



## HISTOPATHOLOGICAL FINDINGS IN CLINICALLY DIAGNOSED ACUTE APPENDICITIS PATIENTS IN TERTIARY CARE HOSPITAL OF PESHAWAR.

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### ABSTRACT

**OBJECTIVE:** To find out unexpected histopathology in patient undergoing appendectomy for clinically diagnosed appendicitis and to determine the frequency of biopsy proven appendicitis in patient undergoing appendectomy for clinically diagnosed appendicitis. **STUDY DESIGN:** Retrospective Cross-sectional study. **PLACE AND DURATION OF STUDY:** Allied teaching hospitals of PMC and histopathology lab PMC, From June 2018 to December 202. **METHODOLOGY:** 440 patients who met our inclusion criteria and were selected using non probability convenient sampling. Patients of all age groups and both genders were included in our study. Patients in whom appendectomy was performed as part of other abdominal procedure were excluded. **RESULTS:** The mean age group of our study participants was 25.3+ 13.6 years. Majority of patients undergoing appendectomies were of age group 11 to 20 43.8%. Male were 56.1% and 43.9% were female. Most of our patients' histopathological examination findings were consistent with acute appendicitis 55%. Negative appendectomies were performed on 4.1% patients. The overall usual findings were found in 84.6% patients. While unexpected findings were found in 11.3% patients. **CONCLUSION:** The unexpected findings detected by chance in our study were 11.3%. Among those cases, serious pathologies like carcinoma were very low 0.4% and there were no significant change in the management of those pathologies. Routine histopathology is expensive and constitutes workload on pathologist and financial burden on patients. So only those specimens should be subjected to biopsy which shows gross evidence of any sinister pathology.

**KEYWORDS:** Appendicitis, Appendectomy, Appendix Neoplasms, Pathology.

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### INTRODUCTION

Appendix is a tubular organ situated at the tip of cecum, mostly in the right lower quadrant of abdomen posterior to cecum. However its position can vary depending on if there is any developmental anomalies like mal rotation of mid gut or if there are other condition like pregnancy or previous abdominal surgeries. The exact function of appendix is unknown, some authority suggests that it is lymphoid organ and has role in immunity. The inflammation of vermiform appendix is known as appendicitis. The presentation of acute appendicitis is usually acute mostly within 24 hours, sometime it can present as a chronic condition with symptoms of on/off abdominal pain form long duration.<sup>1,2</sup>

There are multiple causes of appendicitis but blockage of its lumen is the most common and critical cause. Luminal obstruction cause venous outflow obstruction leading to ischemia which result in disruption of epithelial cells and bacterial invasion as a result the wall of appendix weakens and is prone to perforation.<sup>3,4</sup> Appendicitis most commonly affects people of age 5 to 45 years, with incidence of 233/100,000. Males are affected more than females. The life time risk of acute appendicitis is 8.6% for males and 6.7% for females. It has been observed that the appendectomies are frequently performed in females 25% and males 12%.<sup>5,6</sup>

Acute appendicitis the most common cause of acute abdomen.<sup>7</sup> Appendicitis is diagnosed clinically by typical history and clinical examination. The pain of acute appendicitis start at periumbilical region and then shift to right iliac fossa along with other symptoms like Anorexia, Nausea/vomiting, Fever, Diarrhoea, Urinary frequency or urgency.<sup>8</sup> The Alvarado score is clinical tool for the diagnosis of acute appendicitis. It takes into account the patients symptoms and sign as well as laboratory test i.e blood CP. Total score of 10 Appendectomy is performed if score is grater then 7. The Alvarado score is more sensitive but less specific for the diagnosis of acute appendicitis and therefore is used to rule out appendicitis.<sup>9</sup>

Appendectomy is treatment of choice and laparoscopic appendectomy is now a days is the preferred recommended method.<sup>10</sup> The objective was to find out unexpected histopathology in patient undergoing appendectomy for clinically diagnosed appendicitis and to determine the frequency of biopsy proven appendicitis in patient undergoing appendectomy for clinically diagnosed appendicitis.

#### METHODOLOGY

This was retrospective cross-sectional study which was conducted in clinically diagnosed patient of acute appendicitis of all age groups and both gender presented to tertiary care

Table: I Gender Distribution of Appendectomies

Gender	Frequency	Percentage
Female	193	43.9%
Male	247	56.1%
<b>Total</b>	440	

The mean age group of our study participants was  $25.3 \pm 13.6$  majority of patients undergoing appendectomies were of age group 11 to 20 n=193, 43.8% Table II.

Table: II Age groups of patients undergoing appendectomies

Age Groups	Frequency	Percentage
Under 10	24	5.5%
11 to 20	193	43.8%
21 to 30	116	26.4
31 to 40	53	12.0%
41 to 50	29	6.6%
51 to 60	17	3.9%
61 and above	8	1.8%
<b>Total</b>	440	

Out of 440 patients 242 55% patients HPE findings were consistent with acute appendicitis. Other usual findings were acute appendicitis with periappendicitis 29.8% n=131. The unexpected findings were, Chronic Appendicitis in 8.9% n=39 patients, Chronic Caseating Granulomatous appendicitis 0.9% n=4, Enterobius Vermicularis, Mucinous

hospitals ,Peshawar from June 2018 to December 2021 n=450. Data was collected from patient record including brief clinical history examination findings and demographics. The data was collected manually through performa specifically designed for the study. All age and gender were included while patients of diagnosed case of carcinoma appendix preoperatively, patients in whom appendectomy was performed as part of other abdominal procedure, and previously diagnosed case of any sinister pathology were excluded from the study. This was a document study of patient record. There was no personal identifier included in our data collection tool. Confidentiality of the data was maintained. Data was kept in password protected computer. The study was approved from IRB of prime institute of public health. Permission of the head of the department was sought before data collection. Data was entered and cleaned in Microsoft excel and was analysed on IBM SPSS 25.

#### Results

Total of 485 appendectomies specimens were received in our histopathology lab from January 2015 to February 2022. Out of these 440 patients meet our inclusion criteria and were selected. Out of these 56.1% n=247 were Male and 43.9% n=193 were female. The male to female ratio was 1.5:1 Table I.

Adenocarcinoma, Carcinoid Appendix 0.2% each, while Mucocele of Appendix were found in 0.9% n=4 patients. Negative appendectomies were performed on 4.1% n=18 patients. The overall usual findings were found in 84.6% n=372 patients. While un expected findings were found in 11.3% n=50 patients Table-III.

Table: III Usual and unusual pathologies of appendix after appendectomy

Diagnosis	Frequency	%age
Acute Appendicitis	241	54.8%
Acute Appendicitis with Periappendicitis	131	29.8%
Chronic Appendicitis	39	8.9%
Chronic Caseating Granulomatous Appendicitis	4	0.9%
Enterobius Vermicularis	1	0.2%
Mucinous Adenocarcinoma	1	0.2%
Mucocele of Appendix	4	0.9%
Carcinoid Appendix	1	0.2 %
Normal appendix	18	4.1%
<b>Total</b>	<b>440</b>	

## DISCUSSION

Although acute appendicitis can occur at any age but it is most common in second decade and 3<sup>rd</sup> decade.<sup>11</sup> In our study the incidence of acute appendicitis was high in age group 11 to 20 years 43.8%. The results are coherent with other studies.<sup>12, 13</sup> The risk of acute appendicitis is high in male but negative appendectomies appendectomies in which appendix was normal on histopathology rate is high in female because of diagnostic difficulty and large list of deferential diagnosis of acute appendicitis in females.<sup>13, 14</sup> Our study results are consistent with these findings. While some other studies shown female predominance of acute appendicitis. With Male female ratio 1:1.1.<sup>15</sup> In our study negative appendectomy rate was 4.1 %. Almost same rate was reported by Emre et al.<sup>7</sup> Which was 6%. A systemic literature review by Swank et al found that negative appendectomy rate was between 8 to 32%.<sup>16</sup> Recently negative appendectomy rate is declined because of the availability of advance imaging modality like CT scan which rule out appendicitis preoperatively.<sup>17</sup> We included all those patients in our study in whom appendectomy was performed for clinically diagnosed appendicitis. Findings other than acute appendicitis were considered as unexpected findings. The results of our study showed the incidence of unexpected histopathology findings in 11.3% specimens. Other studies reported different percentages ranging from 0.1 % to 8.6%.<sup>18, 19</sup>

In our study acute appendicitis was most common histopathological finding while chronic appendicitis was unusual finding. Over all acute appendicitis is most commonly observed findings reported by different studies?<sup>11</sup> In our study chronic appendicitis was found in 8.9% patient's reports and chronic Caseating granulomata's appendicitis in 0.9% patients reports. The results are coherent with a study performed by Rehman et al which was 7.9%.<sup>20</sup> Among our study participants other unexpected findings were Mucocele appendix 0.9 %, appendicular neoplasms 0.4% and single case of parasitic infestation which was Enterobius Vermicularis. Mucocele appendix is a rare appendicular pathology. It can be malignant or benign cause. It should be resected without rapture while doing surgery because the mucinous cells will spread into peritoneal cavity and can cause pseudomyxoma peritonei which is a devastating condition.<sup>14</sup>

It has been reported that after appendectomy incidentalomas are rarely found in less than 3% cases.<sup>21</sup> The most frequently occurring appendicular neoplasms are carcinoid tumours and mucinous neoplasms. Previous studies shows incidence of 0.3 to 0.9%.<sup>22</sup> In our study incidental neoplasms were found in 0.4 % patients. Out of 0.2 % were carcinoid and 0.2% were appendicular carcinoma. None of these cases were diagnosed preoperatively.

Parasitic infestations were rare in our study. Worldwide *E. Vermicularis* is the most frequent parasitic infestation. The incidence ranges from 0.6 to 3.8%. among theses the rate of being infested by *E. Vermicularis* was 13 to 37%.<sup>23</sup> The rationale of routine HPE of all resected appendix specimens is controversial. Some center send all appendix specimens after appendectomy while other send only those which show gross evidence of abnormality.<sup>24</sup>

## CONCLUSION

The unexpected findings detected by chance in our study were 11.3 %. Among those cases, serious pathologies like carcinoma were very low 0.4% and there were no significant change in the management of those pathologies. Routine histopathology is expensive and constitutes workload on pathologist and financial burden on patients. So only those specimens should be subjected to biopsy which shows evidence of any sinister pathology on gross appearance.

**ETHICS APPROVAL:** The ERC gave ethical review approval.

**CONSENT TO PARTICIPATE:** written and verbal consent was taken from subjects and next of kin.

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