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Original Research Article

Evaluation of outcome of early appendectomy in appendicular lump

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ABSTRACT

Background: Appendicular lump is a well-known sequalae of acute appendicitis encountered in 2-6% of patients. Successful management of appendicular lump is controversial with different approaches. This study aims to evaluate the outcome of early appendectomy in an appendicular lump.
Methods: A total of 210 patients were admitted in surgery and pediatric surgery department of Rangpur medical college and hospital with the diagnosis of acute appendicitis and its sequalae over two years.
Results: In this study, sixty patients were included who were presented with an appendicular lump. Maximum patients (50%) were found in the age group of 21-30 years. Males (66.67%) were more affected. Eighty percent of patients were coming from below-average socio-economic conditions. In group I, early appendicectomy had done and outcomes were satisfactory and favorable. In group II, eighteen patients were operated who were admitted at 6 to 8 days after an attack of acute appendicitis, and twelve patients were continued the conservative treatment. In group II, who had done surgery, among them, fourteen patients (77.78%) were found an appendicular abscess, and four patients (22.22%) were found perforated appendix per-operatively. In group I, the mean recovery period was less and they had minimum complications. In group II, the mean recovery period was more and they had more complications.
Conclusions: Based on these findings, it can be concluded that early exploration in appendicular lump patients confirm the diagnosis, cures the problem, reduces the cost of management, and shortens the convalescence period and hospital stay with reasonably satisfactory outcomes.

Keywords: Acute appendicitis, Appendicular lump, Conservative management, Appendicectomy

INTRODUCTION

Acute appendicitis is the commonest cause of acute surgical abdomen.[1] An appendicular mass is one of the common complications seen in patients presenting a few days late after the onset of acute appendicitis.[2] The ideal treatment of acute appendicitis is considered to be appendicectomy failing which several complications, including an appendicular mass, usually results. This usually follows a late presentation or a failure of diagnosis at presentation.[3] Traditionally acute appendicitis was principally diagnosed on repeated physical examination after active observation without much reliance on laboratory investigations.[4] Greater reliance on putatively objective tools for the diagnosis can delay the diagnosis and has changed the outlook for some patients.[5] Delayed diagnosis changes the

uncomplicated simple acute appendicitis into complicated appendicitis.[6]

An appendicular lump usually forms in the right iliac fossa after 48-72 hours of first symptoms of acute appendicitis.[1,2,7] Lump develops when appendicitis is caused by obstruction of the lumen of the appendix and there is a danger of perforation of the appendix following ischemic necrosis and gangrene of the appendicular wall.[3,8]As a natural protective mechanism, the omentum, and small bowel wrap up the inflamed appendix in an attempt to prevent infection from spreading by isolating the inflamed organ from the rest of the abdominal cavity.[9] There may have been an evolutionary advantage that selected this kind of defensive mechanism. The patient usually presents with a tender mass in the right iliac fossa associated with fever, malaise, and anorexia.[10]

Appendicular lump is formed in 2-6% cases of acute appendicitis if the successful management is not given.[11] Conventional treatment according to Ochsner-Sherren regime is a conservative regime that is popularized as a standard treatment for appendicular lump.[12] During conservative treatment 10-20% are not resolved. [1-3,13] Failure of conservative regime occurs in 2-4% cases where urgent exploration is essential. [14] The Appendicular mass is more commonly seen amongst young adult males.[2,15]A reluctance for surgery is common in the third world where most of the population live below the poverty line and a single member may generate income for the whole family. In some rural areas, general practitioners often keep the patient on symptomatic therapy rather than referring to a higher-level hospital.[16]

The treatment of appendicular mass is controversial; however, there are several management options for appendicular mass.[17] Traditionally, these patients are managed conservatively followed by interval appendicectomy 4-6 weeks later, believing that an early appendicectomy in these cases is hazardous, time-consuming and may lead to life-threatening complications such as fecal fistula.[18] The need for interval appendicectomy has also been questioned. Advocates of the initial conservative approach claim a lower rate of complications compared to the early operative approach.[19] The studies favoring immediate appendicectomy claim an early recovery and complete cure during the same admission.[20]The present study was designed to evaluate the feasibility and safety of immediate appendicectomy in an appendicular lump in our population by comparing the results of an equal number of patients treated conventionally.[21]

In the case of appendicular mass, early exploration can exclude the other pathologies.[22] This study was designed to evaluate the feasibility and safety of early appendicectomy in an appendicular lump in our population.[23] It can be concluded that early surgical exploration confirms the diagnosis and cures the problem, reduce the cost of management, shortens the convalescence period and hospital stays with a reasonably satisfactory outcome.[24]

The main aim of this study is to evaluate the outcome of early appendectomy in an appendicular lump.

METHODS

Type of study was prospective analytical. Study carried out at surgery and pediatric surgery department, Rangpur medical college and hospital, from January 2015 to December 2016. With sample size of sixty. Sampling method used sampling technique was purposive sampling.

Inclusion criteria included the patients who had developed an appendicular lump within 3 to 8 days after the onset of acute appendicitis. Patients of 11 to 60 years of age who had been admitted to the surgery and pediatric surgery department of Rangpur medical college hospital with the complaints of the appendicular lump. Patients who had given the written consent to participate in this study procedure.

Exclusion criteria excluded any lump in the right iliac region other than appendicular lump e.g. Ileocecal tuberculosis, carcinoma caecum. Right-sided ovarian cyst in case of female. Patients with unwilling to give informed written consent to take part in the study.

Data was collected and recorded by standard pre-designed data collection form. Data were entered in the computer using SPSS (statistical package for social science) version 21.0, calculation of percentage resistance within a 95% confidence interval (CI). The level of significance was considered as a p value less than 0.05 and double-checked before analysis. An appropriate statistical test (chi-square) was performed. clinical criteria, hematological results, and radiological findings were assessed by sensitivity, specificity, positive predictive value and negative predictive value.

The study was conducted over two years (January 2015 to December 2016). A total of 210 patients of appendicular lump were admitted into all surgery units and pediatric surgery department of Rangpur medical college and hospital with the diagnosis of acute appendicitis and its sequalae. In this study, the patients who had been suffering from acute appendicitis with lump formation were included. The author filled up the questionnaire forms after taking the informed consent of the patients and legal guardian. It was obtained after explaining the purpose and nature of the study. The questionnaires were included age, sex, socio-economic condition, duration of onset of symptoms. The findings regarding appendicular lump associated with anorexia, nausea and vomiting, tenderness in the right iliac region, fever was recorded. On local examination, temperature, consistency, and mobility were also recorded.

Among all, 60 patients were included in this study who were presented with an appendicular lump. The age of the patients was within 11 to 60 years and both sexes were included. 60 patients of appendicular lump were divided into two groups, group I and group II. In group I, 30 patients were included who had admitted into the hospital at 3 to 5 days after an attack of acute appendicitis. They had done early appendicectomy. In group II, 30 patients were included who had admitted into the hospital at 6 to 8 days after an attack of acute appendicitis. In group II, 18 patients were operated and 12 patients were continued the treatment as conservatively.

Diagnostic criteria were included in detailed history, thorough clinical examinations, and some relevant investigations. All patients were investigated with complete blood count, urine routine examination, blood grouping, a plain X-ray of the abdomen, serum creatinine, and ultrasonography of the whole abdomen. In this study, the open method was applied. Surgery was done by the different units of surgery and pediatric surgery department of Rangpur medical college and hospital. Collected data was checked every day carefully to identify the errors in collecting data. Data processing was consisting of the inclusion of patients.

RESULTS

In this study, maximum patients were found in the age group of 21-30 years. Males were more affected. 80% of patients were coming from below-average socio-economic conditions (Table 1).

Table 1: Age distribution of appendicular lump (n=60).

Age (years)	No. of patients	Percentage (%)
11-20	10	16.67
21-30	30	50
31-40	12	20
41-50	5	8.33
51-60	3	5

60 patients were grouped into two groups, group I and group II. In group I, 30 patients were included who admitted into the hospital at 3 to 5 days after an attack of first symptoms of acute appendicitis. The 30 patients had done early appendicectomy. In group I, 18 (60%) patients were admitted at 3 days, 9 (30%) patients at 4 days, and 3 (10%) patients were admitted at 5 days after an attack of first symptoms of acute appendicitis (Table 2).

Table 3 shows that, in group II, 30 patients were included who admitted into the hospital at 6 to 8 days after an attack of first symptoms of acute appendicitis. In group II, 17 (56.67%) patients were admitted at 6 days, 8 (26.67%) patients admitted at 7 days and 5 (16.66%) patients were admitted at 8 days after an attack of first symptoms of acute appendicitis.

Table 2: In group I, who had presented with appendicular lump and admitted into the hospital at 3 to 5 days after an attack of first symptoms of acute appendicitis (n=30).

Duration of lump formation (days)	No. of patients	Percentage (%)	P value
3	18	60	<0.001
4	9	30	
5	3	10	

Table 3 shows that, in group II, 30 patients were included who admitted into the hospital at 6 to 8 days after an attack of first symptoms of acute appendicitis. In group II, 17 (56.67%) patients were admitted at 6 days, 8 (26.67%) patients admitted at 7 days and 5 (16.66%) patients were admitted at 8 days after an attack of first symptoms of acute appendicitis.

Table 3: In group II, who had presented with appendicular lump and admitted into the hospital at 6 to 8 days after an attack of first symptoms of acute appendicitis (n=30).

Duration of lump formation (days)	No. of patients	Percentage (%)	P value
6	17	56.67	<0.001
7	8	26.67	
8	5	16.66	

In group I, 27 (90%) patients were discharged from the hospital without any complications, 2 (6.67%) patients have developed wound infections and 1 (3.33%) patient had developed fecal fistula in the post-operative period (Figure 1).

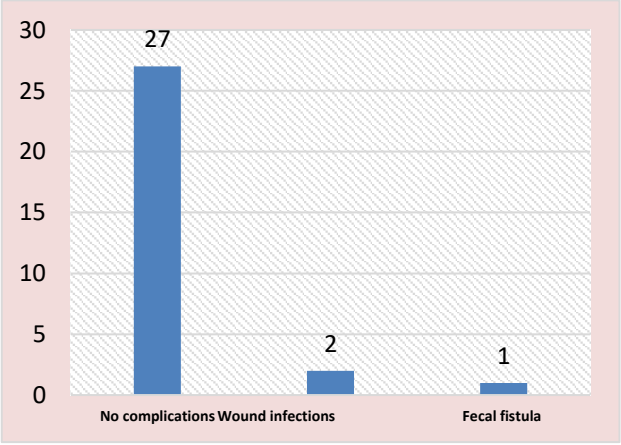

Figure 1: In group I, post-operative complications of the appendicular lump (n=30).

In group II, 18 (60%) patients were needed exploration who was progressed to complications and 12 (40%) patients were continued the conservative treatment those

were progressed to resolving the lump. In group II, 10 patients were developed wound infections, 5 patients were developed paralytic ileus and 3 patients were developed fecal fistula in the post-operative period (Figure 2).

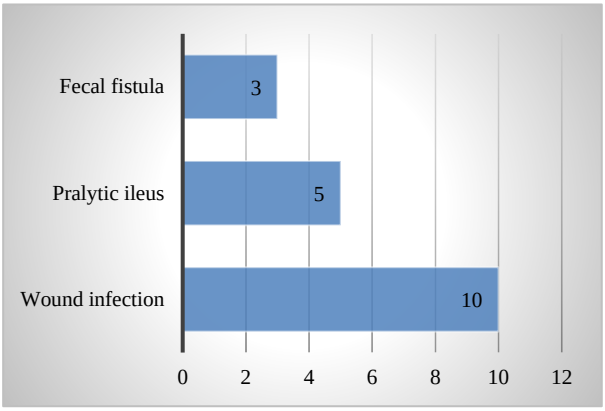

Figure 2: In group II, post-operative complications of the appendicular lump (n=18).

In group I, 27 (90%) patients have stayed in the hospital for 4 days, 2 (6.67%) patients stayed for 9 days and 1 (3.33%) patient stayed in the hospital for 12 days. In group II, 10 (55.56%) patients stayed in the hospital for 12 days, 5 (27.78%) patients stayed in the hospital for 10 days and 3 (16.66%) patients have stayed in the hospital for 9 days. In group I, early appendicectomy was done and patients' mean recovery times were shortened, they had minimum complications, short hospital stay, and outcomes were reasonably favorable and satisfactory. Early exploration in appendicular lump confirms the diagnosis, reduced the cost of management, and shortened the convalescence period. In group II, the mean recovery period was longer and they had more complications that are harmful to the patients.

DISCUSSION

Acute appendicitis is a very common surgical cause of acute abdomen. With the prolongation of the duration of symptoms, in some patient's appendicular lump developed which is an inflammatory mass composed of the inflamed appendix, caecum, omentum, terminal ileum, and mesoappendix at times sigmoid, right tubes and ovaries in females.[1,2] This has been attributed to a protective mechanism of the body to prevent the spread of infection. In this study, I found that the incidence of the appendicular lump was 10.18% and this is comparable with other author's study varying from 2-6%.[3,4]

The treatment of appendicular mass is taking a turn from the traditional approach of initial conservative treatment followed by interval appendectomy to immediate appendectomy. However, this change is not widely accepted and a large number of surgeons continue to adopt the same traditional conservative approach.[5] The early surgical intervention is known to be an effective alternative to conservative therapy for a long time as it considerably reduces the total hospital stay and obviates the need for a second admission.[6] In 10-20% of the cases, it proves unsuccessful and the patients need emergency operation due to the spreading of infection which is comparatively more difficult.[7,8] Also, the patient may suffer a recurrence of appendicitis after being discharged from the hospital.[9] A large number of patients refuse re-admission for operation once their acute problem is solved and this seems to be a major disadvantage of the initial conservative approach. Another disadvantage of conservative management is the chance of misdiagnosis as reported by Garg, et al claiming that conditions like intussusception and carcinoma caecum may be treated conservatively by mistake adding considerable morbidity.[20] This study highlights the feasibility and effectiveness of early appendectomy in appendicular mass and the results are consistent with several similar studies claiming early appendectomy to be a more appropriate and effective way of managing appendicular mass.[10] The earlier belief that surgery is difficult in such a state where the inflamed appendix is buried deeply in the mass and the bowel loops are friable is no more a valid argument at present due to a global improvement in anesthesia, supportive care, and antibiotics.[11] Wound infection, however, remains common postoperative complication of early appendectomy in appendicular mass but the rate of wound infection is not so high as to preclude this early operative approach.[12] The benefits of early appendectomy overweigh the results of interval appendectomy as evident from our results and also supported by many other studies referred to in comparison to our findings.[13]

The age of the patients was within 11 to 60 years in this study, amongst them 30 (50%) patients were in between 21 to 30 years of age. An author states that acute appendicitis which progressed into appendicular lump is more common in young adults.[14] Both sexes were included in this study and males are more affected. Another author says that appendicular lump more commonly occurs in male patients.[15] These correlates with this study.

In this study, 48 (80%) patients of appendicular lump came from below-average socio-economic conditions and 12 (20%) patients came from the average socio-economic condition. Several authors advocate that reluctance for surgery is common in the third world where most of the population live below the poverty line and a single member may generate income for the whole family.[16] Another important factor is a general fear of surgery amongst much of the population. Additional factors that contribute to the development of an appendicular mass include lack of health facilities in remote under-resourced areas.

In this study, in group I, 18 (60%) patients were admitted into the hospital on 3 days, 9 (30%) patients were

admitted on 4 days and 3 (10%) patients were admitted on 5 days after an attack of first symptoms of acute appendicitis. In group I, early appendicectomy had done and outcomes were satisfactory and favorable. Early appendicectomy in appendicular lump reduced the cost of management and shortened the convalescent period. Many authors have stayed that early appendicectomy is more beneficial than traditional conservative management.[1,3,18,19] It reduces the convalescence period, short hospital stays and outcomes were favorable. This correlates with this study.

In this study, in group II, 17 (56.67%) patients were admitted into the hospital on 6 days, 7 (26.67%) patients were admitted on 7 days and 5 (16.66%) patients were admitted on 8 days after an attack of first symptoms of acute appendicitis. Several authors have been said that an appendicular mass is one of the more common complications seen in the patients who were presented after a few days later after an attack of acute appendicitis.[2,4,20] They suffer from serious illness including appendicular abscess, perforation of the appendix, peritonitis, and septic shock. This correlates with this study.

In group I, 2 (6.67%) patients were developed wound infection, 1 (3.33%) patient were developed fecal fistula postoperatively and 27 (90%) patients were discharged on the fourth postoperative day without any complications. Many authors have been said that immediate appendicectomy in an appendicular lump claims an early recovery and complete cure during the same admission.[1,15,21] In group II, 18 (60%) patients were needed exploration who was progressed to complications. Among them, 14 (77.78%) patients were found an appendicular abscess and 4 (22.22%) patients were found perforated appendix per-operatively. An author states that when treatment is delayed or maltreated of an appendicular lump then there may occur some life threaten complications.[22] This correlates with this study. In group II, 10 (55.56%) patients have developed wound infections, 5 (27.78%) patients were developed paralytic ileus and 3 (16.66%) patients were developed fecal fistula in the post-operative period. Many authors have been stated that delayed presentation and delayed exploration in appendicular lump develops more complications. Their recovery time is longer, long hospital stay and management cost is more.[4,23,24]

In group I, 27 (90%) patients have stayed in the hospital for 4 days, 2 (6.67%) patients for 9 days, and 1 (3.33%) patient for 12 days. Many authors have been said that early presentation and early intervention in an appendicular lump gives more benefit for the patient and shorten their hospital stay.[25,26] In group II, 10 (55.56%) patients have stayed in the hospital for 12 days, 5 (27.78%) patients for 10 days, and 3 (16.66%) patients for 9 days. Several authors have been stated that delayed presentation and delayed exploration in an appendicular lump is harmful to the patient, for family, recovery time longer, gives more post-operative complications, and stays in the hospital for a long time.[7,27] These-correlate with this study. With the availability of better anesthesia, better surgical expertise and a wide range of anti-microbial agents, early presentation and early appendicectomy in the appendicular lump is more beneficial than delayed presentation and delayed exploration. It confirms the diagnosis, reduces the cost of management, shortens the sickness period, cure rates are high.[1-3]

CONCLUSION

Based on our study it can be concluded that in an appendicular lump patient, early surgical exploration confirms the diagnosis and cures the problem, reduces the cost of management, shortens the period of convalescence, and hospital stays with a reasonably satisfactory outcome. Now with the availability of better anesthesia, antibiotics, and better surgical expertise, the appendicular lump of a patient can be explored early and gives a satisfactory outcome. Early admission, early diagnosis, and early appendicectomy in a patient of the appendicular lump are more beneficial for the patient. As appendicular lump is a sequela of acute appendicitis, so when there may be a suspected case of acute appendicitis or appendicular lump must be referred to where advance facilities are available.

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