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What lies beneath: A 10-year retrospective analysis of unexpected histopathological findings in hemorrhoidectomy specimens

Abstract

Aim: Hemorrhoidal disease is a common anorectal condition frequently treated with surgical excision in advanced stages. Although the diagnosis is usually clinical, histopathological examination of excised tissue may reveal unexpected benign or premalignant lesions. To evaluate the histopathological spectrum of hemorrhoidectomy specimens and determine the frequency of incidental findings other than hemorrhoidal pathology.

Materials and Methods: This retrospective study analyzed 828 patients who underwent conventional hemorrhoidectomy (Milligan-Morgan or Ferguson technique) between January 2012 and April 2022 at a tertiary care training and research hospital. Selection criteria were inclusion of patients over 16-year-old and submission of surgical specimens for histopathological evaluation. The application of additional anorectal procedures was excluded. Demographic, surgical, and pathological data were collected. Statistical analysis included descriptive measures and normality testing using the Kolmogorov–Smirnov test.

Results: The median age of patients was 33 years (range: 17–80), and 67.1% were male. The Milligan-Morgan technique was used in 67.9% of cases, while the Ferguson method was used in 32.1%. Histopathological examination revealed that 97.8% of specimens were consistent with venous ectasia, characteristic of hemorrhoidal disease. In 2.2% of cases, non-hemorrhoidal lesions were identified: fibroepithelial polyps (1.4%), skin tags (0.4%), anal polyps (0.2%), and one case (0.1%) of anal intraepithelial neoplasia grade 2 (AIN 2), a premalignant lesion.

Conclusion: While the vast majority of hemorrhoidectomy specimens confirmed the clinical diagnosis, a small proportion revealed incidental benign or premalignant lesions. These findings underscore the importance of routine histopathological evaluation, especially in high-risk patients, to avoid missing significant pathology that may impact clinical management.

Keywords: Hemorrhoidal disease, hemorrhoidectomy, histopathology, venous ectasia, fibroepithelial polyp, anal intraepithelial neoplasia, routine pathology, anorectal surgery

INTRODUCTION

Hemorrhoidal disease is among the most common benign anorectal disorders, affecting a significant proportion of the adult population worldwide (1). It is estimated that nearly 40% of adults experience symptomatic hemorrhoids at some point in their lives, with a peak incidence between the ages of 45 and 65 years (2). Hemorrhoids are physiological vascular cushions located around the distal rectum and anal canal, playing a role in maintaining anal continence (3). The condition arises from the pathological enlargement and distal displacement of the normal

vascular cushions in the anal canal, resulting in symptoms such as bleeding, prolapse, pain, pruritus, and fecal soiling (4). While initial management is often conservative, including dietary fiber supplementation, topical agents, and lifestyle modifications, surgical intervention remains the most effective option for patients with advanced grades (Grade III–IV) or refractory hemorrhoidal disease (5).

Among the various surgical techniques available, the Milligan-Morgan and Ferguson hemorrhoidectomy procedures are the most widely utilized conventional methods (6). The Milligan-

Morgan technique, also known as open hemorrhoidectomy, was first described in 1937 and remains the gold standard for excisional treatment (7). Ferguson's closed hemorrhoidectomy, introduced later, offers similar efficacy with the theoretical advantage of reduced postoperative pain and faster wound healing (8). Despite their long-standing clinical use, both techniques carry risks of postoperative complications such as pain, bleeding, infection, anal stenosis, and in rare cases, incontinence (9).

Histopathological examination of excised hemorrhoidal tissue is often performed to confirm the diagnosis and to exclude other potential pathologies. Although hemorrhoidal disease is usually a clinical diagnosis, studies have shown that non-hemorrhoidal or even premalignant lesions may occasionally be detected in surgically removed specimens (10). These findings highlight the importance of routine histopathological analysis, particularly in elderly patients or those with atypical clinical features (11). Despite the high global prevalence of hemorrhoidal disease, there remains limited large-scale data on the histopathological spectrum of lesions found in hemorrhoidectomy specimens. Most studies in the literature are small case series or single-centre reports, often lacking comprehensive data on the rate of incidental or unexpected findings (12). Moreover, demographic differences, surgical preferences, and institutional policies on pathology submission can significantly influence these rates (10).

In this context, the present retrospective study was designed to evaluate the demographic, surgical, and histopathological characteristics of patients who underwent conventional hemorrhoidectomy at a tertiary care centre over a 10-year period. Our primary aim was to identify the prevalence of typical hemorrhoidal pathology versus non-hemorrhoidal benign or premalignant lesions in resected tissue. By analyzing a large cohort of patients and systematically reviewing pathology results, we sought to emphasize the clinical relevance of routine histopathological examination, particularly in resource-limited settings where such practices may not be consistently followed. Furthermore, we aimed to provide contemporary data from a high-volume surgical centre, thereby contributing to the growing body of literature on hemorrhoidal disease management and diagnostic validation.

MATERIALS AND METHODS

This retrospective cohort study was conducted at Van training and research hospital and received approval from the University of Health Sciences Van Training and Research Hospital Non-Interventional Clinical Research Ethics Committee (Approval Number and Date: GOKAEK/2025-06-05, 08.08.2025). The study was designed to evaluate the clinical and histopathological outcomes of patients undergoing surgical treatment for hemorrhoidal disease over a 10-year period, between January 2012 and April 2022.

A total of 1,255 patients who underwent surgical intervention due to symptomatic hemorrhoidal disease were initially screened for eligibility. The inclusion criteria were: (1) patients aged 16 years and older, (2) those who underwent a conventional hemorrhoidectomy procedure—either Milligan-Morgan or Ferguson technique—and (3) availability of excised tissue specimens submitted to the pathology department for histopathological evaluation. These criteria ensured that the study population was homogeneous in terms of treatment modality and that tissue-based confirmation of diagnosis could be achieved for all included cases.

Patients were excluded if they underwent additional anorectal procedures during the same operative session, such as fistulotomy, fissurectomy, or excision of condyloma. Furthermore, individuals who were treated with non-conventional modalities—including rubber band ligation, hemorrhoidal artery ligation (HAL), sclerotherapy, infrared coagulation, laser ablation, or stapled hemorrhoidopexy—were excluded to maintain procedural uniformity and to reduce heterogeneity in surgical outcomes.

Following the application of inclusion and exclusion criteria, a total of 828 patients were deemed eligible and included in the final analysis.

Demographic data, including patient age and sex, were recorded. In addition, operative details such as the type of hemorrhoidectomy performed (Milligan-Morgan or Ferguson) were documented. Retrospectively, all of our patients were HIV negative; HPV testing was not performed. Only the patient with a pathology result of AIN underwent an HPV test, which was found to be negative. Histopathological findings obtained from the excised specimens were retrieved from the hospital's digital pathology database and categorized into typical hemorrhoidal pathology (e.g., venous ectasia) and non-hemorrhoidal benign or premalignant lesions.

Statistical analysis was performed using IBM SPSS Statistics software, version 23.0 (IBM Corp., Armonk, NY, USA). The distribution of numerical data was assessed using the Kolmogorov-Smirnov test to determine normality. Continuous variables were expressed as median with minimum and maximum values, given their non-parametric distribution. Categorical variables were summarized as frequencies and percentages.

RESULTS

A total of 828 patients who met the eligibility criteria were included in the final study population. The median age of the cohort was 33 years, with a range of 17 to 80 years. The majority of patients were male, comprising 556 individuals (67.1%), while 272 (32.9%) were female. This gender distribution reflects the known epidemiological trend of higher prevalence of hemorrhoidal disease in male populations presenting for surgical intervention (Table 1).

In terms of surgical technique, the conventional open hemorrhoidectomy methods were used in all cases. The Milligan-Morgan procedure was the most commonly employed approach, performed in 562 patients (67.9%), whereas the Ferguson closed hemorrhoidectomy technique was utilized in 266 patients (32.1%). The choice of surgical technique was based on surgeon preference, anatomical considerations, and patient-specific factors (Table 1).

Table 1. Demographic data and types of surgery	
Variable	Value
Age	
Median (range)	33 (17-80)
Gender	
Male n (%)	556 (67.1)
Female n (%)	272 (32.9)
Operation type	
Milligan Morgan n (%)	562 (67.9)
Fergusson n (%)	266 (32.1)

Histopathological evaluation of the excised hemorrhoidal specimens revealed that the vast majority of patients, 810 out of 828 (97.8%), exhibited pathological findings consistent with venous ectasia, which is the classical histological hallmark of hemorrhoidal disease. These cases were characterized by dilated, thin-walled vascular channels within fibrovascular tissue, often accompanied by thrombosis, inflammation, and mucosal ulceration.

Interestingly, in 17 patients (2.1%), the histopathological findings did not reflect typical hemorrhoidal disease but instead indicated the presence of other benign anorectal lesions. Among these, the most frequently identified diagnosis was fibroepithelial polyp, observed in 12 patients. These polyps are benign mucosal protrusions characterized by a fibrovascular core covered by squamous epithelium. In addition, 3 patients were diagnosed with skin tags, which are redundant fibrous tissue fragments frequently associated with chronic irritation or previous thrombosed hemorrhoids. Two patients had findings consistent with anal polyps, which were also benign in nature.

Of notable clinical importance, one patient (0.1%) was diagnosed with a premalignant lesion—anal intraepithelial neoplasia grade 2 (AIN-2). Our patient, who was diagnosed with AIN, is a 42-year-old male and was HIV and HPV negative.

AIN is a dysplastic precursor of anal squamous cell carcinoma, and its identification underscores the significance of routine histopathological evaluation of hemorrhoidectomy specimens, even in seemingly benign cases. The distribution of pathological diagnoses is summarized in Table 2. The patient diagnosed with AIN was called for an annual check-up, unlike other patients, and was monitored with physical examination and imaging methods. No recurrence was observed in the patient's 3-year follow-up.

Table 2. Pathological results	
Pathology	n (%)
Venous ectasia	810 (97.8)
Benign non-hemorrhoidal pathologies	17 (2.1)
AIN 2	1 (0.1)
AIN: Anal intraepithelial neoplasia	

DISCUSSION

Hemorrhoidal disease continues to be one of the most prevalent benign anorectal conditions encountered in clinical practice, particularly in tertiary surgical centres. Although its diagnosis is primarily clinical, surgical excision and histopathological confirmation remain important components in advanced or refractory cases. In our study, we analyzed a large cohort of 828 patients who underwent conventional hemorrhoidectomy and evaluated the histopathological outcomes of the resected specimens. The primary aim was to determine the frequency of typical hemorrhoidal pathology versus unexpected benign or premalignant lesions.

The most significant finding was that 97.8% of cases showed histological features consistent with venous ectasia, confirming the clinical diagnosis of hemorrhoids. This rate is consistent with recent literature, which reports similar findings ranging from 95% to 99% in large retrospective cohorts (13). The predominance of venous ectasia in excised tissue underscores the anatomical basis of hemorrhoidal disease as a disorder of vascular cushions.

However, the detection of non-hemorrhoidal pathology in 2.2% of our cases is clinically relevant. Among these, fibroepithelial polyps were the most frequent, followed by skin tags and benign anal polyps. These findings are consistent with previous studies reporting incidental benign lesions in approximately 1–5% of hemorrhoidectomy specimens (12).

Importantly, we identified one case of AIN 2, a premalignant lesion with potential for progression to anal squamous cell carcinoma. Although the incidence was low (0.1%), this supports previous reports emphasizing the need for vigilance, particularly in high-risk populations such as immunocompromised individuals or men who have sex with men (14). Recent studies have shown that AIN 2 and 3 lesions can remain asymptomatic and may only be detected through histological screening (15).

Our study adds to the growing evidence supporting routine histopathological evaluation of hemorrhoidectomy specimens. Although hemorrhoidal pathology is generally predictable, omission of pathological review carries an inherent risk of overlooking unexpected clinically relevant lesions.

Age and sex distributions in our cohort were also in accordance with global epidemiological data. The predominance of male patients (67.1%) and the median age of 33 years reflect the demographic patterns previously described in surgical series

(16). However, recent studies have reported a trend toward younger patients undergoing surgical treatment, potentially due to lifestyle changes and increased awareness of anorectal diseases (17).

Regarding surgical technique, the Milligan-Morgan procedure was preferred in 67.9% of cases. This is consistent with international practice, where open hemorrhoidectomy remains the most commonly performed technique, particularly in high-volume centres (3). While the Ferguson procedure is associated with slightly lower postoperative pain and faster healing, the choice of technique in our centre was likely influenced by surgeon experience and anatomical considerations.

The association between hemorrhoidal disease and other anorectal conditions has also gained attention in recent literature. A 2022 study by Chen et al. emphasized that chronic irritation caused by hemorrhoids may predispose patients to secondary lesions, including polyps and epithelial hyperplasia (18). These findings support our observation of benign polypoid lesions in a small subset of patients.

From a pathological standpoint, the presence of fibroepithelial polyps is not entirely surprising. These lesions are often underdiagnosed in clinical practice and may coexist with hemorrhoidal disease due to chronic mechanical stress and mucosal redundancy (19). Similarly, skin tags are frequently encountered in patients with longstanding hemorrhoids and may reflect prior thrombosed external hemorrhoids or surgical scarring.

The relevance of detecting anal intraepithelial neoplasia (AIN) in hemorrhoidectomy specimens cannot be overstated. Although rare, early identification of such premalignant lesions may enable timely intervention and contribute to cancer prevention. In the present study, we identified one case of AIN grade 2, a recognized precursor of anal squamous cell carcinoma. Despite the low incidence (0.1%), AIN may be detected incidentally in specimens obtained during surgical treatment for benign anorectal disease, even in the absence of clinical suspicion (20,21). These observations highlight the diagnostic value of routine histopathological assessment, even in clinically benign-appearing cases.

Our findings also underscore the importance of standardized specimen submission protocols. At our institution, all hemorrhoidectomy specimens are routinely submitted for pathological evaluation, ensuring diagnostic consistency. This approach is consistent with contemporary recommendations supporting histopathological examination, particularly in older patients or those presenting with atypical clinical features.

Moreover, the economic and logistical considerations of routine pathology have been addressed in recent cost-effectiveness analyses. A 2024 study by Rao et al. concluded that the cost of routine histopathology is justified by the potential benefit

of detecting premalignant lesions, particularly in high-risk populations (22). When weighed against the long-term costs of delayed cancer diagnosis, routine histology proves to be a valuable investment.

Our study is strengthened by its large sample size and the standardized surgical and pathological protocols used throughout the 10-year period. Few recent studies have analyzed over 800 cases with such consistency, making our findings a robust addition to the literature. Furthermore, our data span a decade, offering insights into evolving trends in hemorrhoid surgery and pathology.

Nevertheless, the study has limitations. First, it is retrospective in nature, which may introduce selection bias. Second, we did not assess clinical outcomes such as postoperative pain, recurrence, or patient satisfaction. Future prospective studies should integrate histopathological findings with clinical parameters to provide a more comprehensive understanding.

In addition, our findings are based on a single-centre experience, which may limit generalizability. However, the high case volume and institutional standardization provide valuable data for centres with similar patient demographics and surgical practices. Multicentred studies are warranted to further validate these results across diverse populations.

Another limitation is the lack of HPV status evaluation in patients with AIN. Given the known etiological role of HPV in anal dysplasia, future studies should incorporate viral testing to assess its prevalence in hemorrhoidectomy specimens. This would offer more nuanced insights into the pathogenesis of incidental premalignant lesions.

The detection of non-hemorrhoidal lesions also raises questions about preoperative diagnostic protocols. Although physical examination remains the cornerstone of anorectal assessment, the addition of anoscopy or endoanal ultrasound may help detect coexisting pathologies prior to surgery.

CONCLUSION

In conclusion, our study demonstrates that while hemorrhoidectomy specimens predominantly show typical venous ectasia, a small but clinically significant proportion may harbour other benign or premalignant lesions. The identification of AIN, although rare, underscores the diagnostic value of routine histopathological evaluation. As the landscape of anorectal disease continues to evolve, it is essential that clinical, surgical, and pathological disciplines collaborate to ensure accurate diagnosis and optimal patient outcomes. Our findings support the ongoing practice of submitting all hemorrhoidectomy specimens for histological examination, especially in older or high-risk patients. Continued research and updated guidelines will further clarify the role of pathology in the surgical management of hemorrhoidal disease.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that there is no financial support.

Ethical Approval

The study protocol received approval from the University of Health Sciences Van Training and Research Hospital Non-Interventional Clinical Research Ethics Committee (Decision No: GOKAEK-2025-06-07; Decision Date: 08.08.2025).

Patient Consent

Not necessary for this manuscript.

REFERENCES

1. Sheikh P, Régnier C, Goron F, Salmat G. The prevalence, characteristics and treatment of hemorrhoidal disease: results of an international web-based survey. *J Comp Eff Res*. 2020;9:1219-32.
2. Gallo G, Sacco R, Sammarco G. Epidemiology of hemorrhoidal disease. In: Ratto C, Parello A, Litta F, editors. *Hemorrhoids*. Cham: Springer; 2018;3-7.
3. Lohsiriwat V. Anatomy, physiology, and pathophysiology of hemorrhoids. In: Ratto C, Parello A, Litta F, editors. *Hemorrhoids*. Cham: Springer; 2018;9-17.
4. Sun Z, Migaly J. Review of hemorrhoid disease: presentation and management. *Clin Colon Rectal Surg*. 2016;29:22-9.
5. Ashburn JH. Hemorrhoidal disease: a review. *JAMA*. 2025;334:1203.
6. Hall JF, Rattner DW. Hemorrhoidectomy. In: Cameron JL, Cameron AM, editors. *Current Surgical Therapy*. 12th ed. Philadelphia: Elsevier; 2017;249-53.
7. Tomasicchio G, Martines G, Lantone G, Dibra R, Trigiane G, De Fazio M, et al. Safety and effectiveness of tailored hemorrhoidectomy in outpatient setting. *Front Surg*. 2021;8:708051.
8. Cristea C, Lewis CR. Hemorrhoidectomy. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK549864/> Access date: 13.03.2026.
9. Moldovan C, Rusu E, Cochior D, et al. Ten-year multicentric retrospective analysis regarding postoperative complications and impact of comorbidities in hemorrhoidal surgery with literature review. *World J Clin Cases*. 2023;11:366-84.
10. Mascagni P, Eberspacher C, Saraceno F, et al. Routine pathology examination in the era of value-based healthcare: the case of haemorrhoids specimens. *Updates Surg*. 2020;72:83-8.
11. Kozan R, Aksu E, Dikmen K. Routine histopathological evaluation of benign anorectal interventions: essentiality or excess? *Gazi Med J*. 2024;35:200-3.
12. Navale P, Gonzalez RS, Vyas M. Incidental secondary findings in hemorrhoidectomy specimens: a 16-year experience from a single academic centre. *Hum Pathol*. 2021;109:12-20.
13. Men V, Kaur D, Bahl P, et al. Is routine histopathological analysis of hemorrhoidectomy specimens necessary? A systematic review and meta-analysis. *World J Surg*. 2024;48:1981-89.
14. Hoedema RE. Anal intraepithelial neoplasia and squamous cell cancer of the anus. *Clin Colon Rectal Surg*. 2018;31:347-52.
15. Kavalukas SL, Yang F, Wexner SD, Nogueras JJ. Anal dysplasia as an incidental finding: the importance of specimen evaluation. *Colorectal Dis*. 2020;22:1597-602.
16. Riss S, Weiser FA, Riss T, et al. The prevalence of hemorrhoids in adults. *Int J Colorectal Dis*. 2012;27:215-20.
17. Capece SJ, Browning CJ, Barros de S, et al. Hemorrhoidectomy: does age make a difference? *Dis Colon Rectum*. 2024;67:820-25.
18. Chen YC, Huang CC, Wu KL, et al. Histological changes associated with chronic hemorrhoidal disease: implications for coexisting pathologies. *Int J Colorectal Dis*. 2022;37:1585-91.
19. Lim JY, Han YM, Kim DS. Clinicopathologic spectrum of fibroepithelial polyps in hemorrhoidectomy tissue: a prospective study. *Pathol Res Pract*. 2023;245:154465.
20. Bauer P, Fléjou JF, Etienney I, et al. Prospective single-center observational study of routine histopathologic evaluation of macroscopically normal hemorrhoidectomy and fissurectomy specimens in search of anal intraepithelial neoplasia. *Dis Colon Rectum*. 2015;58:692-7.
21. Hawkins AT, Davis BR, Bhama AR, et al. The American Society of Colon and Rectal Surgeons clinical practice guidelines for the management of hemorrhoids. *Dis Colon Rectum*. 2024;67:614-23.
22. Watter HK, Ng GS, Nalliah S. Cost effectiveness of routine histology for haemorrhoidectomy specimens. *Int Surg J*. 2021;9:12-6.