

Perianal Metastasis from Lung Adenocarcinoma Presenting as an Acute Abscess: A Case Report and review of the literature

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Case Report

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Abstract

Background:

Lung cancer is one of the most common malignancies worldwide and frequently metastasizes to distant sites such as the liver, bones, and brain. Perianal involvement, however, is exceptionally rare.

Case Presentation:

A 76-year-old man with a 50-pack-year smoking history and a known pulmonary nodule presented with a one-month history of perianal pain and a three-month history of productive cough. Physical examination revealed a tender, erythematous perianal mass, leading to an initial diagnosis of perianal abscess. The patient underwent incision and drainage; intraoperatively, an indurated mass was noted, and histopathological examination unexpectedly revealed poorly differentiated adenocarcinoma with sarcomatoid differentiation. Subsequent bronchoscopic evaluation confirmed primary lung adenocarcinoma. The patient's clinical course was complicated by progressive pulmonary infection, ultimately resulting in fatal respiratory failure shortly after diagnosis.

Conclusion:

This case highlights an exceptionally rare pattern of metastatic lung cancer presenting as a benign anorectal condition. It underscores the importance of maintaining a high index of suspicion for metastatic disease in patients with atypical or refractory perianal lesions, particularly those with a history of malignancy or significant risk factors. Early histopathological evaluation is essential to avoid unnecessary surgical intervention and to facilitate timely initiation of systemic therapy.

Introduction

Lung cancer is one of the most common malignancies worldwide, with approximately 2.5 million new cases diagnosed annually, imposing a substantial public health burden on both society and families [1]. Common sites of lung cancer metastasis include the liver, pleura, adrenal glands, brain, and skeletal system [2]. Although gastrointestinal metastasis is not uncommon in advanced lung cancer, involvement of the perianal region is exceedingly rare, with only a few cases reported in the literature [3–8]. To date, approximately 20 cases of perianal or anal metastasis from lung cancer have been documented, highlighting the limited clinical familiarity and the absence of standardized management guidelines [5, 7]. We present a case of lung adenocarcinoma metastasizing to the external anal sphincter, initially mimicking an acute perianal abscess. The metastatic origin was confirmed by immunohistochemical profiling of the perianal specimen, which demonstrated a TTF-1+/Napsin A+ immunophenotype consistent with a pulmonary primary. This case highlights the importance of recognizing this unusual metastatic pattern to avoid misdiagnosis and delayed treatment. This report was prepared in accordance with the CARE (CAsE REport) guidelines[9].

Case presentation

A 76-year-old man was admitted on October 8 of 2025 with a one-month history of perianal pain. He also reported a three-month history of chronic cough producing white mucoid sputum, which had partially responded to antibiotic treatment at a local clinic. His medical history was significant for pulmonary emphysema, chronic bronchitis, and a pulmonary nodule identified one year previously. However, the original imaging reports are regrettably unobtainable, and the size, location, and interval change of the prior nodule cannot be ascertained. He had a 50-pack-year smoking history but had quit smoking two years prior. Physical examination revealed stable vital signs: temperature 36.8°C, heart rate 82 bpm, respiratory rate 18/min, blood pressure 138/82 mmHg, and oxygen saturation 96% on room air. A localized, tender, erythematous mass measuring 3 cm in diameter was identified 1.5 cm from the anal verge, extending from the 1 to 3 o'clock position (in the knee-chest position), with no fluctuance. Laboratory studies revealed elevated inflammatory markers: white blood cell count $9.93 \times 10^9/L$ (reference range: $3.5\text{--}9.5 \times 10^9/L$), neutrophil percentage 70.7% (reference range: 40–75%), C-reactive protein 69.99 mg/L (reference range: 0–5 mg/L), and erythrocyte sedimentation rate 65 mm/h (reference range: 0–20 mm/h), along with mild anemia (hemoglobin: 112g/L; reference range: 130–175 g/L) and hypoalbuminemia (31.5 g/L; reference range: 35–50 g/L). Contrast-enhanced computed tomography (CT) of the chest revealed a tumor in the right lower lobe accompanied by scattered pulmonary infiltrates and multiple enlarged hilar and mediastinal lymph nodes (Fig. 1). CT revealed the right lower lobe mass (37 × 25 mm) and multiple hilar and mediastinal lymph nodes. No pleural effusion or pleural thickening was noted. Abdominal, pelvic, brain, and skeletal imaging were not performed due to the patient's rapid clinical deterioration. Based on the available imaging and the confirmed perianal metastasis, the clinical stage was cT2aN2M1b (perianal), stage IVA, according to American Joint Committee on Cancer 8th edition. Anoscopy performed at the time of incision and drainage revealed no primary anorectal tumor; colonoscopy was not pursued due to the patient's declining clinical condition. Pelvic magnetic resonance imaging (MRI) was interpreted as an abscess-like lesion in the right perianal region (Fig. 2).

The patient subsequently underwent incision and drainage of the perianal abscess under spinal anesthesia. Intraoperatively, a 4 × 2 cm indurated mass was noted, from which approximately 10 mL of pus was drained from a 4-cm-deep cavity. Histopathological examination of the excised tissue unexpectedly revealed poorly differentiated adenocarcinoma with sarcomatoid differentiation (Fig. 3). Immunohistochemical (IHC) staining was performed on the perianal specimen, revealing the following profile: PCK (+), CK7 (+), CK20 (–), Vimentin (+), TTF-1 (+), Napsin A (+), HMB45 (–), S100 (partial +), Melan-A (–), P40 (–), Syn (focal weak +), CgA (–), INSM1 (–), SATB2 (partial +), CDX-2 (–), Ki-67 (LI approximately 30%), MyoD1 (–), LCA (scattered +), CK8/18 (+), ALK (–), SOX10 (–), Desmin (–), CD68 (+), and Myogenin (–). This immunophenotype, characterized by positivity for TTF-1 and Napsin A with negativity for CK20, CDX-2, and P40, supported a pulmonary adenocarcinoma origin and effectively excluded primary anorectal, squamous, melanocytic, neuroendocrine, and mesenchymal differentials. The specimen was reviewed by both thoracic and gastrointestinal pathologists, who concurred on the diagnosis of metastatic adenocarcinoma consistent with a pulmonary primary.

Postoperatively, the patient received empirical intravenous antibiotics (ceftriaxone 2 g daily and metronidazole 500 mg three times daily). Blood cultures were negative. Pus culture from the perianal abscess was not performed due to the emergency nature of the procedure, and sputum cultures were not obtained prior to antibiotic initiation. Upon readmission five days later with fever, antibiotic therapy was escalated to piperacillin-tazobactam. Fiberoptic bronchoscopy was subsequently performed under local anesthesia, and forceps biopsy specimens were obtained from the tumor in the right lower lobe bronchus, confirming the clinical diagnosis of primary lung adenocarcinoma. These biopsy specimens were sent to an external laboratory for molecular testing; however, the complete pathological reports are regrettably unobtainable. The patient's clinical course was further complicated by progressive hypoxemia, and serial chest CT demonstrated progression of pulmonary infiltrates. The cause of death was documented as respiratory failure secondary to progressive pulmonary infection in the setting of advanced malignancy, ultimately leading to fatal respiratory failure on 16 October 2025. Systemic anticancer therapy was not initiated due to rapid deterioration and the family's choice of comfort care.

Discussion

Distant metastases from lung cancer most commonly involve the liver, pleura, adrenal glands, and skeletal system. Although gastrointestinal metastasis occurs in 4.7–14% of cases (predominantly to the small intestine), metastasis to the perianal, rectal, or perirectal regions is exceptionally rare [2]. Of note, this incidence derives largely from autopsy series; clinically detected gastrointestinal metastases are considerably less frequent. In a retrospective cohort of 2,066 lung cancer patients, Taira et al reported a clinical detection rate of only 0.33%, underscoring that most such metastases are clinically silent and may easily be overlooked in routine practice—particularly when presenting with non-specific symptoms that mimic benign anorectal conditions[10].

The clinical symptoms of perirectal and perianal metastases are typically nonspecific and often resemble those of primary anorectal tumors, frequently leading to diagnostic delay [3, 5]. Consequently, these presentations are often mistaken for common perianal abscesses. Typical perianal abscesses, which usually originate from anal gland infections, present as painful perianal masses and are diagnosed primarily by physical examination. For deeper lesions, imaging modalities such as CT, MRI, or endoanal ultrasound are required to delineate their extent. Although these imaging studies cannot reliably distinguish metastasis from infection, they are invaluable for defining the anatomical extent of the lesion and guiding subsequent biopsy. Crucially, whereas a standard perianal abscess requires surgical drainage, a metastatic lesion necessitates a shift to systemic therapy.

The clinical manifestations of perianal metastasis from lung cancer are diverse and nonspecific; they may include abscess-like lesions, palpable masses (with or without ulceration), or perianal skin ulcers [7]. Rarely, they may present as polypoid tumors within the anal canal[4]. This lack of specificity renders them highly susceptible to misdiagnosis as benign anorectal disease, with primary abscess formation being an especially rare and misleading presentation. To our knowledge, only a few prior reports have described a clinical presentation similar to that of our patient [8, 11].

Compared with previously reported cases of perianal metastasis from lung cancer, our case presents several unique features. A comprehensive literature review, including a systematic update of previously published cases, is summarized in Table 1. First, the patient initially presented with what appeared to be an acute perianal abscess, an extremely rare initial manifestation. Most previously reported cases presented with more typical findings, such as a palpable mass or perianal skin ulcers. Second, histopathological examination revealed poorly differentiated adenocarcinoma with sarcomatoid differentiation, a feature relatively uncommon in perianal metastases from lung cancer. This histological subtype is known to confer aggressive biological behavior and a poor prognosis, which may partly explain the rapid clinical deterioration observed in our patient. Furthermore, the coexistence of purulent material and tumor tissue within the same lesion underscores a critical diagnostic pitfall: the presence of infection does not exclude an underlying malignancy, and tissue sampling is essential even when pus is encountered. These unique features may provide new insights into the diagnosis and management of such rare metastatic patterns.

Table 1
Major characteristics of patients reported in the literature

Year	Journal	First Author	Age	Sex	Primary Tumor Type	Other Metastases	Clinical Presentation	Syn/Met	Sin/Mul	Immunohistochemistry
1968	Dis Colon Rectum	Ger R[12]	49	M	Squamous cell carcinoma (NSCLC)	Heart	Rectal hemorrhage	Syn	Mul	NR
1975	Dis Colon Rectum	Kanhouwa S[13]	45	M	Anaplastic large-cell carcinoma (NSCLC)	Mediastinum	Anal ulcer	Met	Mul	NR
1988	Gan No Rinsho	Uenura Y[14]	78	M	Mucoepidermoid carcinoma (NSCLC)	Multiple distant sites	Perianal mass	Syn	Mul	NR
1994	Surg Today	Kawahara K[15]	75	M	Squamous cell carcinoma (NSCLC)	Atrium	Anal polyp	Met	Mul	NR
2006	Gastroenterol Clin Biol	Wisniewski B[16]	53	M	Adenocarcinoma (NSCLC)	Mediastinum, brain	Anal abscess	Met	Mul	NR
2007	Southern Medical Journal	Tek I[17]	50	M	Adenocarcinoma (NSCLC)	None	Anal abscess	Met	Sin	NR
2010	J BUON	Okutur K[18]	64	M	Squamous cell carcinoma (NSCLC)	Pleura	Anal polyp	Met	Mul	NR
2013	Clin Res Hepatol Gastroenterol	Camus M[6]	53	F	Adenocarcinoma (NSCLC)	Liver, mediastinum	Perianal ulceration	Syn	Mul	NR
2014	Intern Med	Imai H[3]	36	F	Adenocarcinoma (NSCLC)	Subcutaneous soft tissue	Perianal mass mimicking hemorrhoid	Met	Mul	NR
2015	Int J Colorectal Dis	Guerra F[11]	75	F	SCLC	None	Perianal abscess	Met	Sin	NR
2016	World J Surg Oncol	Al-Tarakji M[8]	75	M	Adenocarcinoma (NSCLC)	Bone, bilateral adrenals, chest wall	Painful ulcerated abscess-like perianal mass, involuntary defecation	Met	Mul	CKAE1/AE3(+), vimentin(+)
2016	BMJ Case Rep	Dhandapani RG[4]	62	M	Adenocarcinoma (NSCLC)	Mediastinum, bone, liver	Painful perianal abscess-like swelling	Met	Mul	NR
2020	Proc (Bayl Univ Med Cent)	Azhar A[19]	68	M	Poorly differentiated squamous (NSCLC)	Liver, brain, inguinal lymph nodes	Subcutaneous ulcerated perianal mass (initial presenting symptom)	Syn	Mul	TTF-1(+), P40(+)
2021	Iran J Radiol	Choi WJ[5]	78	M	SCLC	Bone, mediastinal lymph nodes	Anal pain, polypoid perianal lesion	Met	Mul	Synaptophysin(+), chromogranin(+)
2025	Rev Esp Enferm Dig	Apodaca L[20]	56	M	adenocarcinoma (NSCLC)	Multiple distant metastases	Painful ulcerated perianal mass (first sign)	Syn	Mul	TTF-1(+), Napsin A(+), CK20(-)
Abbreviations: Syn = synchronous metastasis; Met = metachronous metastasis; Sin = isolated anal/perianal metastasis; Mul = multiple distant metastases postoperative day; M = male; F = female.										

Despite the limited number of reports, a review of the literature suggests that anal metastases occur predominantly in patients with non-small cell lung cancer (NSCLC), with the majority of reported cases being adenocarcinomas. This observed distribution may be attributed, at least in part, to the higher prevalence of NSCLC (which accounts for approximately 80–85% of lung cancers) and the more aggressive nature of small cell lung cancer (SCLC), whose shorter overall survival may limit the clinical detection of symptomatic perianal metastases during a patient's lifetime [8, 21].

Although such metastases are rare, this case underscores the importance for clinicians of maintaining a high index of suspicion for perianal lesions in patients with a known malignancy. This is particularly crucial when manifestations are atypical, refractory to conventional therapy, or persistent. A timely and

accurate diagnosis is critically important to avoid unnecessary local surgery, to initiate appropriate systemic therapy, and ultimately to improve patient outcomes.

Given the diagnostic challenges posed by such atypical presentations, a multidisciplinary approach involving oncologists, radiologists, and pathologists is essential to ensure prompt and accurate diagnosis.

Several limitations of this report warrant acknowledgment. Complete staging imaging—including abdominopelvic CT, brain MRI, and bone scintigraphy—was not performed owing to the patient's rapid clinical decline; consequently, the full burden of metastatic disease may be underestimated. The follow-up period was inherently brief, as the patient succumbed shortly after diagnosis, precluding evaluation of long-term outcomes or treatment response. Systemic anticancer therapy was not administered, which limits any discussion of therapeutic efficacy. Furthermore, although the lung biopsy confirmed the primary diagnosis, the specimens were sent to an external laboratory for molecular testing, and no pathological report or genetic results are available beyond the clinical diagnosis of lung adenocarcinoma. Direct morphological and immunohistochemical comparison between the primary and metastatic lesions was therefore not feasible. Despite these constraints, the principal objective of this report—to document this exceptionally rare metastatic presentation and heighten clinical vigilance—remains fulfilled.

Conclusion

perianal tumors—whether primary or metastatic—can masquerade as abscesses, representing a significant diagnostic pitfall. Therefore, in any patient with a known malignancy who presents with an atypical or refractory perianal lesion, a high index of suspicion must be maintained. Critically, when incising a presumed abscess, any solid or indurated tissue encountered should be submitted for histopathological examination, as infection and malignancy may coexist and both require appropriate management. Prompt histopathological evaluation is mandatory when clinical or imaging findings suggest an underlying mass. This approach facilitates early diagnosis, enables accurate staging, and guides appropriate treatment selection—ultimately providing the best opportunity for optimal clinical management in these challenging cases

Declarations

Ethics approval and consent to participate

The studies involving humans were approved by ethical approval is exempt/waived at the ethical committee team in TaiKang Tongji (Wuhan) Hospital, WuHan, China, because this study reported only one patient. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent for the use of clinical specimens for research purposes was obtained from the patient prior to the initial perianal abscess surgery, which is a routine practice at our institution for all surgical specimens. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article. As the patient was unable to provide additional consent prior to demise due to rapid clinical deterioration, publication consent was obtained from the patient's legally authorized representative following the patient's death.

Consent for publication

Written informed consent was obtained from the patient's next of kin for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

Z.S. and P.C. conceived and designed the study, acquired and interpreted the clinical data, and drafted the initial manuscript. Y.Q. and S.T. supervised the project, provided critical revision of the manuscript for important intellectual content, and are responsible for the overall integrity of the work. J.T. assisted with data acquisition, literature review, and manuscript preparation. All authors reviewed and approved the final version of the manuscript.

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Availability of data and materials

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Figures

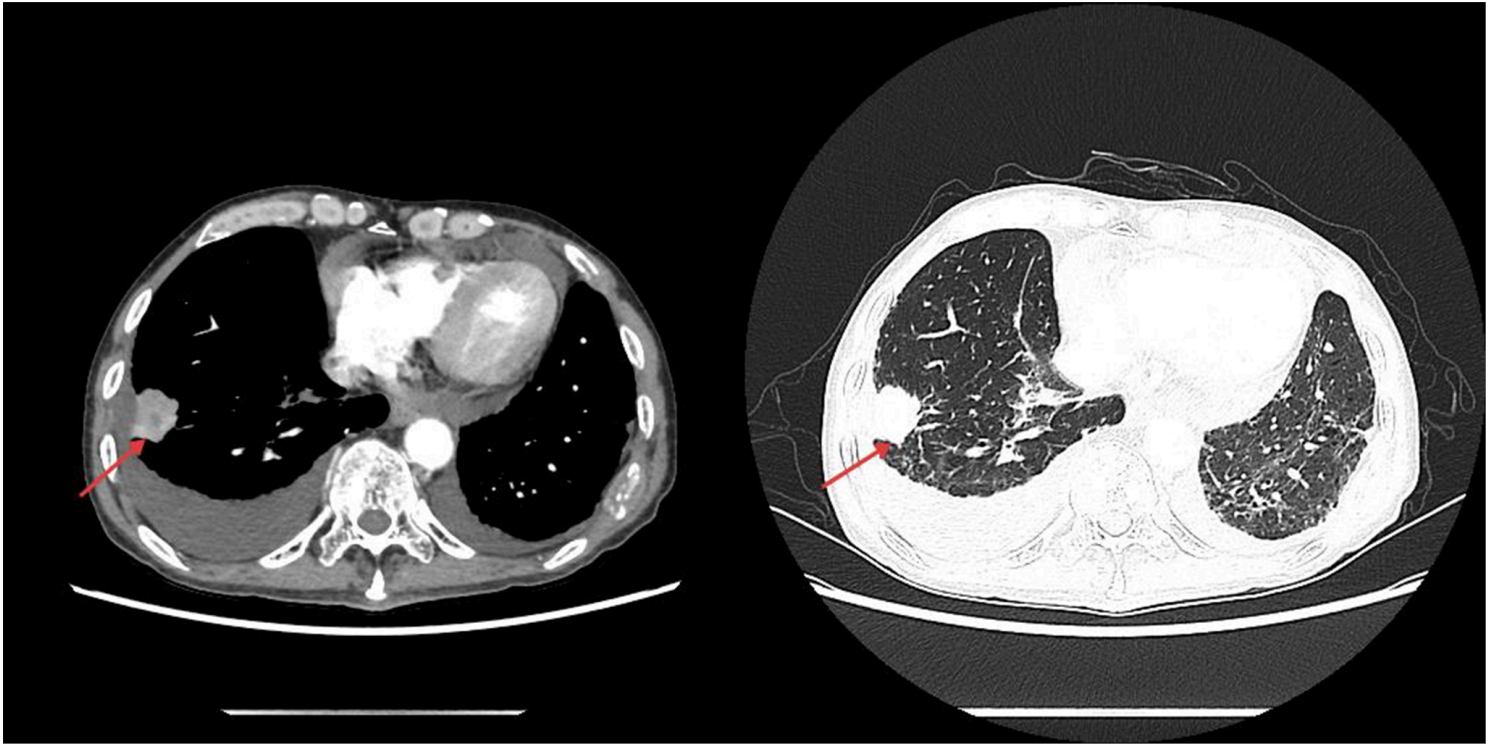


Figure 1

Preoperative chest CT. An axial contrast-enhanced CT image, displayed in the mediastinal (left) and lung (right) windows, shows a heterogeneously enhancing mass (37 mm × 25 mm) in the right lower lobe (red arrow).

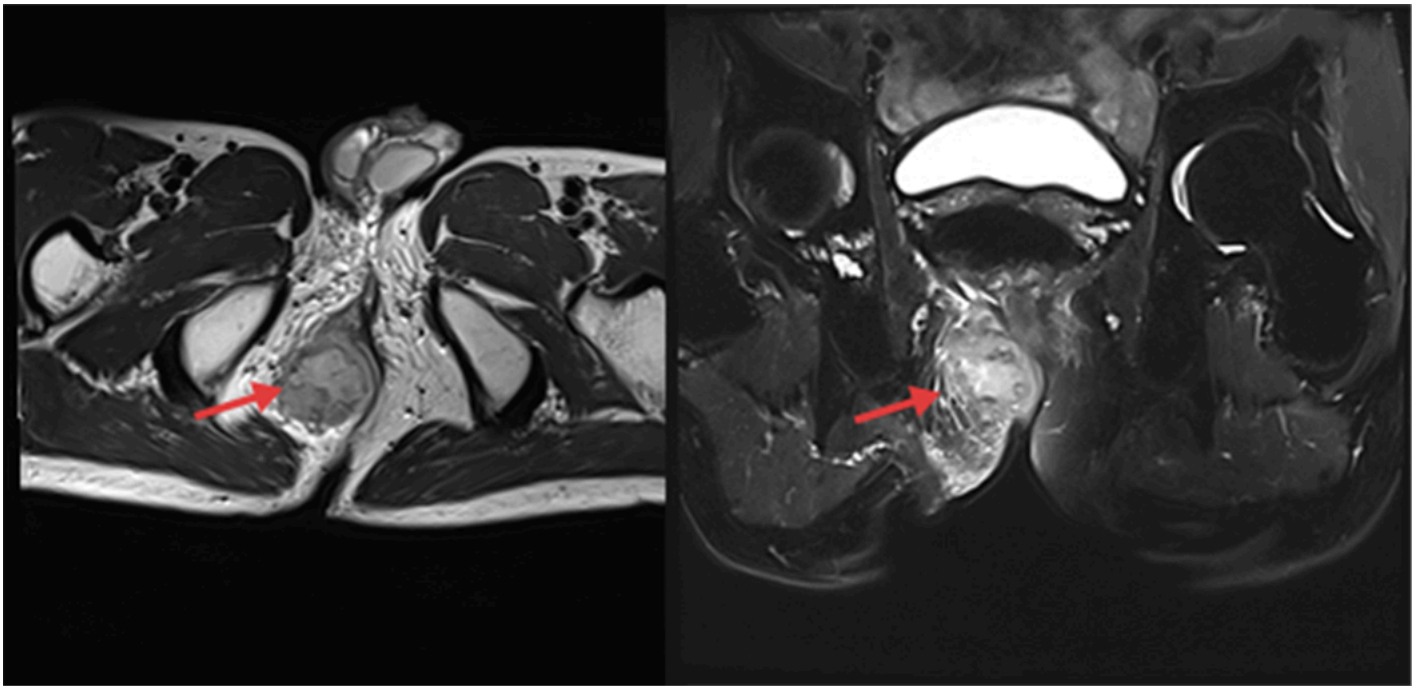


Figure 2

Preoperative pelvic MRI findings . (Left) Axial view demonstrates an abscess-like lesion (approximately 3 cm in diameter, red arrow) in the right perianal region, with peripheral hyperintensity suggestive of fluid collection and adjacent inflammatory changes. (Right) Coronal view shows the lesion located in close proximity to the right aspect of the external anal sphincter (red arrow), with no clear evidence of sphincter invasion.

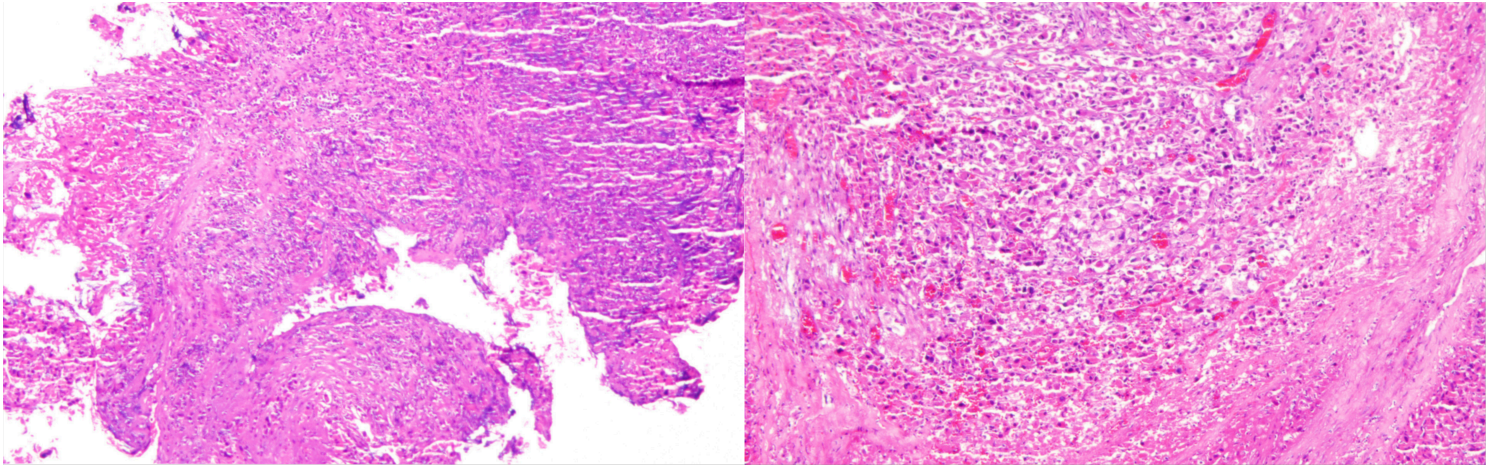


Figure 3

Histopathological features of the perianal metastatic lesion. (Left) Low-power magnification (H&E, $\times 100$) shows sheets of poorly differentiated tumor cells with foci of necrosis. (Right) High-power magnification (H&E, $\times 400$) demonstrates marked nuclear pleomorphism and numerous multinucleated tumor giant cells, with areas suggestive of sarcomatoid differentiation

Supplementary Files

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