

Original Article

Clinical Impact of Incidental Pathological Findings After Appendectomy

Impacto Clínico de Achados Patológicos Incidentais Após Appendicectomia

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ABSTRACT

Introduction: Routine histopathological examination of appendectomy specimens remains controversial despite its potential to identify clinically significant incidental pathological findings. This study aimed to evaluate the spectrum and clinical significance of incidental pathological findings detected during routine histopathological examination of appendectomy specimens, with particular emphasis on their influence on postoperative management.

Methods: This retrospective single-center observational study included 52 consecutive patients with histologically confirmed acute appendicitis who underwent appendectomy. All specimens underwent routine histopathological examination, with immunohistochemical analysis performed when indicated. Demographic, clinicopathological, and postoperative follow-up data were reviewed to assess the clinical implications of incidental pathological findings.

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Results: Incidental pathological findings were identified in 5 of 52 appendectomy specimens (9.6%), including two well-differentiated neuroendocrine tumors, one appendiceal endometriosis, one appendiceal diverticulum, and one *Enterobius vermicularis* infestation. Histopathological diagnosis resulted in additional postoperative management in all affected patients, including multidisciplinary oncologic evaluation and surveillance, gynecological referral, colonoscopic investigation, or disease-specific anti-helminthic therapy. Immunohistochemical analysis confirmed both neuroendocrine tumors and appendiceal endometriosis.

Conclusion: Although uncommon, incidental pathological findings detected during routine histopathological examination may influence postoperative management. These findings demonstrate the value of histopathological evaluation beyond confirming acute appendicitis and support its consideration as part of comprehensive surgical care.

Keywords: Appendectomy; Appendicitis/surgery; Appendix/pathology; Incidental Findings

RESUMO

Introdução: O exame histopatológico de rotina de peças de apendicectomia permanece controverso, apesar de seu potencial para identificar achados patológicos incidentais clinicamente significativos. Este estudo teve como objetivo avaliar o espectro e a relevância clínica dos achados patológicos incidentais detetados durante o exame histopatológico de rotina de peças de apendicectomia, com ênfase particular em sua influência no manejo pós-operatório.

Métodos: Este estudo observacional retrospectivo de centro único incluiu 52 pacientes consecutivos com apendicite aguda confirmada histologicamente que foram submetidos a apendicectomia. Todas as peças cirúrgicas foram submetidas a exame histopatológico de rotina, com análise imuno-histoquímica realizada quando indicada. Dados demográficos, clinicopatológicos e de acompanhamento pós-operatório foram revisados para avaliar as implicações clínicas dos achados patológicos incidentais.

Resultados: Achados patológicos incidentais foram identificados em 5 de 52 espécimes de apendicectomia (9,6%), incluindo dois tumores neuroendócrinos bem diferenciados, uma endometriose apendicular, um divertículo apendicular e uma infestação por *Enterobius vermicularis*. O diagnóstico histopatológico resultou em conduta pós-operatória adicional em todos os pacientes afetados, incluindo avaliação e acompanhamento oncológico multidisciplinar, encaminhamento ginecológico, investigação colonoscópica ou terapia anti-helmíntica específica para a doença. A análise imuno-histoquímica confirmou tanto os tumores neuroendócrinos quanto a endometriose apendicular.

Conclusão: Embora individualmente incomuns, os achados patológicos incidentais detetados durante o exame histopatológico de rotina podem influenciar substancialmente o manejo pós-operatório. Esses achados corroboram a continuidade do uso da avaliação histopatológica de rotina após apendicectomia como componente integral do cuidado cirúrgico abrangente.

Palavras-chave: Achados Incidentais; Apêndice/patologia; Apendicectomia; Apendicite/cirurgia

WHAT IS ALREADY KNOWN ABOUT THIS TOPIC?

- Incidental pathological findings may be identified during routine histopathological examination of appendectomy specimens, although they are uncommon.
- The role of routine histopathological examination after appendectomy remains debated, with concerns regarding its clinical value and cost-effectiveness.
- Certain incidental lesions, including appendiceal neuroendocrine tumors, endometriosis, diverticula, and parasitic infestations, may require additional evaluation or treatment.

WHAT DOES THIS STUDY ADD?

- Clinically significant incidental pathological findings were identified in 9.6% of appendectomy specimens in this cohort.
- Every incidental pathological finding resulted in additional postoperative management, including specialist referral, surveillance, further investigation, or disease-specific treatment.
- The findings support the clinical value of routine histopathological examination by demonstrating its impact on postoperative patient management beyond confirmation of acute appendicitis.

INTRODUCTION

Acute appendicitis remains one of the most common surgical emergencies worldwide and appendectomy is among the most frequently performed emergency surgical procedures.¹ Histopathological examination of the resected appendix is considered the diagnostic gold standard for confirming the diagnosis and classifying the inflammatory subtype.² Beyond confirming acute inflammation, however, routine histopathological evaluation may reveal previously unsuspected pathological entities with potential implications for postoperative management.³

Although individually uncommon, incidental pathological findings such as appendiceal neuroendocrine tumors, endometriosis, diverticula, or parasitic infestation may substantially alter postoperative management.⁴⁻⁷ Depending on the underlying diagnosis, patients may require multidisciplinary oncologic assessment, additional diagnostic investigations, specialist referral, surveillance, or disease-specific treatment. Consequently, the clinical value of routine histopathological examination extends beyond diagnostic confirmation of appendicitis.^{8,9}

Despite these potential benefits, routine histopathological examination of appendectomy specimens remains debated, with some authors advocating selective examination based on intraoperative findings to reduce costs and pathology workload, whereas others emphasize the risk of overlooking clinically relevant disease.^{9,10} From a broader perspective, incidental pathological findings should not be viewed merely as unexpected microscopic observations. Within a three-dimensional framework of acute appendicitis, these entities may be interpreted as components of the etiologic substrate that coexist with the inflammatory process and may influence disease presentation and subsequent clinical management.¹¹ Recognition of these pathological substrates may contribute not only to accurate diagnosis but also to informed postoperative management and a broader understanding of acute appendicitis as a heterogeneous surgical disease.

The present study aimed to evaluate the clinical significance of incidental pathological findings detected during routine histopathological examination of appendectomy specimens, with particular emphasis on their influence on postoperative management and their implications for the ongoing debate regarding routine histopathological evaluation.

MATERIAL AND METHODS

STUDY DESIGN AND PATIENT COHORT

This retrospective single-center observational study included consecutive patients who underwent appendectomy for acute appendicitis at General Hospital Kumanovo, North Macedonia. A total of 52 appendectomy specimens with histologically confirmed acute appendicitis were included. The study evaluated the clinical significance of incidental pathological findings detected during routine histopathological examination and their influence on postoperative patient management.

HISTOPATHOLOGICAL EXAMINATION

All appendectomy specimens underwent routine histopathological examination according to institutional protocol, irrespective of intraoperative appearance. Specimens were fixed in 10% neutral buffered formalin, processed routinely, embedded in paraffin, and stained with hematoxylin and eosin (H&E). Immunohistochemical analyses were performed when required to establish the definitive diagnosis. Neuroendocrine tumors were evaluated using chromogranin, synaptophysin, and Ki-67, whereas suspected endometriosis was confirmed using CK7, estrogen receptor (ER), progesterone receptor (PR), and CD10 immunostaining.

DATA COLLECTION

Demographic, clinicopathological, and postoperative follow-up data were extracted from medical records and pathology reports. Particular attention was paid to incidental pathological findings that had not been suspected clinically or intraoperatively. For patients with incidental findings, postoperative records were reviewed to document additional diagnostic investigations, specialist referral, multidisciplinary discussion, surveillance strategies, or disease-specific treatment undertaken following histopathological diagnosis.

ETHICAL CONSIDERATIONS

The study protocol was reviewed and approved by the Ethics Committee of the Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, North Macedonia. The study was conducted in accordance with the principles of the Declaration of Helsinki and applicable institutional guidelines. Written informed consent was obtained from all participants for inclusion in the study and for the anonymized publication of clinical and pathological data. Patient confidentiality was maintained throughout the study by removing all personal identifiers prior to data collection and analysis.

RESULTS

STUDY POPULATION

A total of 52 appendectomy specimens with histologically confirmed acute appendicitis were included in the study. Routine histopathological examination identified incidental pathological findings in 5 specimens (9.6%). The incidental diagnoses comprised two well-differentiated neuroendocrine tumors, one case of appendiceal endometriosis, one appendiceal diverticulum, and one *Enterobius vermicularis* infestation (Table 1).

Table 1. Spectrum of incidental pathological findings in appendectomy specimens.

Pathology	Number	Percentage
Neuroendocrine tumor	2	3.8%
Endometriosis	1	1.9%
Appendiceal diverticulum	1	1.9%
Enterobius vermicularis	1	1.9%
Total incidental findings	5	9.6%

CLINICOPATHOLOGICAL CHARACTERISTICS

The clinicopathological characteristics of patients with incidental pathological findings are summarized in Table 2. Two patients were diagnosed with well-differentiated neuroendocrine tumors (G1), whereas the remaining incidental findings included appendiceal diverticulum,

appendiceal endometriosis, and *Enterobius vermicularis* infestation. Immunohistochemical analyses confirmed both neuroendocrine tumors and the diagnosis of appendiceal endometriosis.

CLINICAL IMPLICATIONS

All incidental pathological findings resulted in additional postoperative clinical decision-making. Patients with neuroendocrine tumors underwent individualized management according to tumor characteristics, including multidisciplinary oncologic assessment and surveillance where appropriate. Appendiceal endometriosis prompted gynecological evaluation, appendiceal diverticulum led to colonoscopic investigation, and *Enterobius vermicularis* infestation resulted in disease-specific anti-helminthic therapy and clinical follow-up.

HISTOPATHOLOGICAL FINDINGS

Histopathological examination confirmed the diagnosis of two well-differentiated neuroendocrine tumors (G1), one appendiceal endometriosis, one appendiceal diverticulum, and one *Enterobius vermicularis* infestation. Both neuroendocrine tumors demonstrated the characteristic morphological and immunohistochemical profile of well-differentiated NETs, with diffuse chromogranin and synaptophysin positivity and a low proliferative index (Ki-67 <1%). The diagnosis of appendiceal endometriosis was confirmed by immunohistochemical expression of CK7, estrogen receptor (ER), progesterone receptor (PR), and CD10. Representative histopathological and immunohistochemical findings are presented in Figs. 1 to 4.

Table 2. Clinicopathological characteristics and postoperative management of patients with incidental pathological findings.

Case	Age	Sex	Pathology	Size	Pathological stage	Key histological findings	Postoperative management / clinical implication
1	26	Male	Neuroendocrine tumor	1.3 cm	pT3	Well-differentiated NET (G1), tumor nests infiltrating subserosa; Chromogranin+, Synaptophysin+, Ki-67 <1%	Case discussed at multidisciplinary tumor board; appendectomy considered sufficient with surveillance follow-up
2	50	Male	Neuroendocrine tumor	4 mm	pT1	Well-differentiated NET (G1) confined to muscularis propria; Chromogranin+, Synaptophysin+, Ki-67 <1%	Appendectomy considered adequate treatment
3	48	Female	Appendiceal diverticulum	—	—	Herniation of mucosa and submucosa through muscular layer at appendiceal tip	Postoperative colonoscopic evaluation performed to exclude additional colorectal pathology
4	48	Female	Appendiceal endometriosis	—	—	Subserosal endometrial glands and stroma; CK7+, ER+, PR+, CD10+	Gynecological evaluation suggested isolated appendiceal endometriosis; routine follow-up recommended
5	33	Male	Enterobius vermicularis infestation	—	—	Cross-sections of parasite within appendiceal lumen	Anti-helminth therapy and clinical follow-up

DISCUSSION

The principal finding of the present study is that routine histopathological examination identified clinically significant incidental pathological findings in nearly one-tenth of appendectomy specimens, leading to additional diagnostic

evaluation, specialist referral, or surveillance in several patients. These findings demonstrate that the value of routine histopathology extends beyond confirmation of acute appendicitis and may directly influence postoperative management.^{8,9}

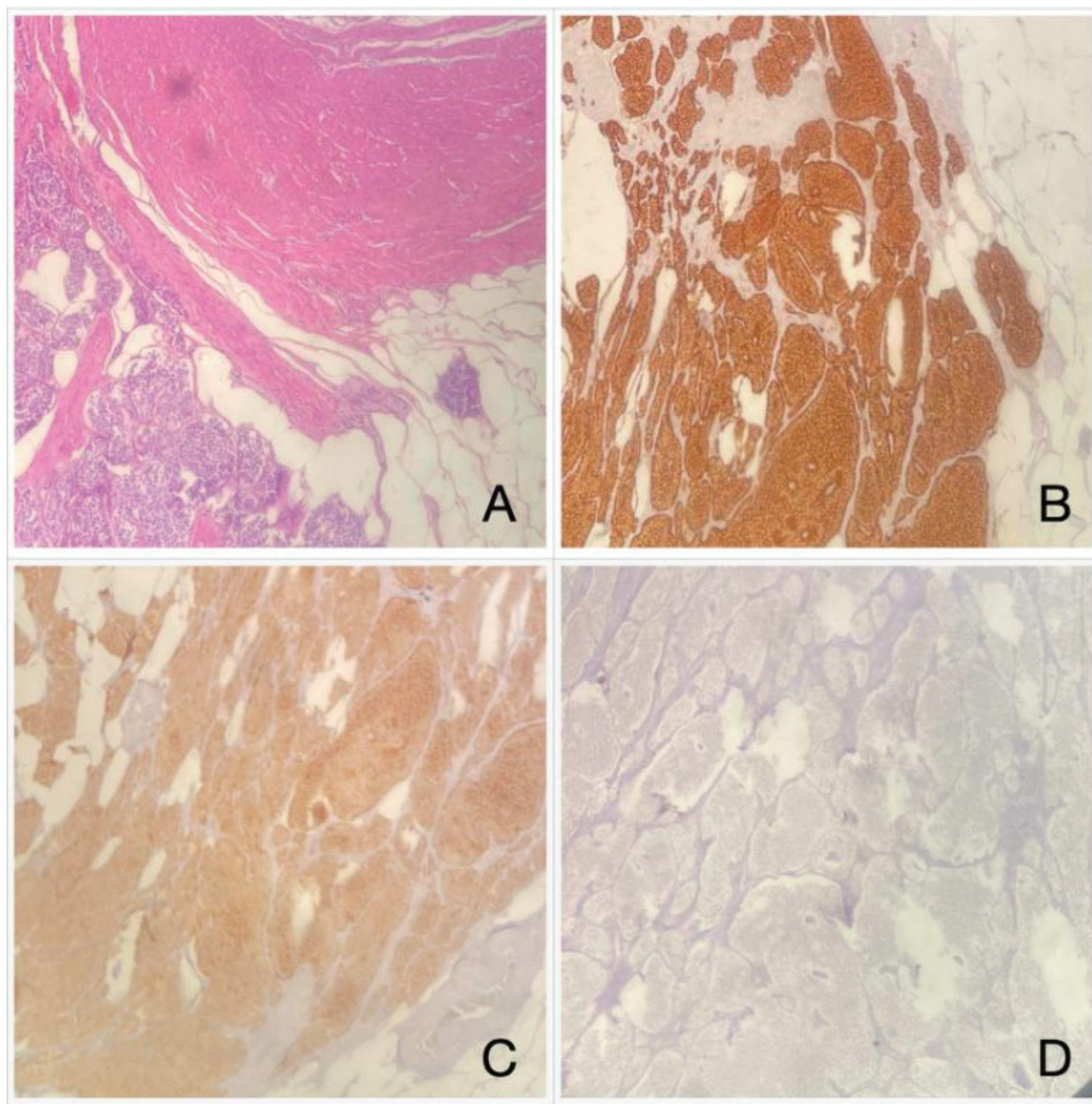


Figure 1. Incidental appendiceal neuroendocrine tumor located at the appendiceal tip. (A) Hematoxylin and eosin staining (H&E, $\times 100$) demonstrating mural and subserosal infiltration by nests and trabeculae of uniform neuroendocrine cells within the appendiceal wall at the appendiceal tip. (B) Immunohistochemical staining for chromogranin A ($\times 100$) showing strong cytoplasmic positivity in tumor cells, confirming neuroendocrine differentiation of the tumor cells. (C) Immunohistochemical staining for synaptophysin ($\times 100$) demonstrating diffuse cytoplasmic positivity in tumor cells. (D) Ki-67 immunostaining demonstrating a proliferative index below 1%, consistent with a WHO grade 1 neuroendocrine tumor.

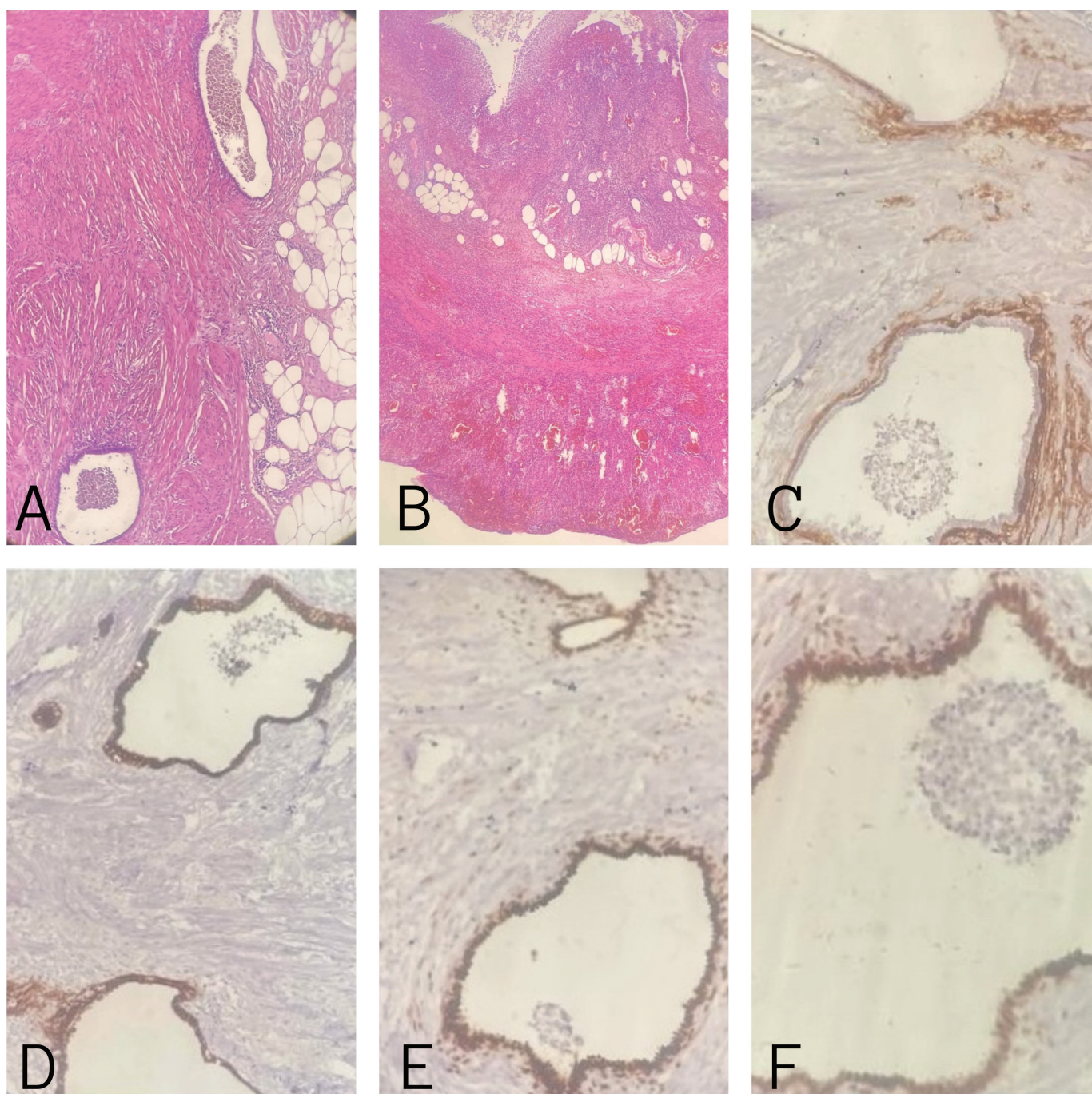


Figure 2. Appendiceal endometriosis identified incidentally in an appendectomy specimen. (A) Hematoxylin and eosin staining (H&E, $\times 100$) demonstrating subserosal endometrial glands with scant surrounding endometrial stroma within the appendiceal wall. (B) Low-power view (H&E, $\times 40$) showing transmural neutrophilic inflammatory infiltration consistent with acute phlegmonous appendicitis. (C) Immunohistochemical staining for CD10 ($\times 200$) highlighting endometrial stromal cells surrounding the ectopic glands. (D) Immunohistochemical staining for cytokeratin 7 (CK7) ($\times 100$) demonstrating positivity in the endometrial glandular epithelium. (E) Progesterone receptor (PR) immunostaining ($\times 200$) showing strong nuclear positivity in the glandular epithelium. (F) Estrogen receptor (ER) immunostaining ($\times 200$) demonstrating strong nuclear expression in the glandular cells.

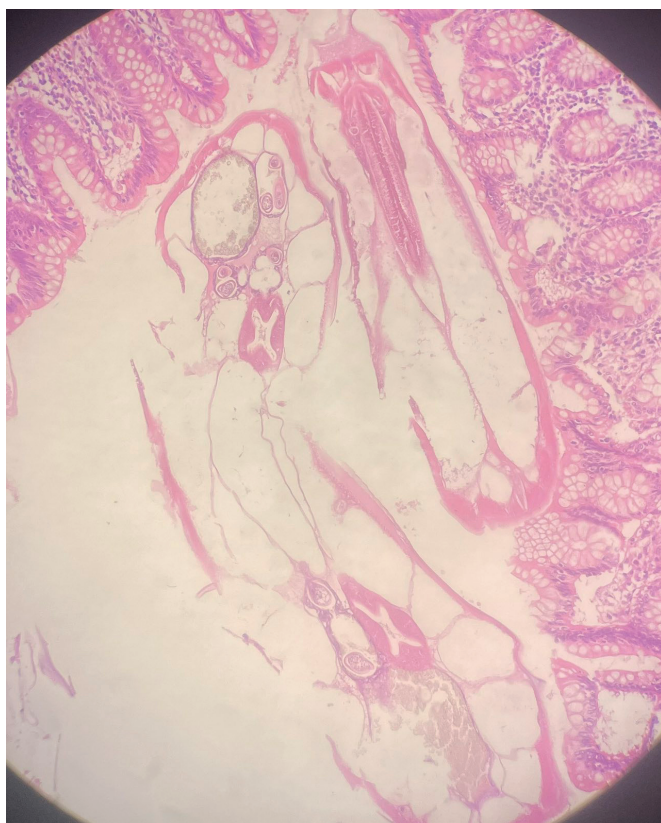


Figure 3. *Enterobius vermicularis* identified within the appendiceal lumen. Hematoxylin and eosin staining (H&E, ×40) demonstrating a cross-section of *Enterobius vermicularis* within the appendiceal lumen. The parasite exhibits characteristic cuticular morphology and numerous intraluminal oval eggs, consistent with *Enterobius vermicularis* infestation.

Among the incidental pathological entities identified in the present cohort, appendiceal neuroendocrine tumors (NETs) had the greatest impact on postoperative management. Although NETs represent the most common primary neoplasms of the appendix and are frequently detected incidentally following appendectomy, their recognition has important therapeutic and prognostic implications.^{4,12} Both tumors identified in our study demonstrated the characteristic morphological and immunohistochemical features of well-differentiated NETs (G1), including chromogranin and synaptophysin positivity with a low proliferative index (Ki-67 <1%). Despite their shared histological characteristics, the two lesions differed in size and pathological stage, resulting in different postoperative management strategies. The 1.3 cm pT3 lesion required multidisciplinary oncologic evaluation to determine the adequacy of appendectomy and subsequent surveillance, whereas the smaller 4 mm pT1 tumor was considered adequately treated by appendectomy alone. These cases illustrate how routine histopathological examination not only identifies unsuspected neoplastic

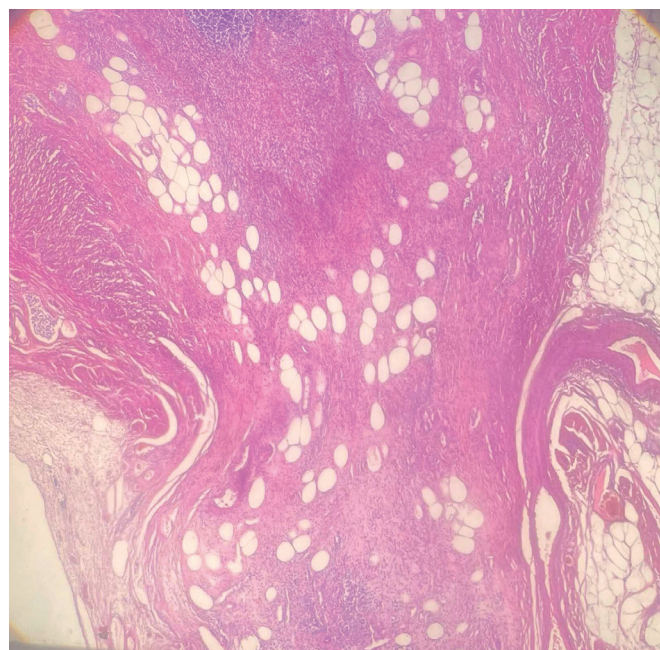


Figure 4. Appendiceal diverticulum identified in an appendectomy specimen. Hematoxylin and eosin staining (H&E, ×40) demonstrating a diverticular outpouching of the appendiceal wall, characterized by herniation of the mucosa and submucosa through the muscularis propria, consistent with an acquired appendiceal diverticulum. The diverticulum was identified in an appendectomy specimen with acute phlegmonous appendicitis.

disease but also provides the information necessary to guide individualized postoperative management.

Appendiceal endometriosis represents another clinically significant incidental diagnosis that may only become apparent following routine histopathological examination. Although uncommon, it may occur either as an isolated lesion or in association with pelvic endometriosis and can occasionally mimic acute appendicitis.⁵ In the present study, histopathological examination identified subserosal endometrial glands and stroma, confirmed by immunohistochemistry (CK7, ER, PR, and CD10). The diagnosis prompted postoperative gynecological evaluation, which suggested isolated appendiceal endometriosis and resulted in recommendations for routine follow-up. This case illustrates that the clinical value of routine histopathological examination extends beyond identifying rare pathological entities; it also facilitates appropriate specialist referral and individualized postoperative management that would not have been considered on the basis of intraoperative findings alone.

Parasitic infestation of the appendix by *Enterobius vermicularis* represents another incidental pathological finding with direct therapeutic implications. Although the relationship between *E. vermicularis* and acute appendicitis remains controversial, the parasite is frequently identified incidentally during histopathological examination rather than suspected clinically or intraoperatively.^{6,13} In the present case, histopathological examination demonstrated cross-sections of *E. vermicularis* within the appendiceal lumen in a specimen with histologically confirmed acute phlegmonous appendicitis and fibrinopurulent peritonitis. These findings support the interpretation of concomitant parasitic infestation rather than a primary etiologic cause of appendicitis. However, the present observation cannot establish or exclude a causal contribution of *E. vermicularis* to the inflammatory process, and this relationship remains unresolved. Importantly, identification of the parasite prompted disease-specific anti-helminthic therapy and clinical follow-up, illustrating that routine histopathological examination may identify clinically actionable diagnoses requiring disease-specific postoperative treatment.

Appendiceal diverticulum represents another clinically relevant incidental finding that may only be recognized through routine histopathological examination. Although uncommon, appendiceal diverticula have been associated with an increased risk of perforation and with concomitant appendiceal neoplasms, making their identification clinically important.^{7,14} In the present study, histopathological examination revealed an appendiceal diverticulum in a specimen resected for acute phlegmonous appendicitis. Recognition of this finding prompted postoperative colonoscopic evaluation because appendiceal diverticula have been associated with an increased incidence of synchronous appendiceal and colorectal neoplasia. This case illustrates that even seemingly incidental structural abnormalities may warrant further diagnostic assessment and reinforces the role of routine histopathological examination in identifying patients who may benefit from individualized postoperative investigation and surveillance.

Collectively, the incidental pathological findings identified in the present study illustrate that routine histopathological examination contributes substantially more than confirmation of acute appendicitis. Although the individual pathological entities differed in their biological nature, each resulted in additional postoperative diagnostic evaluation, specialist referral, surveillance, or disease-specific treatment. From a broader perspective, these findings may be interpreted within a three-dimensional framework of acute appendicitis, in

which incidental pathological entities represent components of the underlying etiologic substrate that coexist with the inflammatory process.¹¹ Viewed in this context, routine histopathological examination provides not only diagnostic confirmation but also clinically relevant information that supports individualized postoperative management and contributes to a more comprehensive understanding of acute appendicitis as a heterogeneous surgical disease (Fig. 5).

The individual cases provide paradigmatic examples of how the three-dimensional framework may be applied in clinical practice. The appendiceal neuroendocrine tumors represent an unsuspected neoplastic substrate whose identification and pathological characterization directly determined subsequent oncologic assessment and surveillance. Appendiceal endometriosis illustrates a distinct biological substrate coexisting with acute phlegmonous inflammation, with histopathological recognition revealing a diagnosis that was not apparent from the intraoperative presentation and prompting specialist evaluation. Similarly, the appendiceal diverticulum represents a structural pathological substrate whose identification led to additional investigation because of its reported association with neoplasia. In contrast, the finding of *Enterobius vermicularis* illustrates the importance of distinguishing coexistence from causation within this framework: despite the presence of the parasite, the histological findings supported concomitant infestation rather than establishing it as the primary cause of appendicitis. Together, these cases demonstrate how apparently similar presentations of acute appendicitis may encompass different underlying pathological substrates with distinct implications for postoperative management.

The clinical benefit demonstrated in the present study should be distinguished from formal cost-effectiveness. Although all incidental pathological findings resulted in additional postoperative management, the present dataset does not permit calculation of the cost per actionable finding or comparison of routine with selective histopathological examination. Importantly, however, assessment of cost should also consider the potential clinical consequences of missed diagnoses. A selective strategy based primarily on macroscopic intraoperative findings may reduce pathology workload and immediate expenditure, but could potentially delay recognition of clinically relevant microscopic disease requiring oncologic assessment, specialist referral, further investigation, or disease-specific treatment. Future health-economic studies should therefore evaluate not only the direct cost of routine histopathological examination, but also the cost per clinically actionable finding detected and the



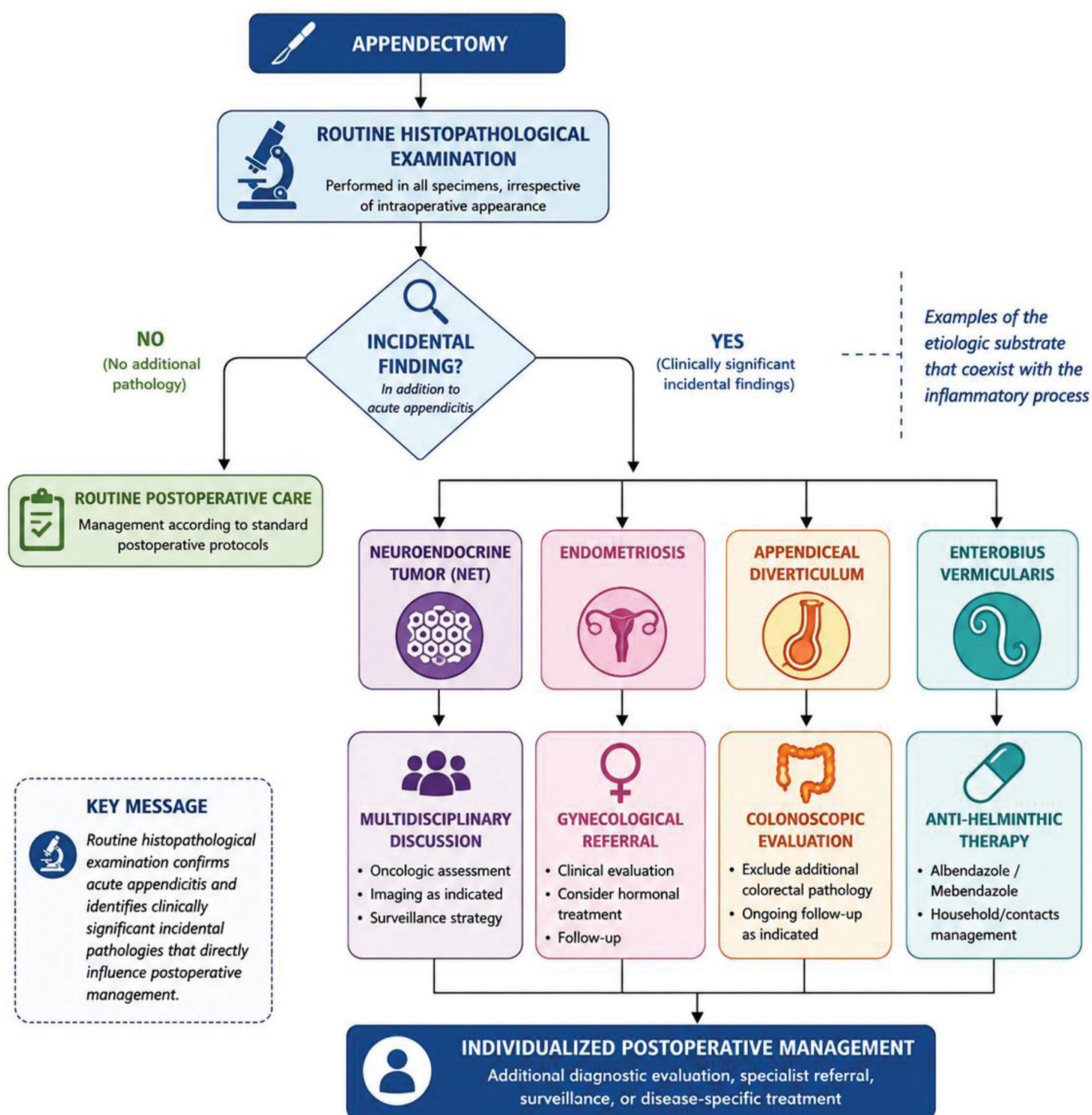


Figure 5. Clinical impact of routine histopathological examination following appendectomy. Schematic workflow illustrating the role of routine histopathological examination after appendectomy. Following diagnostic confirmation of acute appendicitis, incidental pathological findings may prompt individualized postoperative management, including multidisciplinary oncologic assessment, specialist referral, additional diagnostic investigation, surveillance, or disease-specific treatment.

potential downstream clinical and economic consequences of delayed or missed diagnoses.

Several limitations of the present study should be acknowledged. First, this was a retrospective single-center observational study with a relatively small cohort, which

limits the generalizability of the findings. Accordingly, the observed 9.6% rate of incidental pathological findings should be interpreted as a descriptive finding specific to this cohort rather than as an estimate of their prevalence in the broader appendectomy population. Second, the incidental pathological entities identified were heterogeneous and

individually uncommon, precluding meaningful comparative analyses or reliable estimation of the prevalence of specific lesions. Larger prospective multicenter studies involving more diverse patient populations are needed to establish the frequency and spectrum of clinically significant incidental pathological findings more precisely.

Finally, although all incidental findings resulted in additional postoperative management, clinical actionability should not be interpreted as evidence of improved long-term outcomes. The present study cannot determine whether earlier recognition and subsequent intervention reduced morbidity, recurrence, or mortality compared with delayed or incidental diagnosis at a later stage. Prospective longitudinal follow-up, ideally through multicenter registries, will be required to determine whether the management changes prompted by routine histopathological examination translate into measurable long-term patient benefit.

An additional direction for future research is the identification of preoperative or intraoperative predictors of clinically significant incidental pathological findings. Larger prospective datasets could evaluate whether demographic characteristics, clinical presentation, laboratory parameters, imaging findings, or intraoperative features can reliably identify patients at increased risk of occult pathological lesions. Such predictors could potentially contribute to the development and external validation of evidence-based selective histopathological strategies. However, given the heterogeneity and low frequency of individual incidental lesions, any selective approach would require careful validation to ensure that reductions in pathology workload and cost do not come at the expense of missed clinically actionable diagnoses.

ETHICAL DISCLOSURES

Conflicts of Interest: The authors have no conflicts of interest to declare.

Financing Support: This work has not received any contribution, grant or scholarship

Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of patient data.

Protection of Human and Animal Subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and those of the Code of Ethics of the World Medical Association (Declaration of Helsinki as revised in 2024).

Provenance and Peer Review: Not commissioned; externally peer-reviewed.

RESPONSABILIDADES ÉTICAS

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

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CONCLUSION

Routine histopathological examination of appendectomy specimens identified clinically significant incidental pathological findings that influenced postoperative management in several patients. Although these entities were individually uncommon, their detection prompted additional diagnostic evaluation, specialist referral, surveillance, or disease-specific treatment, highlighting the clinical value of histopathological examination beyond confirmation of acute appendicitis. These findings support the continued clinical value of routine histopathological evaluation following appendectomy, while larger prospective multicenter studies incorporating long-term outcomes and health-economic analyses are needed to further define the optimal role of routine versus selective histopathological strategies.

LEARNING POINTS / TAKE-HOME MESSAGES

- Routine histopathological examination after appendectomy may identify clinically significant incidental pathological findings.
- Incidental pathological findings can directly influence postoperative investigation, specialist referral, surveillance, and disease-specific treatment.
- Histopathological evaluation provides clinically actionable information beyond confirmation of acute appendicitis.
- Routine histopathological examination remains an important component of comprehensive postoperative surgical care.

Confidencialidade dos Dados: Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.

Proteção de Pessoas e Animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pela Comissão de Ética responsável e de acordo com a Declaração de Helsínquia revista em 2024 e da Associação Médica Mundial.

Proveniência e Revisão por Pares: Não comissionado; revisão externa por pares.

CONTRIBUTORSHIP STATEMENT

GJ and VA: Study design, critical review.

BK, GT and IK: Data collection, analysis and interpretation of results.

All authors contributed to this work, approved the final version of the manuscript for publication, and agree to be accountable for all aspects of the work, ensuring the accuracy and integrity of the data presented.

DECLARAÇÃO DE CONTRIBUIÇÃO

GJ e VA: Concepção do estudo, revisão crítica.

BK, GT e IK: Recolha de dados, análise e interpretação dos resultados.

Todos os autores contribuíram para este trabalho, aprovaram a versão final do manuscrito para publicação e concordam em assumir a responsabilidade por todos os aspetos do trabalho, garantindo a exatidão e a integridade dos dados apresentados.

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