

Case Report

Duodenal Metastasis from Pulmonary Squamous Cell Carcinoma: A Rare Case

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ABSTRACT

Lung cancer is a major cause of cancer-related mortality worldwide and commonly metastasizes to the brain, bones, liver, and adrenal glands. Gastrointestinal involvement is uncommon, and metastasis to the duodenum is particularly rare. Because of the low incidence and non-specific clinical manifestations, duodenal metastases may be overlooked, leading to delayed diagnosis and unfavorable outcomes. We report a case of duodenal metastasis from squamous cell carcinoma of the lung, highlighting the importance of considering rare metastatic sites and carefully evaluating new gastrointestinal symptoms in patients with lung cancer.

Keywords: Lung cancer, squamous cell carcinoma, duodenal metastasis, gastrointestinal bleeding

Introduction

Lung cancer has a marked propensity for distant dissemination, most commonly to the brain, bones, liver, and adrenal glands. Involvement of the gastrointestinal tract is uncommon, with reported prevalence ranging between 0.3% and 1.7% in clinical studies [1]. Among small bowel metastases, the jejunum and ileum are most frequently involved, whereas the duodenum represents a less common metastatic site [2,3].

Duodenal metastases may be asymptomatic or present with non-specific symptoms such as epigastric pain, weight loss, anorexia, and upper gastrointestinal bleeding. These findings may overlap with treatment-related adverse effects, which can delay recognition of metastatic disease [4-6]. Owing to their rarity, diagnostic challenges, and frequent detection at advanced stages, duodenal metastases are generally associated with unfavorable outcomes. Therefore, newly developed gastrointestinal symptoms in patients with lung cancer should prompt careful evaluation, and uncommon metastatic locations should be considered in the differential diagnosis [7]. Herein, we report a case of duodenal metastasis in a patient

with squamous cell carcinoma of the lung and highlight the clinical relevance of this rare metastatic presentation.

Case Report

A 75-year-old man with a 55 pack-year smoking history was found to have a 31×35 mm mass in the right lower lobe of the lung in July 2016. Biopsy findings were consistent with squamous cell carcinoma of the lung. At diagnosis, the disease was stage IIIB, and concurrent chemoradiotherapy with carboplatin and paclitaxel was administered. During follow-up, widespread bone metastases were detected in October 2023. The patient received palliative radiotherapy, and the driver mutation analysis was negative. Subsequently, six cycles of carboplatin plus gemcitabine were administered as systemic therapy. Disease progression after six cycles led to the initiation of second-line nivolumab treatment.

The patient later presented with progressively worsening epigastric pain and anorexia. Physical examination revealed epigastric tenderness. Laboratory evaluation showed hemoglobin 8.2 g/dL, mean corpuscular volume 72 fL, and mean corpuscular hemoglobin 23 pg. White blood cell count

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was 6800/ μL , red blood cell count was $3 \times 10^6/\mu\text{L}$, and platelet count was 193,000/ μL . Liver and renal function tests were within normal limits. The fecal occult blood test was positive. Abdominal magnetic resonance imaging demonstrated wall thickening of up to 6 mm and diffusion restriction along the lateral wall of the descending (second) portion of the duodenum (Figure 1). Positron emission tomography/computed tomography revealed focal FDG uptake corresponding to the second portion of the duodenum adjacent to the pancreatic head (SUV_{max} : 8.9), while no metabolically active disease was detected at the previously documented metastatic sites (Figure 2). Upper gastrointestinal endoscopy demonstrated an approximately 10-mm malignant-appearing mass with focal ulceration, located on the anterior wall of the mid-second portion and the posterior wall of the distal second portion of the duodenum. Histopathological examination of biopsy specimens revealed submucosal infiltration by a malignant epithelial tumor. Based on the histopathological and subsequent immunohistochemical findings, duodenal metastasis was diagnosed in May 2025.

Immunohistochemical analysis showed positivity for p40/p63 and CK5/6 and negativity for CK20 and CDX2, supporting

a pulmonary origin and excluding a gastrointestinal primary tumor. Additionally, loss of SMARCA4 (BRG1) expression was observed, consistent with aggressive biological behavior and supportive of the diagnosis. These findings were considered compatible with metastatic involvement from the known lung squamous cell carcinoma.

Considering the patient's clinical condition, age, performance status, and history of metastatic disease, the multidisciplinary tumor board recommended continuation of palliative systemic therapy because the patient was not a surgical candidate. During follow-up, the patient presented with melena and syncope. After hemodynamic stabilization, endoscopic argon plasma coagulation was performed to control bleeding. Subsequently, palliative radiotherapy to the duodenal lesion, administered at a dose of 30 Gy in 10 fractions ($3 \text{ Gy} \times 10$), was completed in March 2026. Nivolumab treatment was continued following endoscopic treatment and palliative radiotherapy. The patient remained clinically stable during follow-up, with the last clinical evaluation performed on April 24, 2026. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Discussion

Non-small cell lung cancer commonly metastasizes to distant organs, particularly bone, brain, adrenal glands, liver, and extrathoracic lymph nodes [1]. Gastrointestinal involvement, however, is uncommon and may affect various sites, including the esophagus, stomach, small intestine, and colon. Within the small intestine, the jejunum and ileum are most frequently involved, whereas duodenal involvement represents a relatively small proportion of cases [3,8,9]. The rarity of duodenal metastasis may be explained by rapid intestinal motility, mucosal barrier properties that limit tumor implantation, and a strong local immune microenvironment. Additionally, abundant lymphoid tissue and T-lymphocyte-dominant immune cell populations in the intestinal wall may further contribute to this protective effect. Furthermore, duodenal metastases appear to be less frequently reported in squamous cell carcinoma than in adenocarcinoma [7].

Small bowel metastases are frequently asymptomatic; however, when symptomatic, patients may present with nausea, obstructive jaundice, intestinal obstruction, perforation, or upper gastrointestinal bleeding. In some instances, bleeding related to duodenal vascular involvement may represent the initial clinical manifestation [10]. In the present case, the patient presented with gastrointestinal symptoms that prompted further evaluation.

On imaging, duodenal metastases may appear as intraluminal polypoid lesions, focal wall thickening, mucosal irregularities, or ulceration. Endoscopic evaluation with biopsy remains the most reliable diagnostic method [11]. In our patient, the lesion was identified during endoscopic examination, and histopathological analysis confirmed metastatic involvement. Immunohistochemical analysis is essential for distinguishing

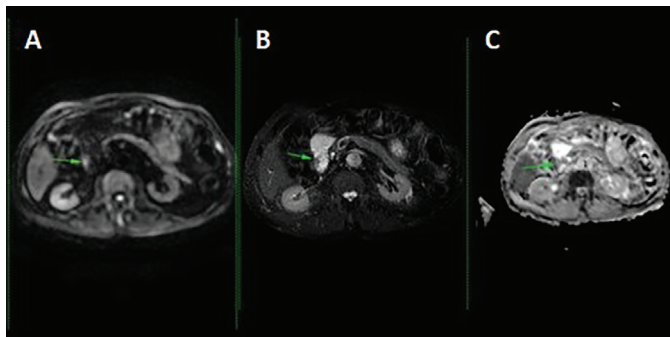


Figure 1. Magnetic resonance imaging findings of the metastatic lesion in the second portion of the duodenum. (A) DWI, (B) fat-suppressed T2-weighted imaging, and (C) ADC map, from left to right, demonstrate the lesion in the second portion of the duodenum adjacent to the pancreatic head. The lesion shows diffusion restriction on DWI, with corresponding low signal intensity on the ADC map and hypointense signal intensity on fat-suppressed T2-weighted imaging (green arrows).

DWI: Diffusion-weighted imaging, ADC: Apparent diffusion coefficient

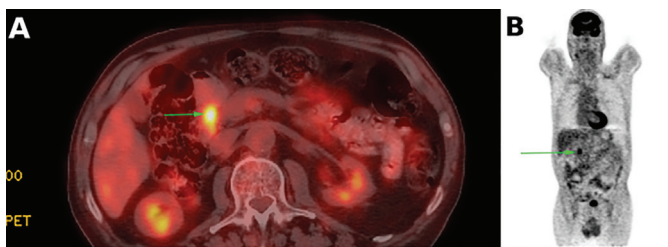


Figure 2. PET/CT findings of the duodenal metastatic lesion. (A) PET/CT fusion image demonstrates increased FDG uptake in the second portion of the duodenum (SUV_{max} : 8.9) (green arrow). (B) MIP image shows focal increased metabolic activity in the same region (arrow). PET/CT: Positron emission tomography/computed tomography, MIP: Maximum intensity projection

metastatic lesions from primary gastrointestinal tumors. Positivity for p40/p63 and CK5/6 together with negativity for CK20 and CDX2 supported pulmonary origin [12]. In addition, loss of SMARCA4 (BRG1) expression has been associated with aggressive tumor biology and may serve as a supportive diagnostic finding [13].

No consensus exists regarding the optimal management of duodenal metastases. Available treatment options include systemic therapy, endoscopic procedures, radiotherapy, and surgical intervention; treatment decisions are guided by the patient's clinical status and the extent of disease. Endoscopic approaches may be considered for small or bleeding lesions, whereas surgical management may be reserved for selected patients with larger or symptomatic lesions. However, most patients present with disseminated metastases, and treatment is primarily palliative [7,14]. The prognosis is generally poor, with a reported median survival of approximately four months in patients with duodenal metastases originating from lung cancer. Therefore, early recognition and appropriate management are clinically important [15].

Conclusion

Duodenal metastasis from lung cancer is exceedingly uncommon and should be considered in patients presenting with unexplained gastrointestinal symptoms or bleeding. This case illustrates that duodenal involvement may occur in squamous cell carcinoma and underscores the importance of careful evaluation of newly developed gastrointestinal symptoms in patients with lung cancer.

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Footnotes

Authorship Contributions

Surgical and Medical Practices: Ö.B., Concept: Ö.B., G.D., Design: Ö.B., G.D., Data Collection or Processing: Ö.B., Analysis or Interpretation: Ö.B., G.D., Literature Search: Ö.B., Writing: Ö.B.

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