

## Original Research Article

# A retrospective study of histopathological exam reports of appendix in appendectomies performed at a teaching hospital in Dehradun

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### ABSTRACT

**Background:** Appendix is a vestigial organ in human body. Inflammation of appendix is termed as appendicitis. The diagnosis of appendicitis still holds dilemma amongst surgeons leading to negative appendectomies on one hand and appendicular perforation on the other hand of therapeutic spectrum. Judicial patient selection for appendectomy and follow up histopathological examination for incidental findings is the cornerstone in management of appendicitis. The current study aims to assess the demographic and histopathological findings of all the appendectomies occurring within study period at our center.

**Methods:** It was a retrospective study over two years done in a teaching hospital of Dehradun. Hospital records were retrieved from medical records department and looked for histopathological findings, demographic details and intervention. The data was analyzed in SPSS version 23. Qualitative and quantitative data were expressed in proportions and mean respectively. T-test was applied for comparison.

**Results:** About 2/3rd of participants were males. The peak age was 20-30 years. 100 underwent open appendectomy and 45 had lap appendectomy. Commonest histopathological exam finding was acute appendicitis (46.2%) followed by peri appendicitis (40%) and resolving appendicitis (28.9%). One specimen had tubercular appendix. There were no negative appendectomies.

**Conclusions:** Elective appendectomy in patients satisfying clinical, lab and radiological criteria can reduce negative appendectomies. Histopathological examination of appendix still holds a valid role for any incidental findings requiring further management.

**Keywords:** Appendicitis, Appendectomy, Histopathological exam reports, Appendix

### INTRODUCTION

Appendicitis is one of the commonest causes of acute abdomen presenting with a spectrum of pain in right iliac fossa, vomiting, tenderness, guarding, rigidity and rebound tenderness.<sup>1</sup> Appendix being a vestigial organ in human body often underestimates the importance of merging clinical, laboratory and radiological findings resulting in high negative appendectomies rate to more than 20%.<sup>2</sup> The appendectomies done after applying clinical criteria, radiological findings and lab findings

have resulted in reducing negative appendectomies.<sup>3,4</sup> The peak incidence of appendicitis is highest in age group of 10-30 years of age with a life time risk of 7-8%.<sup>5</sup> Age, gender, seasonal variations have been observed in many studies but reasons for them are still unknown.<sup>6</sup> The usage of Alvarado scoring and Andersson scoring complimenting with radiological findings has significantly reduced the number of negative appendectomies.<sup>7-9</sup> This study aims to assess the demographic and histopathological findings of all the

appendectomies occurring within study period at our center.

**METHODS**

This study was a retrospective study done over a period of two years from January 2016 to December 2018 at general surgery department of Shri Guru Ram Rai Institute of Medical and Health Sciences (SGRRIM and HS) and associated Shri Mahant Indresh Hospital (SMIH), Dehradun. Record of all the patients who underwent appendectomy in the study period were obtained. The data was collected from patients’ file from medical records department using a structured pre tested questionnaire.

The structured questionnaire contained patients’ demographic profile, histopathological report of appendix, and clinical features of appendicitis. Patients who had undergone elective or emergency appendectomy were included in this study. Those patients who had undergone appendectomy secondary to some other procedure were not included in the study.

The data collected was entered in microsoft excel 17, and was analyzed using SPSS version 23 software. The categorical data was expressed in proportions and percentages, and quantitative data was expressed in mean and standard deviation. Chi-square test was applied to compare proportions of two groups and t-test was applied to compare means of two groups. P value less than 0.05 was considered to be statistically significant.

**RESULTS**

In period of two years, total 145 patients qualifying inclusion criteria underwent appendectomy. Out of them 100 patients underwent open appendectomy and 45 underwent lap appendectomy.

**Table 1: Gender distribution of study participants who underwent appendectomy.**

Intervention	Sex	Frequency	%
Open appendectomy	Female	32	32.0
	Male	68	68.0
	Total	100	100.0
Lap appendectomy	Female	15	33.3
	Male	30	66.7
	Total	45	100.0

About one third of the patients were females in both the groups. 32 (32%) and 15 (33.3%) were female participants belonging to open and lap appendectomy group respectively in this study (Table 1). The age distribution of males and females were from 10 years to 72 years in females and 75 years in males. The mean (SD) age of males in open appendectomy was 32.99 (15.77) years and 29.27 (11.19) years in lap appendectomy. Similarly, the mean age of females in open appendectomy was 34.13 (12.74) and the mean age of females in lap appendectomy was 37.20 (29.27).

**Table 2: Age distribution of study participants who underwent appendectomy.**

Age (in years)	Sex	N	Mean	SD	P value
Open appendectomy	Male	68	32.99	15.772	0.24
	Female	32	34.13	12.742	
Lap appendectomy	Male	30	29.27	11.197	0.48
	Female	15	37.20	16.467	

**Table 3: Histopathological examination findings of appendix in both appendectomies.**

Intervention	Histopathological examination findings	Frequency	Percentage
Open appendectomy (n=100)	Acute appendicitis	55	55.0
	Chronic appendicitis	10	10.0
	Gangrenous appendix	7	7.0
	Healed appendicitis	6	6.0
	Resolving appendicitis	22	22.0
	Peri appendicitis	50	50
	Total	100	100.0
Lap appendectomy (n=45)	Acute appendicitis	12	26.7
	Chronic appendicitis	12	26.7
	Resolving appendicitis	20	44.4
	Tuberculosis	1	2.2
	Peri appendicitis	8	17.8
	Total	45	100.0

**Table 4: Histopathological examination findings of appendix specimen in both groups.**

Intervention	Histopathological examination findings	Frequency	Percentage
Open appendectomy (n=100)	Lump	1	1.0
	Necrotizing	12	12.0
	Reactive	2	2.0
Lap appendectomy (n=45)	Necrotizing	1	2.2

The age distribution of both the sexes in both groups were similar (p value >0.05) (Table 2). The age distribution had unimodal curve with most of the cases occurring between 20 to early 30's. The mean age of study participants was 32.9 years with standard deviation of 14.39 years.

The most common histopathological finding in open appendectomy was acute appendicitis (55%) while that in lap appendectomy was resolving appendicitis (44.4%). The next common finding in open appendectomy was resolving appendicitis (22%). The proportion of acute and chronic appendicitis was same (27.7%) in lap appendectomy. Half of the cases in open appendectomy had peri appendicitis and 8 (17.8%) of the patients had peri appendicitis in lap appendectomy. Gangrenous appendicitis was found in 7% of the open appendectomy specimen while tuberculosis was found in one specimen of lap appendectomy. Moreover, all the cases in both the groups had features of appendectomy thereby ruling out any negative appendectomies performed at our center in this period (Table 3).

Necrotizing appendix was found in 12% of open appendectomy specimens while only 2.2% had in lap appendectomy. One patient in open appendectomy had lump and two patients had reactive appendicitis (Table 4).

## DISCUSSION

The presentation of acute appendicitis has been one of most common causes of general surgical emergency. The patients at our center were first screened for Alvarado scoring and then blood picture followed by ultrasonographic findings for better correlation were looked for. In cases of inconclusive ultrasonographic findings, the patients were asked for CT scan and after suggestive findings, the patients were taken for appendectomy. In a span of two years, total 145 cases underwent appendectomy, out of which 100 had open appendectomy and 45 had lap appendectomy. The incidence of appendicitis was found higher in the age group of 20-30 years in this study similar to few other studies.<sup>10-13</sup> Most commonly appendicitis occurred in age group of 20-30 years in our study similar to findings by Singh et al.<sup>14</sup> In our study, Acute appendicitis was found in 46.2% of the specimens similar to study by Sinha RT et al where it was 51.4%.<sup>15</sup> Gangrenous appendix was found in 4.8% of the cases and tuberculosis was found in one case similar to previous studies.<sup>15,16</sup> The strength of

this study included no negative appendectomy. However, due to limited sample size it might not be generalizable to say that approach of combining clinical, lab and radiological criteria judiciously may lead to no negative appendectomy.

## CONCLUSION

Elective appendectomy in patients satisfying clinical, lab and radiological criteria can reduce negative appendectomies. Histopathological examination of appendix still holds a valid role for any incidental findings requiring further management.

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