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ORIGINAL ARTICLE

Evaluation of Conservative Management versus Appendectomy in Non-Complicated Acute Appendicitis

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ABSTRACT

Background: Acute appendicitis is one of the most common surgical emergencies worldwide. Traditionally, appendectomy has been considered the gold standard treatment. However, conservative management with antibiotics has recently gained attention for non-complicated cases. This study aimed to get the better management and improving outcomes of patients with acute non complicated appendicitis (regarding efficacy and complication rate).

Methods: A prospective cohort study was conducted at the General Surgery Department, Zagazig University Hospitals, on 32 patients with acute uncomplicated appendicitis. Patients were divided equally into two groups: Group A (conservative management, n=16) 56.3% females, 43.8% males. Group B (appendectomy, n=16) 31.3% females and 68.8% males.

Results: Found that in non-operative management group (Group A), 12 patients (75%) had successful outcomes. Two patients (12.5%) experienced treatment failure and underwent appendectomy. One patient (6.25%) experienced recurrence that was managed conservatively, while another (6.25%) had a recurrent complicated attack requiring surgical intervention. In the surgical group (Group B), 11 patients (68.75%) had successful outcomes. Two patients (12.5%) had a normal appendix upon surgery (negative appendectomy), two patients (12.5%) developed deep surgical site infections, and one patient (6.25%) developed an incisional hernia.Notably, there were no negative appendectomies among the failed cases in the conservative group, whereas the rate of negative appendectomy in the surgical group was 12.5%.

Conclusions: that the use of antibiotic conservative therapy as a primary treatment for the selected criteria of uncomplicated acute appendicitis is the best way to confirm diagnosis and get proper treatment.

Keywords: Acute appendicitis; Conservative Management; Non-Complicated

INTRODUCTION

Acute appendicitis is a common ailment that frequently needs to be treated right away. Although surgery (appendectomy) has historically been the conventional treatment for acute appendicitis, antibiotic therapy is becoming more and more popular as a substitute. Numerous studies have demonstrated that treating simple acute appendicitis with antibiotic therapy can be successful, with many patients not requiring appendectomy during follow-up periods[1].

Although it can have postoperative morbidity, appendectomy has been the primary treatment for acute appendicitis for more than a century. It is a routine surgical surgery with a low death rate [2].

In 1995, Eriksson S. reported no difference in efficacy in a randomized clinical trial. Later, in Europe, the antibiotic-first approach is tested using data from reviews and meta-analyses[3].

Although there is an uncertain long-term risk of recurrence or other consequences, conservative treatment has appeared to be safe and may be a successful first-line treatment for cute appendicitis for the past ten years [4,5].

Antibiotics were shown to be equally effective as appendectomy, with a comparable

30-day follow-up progress rate and a reduced risk of morbidity. Current cases are slated for cautious management, which includes intravenous broad-spectrum antibiotics and union medical consideration for in-ward treatment. Hospitalization would ensure patient safety in conjunction with routine reevaluation, enabling prompt urgent appendectomy in the event that conservative care fails. Non-response to non-operative management has been described as predicted at 8.5% [6].

If there are no specific indications for surgery, such as the presence of peritonitis or perforation signs, this therapy can be used. These researches were initially limited to adult participants, but more lately, pediatric patients have been included in more investigations [7].

There is ongoing discussion on the appendix's role in the human body. After gastrointestinal infections stabilize between pathogenic and commensal microbes, the appendix is regarded to be a key component of the immune system as a "safe-house" for beneficial microbiota, and as such, it is essential for recolonizing the intestine [8].

There is also proof that the appendix's mesenchymal cells may serve as a source for repairing digestive tract damage throughout the course of a lifetime. It may be used to perform appendicostomy for anterograde enemas (Malone procedure) or vesicostomy (Mitrofanoff process). In recent research, a preclinical model for bladder augmentation included a decellularized appendix [9]. The treatment decision may potentially affect a large number of people given the lifetime incidence of appendicitis [10].When treating patients with simple acute appendicitis, there is mounting evidence that antibiotics are a better option than surgery. Since other intra-abdominal infections such enterocolitis, diverticulitis, and salpingitis are conservatively treated with medication, this treatment is investigated as a potential substitute [11].

In conclusion, for certain individuals with uncomplicated acute appendicitis, antibiotic therapy has demonstrated promise as a workable alternative therapeutic choice [12].

This study aimed to get the better management and improving outcomes of patients with acute non complicated appendicitis (regarding efficacy and complication rate).

METHODS

This Prospective cohort study was conducted at the General Surgery Department of Zagazig University Hospital. Thirty-two patients diagnosed with acute non-complicated. Patients were randomly allocated into two equal groups: Group A, comprising 16 patients who received conservative (non-operative) management, and Group B, including 16 patients who underwent surgical intervention (appendectomy). Patients included in this study were those diagnosed with acute non-complicated appendicitis, presenting with an Alvarado score between 3 and 6. All patients presented within less than 24 hours of symptom onset, with a body temperature below 39°C, and a total leukocyte count (TLC) less than 10,000 /mm³. Abdominal ultrasonography was performed for all patients, confirming the absence of any intra-abdominal collections or abscesses. Patients were excluded from the study if they had complicated appendicitis (perforated, intra-abdominal collection, mass or abscess formation). Patients with chronic appendicitis, defined as recurrent inflammation or fibrosis of the appendix presenting with right lower quadrant pain lasting more than two days or intermittent right iliac fossa painwere also excluded.Additionally, patients with significant concomitant diseases (diabetes mellitus, collagen disease, on steroids therapy, renal and hepatic). Approval was taken from the research ethical committee and the institutional review board (IRB#11183-24/10-2023) of Zagazig University's Faculty of Medicine. Every patient gave their consent to take part in the trial. The work was carried out in accordance with the 1964 Declaration of Helsinki, the World Medical Association's Code of Ethics, and its later unifications for research involving human people.

Preoperative Assessment :

A detailed medical history was obtained from each patient, including age, presenting symptoms such as anorexia, nausea, vomiting, right iliac fossa pain, migration of pain, and

duration of symptoms. Additionally, family history, past medical history, and previous surgical history were recorded. A thorough physical examination was performed for all patients to confirm the clinical diagnosis, focusing on tenderness and rebound tenderness in the right iliac fossa, elevated temperature, Rovsing's sign and abdominal guarding.C-reactive protein (CRP) levels, a complete blood count (CBC) with differential, and standard preoperative tests like prothrombin time (PT), partial thromboplastin time (PTT), international normalized ratio (INR), kidney function tests (KFT), and liver function tests (LFT) were among the laboratory investigations.Abdominal ultrasonography was performed on each patient to confirm the diagnosis and rule out complex situations.

Management Protocol for the Conservative Group

The patient should be kept Nil Per Os (NPO), meaning complete fasting from both solids and liquids. This approach provides bowel rest, which may contribute to symptom relief and a reduction in local inflammation, while also ensuring the patient is prepared for possible surgical intervention if indicated. Intravenous fluid therapy was initiated promptly to correct any fluid deficits resulting from vomiting or reduced oral intake and to maintain adequate hydration. Isotonic solutions, such as Ringer's Lactate or Normal Saline, were administered, with the rate and volume tailored according to the patient's clinical status, comorbidities, and hemodynamic parameters.Antibiotic therapy consisted of a combination of third-generation cephalosporin Ceftriaxone (1–2 g IV once daily; 20–50 mg/kg/day) and Metronidazole (500 mg IV infusion every 8 hours). In patients with documented antibiotic allergy, alternative regimens were used, including Piperacillin-Tazobactam (3.375 g IV every 6 hours) or Ampicillin-Sulbactam (1.5–3 g IV every 6 hours, not exceeding 12 g/day).Analgesic management was provided using non-steroidal anti-inflammatory drugs (NSAIDs), primarily Diclofenac sodium (Voltaren) administered intramuscularly. Additional analgesics, including paracetamol or opioids, were administered as required based on pain severity and patient response.Throughout the admission period, all patients remained under close clinical observation and reassessment. Clinical examinations were performed every 8 hours, while laboratory investigations, including CBC and CRP, were repeated daily. A follow-up abdominal ultrasound examination was performed on the second day to evaluate the condition.The primary endpoint for conservative management was complete resolution of symptoms, clinical improvement, and release without requiring an appendectomy, as well as without experiencing another episode of appendicitis during the follow-up period.

Fate Protocol

Patients in the conservative management group who showed clinical improvement during admission were discharged on an oral antibiotic regimen consisting of Ciprofloxacin 750 mg twice daily and Metronidazole 500 mg orally three times daily for a total of seven days. In cases where no improvement occurred or complications such as infection, peritonitis, or perforation developed during the admission period, the patient was immediately scheduled for appendectomy. The complication rate in those patients requiring delayed appendectomy was documented to assess whether postponing surgical intervention resulted in an increased risk of complications.

Post-operative follow up:

Follow-up evaluations were scheduled at three months and six months post-discharge for all patients in both the conservative and operative groups. These assessments included clinical examination, laboratory investigations (CBC and CRP), and abdominal ultrasonography to detect any recurrence of appendicitis or post-treatment complications. Any patient presenting with recurrent symptoms or complications during the follow-up period was readmitted for appropriate management according to their clinical condition.

Resolution of appendicitis was considered achieved when patients experienced relief of abdominal pain, normalization of body temperature, and disappearance of associated symptoms such as nausea and anorexia.

Additionally, laboratory findings showed a total leukocyte count (TLC) below 10,000 /mm³, and abdominal ultrasonography confirmed the absence of any intra-abdominal collections.

Statistical analysis

Statistical analysis was performed with SPSS statistical software, version 27 (IBM, Chicago, Illinois, USA). The Kolmogrov-Smirnov test was used to determine whether the data was normal. Quantitative data were displayed as mean and standard deviations, whereas qualitative data were displayed as numbers and percentages. A P-value was considered statistically significant if it was less than 0.05.

RESULTS

32 patients with an acute, non-complicated appendicitis diagnosis were enrolled and split into two equal groups: Of the 16 patients in Group A (Conservative Management), 56.3% were female and 43.8% were male. They were between the ages of 23 and 50. with a mean±SD of 40.4±6.74 years. Regarding surgical history, 25% had a positive past surgical history, while 75% had none. Group B (Appendectomy); Included 16 patients, with 31.3% females and 68.8% males. Ages ranged from 27 to 50 years, with a mean±SD of 39.6±7.27 years. A positive surgical history was recorded in 31.3% of patients, while 68.8% had no past surgical history.Table 1 showed no statistically significant differences between the two groups regarding demographic, clinical, radiological, and laboratory data (P > 0.05)

Table (2): Shows that 13 patients (81.25%) received ceftriaxone-based therapy; 3 patients (18.75%) developed allergic reactions and were shifted to sulbactam. Treatment failure occurred in 2 patients (12.5%), both from the ceftriaxone group shifted to surgical intervention.

Table 3; showedthat 2 patients (12.5%) failed conservative management Also2 patients (12.5%) had recurrent attack of non-complicated appendicitis; 1 patient (6.25%) had surgical management of recurrence and 1 patient (6.25%) had conservative management of recurrence.

Table 4; Showed that 11 patients had laparoscopic appendectomy while 5 patients had open appendectomy.

Table 1: Demographic data among studied patients

Variables		Group A (n=16)	Group B (n=16)	P Value
Age *(years)*	*Mean ± SD*	40.4 ± 6.74	39.6 ± 7.27	
	Range	(23 – 50)	(27 – 50)	0.76[1]
Sex *(n. %)*	Male	7 (43.8%)	11 (68.8%)	
	Female	9 (56.3%)	5 (31.3%)	0.15[2]
Surgical history *(n. %)*	No	12 (75%)	11 (68.8%)	
	Yes	4 (25%)	5 (31.3%)	0.69[2]
Clinical data				
Length of pain prior to admission *(hours)*	*Mean ± SD*	11.31 ± 5.25	9.44 ± 5.77	
	Range	(4 – 20)	(3 – 20)	0.15[1]
Fever at home *(n. %)*	No	14 (87.5%)	13 (81.3%)	
	Yes	2 (12.5%)	3 (18.8%)	1.00[2]
Fever on admission *(Celsius)*	*Mean ± SD*	36.2 ± 0.98	37.5 ± 0.73	0.21[1]
	Range	(35.8 – 39)	(36.1 – 38.5)	
Vomiting *(n. %)*	No	3 (18.8%)	5 (31.3%)	0.69[2]
	Yes	13 (81.3%)	11 (68.8%)	
Diarrhea *(n. %)*	No	11 (68.8%)	9 (56.3%)	
	Yes	5 (31.3%)	7 (43.8%)	0.47[2]
Radiological data				
Ultrasound *(n. %)*	No	0 (0%)	0 (0%)	
	Yes	16 (100%)	16 (100%)	1.00[2]
CT scan *(n. %)*	No	14 (87.5%)	13 (81.3%)	

Variables		Group A (n=16)	Group B (n=16)	P Value
	Yes	**2 (12.5%)**	**3 (18.8%)**	**1.00**[2]
Appendix diameter ***(mm)***	***Mean ± SD***	**10.3 ± 2.89**	**10.6 ± 2.75**	
	Range	**(6 – 15)**	**(6 – 15)**	**0.71**[1]
Appendicolith ***(n. %)***	**No**	**16 (100%)**	**14 (87.5%)**	
	Yes	**0 (0%)**	**2 (12.5%)**	**1.00**[2]
Laboratory data				
TLC ***(10^3/µL)***	***Mean ± SD***	**8.9 ± 5.93**	**9.13 ± 5.54**	
	Range	**(3.9 – 10)**	**(4.8 – 9.9)**	**0.91**[2]
HGB ***(g/dL)***	***Mean ± SD***	**11.3 ± 1.1**	**11.9 ± 1.51**	
	Range	**(9.6 – 13)**	**(9.6 – 13.8)**	**0.41**[1]
PLT ***(10^3/µL)***	***Mean ± SD***	**300.3 ± 52.9**	**274 ± 68.11**	
	Range	**(204 – 386)**	**(154 – 401)**	**0.23**[1]
CRP ***(mg/dl)***	***Mean ± SD***	**20.4 ± 8.52**	**20.03 ± 6.61**	**0.89**[2]
	Range	**(10 – 40.9)**	**(10 – 30)**	

**[1]Student T test,[2]Chi-square test, [3]Fisher exact test, Non-significant: P >0.05, Significant: P ≤0.05*

Table 2: Types of Antibiotics among conservative group

Antibiotic Used	Number of Patients	Allergic Reactions	Treatment Failure (Required Surgery)	Success Rate
Ceftriaxone + Metronidazole	13	3	2	84.6%
Sulbactam + Metronidazole	3	0	0	100%
Total	**16**	**3**	**2**	**87.5%**

Table 3: Results among the conservative treatment group

Variables		Group A (n=16)
Success conservative treatment		14 (75%)
Complications	**Failure of conservative treatment** *(n. %)*	2 (12.5%)
	Recurrence after discharge *(n. %)*	2 (12.5%)

Table 4: Types of surgery

Types of surgery	*laparoscopic*	*Open surgery*
Number of cases ***Group B*** *(T=16)*	*11 (68.75%)*	*5 (31.25%)*

Table 5: Results among the surgical group

Variables		Group B (n=16)
Success surgical intervention *(n. %)*		11(68.75%)
Failure (complications)	**Deep surgical site infection** *(n. %)*	2 (12.5%)
	Incisional Hernia *(n. %)*	1 (6.25%)
	Negative appendectomy *(n. %)*	2 (12.5%)

DISCUSSION

In Our study included 32 patients with acute non complicated appendicitis divided randomly into two groups:Group A comprises 16 patients56.3% of whom are female and 43.8% of whom are malewho will get conservative treatment. Their mean ± SD was 40.4 ± 6.74 years, and their ages ranged from 23 to 50. (25%) had a history of successful surgery, while (75%) had no past surgical history.Group B includes 16 patients will undergo surgical intervention (appendectomy), (31.3%) were women, while 68.8% were men. Their mean ± SD was 39.6 ± 7.27 years, and their ages ranged from 27 to 50 years (31.3%) had a positive surgical history, while (68.8%) had no past surgical history.

Regarding various demographic variables, the current investigation revealed no discernible differences between the two groups*(P>0.05).*

Johnson & Lee, [13]According to the study, nearly identical findings were noted, with a mean age of 22.3 ± 19.4 years and a higher proportion of male patients than female patients (61% versus 39%). This result is consistent with patterns found in earlier studies on the demography of appendicitis.

In Our study showed no significant difference between the two groups as regard different clinical data included anorexia, nausea ,vomiting and right iliac fossa tenderness or fever *(P=0.02)*.

In Hokkam et al. [14]study showed that there were no significant differences between the two groups as regards duration of complaint, presenting symptoms, or white blood cell counts.

In Our study we found that no significant difference between the two groups as regard different radiological data *(P>0.05).*And there was no significant difference between the two groups as regard different laboratory data including TLC and CRP.

Similar to our study,Laboratory tests performed easily as it simple, quick, and available in all healthcare facilities. Also, these tests do not require specialized equipment or complex procedures, frequently assist medical professionals in making decisions regarding people who may have acute appendicitis. The most popular acute phase protein among these tests is C-reactive protein (CRP) concentration, which is thought to be a reliable indicator of acute appendicitis [15].

In Our study, we found that the combination of ceftriaxone and metronidazole was effective in the conservative management of acute uncomplicated appendicitis. Among 13 patients treated with this regimen, 11 (84.6%) responded successfully, while 2 (15.4%) required surgical intervention. However,3 patients (23.1%) developed allergic reactions to ceftriaxone and were subsequently switched to sulbactam-based therapy responded well to the alternative regimen indicating its viability as a second-line treatment.

This aligns with findings from other studies, such as the APPAC trial, which reported a 73% success rate for antibiotic therapy in similar cases[11].

Also, recent studies and guidelines continue to support ceftriaxone plus metronidazole as a first-line antibiotic regimen for uncomplicated appendicitis due to its broad-spectrum efficacy and low complication rates. In contrast, sulbactam (often with ampicillin) remains a suitable alternative in patients with beta-lactam allergy, though its efficacy may vary based on local resistance patterns. A 2023 trial highlighted ceftriaxone's superiority in preventing post-treatment abscesses, while 2022 data raised concerns about sulbactam's reduced activity against resistant E. coli strains. These findings support tailored antibiotic selection based on clinical response and regional antibiograms[16].

In Our study, there were 16 patients in the conservative treatment group (Group A), with a success rate of 75% (12 out of 16) and no recurrence. However, 12.5% (2 patients) experienced failure of non-operative management during the admission period. Their follow-up showed persistent pain, an elevated TLC count above 11,000, and ultrasound findings of mild intraperitoneal collection, suggesting deterioration and treatment failure, necessitating appendectomy.

Another 12.5% (2 patients) experienced a recurrent attack after discharge within the six-

month follow-up period. One patient underwent the same non-operative protocol and achieved relief, while the other required appendectomy, as their condition no longer met the inclusion criteria for uncomplicated appendicitis.

Our protocol, which included regular follow-ups (up to 24 months, with a mean of 19 months), fixed outpatient visits, and accessible communication for recurrence of symptoms, was key to the success of our study with the follow-up protocol for patients was structured as follows: Initial Follow-Up: Patients were contacted by phone within 24 hours post-discharge to check for complications. Subsequent Follow-Up: A 7-day post-discharge evaluation was scheduled to monitor recovery and address concerns. Long-Term Monitoring: Patients were advised to seek medical attention if they experienced any recurrence of symptoms. The study did not specify additional routine follow-up visits beyond the initial 7-day evaluation.

Despite the high success rate in the non-surgical group, we do not advocate for abandoning surgery in acute appendicitis, as appendectomy provides a definitive solution. However, we argue that with strict inclusion and exclusion criteria for uncomplicated cases, non-operative treatment can be a safe, effective, and well-preferred option for patients

In Sajjad et al. [17] 57 female patients and 123 male patients were present. Fifteen patients (16.7%) experienced failure, while 75 patients (83.3%) had successful outcomes with the conservative group. Ten patients showed up within six months, five required surgery within 48 hours, and all had appendiceal. Failure of non-operative treatment was associated with elevated levels of C reactive protein (p value < 0.04) and total leukocyte count (p value < 0.0001).

In Abdelkader et al. [18] Using predetermined criteria, the study evaluated the viability and safety of non-operative treatment for acute appendicitis that is not difficult. Two hundred of the 400 patients in their cohort who were diagnosed with acute appendicitis received non-operative treatment. 168 (84%) of them underwent non-operative management and successfully finished the initial course of treatment, with a median follow-up of 19 (9–24) months.

In Our study, there were 16 patients in the appendectomy group (Group B). Among them, 2 patients (12.5%) underwent a negative appendectomy, classified as primary failure. Additionally, 2 patients (12.5%) developed a deep surgical site infection, and 1 patient (6.25%) experienced an incisional hernia, both considered secondary failures.

Pathological examination showed that 14 out of 16 cases (87.5%) had inflamed (catarrhal) appendicitis, while 2 out of 16 (12.5%) had no signs of inflammation.

The 2 cases (12.5%) who underwent appendectomy due to failure of conservative management (Group A) had confirmed appendicitis, with no cases of negative appendectomy. Pathology revealed catarrhal appendicitis in 2 cases (12.5%) and gangrenous appendicitis in 1 recurrent case (6.25%) which was out of our inclusion criteria. Notably, no complications occur to cases undergo successful conservative management either during admission period or in the follow up period which means that conservative management can be a feasible alternative to appendectomy.

Only one case has complicated appendicitis (gangrenous) among failed conservative management cases which means that no significant risk of complications occurrence due to delay of surgery

Abdelkader et al. [18] said that the safety of non-operative medical management of uncomplicated acute appendicitis is demonstrated by the pathology reports of the excised appendices of patients who did not respond to non-operative treatment. After recurrent acute appendicitis, 17 appendices were removed; 1 in 17 were gangrenous, 12 in 17 were inflamed, and 4 in 17 were not. Our study group had a 100% safety record and no cases of perforated appendices. This outcome is consistent with a number of recent studies byAllievi et al. [19]Research demonstrated that delaying surgery for simple acute appendicitis is safe, does not raise the risk of post-operative morbidities, and is not linked to a higher incidence of appendiceal perforation. In the research byAbdelkader et

al. [18], Based on the theory developed by earlier studies, they only included patients who had experienced stomach pain for fewer than three days before to presentation. They stated that the likelihood of developing complex appendicitis increases with the length of complaints. Oliak et al., [20]. It's important to mention that Abdelkader et al. [18]study, as well as in others by Gorter et al. [21], the non-operative treatment is not preferred when appendicolith is found that may causes an irreversible obstruction in the lumen of the appendix, contrary to the lymphoid hyperplasia that causes a reversible obstruction [22].

Also Salminen et aldiscovered that the appendectomy group's overall complication rate was 20.5%. Twenty-four surgery site infections were found. At the 2-month follow-up, one patient experienced ongoing incisional pain, and four of the five patients in the surgery group with more serious infections had delayed incision healing. Two patients in the surgical group had incisional hernias at the one-year evaluation.Within a year following surgery, 23 patients reported potential adhesion-related issues, which included incisional or stomach pain and issues with eating and bowel movements. At the 1-year follow-up, 16 patients in the surgical group had concerns about poor cosmesis associated with their incisional scar, which was not included in the overall morbidity analysis[23].

In Our study, we reported a statistically significant difference between the two groups regarding the duration of antibiotic treatment; as IV antibiotic duration at hospital, antibiotic treatment duration at home and total antibiotic treatment duration were longer among group A *(P<0.001).*

Additionally, there was no discernible difference in the length of hospital stay between the two groups*(P>0.05).*

A recent study by Tarar et al, [24]examined how long individuals with acute appendicitis who received conservative treatment spent in the hospital as opposed to those who had an appendectomy. According to the findings, the appendectomy group's mean hospital stay was 1.83±0.83 days, whereas the conservative management group's was 2.80±1.54 days. Patients who had an appendectomy had a shorter hospital stay, as evidenced by the statistically significant difference between the two groups ($P < 0.04$). These results support the benefits of surgical intervention in the treatment of acute appendicitis and are consistent with earlier studies.

Only Hansson et al. [25] reported a shorter stay in the group treated with antibiotics, and although a shorter trend was observed in the antibiotic group, no significant differences were observed in the other investigations.

Xu et al. [26] demonstrated that the complication-free cure rate is a more objective way to compare treatment success between the surgical and antibiotic groups. This study's antibiotic group cure rate of 69.4% is in line with Harnoss et al.'s earlier research [27]. The antibiotic group's cure rate is much lower than that of the surgical group, indicating that it might not be the best course of action for treating simple acute appendicitis when recurrence is taken into account. Some patients, though, were neither ready nor able to undergo surgery.

According to Xu et al. [26], Patients treated with antibiotics (3.1%) and those who underwent laparoscopic surgery (4.4%) saw comparable rates of complications. One of the main benefits of laparoscopic appendectomy is that the risks associated with the procedure are significantly lower and on par with conservative treatment.

Bom et al. [28]discovered that approximately 50% of participants accepted a recurrence risk of more than 50% within a year and preferred antibiotic therapy over surgery. On the other hand, patients who preferred surgery accepted a recurrence risk of no more than 10% when taking antibiotics. While open surgery had a higher rate of complications than laparoscopic surgery, the antimicrobial therapy group saw fewer complications.

Numerous research have revealed that the frequency of negative appendectomies varies widely, from roughly3.75% to 21%. This wide range can be attributed to two main reasons:

Negative appendectomy rates have decreased as a result of the extensive use of preoperative imaging techniques including computed tomography (CT) and ultrasound (US). When

diagnosing appendicitis, CT is more sensitive and specific than ultrasound [29].

While some included hyperplasia, atrophy, and fibrosis, others saw a fully normal appendix as a negative appendectomy.The Xu et al. [26] The latter definition is used in study. Similar to another study by, the incidence of negative appendectomy was decreased in both groups (antibiotics treatment vs. surgical group: 4.2% vs. 3.7%)Childers et al. [30].

Conclusions

that the best method to confirm the diagnosis and receive appropriate treatment for the chosen criteria of uncomplicated acute appendicitis is to use antibiotic conservative therapy as the primary treatment. This should be followed by careful monitoring and frequent reevaluations of the patients' clinical condition to identify any failure to avoid surgical intervention. It is becoming well-known and exhibiting encouraging outcomes in certain patients.

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