

A Prospective Study Of Histopathology In Appendectomy Specimen In Children A Tertiary Care Institute

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I. INTRODUCTION

Appendectomy is the most common emergency abdominal Surgery performed worldwide. Appendicitis is characterised by inflammation of vermiform appendix. Prompt diagnosis and timely intervention are essential to prevent complication such as perforation, abscess formation and peritonitis. Emergency appendectomy is typically performed within 24-48 hours after the onset of symptoms. Primary goal of this procedure is to prevent the progression of acute appendicitis to complication. Delayed appendectomy refers to the surgical removal of appendix performed beyond the initial acute phase of the diagnosis. Histopathological examination of the appendectomy specimens plays a crucial role in conforming the diagnosis, evaluating the severity of inflammation and identifying any underlying pathological condition.

II. AIM AND OBJECTIVES

1. To examine the function of histopathology in specimens from appendectomies.
2. To assess its function in management prediction

III. METHODS & METHODOLOGY, SAMPLE SIZE AND STUDY

A Prospective study was conducted from November 2022 to November 2023. All patients belonged to a single surgical unit.

A total number of 10 patients were included in the study.

Inclusion criteria:

Patients with appendicitis diagnosed clinically and by ultrasound.

Exclusion criteria:

Patients with appendicular mass or abscess at admission.

- A proforma was made that included detailed history, physical examination, basic investigations and other relevant investigations required
 - Clinical scoring of the patients was done by Alvarado's scoring system.
 - All patients diagnosed with clinical symptoms of acute appendicitis and ultrasound proven were taken for the study.
 - Patients included in the study were haemodynamically stable without any concurrent illness.
 - An informed consent for participating in the study was obtained.
 - Among all patients who underwent appendectomy, appendix were sent for Histopathological examination
- All results were analyzed and tabulated

IV. RESULTS:

In the group of 10 individuals operated, 10% were below 7 years of age and 30% were 7 to 10 yrs whereas another 60 were above 10 yrs. WBC count among the appendectomy individual varies contributing, 0% for less than 4500 cu/mm and 60% for 4500-11000 whereas other 40% for above 11000. Duration of abdominal pain varies among the patient. Most commonly (48%) individual presented to us within 5 days of pain; 24% had pain between 5 to 10 days; only 28% had pain more than 10 days. Among gender distribution, 9(90%) were males and 1(10%) were females. Patient were analysed using Alvarado score, Regarding the clinical scoring, 10% were less than or equal to 6, 50% were between 7-8 whereas 40% for 9 and above as shown in Fig below.

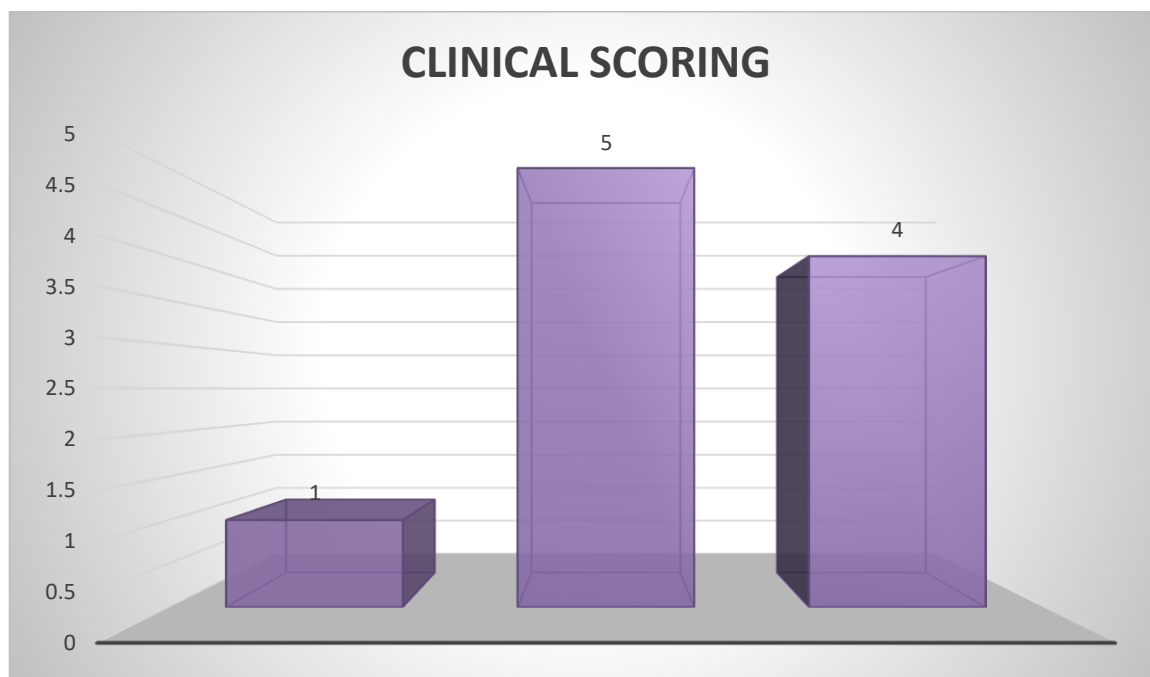


Figure 1 clinical score

Of 10 individuals, 10% of the individual has neutrophil count is less than 55% , 30% were 55%-70% & 60% were above 70%. Analysis of total bilirubin revealed that 20% were less than 0.5 mg/dl , 60% were between 0.6-1.2 mg/dl and 20% were 1.2 mg/dl and above.Regarding pattern of distribution of type of appendicitis ,50 % were acute appendicitis, 10% were chronic appendicitis where as 40% were appendicular perforation with pyoperitoneum.Regarding serosal congestion.80% were associated with serosal congestion as show in Figure and 20% did not.

Of the 10 individuals.70% were associated with luminal obstruction and 30% do not.

Of the 10 cases analyzed, 70% presented with mucosal ulceration whereas 30% had no mucosal ulceration. Regarding the diameter of appendix 40% presented with 6mm to 9mm of diameter whereas 60 % with 10mm above. In the group of 10 individual,60% of infiltration is neutrophil, eosinophil, lymphocyte, 30% were neutrophil,lymphocyte whereas another 10% is only neutrophils. In the group of 10 individual, 10% were extended till muscularis mucosa(Fig2), 50% were extended till muscularis propria (Fig3)whereas another 40% is extended till serosa(Fig4).

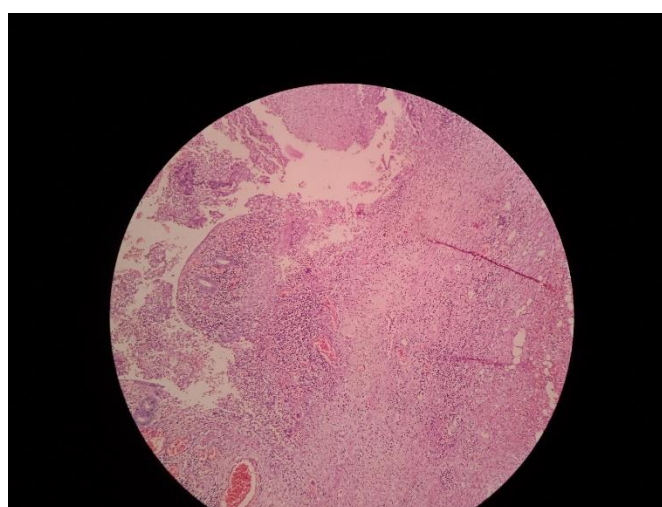


Figure 2 muscularis mucosa

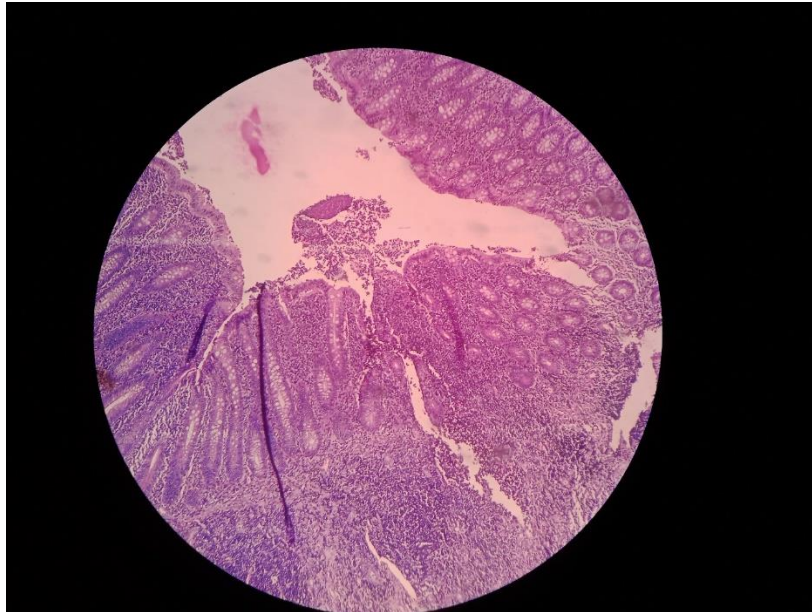


Figure 3 infiltration till muscularis propria

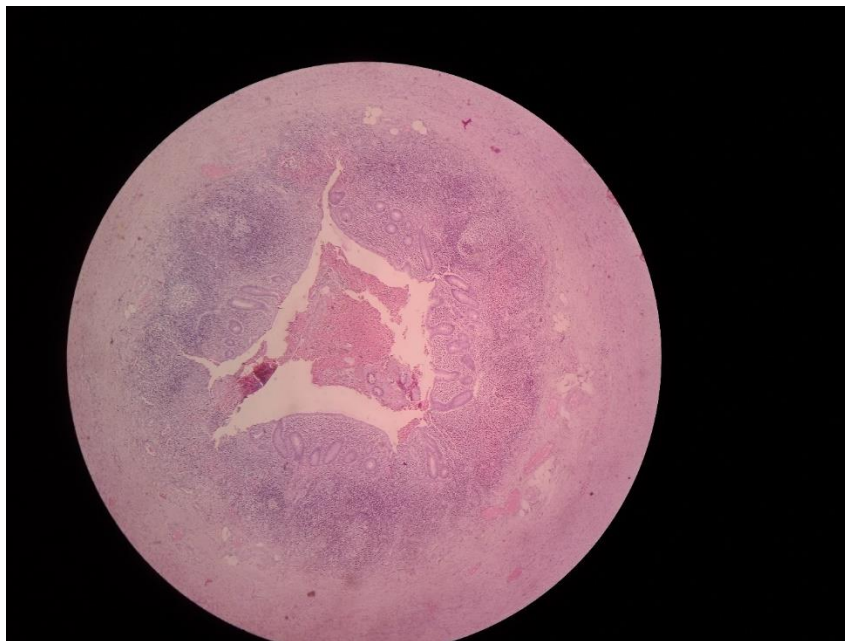


Figure 4 infiltration till serosa

Our Study included patients with appendicitis till age of 12 . The age of incidence was maximum in more than 10 years of age around 60% .The male: female sex distribution in our study was 9:1, in contrast to the .other studies showing a ratio of 3:2 . Alvarado scoring has a sensitivity of 87.5% and our study patients more than 60 percent had a score more than 7 .

The importance of routine histopathological analysis of the appendix retrieved during surgery has been stressed by many authors in the context of analysing the type of lesion, its correlation with clinical features and for the diagnosis of any other lesions in the appendix. This is followed in our setup.

1. Serosal congestion was earlier considered as early form of appendicitis.
2. Presently it is regarded as periappendicitis and presence of it in the absence of mucosal/submucosal inflammation is interpreted as significant.
3. It indicates other causes of peritonitis like pelvic inflammatory disease, perforation of bowel etc., which might need further management. In our study too we observed similar pattern in a patient with Meckel's diverticulitis .Serosal congestion was present in 80% of emergency appendicectomy and 35% of delayed appendicectomy patients in our study. The presence of such high rate of serosal congestion in the latter group

suggests that the inflammation has not resolved and the intervention by surgery was appropriate. Lymphoid follicles are regarded the most common agent to cause appendiceal luminal obstruction which foreruns most of the acute appendicitis. This occurs due to bacterial and viral invasion of the submucosal lymphoid follicles resulting in their hypertrophy. Fecoliths are considered the next common etiological agent. In contrast to this in our study fecolith was the commonest agent causing luminal obstruction involving 70% of the study group .

In studies done to follow the resolution of appendicitis after nonsurgical treatment, using ultrasonogram ,the response was delayed as sonographically documented ,when there is an appendicololith. .Since our group of patients are presenting commonly with fecolith the chance of resolution of the condition can be delayed if managed conservatively

Mucosal Inflammation: According to Howie, the histological features of mucosal inflammatory changes include

1. Presence of neutrophils in the lumen of the appendix.
2. Focus of ulceration of the mucosa with neutrophilic invasion of the adjacent stroma
3. Lack of involvement of deeper layers.

This was mentioned by other authors as ‘endoappendicitis’, ‘acute focal appendicitis’ and ‘limited acute appendicitis’.The mucosal inflammation is related to the severity of the symptomatology as denoted by elevated Alvarado scores in our study. This also correlates with the study of Piper et al. Mucosal ulceration was found in 70% of the study individual .

Most common type of infiltration seen includes all three types of WBC . neutrophil , eosinophil , lymphocytes were seen in 60% of the individual . 30 % had only neutrophil & lymphocyte . 10% had only neutrophil . Most common infiltration is till muscularis propria . Eosinophilic infiltration of the muscularis apart from its presence in mucosal and submucosal layers has been discussed as Eosinophil Edema reaction by Aravindan et al and has been observed in this study too.The condition is described as another etiological event in onset of appendicitis and neutrattributed to allergy. However its correlation to parasitic infestation remains unclear. USG abdomen plays a vital role in diagnosing appendicitis with high sensitivity and specificity . 40% had appendicular diameter between 6-9mm .60% with size of more than 10 mm . One of the individual in our study group had appendicitis secondary to pinworm infestations (enterobius vermicularis) . Intraoperative picture of worm roaming around appendicular stump is shown in Fig . HPE section of larvae inside appendix is shown in Fig 5.

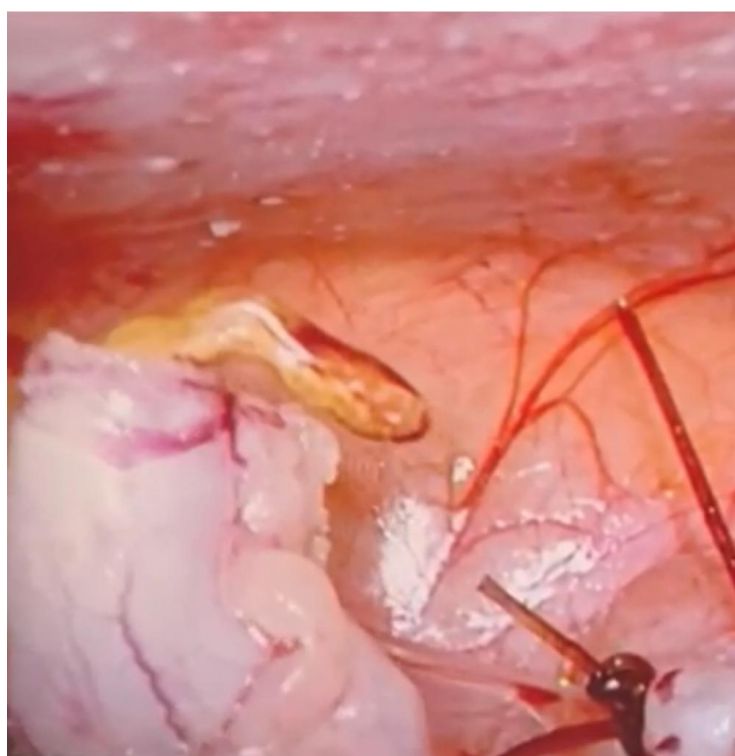


Figure 5 PIN WORM AT APPENDICULAR STUMP

V. CONCLUSION

The study states that histopathological analysis in appendectomy is absolutely necessary in guiding further management.

However the role of conservative management remains selective in our group of patients and majority benefit from surgical intervention

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