



QUALITY IN SPORT

eISSN 2450-3118 · Open Access · Peer-reviewed

apcz.umk.pl/QS Nicolaus Copernicus University in Toruń



SKALNIAK, Kinga, BOCHNAK, Mikołaj and WOJTANOWICZ, Julia. Perianal Abscess as a Potential First Manifestation of Crohn's Disease - Current State of Knowledge. Quality in Sport. 2026;75:76040. <https://doi.org/10.12775/QS.2026.75.76040>

ARTICLE TIMELINE

Received: 12.09.2026. Accepted: 17.09.2026. Published: 22.09.2026.

The journal has been awarded 20 points in the parametric evaluation by the Polish Ministry of Higher Education and Science (Annex to the announcement of 05.01.2024, No. 32553). Unique Journal Identifier: 201398. Scientific disciplines assigned: Economics and Finance (Field of Social Sciences); Management and Quality Sciences (Field of Social Sciences).

Punkty Ministerialne z 2019 – aktualny rok 20 punktów. Załącznik do komunikatu Ministra Szkolnictwa Wyższego i Nauki z dnia 05.01.2024 Lp. 32553. Posiada Unikatowy Identyfikator Czasopisma: 201398. Przypisane dyscypliny naukowe: Ekonomia i finanse (Dziedzina nauk społecznych); Nauki o zarządzaniu i jakości (Dziedzina nauk społecznych). © The Authors 2026.

OPEN ACCESS · CC BY-NC-SA 4.0 This article is published with open access under the License Open Journal Systems of Nicolaus Copernicus University in Toruń, Poland, and is distributed under the terms of the Creative Commons Attribution Non-commercial Share Alike License (<http://creativecommons.org/licenses/by-nc-sa/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the work is properly cited. The authors declare no conflict of interest regarding the publication of this paper.

Perianal Abscess as a Potential First Manifestation of Crohn's Disease - Current State of Knowledge

Kinga Skalniak

University of Rzeszów

al. Tadeusza Rejtana 16C, 35-310 Rzeszów, Poland

<https://orcid.org/0009-0009-4752-9351>

bskalniak@gmail.com

Julia Wojtanowicz

University of Rzeszów

al. Tadeusza Rejtana 16C, 35-310 Rzeszów, Poland

<https://orcid.org/0009-0008-0747-9946>

wojtanowiczjulia@gmail.com

Mikołaj Bochnak
University of Rzeszów
al. Tadeusza Rejtana 16C, 35-310 Rzeszów, Poland
<https://orcid.org/0009-0007-9913-8470>
mikolajbochnak@gmail.com

Corresponding Author
Kinga Skalniak
bskalniak@gmail.com

Abstract

Introduction and Purpose

Perianal abscess (PAA) may occasionally precede the diagnosis of Crohn's disease (CD), including in patients without previously recognized inflammatory bowel disease or typical intestinal symptoms. Most PAAs, however, are unrelated to CD, making it difficult to determine which patients require further investigation after a first episode. This review evaluates PAA as a potential early manifestation of CD, with particular attention to clinical features that may raise suspicion of underlying disease and to the limitations of the available evidence.

Materials and Methods

A structured search of PubMed/MEDLINE was performed, with the final search completed on 12 August 2026. Studies addressing PAA, perianal fistula (PAF), early recognition of CD, diagnostic assessment, and subsequent disease course were considered. PAA-specific evidence was evaluated separately from mixed PAA/PAF cohorts and PAF-only studies to avoid direct extrapolation of fistula-derived findings to patients presenting with an isolated abscess.

Results

PAA is associated with subsequent CD diagnosis, but the absolute risk following a first isolated episode remains uncertain. Most evidence on early recognition derives from PAF or mixed perianal populations. Gastrointestinal symptoms, an atypical or recurrent perianal course, inflammatory abnormalities, and selected imaging findings may increase clinical

suspicion, while faecal calprotectin may support further assessment. However, no PAA-specific risk model or diagnostic strategy has been prospectively validated.

Conclusion

A first isolated PAA may be an early manifestation of CD, but the abscess alone does not reliably distinguish Crohn-related from cryptoglandular disease. Further investigation should be guided by the overall clinical context and evolution of perianal disease rather than by a single finding or diagnostic threshold. Prospective studies beginning at the first PAA episode are needed to define absolute risk and determine which patients are most likely to benefit from early CD assessment.

Keywords: Crohn's disease; perianal abscess; perianal Crohn's disease; cryptoglandular disease; early diagnosis; differential diagnosis

1. Introduction

Crohn's disease (CD) may involve the perianal region at different stages of its course, and in some patients perianal manifestations appear before intestinal disease is recognized [1,2]. Perianal abscess (PAA) is one possible presentation and may occasionally be the first event leading a patient to medical attention. The diagnostic significance of such a presentation is difficult to judge when there is no previous history of inflammatory bowel disease and no gastrointestinal symptoms suggesting an underlying chronic inflammatory process.

Most PAAs arise from cryptoglandular infection and are managed primarily by adequate drainage [3,4]. At the first episode, however, the underlying cause may not always be apparent. An abscess occurring in a patient with previously unrecognized CD may precede other manifestations that later make the diagnosis evident. This creates a practical dilemma. Extensive investigation of every patient presenting with a first PAA would expose many individuals with uncomplicated cryptoglandular disease to unnecessary testing, whereas a more restrictive approach may delay recognition of CD in a smaller but clinically relevant group.

Interpretation of the available literature is complicated by the close relationship between abscesses and fistulas. Much of what is known about perianal disease preceding CD diagnosis comes from studies of perianal fistulas (PAF), including evidence that

fistulizing disease may precede recognition of luminal CD by several years [2]. PAA and PAF are closely related clinically, but they are not interchangeable study populations. Predictors identified in patients with established fistulas cannot automatically be assumed to have the same diagnostic value after a first isolated abscess.

This review examines PAA as a potential first manifestation of CD in patients without a previous diagnosis of inflammatory bowel disease. It considers the pathogenesis and natural history of perianal disease, available epidemiological evidence, clinical features associated with greater suspicion of CD, and the roles of biomarkers, imaging, and luminal assessment. Particular attention is given to the distinction between evidence obtained directly from patients with PAA and findings derived from fistulizing or mixed perianal populations, as this distinction remains central to the interpretation of current diagnostic strategies.

2. Pathogenesis and Natural History

Perianal abscess formation in Crohn's disease (CD) is related to the transmural and penetrating nature of the inflammatory process. Deep anorectal ulceration may extend through the bowel wall and involve adjacent tissues, creating conditions for local suppuration and penetrating complications. In the conventional cryptoglandular model, infection originates within the anal glands, usually following obstruction of their ducts. Although these pathways differ in their initiating mechanisms, local anatomy and microbial factors may contribute to abscess formation in both settings, while chronic intestinal inflammation provides an additional substrate for tissue penetration in CD [3–6].

Perianal involvement in CD is not limited to established fistulas. Deep anal or perianal ulceration and inflammatory tissue damage may coexist with, or provide a local substrate for, penetrating complications. The inflammatory process may involve the anal canal, surrounding soft tissues, and rectal wall, with abscesses, fistulas, and stenotic lesions forming part of a broader spectrum of perianal disease. An abscess may therefore arise in tissues already affected by Crohn-related inflammation even when intestinal CD has not yet been recognized. Evidence defining this sequence specifically in patients with a first isolated abscess remains limited [5,6].

Most mechanistic studies of penetrating perianal CD have examined fistulous tissue rather than isolated abscesses. Persistent inflammation and disturbed wound healing appear to contribute to fistula maintenance, with studies implicating cytokine signaling, epithelial-to-mesenchymal transition, and extracellular matrix remodeling. Alterations in the local microbial environment have also been proposed, although their causal role remains uncertain. These mechanisms may help explain the persistence of established fistulizing disease, but their relevance to the formation of a first isolated PAA has not been established [5–7].

The relationship between abscesses and fistulas is less linear than is sometimes assumed. After drainage, a PAA may heal completely, recur, or later be associated with a clinically apparent fistulous tract. Fistula formation following an abscess is not specific to CD and is also a recognized outcome of cryptoglandular infection. Conversely, a fistulous tract may already be present but clinically occult when an abscess is diagnosed, and fistulizing disease may occur without a previously documented abscess. The sequence of abscess followed by fistula should therefore not be regarded as a specific natural-history pattern of CD [3,4,8].

Perianal manifestations may occur before, concurrently with, or after recognition of luminal CD. An abscess may be the first clinically apparent event in a patient whose intestinal disease has not yet been recognized. This does not necessarily mean that the abscess represents an earlier biological stage of fistulizing disease; it may instead be the first manifestation that brings an evolving inflammatory process to clinical attention. In other patients, the abscess remains an isolated anorectal event without subsequent evidence of CD [1,2].

The frequency of these different clinical courses cannot be reliably determined from the available literature. Existing longitudinal data rarely allow the natural history of a first isolated PAA to be separated from that of fistulizing or already established perianal CD. Consequently, it remains unclear how often an apparently isolated abscess represents the earliest recognized manifestation of CD [1,2,5].

3. Epidemiology and Clinical Course

Perianal involvement is a well-recognized manifestation of Crohn's disease (CD), although its reported frequency varies according to the population studied and the definition of perianal disease. Population-based studies generally consider abscesses and fistulas together, which makes it difficult to determine how often a perianal abscess (PAA) occurs as an isolated manifestation. Perianal disease may be present at the time of CD diagnosis, precede recognition of intestinal disease, or develop later in its course. These observations establish the clinical relevance of perianal manifestations in CD but provide limited information about the specific risk associated with a first isolated PAA [1,2].

Population-based cohorts illustrate the heterogeneity of this presentation. In a New Zealand cohort of 715 patients with CD, 26.6% developed symptomatic perianal disease. Fistulas were the most frequently recorded manifestation, while abscesses occurred in 42.1% of patients with perianal involvement. The timing varied considerably, with perianal disease documented both before and after recognition of intestinal CD. Such studies describe the burden and clinical spectrum of perianal CD, but they begin with patients already known to have CD and therefore cannot determine the probability of CD in an otherwise unselected patient presenting with an abscess [9].

The best quantified evidence for perianal disease preceding CD diagnosis concerns perianal fistula (PAF). A 2024 systematic review and meta-analysis of 17 studies including 34,030 patients with CD found that PAF preceded CD diagnosis in 8.6% of patients. The weighted mean interval between fistula presentation and diagnosis was 45.9 months. These findings show that fistulizing perianal disease may precede recognition of CD by several years and provide an important explanation for diagnostic delay in this population. They should not, however, be interpreted as estimates of risk after a first isolated PAA [2].

Studies beginning with an abscess presentation are more directly relevant but remain limited. In a large English population-based study of patients presenting with a new anorectal abscess, 2.9% were subsequently diagnosed with CD, with a median interval of 14 months. Most fistulas that developed after the abscess appeared within the first year, and IBD was independently associated with subsequent fistula formation. These findings show that an abscess may precede recognition of CD, but the study was based on routinely collected population data and concerned new anorectal abscesses rather than a prospectively characterized cohort restricted

to first isolated PAA. The reported 2.9% should therefore not be treated as a precise estimate of CD risk in the population considered in this review [10].

Recurrence may also alter the clinical context. In a Swedish national registry study including 18,877 patients treated for perianal abscess, CD was associated with a higher prevalence of PAA and was the only examined comorbidity independently associated with readmission for abscess in multivariable analysis. This association supports greater attention to recurrent disease, but recurrence itself remains non-specific and cannot distinguish CD-related from cryptoglandular disease [11].

The epidemiological evidence therefore leaves an important gap. Studies starting from established CD describe how often perianal disease occurs, while PAF cohorts demonstrate that fistulizing disease may substantially precede luminal diagnosis. Abscess-first studies provide a more relevant perspective, but available cohorts do not isolate the exact population addressed in this review. The absolute risk of subsequent CD after a first isolated PAA in an adult without known IBD or an established fistula consequently remains uncertain [1,2,9–11].

4. Diagnosis and Risk Stratification

The main diagnostic challenge after a first perianal abscess (PAA) is deciding which patients require investigation beyond routine treatment of the abscess. Most PAAs are unrelated to Crohn's disease (CD), and systematic investigation of every patient would expose many individuals to unnecessary procedures. Conversely, restricting further assessment to patients with established gastrointestinal symptoms may miss CD presenting initially with perianal disease. The decision to investigate should therefore be based on the overall clinical presentation rather than on the abscess alone [3,4].

Clinical history remains the starting point. Chronic or recurrent diarrhoea, abdominal pain, weight loss, fatigue, and a family history of inflammatory bowel disease increase suspicion, particularly when they accompany an atypical perianal course. Persistent drainage, recurrent abscesses, repeated interventions, or subsequent fistula formation may also justify reassessment. None of these findings is specific to CD, and similar patterns may occur in cryptoglandular disease. Their value lies in identifying patients in whom further investigation becomes more reasonable [12].

Attempts have been made to formalize this assessment. A systematic review examining early recognition of CD in patients with perianal disease identified eight studies reporting potentially relevant clinical features, but only two concerned PAA, whereas six focused on perianal fistula (PAF). The subsequently developed perianal red flags index (pRFI) was derived from patients with PAF rather than isolated abscesses. Age, previous perianal interventions, weight loss, and abdominal pain contributed to discrimination between CD-associated and cryptoglandular fistulas, with a reported area under the receiver operating characteristic curve of 0.83. The derivation cohort was small, however, comprising 25 patients with CD-associated PAF and 75 controls, and symptoms at first presentation were collected retrospectively. The pRFI is therefore useful as evidence that combinations of clinical features may improve case selection, but its performance cannot be assumed to apply to patients presenting with a first isolated PAA [12].

Prospective work has begun to move assessment closer to the initial perianal presentation. The PREFAB pilot study included patients with PAA as well as PAF and evaluated a screening strategy incorporating faecal calprotectin (FC) and predefined clinical criteria. This represents an important change from studies restricted to established fistulizing disease, but it does not yet provide a validated diagnostic pathway specifically for patients with a first isolated PAA [13].

FC is attractive in this setting because it provides a non-invasive measure of intestinal inflammation. Its evidence base in perianal disease remains limited. A 2025 systematic review identified only three studies evaluating FC for differentiation between IBD-related and cryptoglandular PAF. Proposed thresholds ranged from 110 to 344 $\mu\text{g/g}$, with sensitivities of 52–81% and specificities of 77–93%. These results suggest that FC may help select patients for further assessment, but the variation between studies is substantial and the proposed thresholds have not been validated in patients presenting with a first isolated PAA. A single FC value should therefore not be used as a PAA-specific diagnostic threshold [14,15].

Routine blood tests provide additional context but are non-specific. Elevated C-reactive protein or erythrocyte sedimentation rate, anaemia, iron deficiency, thrombocytosis, or hypoalbuminaemia may support suspicion of systemic or intestinal inflammation when present alongside compatible clinical features. Normal results do not exclude CD, particularly when intestinal disease is limited or the presentation is predominantly perianal [16].

Pelvic magnetic resonance imaging (MRI) serves a different purpose. It is particularly useful when fistulous disease, secondary extensions, residual collections, or complex perianal anatomy are suspected and may identify abnormalities that are not apparent on clinical examination. Some imaging features are more frequently associated with CD-related than cryptoglandular fistulas, but these observations again derive mainly from PAF populations. MRI can identify anatomical findings that increase suspicion of CD and define the extent of local disease, but it cannot establish or exclude luminal CD on its own [17,18].

When suspicion persists after clinical assessment and appropriate laboratory or perianal evaluation, investigation should shift from characterization of the local lesion to assessment for intestinal disease. Ileocolonoscopy with biopsies remains central to the evaluation of suspected CD, with small-bowel assessment providing complementary information when indicated. The decision to proceed to luminal investigation after a first PAA cannot currently be based on a validated PAA-specific score or threshold and must instead reflect the accumulated clinical evidence [16,19].

The available diagnostic tools therefore answer different questions. Clinical features and biomarkers help determine whether underlying intestinal inflammation is plausible; pelvic MRI defines perianal anatomy and may reveal occult fistulizing disease; ileocolonoscopy and small-bowel imaging evaluate luminal involvement. No single symptom, biomarker, imaging feature, or risk score has been shown to reliably identify CD after a first isolated PAA. Risk stratification in this setting is best understood as a means of selecting patients for further assessment rather than establishing the diagnosis itself [12–14,16–19].

Table 1. Clinical and diagnostic findings relevant to the assessment of Crohn’s disease in patients presenting with a perianal abscess

Domain	Finding and clinical relevance	Evidence base	Key limitation
Clinical features	Gastrointestinal symptoms, weight loss, and other findings suggestive of	Mainly PAF-derived and general IBD evidence	Predictive value after a first isolated PAA is poorly defined

	intestinal inflammation may increase suspicion of CD		
Perianal course	Recurrence, persistent non-healing, repeated interventions, or subsequent fistula formation may warrant reassessment	Mixed PAA/PAF and PAF-derived	These findings are not specific to CD
Faecal calprotectin	Elevated FC may support further investigation for intestinal inflammation	PAF-derived; prospectively assessed in a mixed PAA/PAF cohort	No validated threshold for first isolated PAA
Pelvic imaging	Pelvic MRI can define anatomy and identify occult fistulous or complex perianal disease when clinically suspected	Mainly PAF/perianal disease evidence	Imaging findings alone cannot establish or exclude luminal CD
Luminal assessment	Ileocolonoscopy with biopsies combined with IUS and/or MRE evaluates suspected intestinal CD	ECCO guidance for suspected IBD	Indications for this work-up after an otherwise uncomplicated first PAA have not been established

5. Management and Follow-up

Management of a first perianal abscess (PAA) is initially determined by the acute septic process rather than by its possible association with Crohn's disease (CD). Adequate drainage remains the primary treatment. Management of a fistula identified at the time of drainage depends on its anatomy and clinical setting, and definitive fistula treatment is not required in every patient during the acute episode. Antibiotics are generally reserved for selected situations, including associated cellulitis, systemic signs of infection, or immunosuppression, rather than routinely prescribed after uncomplicated drainage [3,4].

Once the acute episode has resolved, management is less clearly defined. In patients with a first PAA and no convincing evidence of CD at presentation, current evidence does not support routine ileocolonoscopy, small-bowel imaging, or repeated pelvic MRI in every case. An uncomplicated course with complete healing does not by itself provide a strong indication for immediate escalation of CD-directed investigation. Failure to heal, recurrent abscess formation, persistent drainage, or subsequent fistula formation changes the clinical context and warrants reassessment [10–13,16,19].

Fistula formation after drainage requires careful interpretation. Population-based data show that fistulas may develop after anorectal abscesses in patients without inflammatory bowel disease, although IBD is associated with a higher risk of subsequent fistula formation. The abscess–fistula sequence is therefore not specific to CD. A newly diagnosed fistula becomes more concerning when accompanied by gastrointestinal symptoms, inflammatory abnormalities, recurrent perianal disease, or other features suggesting an underlying inflammatory disorder [10–12].

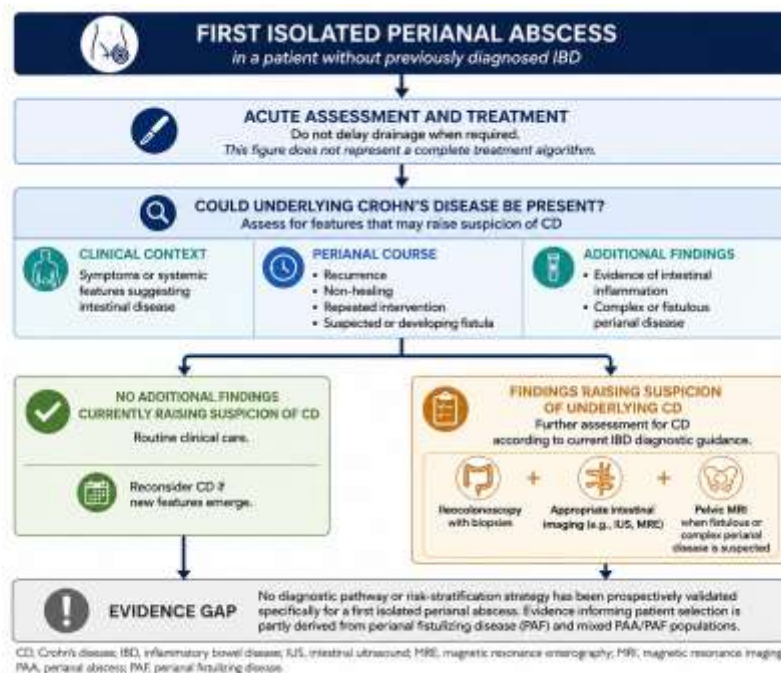
The clinical picture may also change independently of fistula formation. Persistent or new gastrointestinal symptoms, weight loss, inflammatory laboratory abnormalities, repeated perianal interventions, or increasing complexity of local disease should lead to reconsideration of CD. Assessment at that stage should reflect the evolving presentation rather than rely solely on findings obtained during the initial abscess episode [12,13].

No evidence-based surveillance interval has been established specifically for adults after a first isolated PAA. There is also insufficient evidence to recommend scheduled faecal calprotectin measurement, pelvic MRI, or ileocolonoscopy solely because a patient has experienced an otherwise uncomplicated abscess. Targeted investigation remains appropriate when clinical

suspicion persists, but a uniform surveillance programme for all patients after a first PAA is not currently supported by evidence [13,14,16,19,20].

Once CD is established, management follows a different pathway. Control of perianal sepsis remains essential, while persistent fistulizing disease generally requires coordinated gastroenterological and colorectal surgical management. Detailed treatment of established perianal CD is beyond the scope of this review [20,21].

Figure 1. Proposed evidence-informed framework for the assessment of possible Crohn's disease in patients presenting with a first isolated perianal abscess. The framework summarizes clinical features that may prompt further assessment for CD while acknowledging the lack of a prospectively validated PAA-specific diagnostic strategy.



Abbreviations: CD, Crohn's disease; IBD, inflammatory bowel disease; IUS, intestinal ultrasound; MRE, magnetic resonance enterography; MRI, magnetic resonance imaging; PAA, perianal abscess; PAF, perianal fistula.

6. Current Challenges and Future Perspectives

The main unresolved issue is the lack of prospective evidence beginning with patients presenting with a first isolated perianal abscess (PAA). Current knowledge is derived largely from cohorts of patients with established Crohn's disease (CD), perianal fistula (PAF), or

mixed perianal disease. These studies have identified clinical and diagnostic features associated with CD, but they do not establish the absolute risk of CD in an adult presenting with an otherwise unexplained first PAA [1,2,9–13,20].

Recent studies have moved closer to this population but have not eliminated this uncertainty. The perianal red flags index (pRFI) was developed in patients with PAF, while studies evaluating faecal calprotectin (FC) have also focused predominantly on fistulizing disease. PREFAB prospectively included patients presenting with PAA as well as PAF and therefore represents an important step towards assessment earlier in the diagnostic pathway. Nevertheless, the available data remain insufficient to define a PAA-specific combination of clinical findings, biomarkers, or imaging features that reliably identifies patients requiring further investigation [12–15].

A more informative evidence base would begin at the first abscess episode. Prospective cohorts should distinguish an isolated PAA from an abscess associated with an established fistula, previous perianal disease, or known IBD. Standardized baseline assessment would allow clinical characteristics, inflammatory markers, FC, and relevant imaging findings to be evaluated in the population in which they are intended to guide decisions. Such cohorts would also provide a more reliable estimate of how frequently CD becomes apparent after an initially isolated presentation and over what interval this occurs [10,12–14,20].

How CD is ascertained is equally important. If ileocolonoscopy or small-bowel imaging is performed mainly in patients with positive screening tests or strong clinical suspicion, disease may be preferentially detected in those already considered high risk. Conversely, initially low-risk patients may remain undiagnosed unless adequate follow-up is maintained. Prespecified diagnostic criteria and longitudinal assessment across the cohort would reduce verification bias and allow more reliable estimation of absolute risk.

Future studies should also look beyond incident CD as the sole outcome. Time to diagnosis, recurrent abscess formation, subsequent fistulization, and repeated perianal interventions are relevant to the clinical course. The burden of diagnostic investigation is equally important. A strategy that detects additional cases of CD but requires invasive assessment of a large proportion of patients with uncomplicated PAA may offer limited clinical benefit [10,11,13].

These data are needed before a PAA-specific risk model or diagnostic pathway can be meaningfully validated. Ultimately, the value of any risk-based strategy will depend not only

on its ability to identify CD, but also on whether it shortens clinically relevant diagnostic delay without exposing large numbers of low-risk patients to unnecessary investigation. Current evidence does not yet establish such a balance [12–14,20].

Conclusions

A perianal abscess (PAA) may be the first recognized manifestation of Crohn's disease (CD), but a single episode does not, by itself, distinguish CD-related from cryptoglandular disease or justify extensive investigation for CD. The diagnostic significance of an initial abscess depends on the broader clinical picture and on how the disease evolves after treatment [1,2,10,11].

Suspicion of CD should increase when a PAA occurs alongside gastrointestinal symptoms, systemic or laboratory evidence of inflammation, recurrent or persistent perianal disease, or subsequent fistula formation. These findings are not diagnostic in isolation, and much of the evidence supporting their use derives from patients with perianal fistulas rather than from those presenting with a first isolated abscess. Biomarkers and pelvic imaging may support patient selection and characterize local disease, but neither provides a PAA-specific diagnostic threshold for CD [12–18].

The main clinical challenge is not to investigate every first PAA, but to identify the smaller group of patients in whom further assessment for CD is justified. At present, this requires integration of clinical history, subsequent perianal course, laboratory findings, and appropriate imaging or luminal assessment rather than reliance on a single risk factor or test. Prospective studies beginning at the first PAA episode are needed to define the absolute risk of subsequent CD and determine whether a risk-based diagnostic strategy can shorten meaningful diagnostic delay without unnecessary investigation [12–14,20].

Author's contribution

Conceptualization – Kinga Skalniak, Julia Wojtanowicz, Mikołaj Bochnak,

Formal analysis – Kinga Skalniak, Mikołaj Bochnak

Investigation – Kinga Skalniak, Julia Wojtanowicz

Data curation – Julia Wojtanowicz, Kinga Skalniak

Writing – rough preparation – Kinga Skalniak, Julia Wojtanowicz, Mikołaj Bochnak,

Writing – review and editing – Kinga Skalniak, Julia Wojtanowicz, Mikołaj Bochnak,

Visualization – Kinga Skalniak

All authors have read and agreed with published version of the manuscript.

Funding Statement – No applicable.

Institutional Review Board Statement – Not applicable.

Informed Consent Statement – Not applicable.

Data Availability Statement – The authors confirm that the data supporting this study are available in the article's references.

Conflict of Interest – Authors declare no conflict of interest.

References

1. Tsai L, McCurdy JD, Ma C, et al. Epidemiology and Natural History of Perianal Crohn's Disease: A Systematic Review and Meta-Analysis of Population-Based Cohorts. *Inflamm Bowel Dis*. 2022;28(10):1477–1484. doi:10.1093/ibd/izab287.
2. Munster LJ, Mönnink GLE, van Dieren S, et al. Fistulizing Perianal Disease as a First Manifestation of Crohn's Disease: A Systematic Review and Meta-Analysis. *J Clin Med*. 2024;13(16):4734. doi:10.3390/jcm13164734.
3. Eglinton TW, Barclay ML, Gearry RB, Frizelle FA. The spectrum of perianal Crohn's disease in a population-based cohort. *Dis Colon Rectum*. 2012;55(7):773–777. doi:10.1097/DCR.0b013e31825228b0.
4. Gaertner WB, Burgess PL, Davids JS, et al. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula. *Dis Colon Rectum*. 2022;65(8):964–985. doi:10.1097/DCR.0000000000002473.

5. Reza L, Gottgens K, Kleijnen J, et al. European Society of Coloproctology: Guidelines for diagnosis and treatment of cryptoglandular anal fistula. *Colorectal Dis.* 2024;26(1):145–196. doi:10.1111/codi.16741.
6. Cao S, Colonna M, Deepak P. Pathogenesis of Perianal Fistulising Crohn's Disease: Current Knowledge, Gaps in Understanding, and Future Research Directions. *J Crohns Colitis.* 2023;17(6):1010–1022. doi:10.1093/ecco-jcc/jjad008.
7. Panés J, Rimola J. Perianal fistulizing Crohn's disease: pathogenesis, diagnosis and therapy. *Nat Rev Gastroenterol Hepatol.* 2017;14:652–664.
8. Sugrue J, Nordenstam J, Abcarian H, et al. Pathogenesis and persistence of cryptoglandular anal fistula: a systematic review. *Tech Coloproctol.* 2017;21(6):425–432. doi:10.1007/s10151-017-1645-5.
9. Swaminathan A, Sparrow MP. Perianal Crohn's disease: Still more questions than answers. *World J Gastroenterol.* 2024;30(39):4260–4266. doi:10.3748/wjg.v30.i39.4260.
10. Parian AM, Obi M, Fleshner P, Schwartz DA. Management of Perianal Crohn's Disease. *Am J Gastroenterol.* 2023;118(8):1323–1331. doi:10.14309/ajg.0000000000002326.
11. Sahnun K, Askari A, Adegbola SO, et al. Natural history of anorectal sepsis. *Br J Surg.* 2017. PMID: 28857130.
12. Adamo K, Sandblom G, Brännström F, Strigård K. Prevalence and recurrence rate of perianal abscess—a population-based study, Sweden 1997–2009. *Int J Colorectal Dis.* 2016;31(3):669–673. doi:10.1007/s00384-015-2500-7.
13. Munster LJ, Meriba GR, Schuitema J, et al. Early diagnosis of Crohn's disease in patients presenting with a perianal fistula: systematic review and development of a perianal red flags index. *Tech Coloproctol.* 2025;29(1):89. doi:10.1007/s10151-024-03106-y.
14. Munster LJ, de Groof EJ, van Dieren S, et al. Prediction tool for early identification of patients at risk of Crohn's disease in perianal fistulas and abscesses (PREFAB): Analysis of a prospective pilot study at a non-academic, teaching centre in the Netherlands. *Tech Coloproctol.* 2025;29(1):171. doi:10.1007/s10151-025-03209-0.
15. Chatziisaak S, Burri P, Wolf S, et al. The diagnostic value of faecal calprotectin levels in patients with perianal fistula: A systematic review. *Colorectal Dis.* 2025;27(12):e70331. doi:10.1111/codi.70331.

16. Stevens TW, D'Haens GR, Duijvestein M, Bemelman WA, Buskens CJ, Gecse KB. Diagnostic accuracy of faecal calprotectin in patients with active perianal fistulas. *United European Gastroenterol J*. 2019;7(4):496–506. doi:10.1177/2050640619834464.
17. Kucharzik T, Taylor S, Allocca M, et al. ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 1. *J Crohns Colitis*. 2025;19(7):jjaf106. doi:10.1093/ecco-jcc/jjaf106.
18. Yanai H, Feakins R, Allocca M, et al. ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 2. *J Crohns Colitis*. 2025;19(7):jjaf107. doi:10.1093/ecco-jcc/jjaf107.
19. Siddiqui MRS, Ashrafian H, Tozer P, et al. A diagnostic accuracy meta-analysis of endoanal ultrasound and MRI for perianal fistula assessment. *Dis Colon Rectum*. 2012;55(5):576–585. doi:10.1097/DCR.0b013e318249d26c.
20. Schwartz DA, Wiersema MJ, Dudiak KM, et al. A comparison of endoscopic ultrasound, magnetic resonance imaging, and exam under anesthesia for evaluation of Crohn's perianal fistulas. *Gastroenterology*. 2001;121(5):1064–1072. doi:10.1053/gast.2001.28676.
21. Strategies to Distinguish Perianal Fistulas Related to Crohn's Disease From Cryptoglandular Disease: Systematic Review With Meta-Analysis. *Inflamm Bowel Dis*. 2022.
22. Hanna LN, Munster LJ, Joshi S, et al.; TOpClass Collaborators. Isolated perianal Crohn's disease: a systematic review and expert consensus proposing novel diagnostic criteria and management advice. *Lancet Gastroenterol Hepatol*. 2025;10(8):757–768. doi:10.1016/S2468-1253(25)00007-X.
23. Gecse KB, Bemelman W, Kamm MA, et al. A global consensus on the classification, diagnosis and multidisciplinary treatment of perianal fistulising Crohn's disease. *Gut*. 2014. PMID:24951257.
24. Devi J, Ballard DH, Aswani-Omprakash T, Parian AM, Deepak P. Perianal fistulizing Crohn's disease: Current perspectives on diagnosis, monitoring and management with a focus on emerging therapies. *Indian J Gastroenterol*. 2024;43(1):48–63. doi:10.1007/s12664-024-01524-2.

25. Arkenbosch JHC, van Ruler O, de Vries AC, van der Woude CJ, Dwarkasing RS. The role of MRI in perianal fistulizing disease: diagnostic imaging and classification systems to monitor disease activity. *Abdom Radiol (NY)*. 2025. doi:10.1007/s00261-024-04455-w.
26. Anandabaskaran S, Hanna L, Iqbal N, Constable L, Tozer P, Hart A. Where Are We and Where to Next?—The Future of Perianal Crohn's Disease Management. *J Clin Med*. 2023;12(19):6379. doi:10.3390/jcm12196379.
27. Scheurlen KM, MacLeod A, Kavalukas SL, Galandiuk S. State-of-the-art surgery for Crohn's disease: part III—perianal Crohn's disease. *Langenbecks Arch Surg*. 2023;408(1):132. doi:10.1007/s00423-023-02856-x.
28. Vuyyuru SK, Solitano V, Narula N, et al. Pharmacological Therapies for the Management of Fistulizing Crohn's Disease: A Systematic Review and Meta-Analysis. *J Crohns Colitis*. 2024;18(4):589–603. doi:10.1093/ecco-jcc/jjad185.
29. Faggiani I, et al. Perianal Crohn's Disease in Inflammatory Bowel Disease: Diagnosis, Assessment and Treatment. *Life (Basel)*. 2026. doi:10.3390/life16010182.
30. Lanier MH, Hoegger MJ, Itani M, et al. MRI of Perianal Fistulas: Anatomy, Diagnosis, and Perianal Crohn Disease Treatment Monitoring. *Radiographics*. 2026;46(3):e250033. doi:10.1148/rg.250033.