

# Frequency of different Histological findings in Patients Undergoing Appendicectomy

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## ABSTRACT

Appendectomy remains the most frequently performed emergency abdominal surgical procedure.<sup>1,2</sup> The lifetime risk of acute appendicitis for men and women is 8.6% and 6.7%, respectively. Diagnosis of acute appendicitis is made primarily on the basis of the history and the clinical examination. However, histopathologic studies help in diagnosis of acute appendicitis.<sup>3</sup> Approximately 20% of patients, those undergoing appendectomy are found not to have acute appendicitis at surgery, 86.3% specimens revealed findings of acute appendicitis, 10.8% were normal, while 3% has tuberculosis, 1.5% had Meckle diverticulitis and 0.6% each of adenocarcinoma and Carcinoid tumour. The rationale of study is to find out the burden of different histological findings especially tuberculosis in appendix specimen and compare them with international data.

**Objective:** The objective of this study was to determine the frequency if acute appendicitis, normal appendix and tuberculosis in patients undergoing appendectomy based on histological findings.

**Study Design:** Randomised Control trial (RCT).

**Setting:** Holy Family Hospital Rawalpindi in Surgical Unit-I. Six months, from August 2009 to January 2010.

**Methods:** 98 patients who present in emergency department with signs and symptoms of acute appendicitis were randomly allocated into two groups for open (OA) and laproscopic appendectomy (LA). Data on these two groups was collected and analyzed for operative time and postoperative pain.

**Results:** 98 patients were included in the study (49 patients in each group). Out of 98 there were 37 male and 61 female, respectively. In OA group 18% were male patients and 31% female patients. However in LA group, 19% were male and 30% female patients. The mean age in OA group is 20.18+7.56, and in LA group is 22.24+6.96. The mean operative time in OA group is 33.84 +13.20 in LA group is 37.67+ 11.07. Postoperative pain assessed after 4 hours in both groups (visual analogue scale), patients in LA group experienced less postoperative as compare to OA group. Mean VAS in OA group is 7.08 +1.93 in LA group is 3.84+ 1.84 which is statistically significant ( $p < 0.05$ ).

**Conclusion:** Laparoscopic appendectomy is better than open appendectomy for treatment of acute appendicitis in terms of post-operative pain but operative time is same in both of the approaches.

**Keywords:** Laproscopic appendectomy, open appendectomy, operative time, post-operative pain.

## INTRODUCTION

Appendectomy remains the most frequently performed emergency abdominal surgical procedure.<sup>1,2</sup> The lifetime risk of acute appendicitis for men and women is 8.6% and 6.7%, respectively. However, the lifetime risk of having an appendectomy is 12% for men and 25% for women. Diagnosis of acute appendicitis is made primarily on the basis of the history and the clinical examination, with help of laboratory findings. However, histopathologic studies help in diagnosis of acute appendicitis.<sup>3</sup> Histopathologic features of appendicitis are known after the operation, and a great number of patients are operated without regard to the severity of involvement. On the other hand, a good number of the specimens of appendix submitted for examination have normal histologic features. It has incidence of 1.5 and 1.9/1000 in male and female population respectively and mean age group 28 year.<sup>4</sup> Appendicitis is the most common abdominal surgical emergency and there are approximately 40,000 cases in the UK per annum. So, even in this era of technological advancements, the appendicitis remain to be a clinical diagnosis.

Approximately 20% of patients, those undergoing appendectomy are found not to have acute appendicitis at surgery but even these patients have their symptoms relieved. 86.3% specimens revealed findings of acute appendicitis, 10.8% were normal, while 3% has tuberculosis, 1.5% had Meckle diverticulitis and 0.6% each of adenocarcinoma and Carcinoid tumour.<sup>5</sup> Among acute appendicitis, lymphoid hyperplasia was the predominant finding seen in 57.8% of cases. The patients with abdominal pains that were initially located at the umbilicus in 38.0% and diffused in 31.8%. Vomiting 85.7%, fever 73.0% and anorexia 49.0% were the most frequent associated symptoms. Right iliac fossa pain and tenderness were present in 612 patients (89.22%). The total white cell count was significantly raised ( $p = 0.05$ ) In spite of the advances in the diagnostic and imaging techniques, the rates of

negative findings on appendicectomy have not decreased much. Clinical judgment is still the most important factor in the management of patients with suspected acute appendicitis. Parasites were identified on histological examination in some cases of acute appendicitis, but it is unclear whether these parasites were actually responsible for the appendicitis. Efficient examinations for the exploration of acute nonspecific abdominal pain, such as the measurement of inflammation indicators, particularly serum activated protein C levels, graded-compression ultrasound scans and celioscopy, should be made available.<sup>6</sup>

The rationale of study is to find out the burden of different histological findings especially tuberculosis in appendix specimen and compare them with international data.

## MATERIAL AND METHODS

Cross sectional study. Surgical department of Benazir Bhatto Hospital Rawalpindi. Duration is Six months, from August 2009 to January 2010. Using WHO sample size calculator with the following, Confidence level 95% anticipated population proportion 3%<sup>4</sup>, absolute precision required 1.5%, sample size is 500. Sample technique is Non probability consecutive.

### Inclusion Criteria:

- Pt undergoing appendectomy based on clinical diagnosis between age 20 and 60 yrs, either gender.
- Pt of ASA 1 and 2 status.

### Exclusion Criteria:

- Patients less than 18 years and above 60 years of age
- Patient with diagnosis of tuberculosis presenting with right iliac fossa pain

**RESULTS**

500 patients were included in the study .Our study population was in age group of 2-90years.The mean age in is 20.58+\_9.73, (as shown in table 3). In our study group, 37 male and 61 female patients were included(n=98). In OA group 18% were male patients and 31% female patients. However in LA group, 19% were male and 30% female patients.(shown in table 4)

**Descriptive Statistics: Age (in years)**

	mean	minimum	maximum	Std deviation
Age	20.58	2	90	9.73

**Table 3: Descriptive Statistics: gender**

Groups	Sex		Total
	Male	Female	
Female			
243(48.6%)	257(51.8%)	500	

**Table 4: Gender distribution**

histology					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	acute appendicitis	459	91.8	91.8	91.8
	Normal	20	4.0	4.0	95.8
	TB	11	2.2	2.2	98.0
	Others	10	2.0	2.0	100.0
	Total	500	100.0	100.0	

**DISCUSSION**

Appendectomy is the treatment of choice for acute appendicitis.<sup>58</sup>Despite advantages in technology, there is no laboratory test or examination with sufficient specificity and sensitivity to diagnose appendicitis consistently. Many surgeons are turning from a philosophy of “when in doubt, take it out” to “when in doubt, check it out”. Approximately 7% of the population will have appendicitis in their life time with peak incidence occurring between the ages of 10 and 30 years. So, the appendectomy is the most frequently performed abdominal operation.The histopathological examination of the appendix serves two purposes, first it allows the diagnosis of acute appendicitis to be confirmed. Second histopathological examination may disclose additional pathologies that may not be evident intraoperatively which may impact patient management.<sup>60</sup> Patient’s symptoms frequently disappear post operatively even with negative histopathologies. It has been suggested that in these cases there may be an early sub clinical appendicitis at micro cellular level. This indicates that it is not possible to make an accurate macroscopic assessment of appendiceal inflammation emphasizing more on importance of histopathology. Our study shows the highest occurrence of appendicitis in 2nd and 3rd decade. This is the same finding as observed by Ojo et al in his study from Nigeria.<sup>62</sup> A false positive diagnosis of acute appendicitis was observed in 10.8% in our study, which is the same as of other recommended values of 10% and 30%.<sup>63</sup> The ratio of negative appendectomies in females is more. It is suggested that all histo-pathological specimens should be audited to improve clinical evaluation particularly in females. The finding of appendices with abscess (20.7%) and gangrenous appendix (7.7%) reflects delay in seeking medi-cal help. It is believed that in western world chronic appendicitis is rare<sup>14</sup> but in our study 10% patients had chronic granulomatous changes consistent with tuberculosis. Definite diagnosis of tuberculosis of the appendix mainly depends upon histopathology. Results of all preoperative investigations are non-specific and the diagnosis is made only after histopathology. It is recommended that in order to avoid

misdiagnoses, all appendices should be histopathological examined.

Less than 50% of the appendicular tumors are identified intraoperatively. Acute appendicitis may be the mode of presentation of appendix neoplasms particularly adenocarcinoma.<sup>67</sup> 0.6% cases accounted as adenocarcinoma in our study which were kept on follow up because 20% may develop secondary malignancy.<sup>68</sup> Carcinoids are the most common tumor of appendix and are typically small, firm, circumscribed yellow-brown lesions.<sup>69</sup> It is plausible that carcinoid tumors may present by appendicitis because of luminal obstruction or elevated levels of 5 hydroxytryptamine, histamine and kinin. As these are all potent mediators of inflammation.<sup>70</sup> Our study showed 0.6% specimens with carcinoids. All patients in our study had signs and symptoms of acute appendicitis. Flushing, diarrhea, Cushing syndrome or carcinoid syndrome were not observed. Diagnosis was made after appendectomy and histological examination. The reported incidence of carcinoids in several studies ranges from 0.02 to 1.5% of surgically removed appendices. 1.2% of case presented as acute appendicitis but had Meckel’s diverticulitis as coexisting pathology. Meckel’s diverticulitis can mimic acute appendicitis in clinical his-tory, physical findings and operative findings. It is important to always consider this as possible cause of acute abdomen.

**CONCLUSION**

Unusual or coexisting pathologies can be seen rarely during appendectomy, that should be kept in mind and meticulous exploration and evaluation should be performed in each cases. As final diagnosis may affect the requirements for further surgery, same principals should be applied to histologic evaluation.

**REFERENCES**

1. Simpson J, Samaraweera AP, Sara RK, Lobo DN. Acute appendicitis--a benign disease? *Ann R Coll Surg Engl* 2008 ;90:313-6.
2. Vellani Y, Shaheena Bhatti S ,Ghina Shamsi G, Parpio Y, Saeed T Evaluation of laparoscopic appendectomy vs open Appendectomy: A Retrospective Study .*JPMA* 2009; 59:605.
3. Nabipour F,Daneshtalab MB. Histopathological features of acute appendicitis in Kerman-Iran.*Rawal Med J* 2005;30:53-5.
4. Oguéreh DD, Lemaître X, Ikoli JF, Delmont J, Chamlian A, Mandaba JL, et al [Acute appendicitis at the National University Hospital in Bangui, Central African Republic: epidemiologic, clinical, paraclinical and therapeutic aspects]. *Sante* 2001 ;11:117-25.
5. Zulfikar I, Khanzada TW, Sushel C, Samad A. Review of the Pathologic Diagnoses of Appendectomy Specimens. *Ann King Edward Med Univ* 2009;15:168-70
6. Khairy G. Acute appendicitis: Is removal of a normal appendix still existing and can we reduce its rate?. *Saudi J Gastroenterol* 2009;15:167-70
7. Herrington JL Jr. The vermiform appendix: its surgical history. *Contemp Surg* 1991;39:36-43.
8. Kamal M, Qureshi KH. Laparoscopic versus open appendectomy. *Pakistan J Med Res* 2003;42:23-6.
9. Jaffe BM, Berger DH: The appendix, in Brunicaudi FC, Andersen DK, Billiar TR, Dunn DL.(eds): *Schwartz’s principles of (Surgery 8th ED)*. New York: McGraw-HILL, 2005:784-800.
10. Fitz RH. Perforating inflammation of the vermiform appendix with special reference to its early diagnosis and treatment. *Transactions of the Association of American Physicians.* 1886;1:107-44.
11. Maa J, Kirkwood KS. The Appendix. In:Townsend: *Sabiston Textbook of Surgery*, 18th ed. Saunders, 2007:1333-1334.
12. McBurney C. The incision made in the abdominal wall in cases of appendicitis. *Ann Surg* 1894;20:38-43.
13. Guller U, Hervey S, Purves H, Muhlbaier LH, Peterson ED, Eubanks S et al. Laparoscopic verses Open appendectomy: Outcomes comparison Based on a Large Administrative Database. *Ann Surg* 2004;239:43-52.
14. Nathaniel J, Brunt LM, Kerbl K. Laparoscopic general surgery. *N Engl J Med* 1994;330:409-