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WHEN THE APPENDIX LIES: A CLINICOPATHOLOGICAL AUDIT OF NEGATIVE APPENDECTOMIES

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ABSTRACT

Background: Acute appendicitis is one of the most common surgical emergencies. Despite advances in diagnostic modalities, negative appendectomy continues to pose a clinical challenge. **Objectives:** To evaluate the incidence of negative appendectomies and analyze clinicopathological correlates in patients undergoing appendectomy. **Materials and Methods:** This retrospective clinicopathological audit was conducted at TRR Institute of Medical Sciences, Sangareddy district, Telangana, over a one-year period (January 2024–January 2025). Clinical, radiological, intraoperative, and histopathological findings of appendectomy specimens were analyzed. Negative appendectomy was defined as absence of histological features of acute appendicitis. **Results:** A total of 56 appendectomy specimens were studied. Histopathology revealed acute appendicitis in 34 cases (60.7%), complicated appendicitis in 8 cases (14.3%), and negative appendectomy in 14 cases (25%). Negative appendectomy showed female predominance and was most common in the 20–35 year age group. Normal appendix and lymphoid hyperplasia were the most frequent findings. **Conclusion:** Negative appendectomy remains a significant concern. Histopathological examination plays a crucial role in definitive diagnosis and in identifying mimickers of acute appendicitis.

Keywords: Negative Appendectomy, Acute Appendicitis, Histopathology, Clinicopathological Correlation, Appendix.

INTRODUCTION

Acute appendicitis is a frequent cause of abdominal pain requiring emergency surgical intervention and remains one of the most common indications for emergency abdominal surgery worldwide. Prompt diagnosis is crucial to prevent complications such as perforation and peritonitis. Traditionally, surgeons accepted a relatively high negative appendectomy rate to avoid missing cases of true appendicitis.[1,2]

With advances in laboratory investigations, clinical scoring systems, and imaging modalities such as ultrasonography and computed tomography, the diagnostic accuracy for acute appendicitis has improved. However, despite these developments, negative appendectomy- defined as the surgical removal of a histologically normal appendix continues to occur and represents a significant clinical and economic burden.[3,4]

Negative appendectomy is particularly common among females of reproductive age, where gynecological conditions frequently mimic appendicitis, further complicating clinical decision-making.[5]

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Histopathological examination remains the gold standard for confirming the diagnosis and plays a pivotal role in identifying alternative pathologies responsible for right iliac fossa pain.[6]

The present study was undertaken to audit the incidence of negative appendectomies at a teaching hospital and to analyze the clinicopathological factors contributing to diagnostic discordance between clinical, radiological, intraoperative, and histopathological findings.

MATERIALS AND METHODS

Study Design and Setting- A retrospective clinicopathological audit was conducted in the Department of General Surgery in collaboration with the Department of Pathology at TRR Institute of Medical Sciences, Sangareddy district – 502319, Telangana.

Study Population- All patients who underwent emergency or elective appendectomy with a clinical diagnosis of acute appendicitis during the study period (Jan 2024-Jan 2025) were included. Incidental appendectomies were excluded.

Data Collection- Clinical details including age, sex, presenting symptoms, laboratory findings, and radiological impressions were retrieved from medical records. Intraoperative findings were noted from surgical records.

Histopathological Examination - All appendectomy specimens were fixed in 10% neutral buffered formalin, processed routinely, and stained with

hematoxylin and eosin. Histopathological diagnosis was categorized as acute appendicitis, complicated appendicitis, or negative appendectomy.

Definition of Negative Appendectomy - Negative appendectomy was defined as absence of histological features of acute appendicitis, including neutrophilic infiltration of the muscularis propria.

Statistical Analysis - Data were analyzed using descriptive statistics. Results were expressed as frequencies and percentages.

RESULTS

During the one-year study period (January 2024–January 2025), a total of 56 appendectomy specimens were received and analyzed at TRR Institute of Medical Sciences, Sangareddy district, Telangana. The age of patients ranged from 8 to 65 years, with a mean age of 27.4 ± 12.1 years. There were 32 males (57.1%) and 24 females (42.9%), with a male-to-female ratio of 1.3:1. Most patients belonged to the second and third decades of life. **(Table 1)**

Table 1: Gender Distribution of Appendectomy Cases

Gender	No. Of Cases	Percentage
Male	32	57.1%
Female	24	42.9%
Total	56	100%

Histopathological evaluation of the 56 appendectomy specimens revealed features of acute appendicitis in 34 cases (60.7%). Complicated appendicitis, including gangrenous and perforated forms, was identified in 8 cases (14.3%). Fourteen specimens (25.0%) showed no histopathological evidence of appendicitis and were categorized as negative appendectomies. Thus, the overall negative appendectomy rate in the present study was 25%. **(Figure 1)**

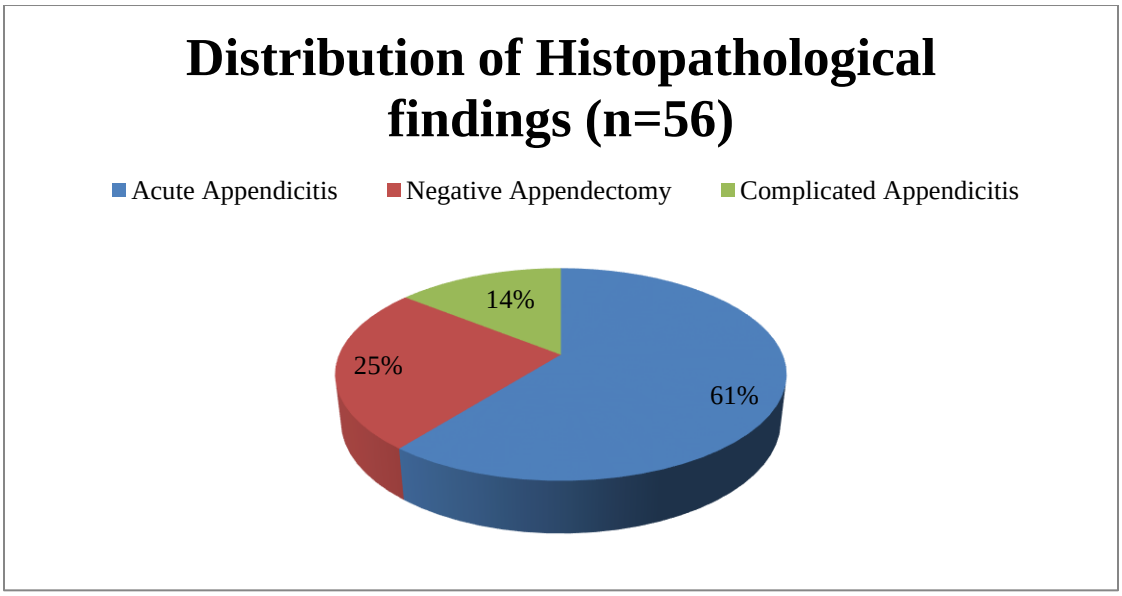

Figure 1: Pie Chart Showing the Distribution of Histopathological Findings in Appendectomy Specimens

Among the 14 negative appendectomy specimens, a normal appendix was observed in 6 cases (42.9%), followed by lymphoid hyperplasia in 4 cases (28.6%). Periappendicitis was noted in 2 cases (14.3%), while parasitic infestation (*Enterobius vermicularis*) and fibrosis suggestive of resolved appendicitis were identified in 1 case each (7.1%). **(Figure 2)**

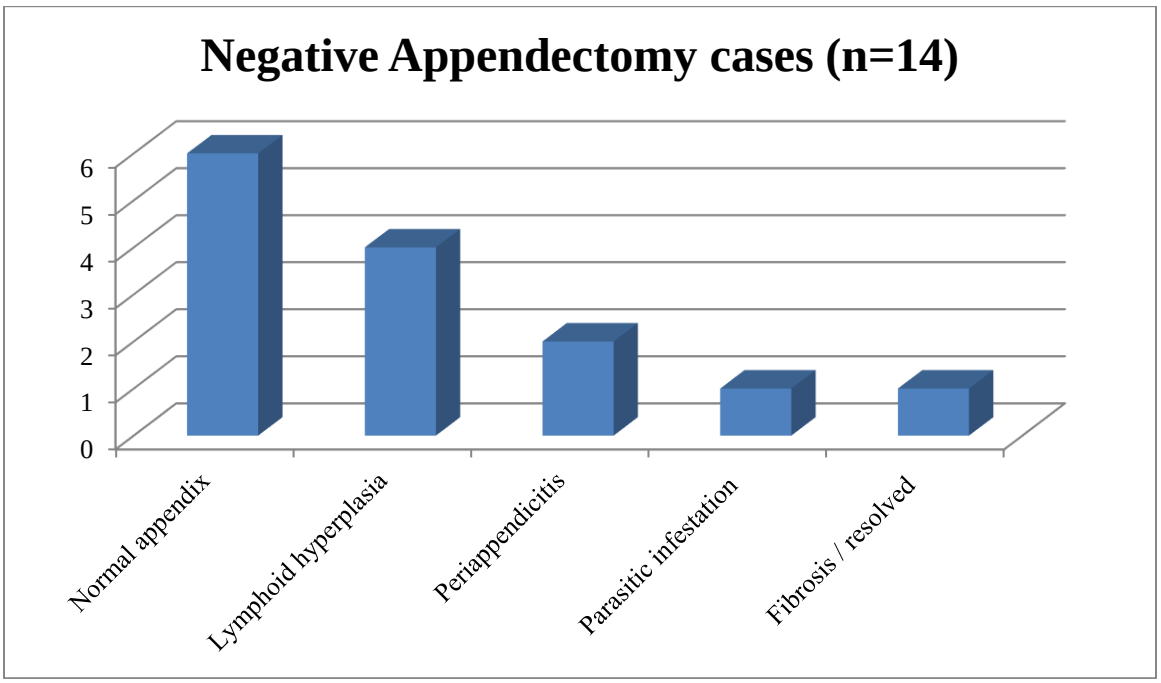

Figure 2: Bar chart depicting the Spectrum of Negative Appendectomy (n =14) with the number of cases on the Y-axis and histopathological diagnoses on the X-axis.

Age and Gender Distribution of Negative Appendectomy- Negative appendectomy showed female predominance, with 9 cases (64.3%) occurring in females and 5 cases (35.7%) in males. The highest incidence was noted in the 20–35 year age group, particularly among females of reproductive age.

Clinicoradiological Correlation - Ultrasonography (USG) was performed in 46 cases (82.1%). Among the 14 negative appendectomy cases, USG suggested acute appendicitis in 10 cases (71.4%). Radiology–histopathology discordance was observed in 6 cases (42.9%). CT abdomen was performed in 6 cases, showing better correlation with histopathological findings.

Intraoperative Findings- Intraoperative assessment suggested an inflamed appendix in 11 of the 14 negative appendectomy cases (78.6%), indicating limited reliability of gross appearance alone.

DISCUSSION

Acute appendicitis continues to be a major cause of emergency abdominal surgery. Despite advances in clinical scoring systems and imaging modalities, negative appendectomy remains a persistent challenge. In the present clinicopathological audit, the negative appendectomy rate was 25%, which is comparable to rates reported in literature ranging from 15% to 30%, particularly in small teaching hospitals and resource-limited settings.[1-3]

Female patients constituted the majority of negative appendectomy cases in this study, a finding consistent with previous studies. Gynecological conditions such as ovarian cysts, pelvic inflammatory disease, and ovulatory pain often mimic acute appendicitis, leading to diagnostic uncertainty.[4,5] The predominance of negative appendectomy in females of reproductive age underscores the need for careful clinical and radiological evaluation in this subgroup.

Histopathological examination revealed that a significant proportion of negative appendectomy cases showed a normal appendix or lymphoid hyperplasia. Lymphoid hyperplasia, particularly in younger patients, can clinically and radiologically simulate acute appendicitis but lacks the hallmark neutrophilic infiltration of the muscularis propria.[6] Periappendicitis and parasitic infestations further highlight the role of histopathology in identifying alternative causes of right iliac fossa pain.

Ultrasonography, though widely used as a first-line imaging modality, demonstrated limited specificity in the present study, with radiology–histopathology discordance observed in nearly half of the negative appendectomy cases. Similar observations have been documented in earlier studies, emphasizing operator dependency and patient-related factors affecting USG accuracy.[7] CT imaging showed better correlation; however, its limited use in this cohort reflects concerns regarding cost, availability, and radiation exposure.

Intraoperative assessment alone was also found to be unreliable, as grossly inflamed appendices were frequently histologically normal. This finding reiterates that histopathological examination remains

the gold standard for definitive diagnosis and is essential for audit, quality assurance, and medico-legal documentation.[8]

Overall, this audit highlights the ongoing diagnostic dilemmas in suspected acute appendicitis and reinforces the importance of a multidisciplinary approach involving surgeons, radiologists, and pathologists to minimize unnecessary appendectomies.

CONCLUSION

Negative appendectomy remains a significant challenge in surgical practice, particularly in young women where gynecological conditions may mimic appendicitis. While clinical evaluation and imaging guide operative decisions, this audit highlights that neither intraoperative appearance nor ultrasonography alone can reliably exclude normal appendices. Histopathological confirmation is essential not only for definitive diagnosis but also for quality assurance, medico-legal documentation, and identifying alternative pathologies. Surgeons should maintain a high index of suspicion, carefully integrate clinical, radiological, and intraoperative findings, and consider selective imaging or observation strategies to minimize unnecessary appendectomies while ensuring timely intervention for true appendicitis.

Limitations

- Retrospective study design
- Single-centre experience
- Limited availability of advanced imaging in all cases

Recommendations

Implementation of standardized diagnostic protocols and selective use of imaging may help reduce negative appendectomy rates.

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Conflicts of Interest - None declared.

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REFERENCES

1. Flum DR, Koepsell T. The clinical and economic correlates of misdiagnosed appendicitis. Arch Surg. 2002;137(7):799–804.
2. Andersson RE. Short-term complications and long-term morbidity of laparoscopic and open appendicectomy in a national cohort. Br J Surg. 2014;101(9):1135–1142.
3. D'Souza N, Nugent K. Appendicitis. BMJ. 2016;354:i3835.
4. Rao PM, Rhea JT, Novelline RA. Sensitivity and specificity of CT in the diagnosis of appendicitis. Radiology. 1998;208(2):349–355.
5. Humes DJ, Simpson J. Acute appendicitis. BMJ. 2006;333(7567):530–534.
6. Carr NJ. The pathology of acute appendicitis. Ann Diagn Pathol. 2000;4(1):46–58.
7. Puylaert JB. Acute appendicitis: US evaluation using graded compression. Radiology. 1986;158(2):355–360.
8. Chamisa I. A clinicopathological review of appendectomy specimens. S Afr J Surg. 2009;47(4):113–116.

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