Comparative Study between Conservative Management and Appendectomy in Appendicular Lump in Children

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ABSTRACT

Introduction: Acute appendicitis is the most common presentation in the pediatric emergency department. Presentation ranges from mild inflammation to perforation and peritonitis. Frequently, patients present late with lump formation. Traditionally, an appendicular lump is managed conservatively followed by interval appendectomy six weeks later when the inflammation has resolved. **Aims:** This study was designed to evaluate the outcome of early appendectomy in cases of appendicular lump and their complications compared to the conventional method of conservative management followed by interval appendectomy. **Methods**: A prospective comparative study was conducted between November 2018 and October 2021. All the patients with appendicular lump of up to 7 days duration diagnosed clinically or by ultrasonography were randomly divided into two groups. Group I patients were conservatively managed as per the Ochsner-Sherren regimen. Patients in Group II were operated within 24 hours of admission. Mean operative time was recorded in each case. Complications following the respective interventions were observed. **Results**: Sixty-two patients of which 42 males and 20 females were diagnosed to have an appendicular lump. The age of the patients ranged from seven to 15 years. Duration of onset ranged from three to seven days at the time of presentation in the emergency room. All the patients in Group I except two patients underwent conservative management. There were four readmissions among Group I patients and one in Group II. The average operating time was 67 minutes for patients undergoing open appendectomy. Complications following surgery were more in patients presenting with history of over five days duration. Group I patients had a comparatively greater number of hospital admission days compared to Group II (7.1 and 4.8 days). **Conclusion**: The appendicular lump can be explored early as it confirms the diagnosis, shortens the financial burden and hospital stay and avoids follow-up visits for interval surgery.

***Keywords*:** Acute Appendicitis, Appendicular Lump, Ochsner-Shrerren regimen

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INTRODUCTION

Generally, one to eight percent of children with abdominal pain are diagnosed with acute appendicitis.[1-4] Owing to non-specific presentations andinability of the child to communicate properly, most patients present late with complications like perforation, appendicular lump, abscess formation, generalized peritonitis and sepsis.[5-7] Appendicular lump usually develop 48-72 hours after the commencement of initial symptom, as a natural defence mechanism of the omentum and small intestine, which envelops the inflamed appendix to localize the infection. The incidence of appendicular lump is two to 10 percent.[8-12] The presence of a tender, boggy mass in the right lower abdomen with fever and anorexia are the usual findings.

The most widely accepted treatment for appendicular lump is the Ochsner-Sherren regime followed by interval appendectomy. Most cases resolve yet 10-20% of patients fail to respond, requiring an urgent and difficult surgery.[13-14] A second school of thought includes proponents of altogether conservative management.[15-17] Recently, a third option of performing immediate appendectomy prior to the resolution of the lump has been proposed. Those in favour propose following benefits: Shortens the hospital stay, cures the

disease, obviates the possibility of misdiagnosis of conditions like intussusception, ileocecal tuberculosis, and omental torsion, eliminates the necessity of re-admission and re-investigation, without added morbidity.[18] However, surgeons who oppose allude disadvantages such as difficulty in localizing the appendix, probability of spread of localized infection, injury to surrounding structures leading to fecal fistula and rarely requiring right hemicolectomy.[19] This study is a prospective comparative study to assess the outcome of early surgical management in the cases of the appendicular lump.

METHODS

A prospective comparative study was conducted in the department of Pediatric surgery at Nepalgunj Medical College, Kohalpur from November 2018 to October 2021. Consent from patient's family was obtained after explaining the procedure in detail and ethical clearance was taken from the NGMC Institutional Review committee. The diagnosis was made after detailed history, physical examination, routine laboratory investigations, and abdominal ultrasonography as it is often difficult to palpate the appendicular lump in children due to irritability. Patients with history of recurrent appendicitis, appendicular lump with history of more than 7 days and patients with diffuse peritonitis were excluded from the study.

Patients with appendicular lump were randomly divided into two groups, each with 31 patients. Group I patients were conservatively managed as per the Ochsner-Sherren regime with hospitalization, intravenous fluid, broad-spectrum antibiotics, and analgesics. The patients' vitals and the size of the mass were regularly monitored. Patients were discharged after complete resolution of the mass and re-admitted after six to eight weeks for interval appendectomy. Patients in Group II were operated within 24 hours of admission. Patients in Group II were operated within 24 hours of admission under general anaesthesia. Lanz incision over the McBurney's point was made in all the cases. Muscles were split along the direction of their fibres. In difficult cases, the lanz incision was extended up by curvilinear and minimal muscle cutting up to the lateral border of rectus abdominis muscle.

RESULTS

The male-to-female ratio was 2.1:1 with 42 boys and 20 girls. The ages of the patients ranged from seven to 15 years. The duration of the symptoms before admission ranged from 3 to 7 days. The most common manifestations included abdominal pain in 100% of cases, pyrexia in 50(80%), and vomiting in 53(85%) patients. Other symptoms included constipation in 6(10%) and burning micturition in 2(3.3%). On physical examination, abdominal tenderness was present in 100% of the patients, rebound tenderness in 23 patients (37%), and guarding in 51 patients (82%). Lump in the right lower abdomen was palpable in 52 patients (84%). In the rest 10 patients, appendicular lump was diagnosed on abdominal ultrasound. Every patient had leucocytosis (Table I).

Of the 31 patients in Group I, two patients did not respond to conservative treatment. Thus, appendectomy was done after 48 hours. In one patient, appendectomy could not be performed due to dense adhesion and so only a drain was placed. The average duration of hospital stay in Group I was 7.1 days. The post-operative period was uneventful. Interval appendectomy was performed in the remaining 30 patients after six weeks. There were four readmissions in this group. However, they were managed conservatively.

In Group II, surgical exploration within 24 hours of hospitalization was performed. In one patient, appendix was found to be normal. Instead, an omental torsion was identified which was eventually ligated and excised. Appendectomy was performed in all the cases. In nine patients (30%), abdominal drain was placed due to abscess formation. One patient developed fecal fistula on third postoperative day which healed spontaneously. Four (13.3%) had superficial surgical site infections, which were managed by regular dressings (Table III). There was one readmission due to wound dehiscence which was managed by secondary closure. There were no other local and systemic complications and no mortality. The average operating time was 67 minutes and the average length of hospital stay was 4.8 days (Table II). Successful surgical exploration in Group II patients were the patients who presented within three to seven days of symptoms. However, in patients with a history of 5 or more days, localization of appendix, dense adhesion, and bleeding-related problems are more marked. The data comparing the duration of hospital stay in either groups were statistically significant (p=0.045).

Symptoms/Signs	Appendicular Lump (%)
Abdominal pain	62 (100%)
Fever	50 (80%)
Vomiting	53 (85%)
Constipation	6 (10%)
Burning Micturition	2 (3.3%)
Tenderness	62 (100%)
Guarding	51 (82%)
Rebound Tenderness	23 (37%)
Lump in RIF	52 (84%)

Table I: Symptoms and Signs of patients presenting with appendicular lump

Hospital Stay	<4 days	4 - 8 days	8 - 14 days	>14days	P - value
Group I (conservative)	00	24	05	02	0.045
Group II (surgery)	20	10	01	00	

Table II: Duration of hospital stay

Complications	Group I	Group II
Surgical site infection	0	4
Fecal fistula	0	1
Readmission	4	1
Misdiagnosis (Omental Torsion)	0	1

Table III: Complications

DISCUSSION

Appendicular mass is one of the sequels of acute appendicitis which usually develops after 48 hours of inflammation. The inflamed appendix is walled off by the omentum and bowel loops, often by the edematous cecum and ileum, which can be palpable in the right iliac fossa.[20-22] It is more common in extremes of age (children and elderly). About 2-10% of children presenting with acute appendicitis have an appendicular lump.[23]

A similar study conducted by Malik AM and Shaikh NA showed early surgery was relatively easier and there were more complications in the interval appendectomy group. The conclusion was that immediate surgery is the better management as it saves time, ensures total recovery during the initial admission, and excludes other pathology. The results of our study support the mentioned conclusion and agree with the authors' study.[24]

Kaya B and et al conducted a study on forty-seven patients with appendicular lump who were operated within 24 hours after admission. A simple appendectomy was performed in 38 patients and 29 patients were discharged and followed up without any complication after surgery. The authors concluded that immediate appendectomy in appendicular mass is a safe and effective alternative to conservative management. Similarly, Meena HC and et al conducted a retrospective study in which the average duration of hospital stay was 5 days for people undergoing early surgery compared to 11 days in patients undergoing conservative treatment. The study also emphasized the advantage of lesser economic burden, fewer chances of readmission, and no reported major complications during follow-up. Our study showed similar results and supported early intervention.[23-25]

Agarwal VK and Agrawal Sonal conducted a retrospective study of 52 patients having appendicular lump and immediate surgery was addressed as better management plan due to similar reasons listed above. The average hospital stay for patients who underwent surgery was four days compared to 12 days in conservative treatment group.[26]

Pandey C and et al studied 632 patients in which only 62 had an appendicular lump. The mean hospital stay of the early intervention group was four days while patients who were managed conservatively had 10 days. Complications like residual abscess, intestinal obstruction, failure to treatment, and readmission were not observed.[13]

Management of appendicular lump is still controversial and debate over managing it early or after few weeks is never-ending. However, as children and elderly groups of people pose a higher probability of perforation due to less developed greater omentum and atherosclerosis respectively, early intervention in children has been supported by numerous studies from numerous countries. Recurrence rates ranging between 6.6% and 13.7% have been reported in an appendicular lump if treated conservatively.[27]

LIMITATIONS

The duration of the study and the follow-up period were relatively short. The results were based on a single centre study with relatively small sample size, hence more multimodal randomized controlled trials and reviews are required to specify guidelines for the management of appendicular lump.

CONCLUSION

Appendicular lump of three to seven days duration can be safely explored with fewer post-operative complications. It cures the problem completely, reduces the cost and duration of hospital stay, and obviates the chance of misdiagnosis. Nevertheless, our results reveal that the benefits of early appendectomy overweigh that of interval appendectomy.

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