

## Perianal tuberculosis in an immunocompetent patient: A diagnostic enigma unraveled by caseating granulomas

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### ABSTRACT

Perianal tuberculosis (TB) is an exceptionally rare form of extrapulmonary TB (<1% of cases), often linked to immunocompromised states but increasingly reported in immunocompetent individuals in endemic areas. We describe the case of a 48-year-old immunocompetent male from a TB-endemic region presenting with a 4-year history of progressive left perianal nodular growths (initially solitary, evolving to multiple), associated with whitish seropurulent discharge for 1 year, perianal itching, and an unintentional 5 kg weight loss over 10 months. Examination showed multiple discharging sinuses at 1, 5, and 6 o'clock positions with a 3 × 2 cm irregular hyperpigmented nodular growth at 1 o'clock, 3 cm from the anal verge. Imaging revealed an 8 × 2 cm perianal abscess with sphincter involvement and fistulous tracts. Excisional biopsy demonstrated granulomatous inflammation with epithelioid histiocytes, Langhans giant cells, fibroblastic rimming, and central caseous necrosis, consistent with tuberculous etiology. Post-operative category I anti-tubercular therapy (2HRZE/4HR) led to complete resolution at 1-month follow-up. This case highlights perianal TB as a key differential in chronic perianal lesions in immunocompetent patients from endemic regions, stressing the role of early histopathological confirmation through caseating granulomas and combined surgical-medical management to prevent diagnostic delays and sphincter damage.

**Key words:** Anti-tubercular therapy, Caseating granuloma, Extrapulmonary tuberculosis, Fistulizing disease, Immunocompetent, Perianal tuberculosis


Tuberculosis (TB) remains a leading infectious killer globally, with an estimated 10.8 million new cases and 1.25 million deaths in 2023, according to the latest World Health Organization data [1]. Extrapulmonary TB (EPTB) accounts for 16–19% of cases worldwide, rising to ~40% in high-burden Southeast Asian regions such as India [2,3]. Gastrointestinal TB constitutes <1% of EPTB, and perianal involvement is exceedingly rare (0.7–1% of all TB), frequently mimicking common anorectal conditions, such as cryptoglandular fistula-in-ano, Crohn's disease, hidradenitis suppurativa, or squamous cell carcinoma, leading to diagnostic delays and inappropriate interventions [4,5]. Pathogenesis typically involves hematogenous spread from pulmonary foci, ingestion of bacilli-laden sputum, lymphatic dissemination from intra-abdominal nodes, or direct perianal inoculation [6]. While fistulizing disease predominates (80–91%), nodular or ulcerative forms can occur in immunocompetent hosts through local reactivation [7]. Isolated perianal TB without pulmonary

involvement in immunocompetent patients challenges traditional assumptions of immunosuppression as a prerequisite, with recent case reports documenting such presentations [8,9].

The rationale for reporting this case lies in its extreme rarity as an isolated manifestation in an immunocompetent individual from a TB-endemic area (Telangana, India), prolonged 4-year diagnostic delay due to non-specific features, and successful outcome with histopathological confirmation alone (caseating granulomas) without advanced molecular testing. This underscores the need for routine biopsy in chronic perianal pathology in endemic settings to avert misdiagnosis as Crohn's or malignancy and enable sphincter-preserving management [4,10].

### CASE PRESENTATION

A 48-year-old immunocompetent male farmer presented with a 4-year history of progressive left perianal swelling. The lesion began as a solitary small nodule, gradually evolving into multiple growths. For the past 1 year, it was associated with whitish seropurulent discharge,

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perianal itching, and unintentional 5 kg weight loss over the preceding 10 months. The patient reported moderate pain associated with the swelling, which was dull-aching in character, intensity 6–7/10 on Visual Analog Scale, continuous with exacerbations during defecation, prolonged sitting, or local pressure; partially relieved by oral analgesics and warm sitz baths. There was no history of radiation, fever, cough, night sweats, rectal bleeding, constipation, altered bowel habits, prior TB exposure, or family history of TB. There were no comorbidities or immunosuppression.

Vital signs on admission were as follows: Blood pressure 118/76 mmHg, heart rate 82 bpm (regular), respiratory rate 16/min, temperature 37.2°C, and SpO<sub>2</sub> 98% on room air. Abdominal and local examination showed multiple active discharging sinuses at 1, 5, and 6 o'clock positions in lithotomy view. A 3 × 2 cm irregular, hyperpigmented, nodular growth with well-defined margins and non-tender nodular surface, located 3 cm from the anal verge at 1 o'clock, was seen (Fig. 1). Digital rectal examination revealed no intra-anal abnormality; sphincter tone was preserved.

Laboratory parameters are summarized in Table 1. Viral serology (HIV, HBsAg, and HCV) was negative. Imaging findings are detailed in Table 2 (ultrasound perineum, contrast-enhanced computed tomography abdomen/pelvis, and magnetic resonance fistulogram confirming fistulous tracts with sphincter involvement).

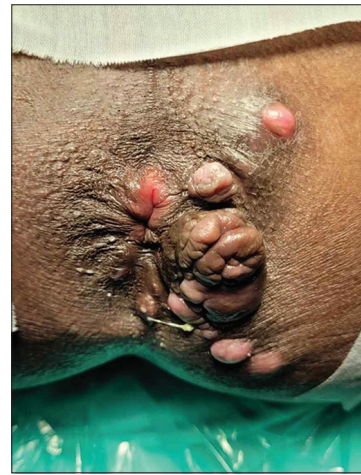
Under spinal anesthesia, excisional biopsy of the nodular growth and sinus tracts was performed. Gross specimen: polypoidal 3 × 2 cm lesion with caseous material expression (Fig. 2).

The histopathology sections showed a polypoidal structure lined by hypertrophied stratified squamous epithelium with acanthosis and papillomatosis. Subepithelium showed multiple granulomas with epithelioid histiocytes, mature lymphocytes, Langhans-type giant cells, fibroblastic rimming, and occasional central caseous necrosis. Dense mixed inflammation was present. Impression: Granulomatous lesion suggestive of Koch's (tuberculous) etiology.

The post-operative course was uneventful. Category I anti-tubercular therapy was initiated (2 months intensive phase: Isoniazid, rifampicin, pyrazinamide, ethambutol [HRZE]; 4 months continuation: HR). Complete wound healing and lesion resolution were documented at 1-month follow-up (Fig. 3).

## DISCUSSION

Perianal TB remains <1% of EPTB manifestations, traditionally linked to immunocompromised states through hematogenous dissemination, bacillary ingestion, or lymphatic spread [4,6]. However, our case of isolated perianal disease in an immunocompetent 48-year-old without pulmonary involvement aligns with emerging reports, suggesting local reactivation or autoinoculation can occur independently of immunosuppression [8,9,11].



**Figure 1:** Clinical photograph showing multiple discharging sinuses at 1, 5, and 6 o'clock positions with a 3 × 2 cm irregular hyperpigmented nodular growth at 1 o'clock (3 cm from anal verge)

**Table 1: Laboratory parameters of the patient**

Parameter	Value	Reference range
Hemoglobin	14 g/dL	13–17 g/dL
White blood cell count	9700/mm <sup>3</sup>	4000–11,000/mm <sup>3</sup>
Platelets	3.6 lakh/mm <sup>3</sup>	1.5–4.5 lakh/mm <sup>3</sup>
Serum creatinine	0.68 mg/dL	0.7–1.3 mg/dL
Erythrocyte sedimentation rate	40 mm/h	0–20 mm/h
Viral serology (HIV/HBsAg/HCV)	Negative	

**Table 2: Imaging findings**

Modality	Key findings
Ultrasound perineum	8×2 cm ill-defined hypoechoic collection; 1.7 cm max thickness
Contrast-enhanced computed tomography abdomen/pelvis	6×2 × 6 cm soft-tissue lesion extending to anal sphincter; Bilateral ischioanal fat stranding (R>L); Normal rectal contrast passage
Magnetic resonance fistulogram	1. Intersphincteric fistula with tract opening caudally at 1 and 6 o'clock positions 2. Transsphincteric fistulous tract at the 5 o'clock position

Diagnostic challenges arise from chronicity (here 4 years), insidious progression, and non-specific symptoms (discharge, weight loss, and pain on defecation), mimicking hidradenitis suppurativa, Crohn's disease, or anorectal carcinoma [5,12]. Key discriminators favoring TB included absent diarrhea/hematochezia (common in Crohn's), no extraintestinal manifestations, normal rectal mucosa on imaging, elevated erythrocyte sedimentation rate, and pathognomonic histopathology (epithelioid granulomas, Langhans giant cells, and caseous necrosis) – distinguishing from non-caseating Crohn's granulomas [13].

Pathophysiology in immunocompetent hosts likely involves low-bacillary-load local infection or reactivation, explaining the prolonged course without systemic spread. The classic histopathological triad



**Figure 2: Intraoperative photograph of excised polypoidal growth (3 × 2 cm) with caseous material from sinus tracts**



**Figure 3: One-month post-operative follow-up showing complete healing and resolution**

provided definitive diagnosis, consistent with reports of refractory perianal abscesses or fistulas resolved by biopsy + anti-tubercular treatment (ATT) [7,10].

Management includes combined surgical excision (to drain abscesses, excise nodular growth, and prevent fistula progression) with Category I ATT, achieving >90% cure rates without need for extensive fistulotomy [11,14]. Unlike Crohn's (requiring biologics ± immunomodulators), TB prioritizes antimycobacterial therapy post-debridement. Prognosis is excellent in early diagnosed immunocompetent cases (<5% recurrence with adherence), emphasizing multidisciplinary follow-up and drug susceptibility testing if needed.

This case reinforces biopsy vigilance in chronic perianal lesions in TB-endemic zones to avoid misdiagnosis, sphincter compromise, and unnecessary procedures.

## CONCLUSION

Isolated perianal TB in immunocompetent patients merits inclusion in differentials for chronic perianal pathology in endemic regions. Histopathological confirmation through caseating granulomas enables timely excision and Category I ATT, yielding rapid resolution and sphincter preservation. Heightened awareness and routine biopsy in suspicious cases optimize outcomes in resource-limited settings.

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