

ORIGINAL RESEARCH

A short observation of 215 patients on the non-operative management of acute appendicitis (AA) during the covid pandemic period (2019-2022)

¹Parthasarathi Giri, ²Amita Majumdar Giri, ³Debjitpaul, ⁴Pramit Giri, ⁵Narayan Chandra Bhowmik, ⁶Nirmalendu Kanjilal

¹Professor, Department of Emergency Medicine, Santiniketan Medical College, Muluk, West Bengal, India

²Professor, Department of Pathology, IIMSAR & BCRHH, Haldia, West Bengal, India

^{3,6}Assistant Professor, Department of Surgery, IIMSAR & BCRHH, Haldia, West Bengal, India

⁴General Physician, Department of Medicine, Aster Clinic Dubai

⁵Senior Gynaecologist, Department of OBG & Gynae, College of Medicine & J.N.M. Hospital, Kalyani, West Bengal, India

Corresponding Author

Parthasarathi Giri

Professor, Department of Emergency Medicine, Santiniketan Medical College, Muluk, West Bengal, India

Received Date: 20 May, 2024

Acceptance Date: 19 June, 2024

ABSTRACT

Introduction: The surgical practice in the management of an acute appendicitis, when diagnosed, is appendectomy. There are conventional approaches apart from appendectomy include the conservative management by Ochsner-Sherren regime when the clinical diagnosis of appendicular lump is suspected or established. Present study was aimed to study the outcome of conservative management of acute appendicitis. **Materials and method:** Observational retrospective and longitudinal descriptive study was conducted among the population of patients are consulted online' and on 'physical assessment' during the hours of emergency duty and who consulted on what's app, on phone and on mail from different parts of our state and even from the out of country also. The accepted diagnostic tools are used as the short history, pulse rate, ultrasound probe tenderness, raised temperature, urine output, clinical co-relationship and WBC count above eleven and below four thousands/cu.mm. the modified parameters as we followed clinically and on line to assess the conditions in the process of management following history, pain abdomen, nausea & vomiting along with coating on the tongue.

This is almost similar to the assessment of severity of sepsis. The clinical advises were adopted by the hybrid mode (online and physical assessment during the covid pandemic state) from the peripheral units of Sundarbans, Santiniketan, Madanpur, Kalyani and other centers of rural areas of our country like Tripura, and from close friends who suffered from similar symptoms there at Bahrain and UAE. **Results:** There were heterogeneous sex and age group of patients in between six and hundred and one. The signs and symptoms were not homogeneous in all the patients. There were 215 patients who came to seek advice (physically and majority on line) but did not agree to go on with the surgical management, when needed, in this adverse environment of covid19. We collectively compelled to opt the medical management closely following on the Ochsner-Sherren's regimen which is more true for appendicular lump management. This was due to this adverse panic stricken situation. We had to take the decision for appendectomy in 13 patients in the first half of the Covid situation and 6 patients underwent interval appendectomy. Out of these thirteen patients 2 died but the exact cause of death of these two patients was not vivid within this covid pandemic state. There were no provisions for medical autopsy.

We also followed the safety protocol on the guideline of risk assessment adopting the online monitoring of Enhanced Recovery After Surgery (ERAS) protocol to achieve the quality and quantity of life. **Conclusion:** This preliminary observation provided us clues those are inferred as

- The challenges and strategies can guide us to avoid emergency to find a plan for the next
- To opt the risk-benefit ratio in the event of odd situations
- The ERAS protocol with some modification is an accepted guideline in the event of remote area emergency during odd situations
- The procedure is a collaborative approach and life saving within the damage control procedure particularly in remote areas where doctors are not readily available in real time but there is emergency.

Keywords: Acute appendicitis, conservative approach, ERAS protocol, risk assessment.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution- Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

INTRODUCTION

The vermiform appendix is considered by most to be a vestigial organ, its importance in surgery due only to its propensity for inflammation that results in the clinical syndrome known as acute appendicitis. Acute appendicitis is the most common cause of an 'acute abdomen' in young adults, and as such the associated symptoms and signs has become a paradigm for clinical teaching.¹

The diagnosis of appendicitis remains essentially clinical, requiring a mixture of observation, clinical acumen and surgical science.¹

We therefore came across the situation that the patient and the relatives of the patient became apprehensive of undergoing operative procedures for acute abdomen within the pandemic situation. The patients inclined to stay at home accepting the threats of an acute abdomen. They were apprehensive to undergo operation, nor did they were free to come to the clinic for management. They, on the other hand, were assessed online and advised on phone or on other wireless devices together lieved exclusively of pain and vomiting. They preferred home stay on the conservative managements. We, finding no other alternatives developed the procedural protocol on a time tested approach of *medical management* of the acute condition. We have been forced to accept the situation and accepted the conservative management with an intention to go for an interval appendectomy, if needed. The life saving operative procedure was modified to keep the the lifeline within the procedural approach of online medical management. The patient and the relatives mostly were adamant to accept the non operative approach out of covid pandemic situation. Our object was to find time for appendectomy and modify the quality and quantity of life also.

The event of risk assessment as it is stated that, there are arguably only two indications for surgery - improvement of symptoms (quality of life) and improvement of prognosis (quantity of life). The likelihood of achieving a meaningful improvement of symptoms or prognosis (the benefit) must be balanced against the risks of death or an outcome that result in reduced quality of life (the cost).³ The procedure was structured within the steps as below.

MATERIALS AND METHODS

All, but fifteen patients were on line discussions and the management schedule so prescribed was framed as per the guidance on the on-line history and local laboratory investigations. The remote centers during the covid pandemic situation were so critical that the patients had to accept the conservative approach (OchsnerSherren approach) as a life saving steps scheduled on the medical management of

appendicular lump. We adopted steps after we received phone calls seeking advises.

1. The packed food drinks/ORS by mouth in sips only was restricted for 12-48 hours and continued, if tolerated gradually. The patients were continued for 72 more hours if the vomiting or nausea had subsided gradually. The oral antibiotic like ofloxacin with Ornidazole (O2) + pantoprazole 40mg /day was our standard protocol. These drugs associated with Ondansetron 4mg showed the in some patients.
2. If vomiting and/or nausea was not under control for 48 hours, the selected patients were converted to per enteral therapy. Omeprazole sachet, when available, proved to be the good substitute for oral administration for those patients.
3. We adopted the surgical procedure, if needed, after 48-72 hrs conservative approach in the management of acute appendicitis. [WBC count, pain, Apathy to food, nausea & vomiting, temperature with associated probe tenderness during USG]
4. There was a close simulation of ERAS protocol in the management of AA.

The management procedure was designed as under four headings of 4R & SNAP,

Resuscitation means the procedure for an emergency management for optimisation

Restitution is an unstable state where the patient may roll back to previous state of resuscitation or may gear up to be optimised to the state of restoration.

Restoration is a state when the interventions prove to be safe and risk poor for prolonged periods.

Rehabilitation is a state when the patient is fit and safe to be in the normal flow of life, review.

SNAP is the abbreviated term for assessing the conditions for,

- Sepsis control
- Nutrition back up
- Anatomical mapping when the patient is stable and optimised
- Plan for the next line of management for the patient.

RESULT & DISCUSSION

The study was done on process of forced management and procedural approach during the covid pandemic state when the management was done under stress as a life saving procedure and mostly online and a very few patients observed physically and treated by operative procedure. It is a collaborative approach and a procedure falls under a forced conservative management for AA.

- is a short study [2019-22]
- observational (retrospective/prospective, longitudinal)

- Diagnostic procedure & assessment was mostly on line, physical assessment
- the risk assessment is also an important factor in the process of management

Acute appendicitis is the most common cause of an acute abdomen in the young adult. the appendicitis is most common in adolescents and young adults with life time risk of 7%.advanced modern radiography imaging associated with clinical acumen have improved diagnostic accuracy²

The vermiform appendix is present only in human, certain anthropoid apes and the Wombat. At birth the appendix is short and broad at its junction with caecum. Diagnosis of early acute appendicitis requires neutrophilic infiltrations of the muscularispropria .Sub serosal vessels are congested and peri vascular neutrophilic infiltration in all layers of the wall.^{1,2}

Early enteral nutrition (nasogastric tube) or oral feeding appears to be an useful and safe therapeutic alternative for the post-operative management of patients undergoing gastrointestinal surgery in emergency. However, careful selection of patient is necessary in order to obtain the greatest benefit of early oral feeding in patients.In this regard, the role of early oral feeding in gastro intestinal surgery needs to be clarified in controlled randomized trials.⁷

Appendicular artery is the end artery, thrombosis of which results in necrosis of the appendix [synonym: gangrene]1. The acute appendicitis, if diagnosed, is managed by the surgical approach whether in a carrying mother, elderly or in a child. The reasons are different but real in the sense that is the pregnancy the pushed up appendix may be miss diagnosed whereas in a child it is late to decide because of the wide base and the stretching pain is late to initiate base perforation. The elderly man might develop atherosclerotic gangrene. So, acute appendicitis is always treated with appendicectomy.

Lymphoid hyperplasia narrows the lumen of the appendix, leading to luminal obstruction.

Appendicitis is thought to be initiated by the progressive intra luminal pressure that compromise venous outflow in 50 to 80 percent of cases overt luminal obstruction by faecolith, Oxyuriasis vermicular, peri appendicular lymphoid hyperplasia

after viral infections, tumours and gall stones. The stasis of luminal contents allows bacterial proliferation that leads to ischemia and inflammation.² Advanced modern radiographic imaging has improved the diagnostic accuracy. However the diagnosis of acute appendicitis remains essentially clinical, requiring a mixture of observation, clinical acumen and surgical science and as such it remains an enigmatic challenge and reminder of the art of surgical diagnosis.¹ The state of acute inflammation of appendix may be of viral origin and responded to the medical management with time to get relieved of mucosal oedema of viral origin in a large proportion of patients. 'Rates of influenza and non perforating appendicitis declined progressively from the late 1970s to 1995 and rose thereafter'. The rota and the influenza virus might have the relation to cause the non perforated acute appendicitis.⁸

There were at least fifty percent patients of different age group and sex who responded with home based oral antibiotic like ciprofloxacin and metronidazole or Ofloxacin and Ornidazole [O-2] associated with a pantoprazole in sachet or tablet form when there was no practical way out to reach the clinic within the pandemic crisis. The patients were advised to take ORS only for 48-72 hours and to take no solid food during this period.

The ERAS program allows patients to consume solid food up to 6 hours and a 12.5% maltodextrin-form carbohydrate (CHO) supplement drink up to 2 hours prior to surgery to reduce the fasting period.⁴we did not allow the patients to take solid foods because of online management and accepting the negative nitrogen balance, if at all occurred, as a temporary event on the management with ORS and fruit juice.

Acute appendicitis (AA) is among the most common cause of acute abdominal pain. Diagnosis of AA is challenging; a variable combination of clinical signs and symptoms has been used together with laboratory findings in several scoring systems proposed for suggesting the probability of AA and the possible subsequent management pathway. The role of imaging in the diagnosis of AA is still debated, with variable use of US, CT and MRI in different settings worldwide⁶.

yrs	medl[m/f]	opn[m/f]	cov[+]	Temp	USG tender	pain abd	diarrhoea	anorexia	died	noton follow up	Total no pts
1-10	13m/8f[21]	x	x	21	7	21	18	21	x	4	
11-20-	25m/17f[42]	f1[1]	x	39	30	42	33	42	x	4	
21-30	43m/11f [54]	6m/2f[8]	x	52	51	54	40	50	x	3	
51-60	37m/4f[41]	x	18m/7f	41	30	41	36	35	F1	1	
61-70	13m/9f[22]	1m[1]	12m/4f	19	3	21	17	17	x	7	
71-80	8m/3f[11]	x	5m/2f	8	7	11	7		x	x	
81-90	3m/1f [4]	x	6m	4	1	4	3	4	f1	3	
91-100	2m[2]	x	x	2	x	2	1	2	x	0	
101-110	1m[1]	1f[1]	x	1	1	1	1	1	x	0	
Total	198	17	41							36	215

CONCLUSION

Acute appendicitis when diagnosed the modern line of management is appendicectomy but the short study during the pandemic situation we were compelled to go on with the conservative approach opposed to the operative procedure. There were a few those who needed appendicectomy as an emergency approach and that is evaluated by the team management within the self directed and stressful structured assessment. The large proportion of acute form of appendicitis might be of viral origin as a result luminal obstruction was temporary events due to mucosal oedema responded on the medical management. But in many patients lymphocytosis was not so vivid.

In the event of panic and pandemic situation there were more than fifty percent patients with signs and symptoms of acute features were forced to take oral medicine even in the midst of nausea and vomiting with marked apathy to oral food. They achieved the symptom Free State with oral antibiotic and ORS for 3-4 days. This is a significant observation very close to ERAS protocol.⁵ More study is required.

- Improvement of quality and quantity of life and
- Cost-benefit ratio in terms of a profit in simulating a fair & viable business.

REFERENCES

1. The vermiform appendix, by Bailey & Love's short practice of surgery, 26 th.Edition, 71:1199
2. Jerrold R. Turner: The Gastrointestinal Tract, Robbins & Cotran, Pathologic Basis of Disease, vol-ii, 17:816,2015.
3. Joseph E Arrowsmith, Iain Mackenzie: Risk assessment', Surgery, volume 23:12 December 2005: www.surgeryonline.co.uk
4. <http://www.ncbi.nlm.nih.gov/pmc>, Diet Modification Based on the Enhanced Recovery After Surgery Program (ERAS)
5. Perioperative nutrition in ERAS protocols] pubmed, by A"Sanchez.2017. Cited by 5- the nutritional perioperative interventions in the ERAS protocol, focus on avoiding prolonged perioperative fasting by oral carbohydrate loading up to two hours...": "<http://pubmed.ncbi.nlm.nih.gov/>"
6. Saverio S, Birindelli A, Kelly MD, Catena F, Weber DG, Sartelli M, Sugrue M, De Moya M, Gomes CA, Bhangu A, Agresta F et.al: World J Emerg Surg. 2016 Jul 18;11:34. doi: 10.1186/s13017-016-0090-0 eCollection 2016. WSES Jerusalem guideline of diagnosis and treatment of acute Appendicitis: <https://pubmed.ncbi.nlm.nih.gov/274>
7. Lewis SJ, Egger M, Sylvester PA, Thomas S. Early enteral feeding versus "nil by mouth" after gastrointestinal surgery: systemic review and meta-analysis of controlled trials, British Medical Journal 2001; 323:773-81.
8. Association of Viral infection and Appendicitis; January 2010. Archives of surgery (Chicago, Ill.:1960) 145(1):63-71, pubmed:: www.researchgate.net
9. www.erassociety.org, Guidelines for peri operative care in Bariatric Surgery; Enhanced Recovery after Surgery (ERAS), society recommendation: A2021 update
10. Man The Unknown; Alexis Carrel: The Science of Man, chapter, II:61