this study experienced these critical complications. El Nakeeb A et al investigated the impact of the COVID-19 pandemic on the presentation management and outcomes of acute appendicitis (AA) in different centers in the Middle East. Seven hundred seventy-one patients presented with AA during the COVID pandemic versus 1174 in the pre-COVID period. Delayed and complex presentation of AA was significantly more observed during the pandemic period. Seventy-six percent of patients underwent CT scanning to confirm the diagnosis of AA during the pandemic period, compared to 62.7% in the pre-COVID period. Non-operative management (NOM) was more frequently employed in the pandemic period. Postoperative complications were higher amid the pandemic as compared to before its onset. Reoperation and readmission rates were significantly higher in the COVID period, whereas the negative appendectomy rate was significantly lower in the pandemic period. During the COVID-19 pandemic, a remarkable decrease in the number of patients with AA was seen along with a higher incidence of complex AA, greater use of CT scanning, and more application of NOM.¹⁹

CONCLUSION

Conservative management of AA can be both safe and effective. The efficacy of this classification process will be assessed by analysis once it is implemented.

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