



Case Report

Perforation of the Small Bowel Due to Metastasis From Tongue Cancer

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Distant small bowel metastases from head and neck squamous cell carcinomas are extremely rare, and tongue cancer metastasizing to the small bowel has not been previously reported. We describe a 40-year-old male patient who underwent subtotal gross laryngectomy for squamous cell carcinoma of the tongue in February 2007 and then presented in November 2008 with severe abdominal pain. Abdominal computed tomography (CT) and X-rays revealed free air, suggesting intestinal perforation. Emergency surgery revealed a 10-mm perforation at the ileum and a palpable hard tumor at the perforation site. The ileum was resected, and pathologic findings showed squamous cell carcinoma at the perforation site, which was consistent with metastasis from tongue cancer.

Key words: Tongue – Cancer – Metastasis – Small bowel – Perforation

Intestinal metastases of cancer usually are difficult to diagnose unless patients are symptomatic.¹ Although tongue cancer often metastasizes to the lungs, liver, or bone,² it rarely spreads to the digestive tract, and metastasis to the small intestine from tongue cancer has not been reported to date as far as we can determine. We describe herein a patient with tongue cancer that metastasized to the small intestine.

Case Presentation

A 40-year-old male patient was admitted to hospital in February 2007 with bleeding, a large lingual mass

on the left side of the tongue, and swollen lymph nodes on the left side of the neck. Computed tomography (CT) and magnetic resonance imaging (MRI) revealed a lesion that occupied much of the tongue, and pathologic assessment identified moderately to poorly differentiated squamous cell carcinoma. The patient was diagnosed with T4N3cM0 squamous cell carcinoma of the tongue and was treated with oral 5-fluorouracil (TS-1) for 2 weeks. Subtotal gross laryngectomy was performed in March 2007. Affected lymph nodes on the left side of the neck were resected, and a rectus abdominis musculocutaneous flap was reconstructed. Pathologic findings

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revealed moderately differentiated squamous cell carcinoma with metastasis to a lymph node and sublingual gland (pT2, pN1, pM1) (Fig. 1a and 1b). The patient was postoperatively treated with radiation (60 Gy). However, tumor recurred in the mediastinum and in the abdominal wall in August 2008. Resection and subsequent pathologic assessment of tumor in the abdominal wall revealed squamous cell carcinoma consistent with metastasis of the tongue cancer (Fig. 1c). The mediastinum was irradiated (60 Gy), and the patient was administered cisplatin and docetaxel.

In November, the patient was admitted to the surgical department of our hospital with severe abdominal pain. Tenderness, rebound tenderness, and muscular defense were apparent all over the abdomen. Abdominal CT and X-rays revealed the presence of free air, which led to a diagnosis of intestinal perforation. Upper gastrofiberscopy showed no perforations in the stomach or duodenum. Emergency surgery revealed a 10-mm perforation at the ileum located 180 cm on the oral side from Bauhin's valve (Fig. 2a), a swollen lymph node in the mesentery near the perforation (Fig. 2b), and a palpable hard tumor at the perforation locus. The ileum, including the perforation locus and a swollen lymph node, was resected (Fig. 2c). A double-lumen ileal stoma was fashioned owing to severe edema in the ileum. Pathologic findings suggested that the tumor at the perforation locus and the swollen lymph node in the mesentery comprised squamous cell carcinoma, findings that were consistent with metastasis from the tongue cancer (Fig. 3a, 3b, and 3c).

Discussion

According to Ise *et al*, tumors of the skin (melanoma) and the lung are among the types of cancer that most commonly metastasize to extra-abdominal sites, resulting in small bowel metastases.¹ One study of 478 metastases to the small bowel found that 216 arose from melanoma anywhere on the body, 162 developed from lung cancer, and the remaining 100 were derived from malignant lymphoma, testicular tumor, breast cancer, salivary gland tumor, esophageal cancer, and pulmonary rhabdomyosarcoma.¹ The small bowel was perforated in 121 (25.3%) of 478 metastases.¹

Several pathways might be responsible for metastasis to the digestive tract from a primary tongue lesion. One is lymphatic metastasis, and another is hematogenous spread. The tongue has a vast lymphatic network, and metastases to the cervical

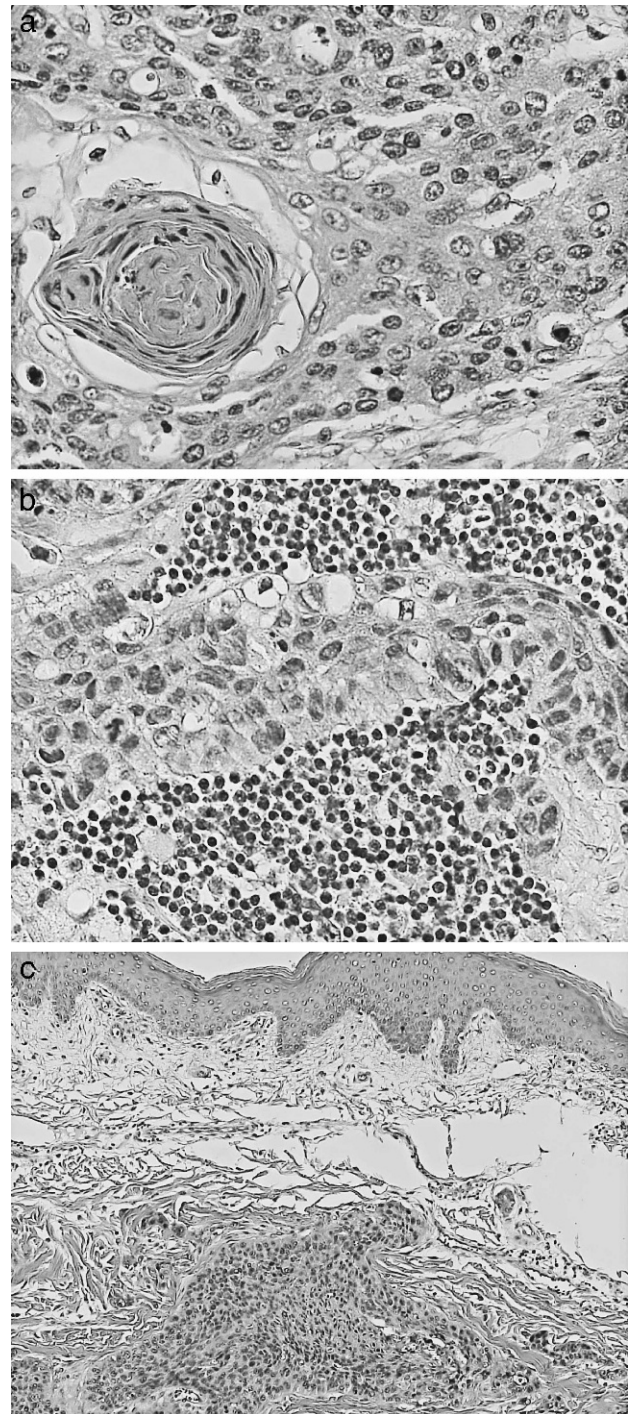


Fig. 1 Histopathologic findings of specimens stained with hematoxylin and eosin (×40). (a) Squamous cell carcinoma with keratinization of the tongue. (b) Metastatic carcinoma in lymph node from the neck. (c) Metastatic carcinoma beneath the dermis in the abdominal wall.

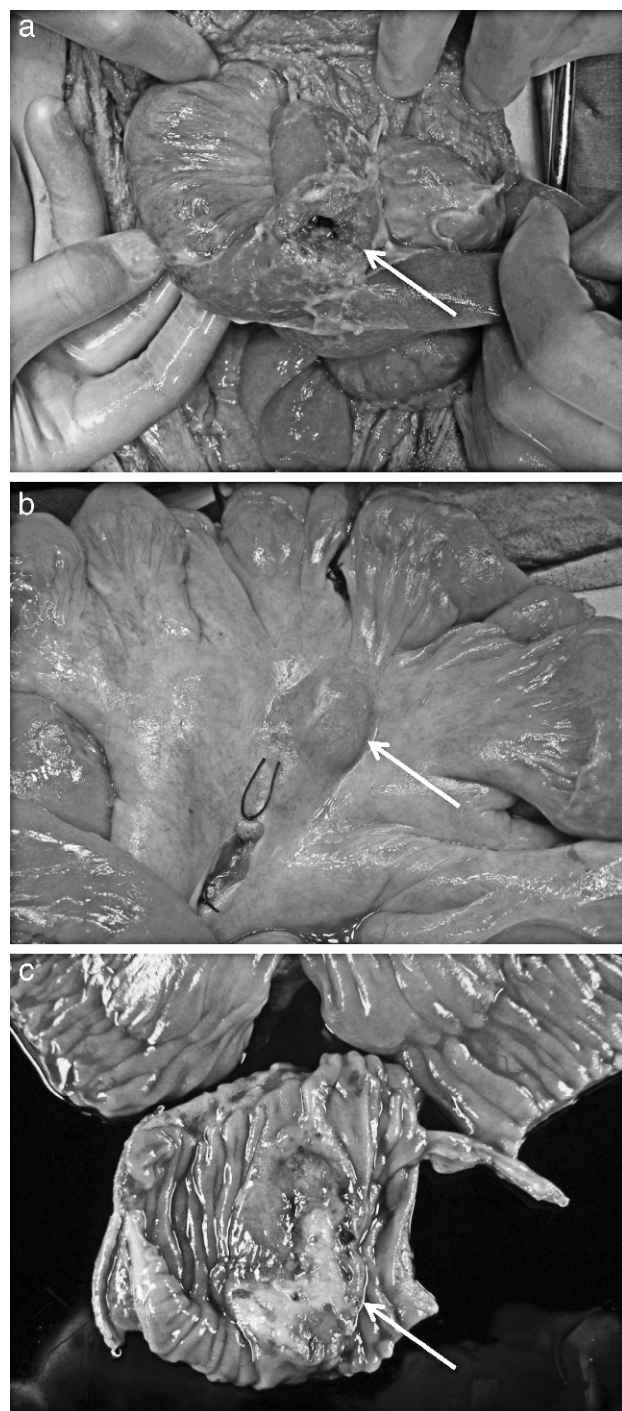


Fig. 2 Images of small bowel with metastasis. (a) Perforation (10 mm) is located in the ileum. (b) Swollen lymph node in the mesentery near perforation. (c) Hard tumor located at the perforation locus.

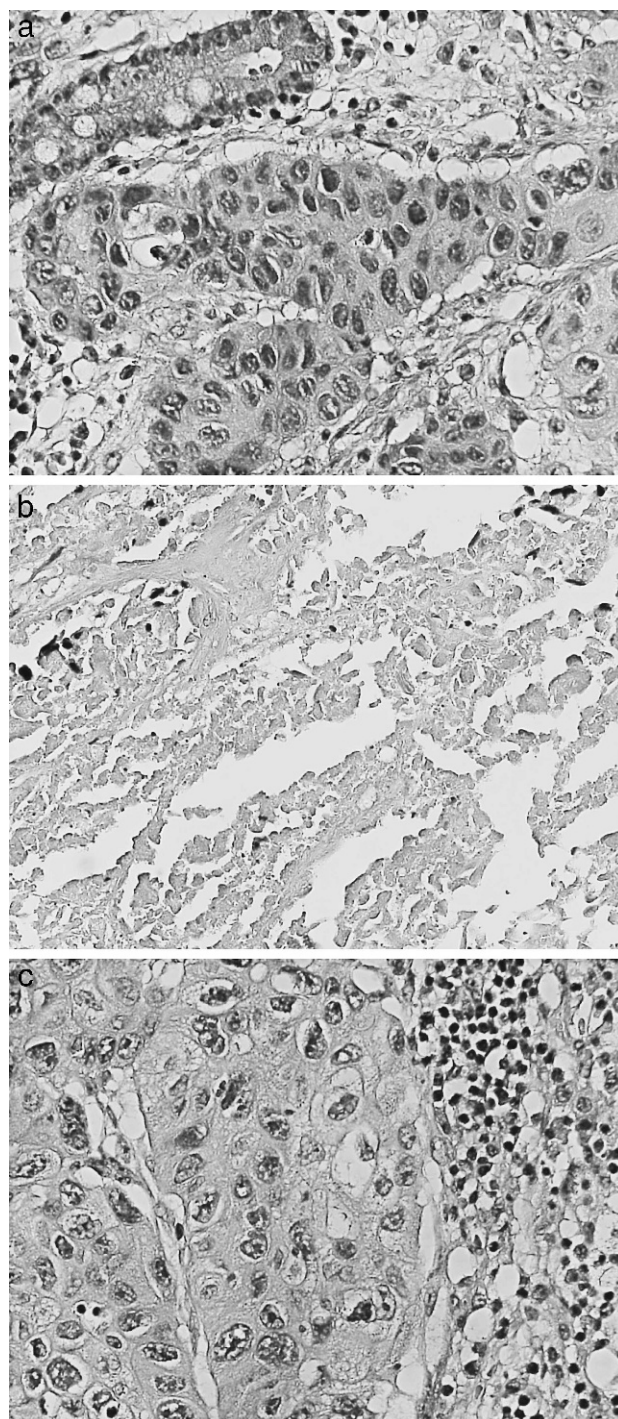


Fig. 3 Images of metastatic lesion in the ileum. (a) Metastatic squamous cell carcinoma of hard tumor at perforation locus. Cancer cells are adjacent to the normal ileal gland (hematoxylin and eosin [H&E] staining; $\times 40$). (b) Necrotic tissue area adjacent to perforation locus. (c) Metastatic carcinoma in mesenteric lymph node (H&E, $\times 40$).

lymph node occur at a comparatively high rate. However, distant metastases such as those to lymph nodes in the bifurcation tracheae, pulmonary hilum, or paratrachea are likely to be hematogenous metastases derived from lung lesions. We do not fully understand the mechanism responsible for the metastasis to the small bowel that caused perforation of the ileum in our patient. However, we believe that because cervical lymph node findings have not recurred after the first cervical lymph node dissection, and because lymph node metastasis was found only around the small intestine, the pathway of metastasis to the small intestine probably was hematogenous in this patient.

Another characteristic of the metastasis was perforation. We could find no reports of small bowel perforation due to metastatic tongue cancer. To the best of our knowledge, we are the first to describe small bowel perforation occurring secondarily to metastatic tongue cancer. In describing the pathogenesis of bowel perforation secondary to metastatic carcinoma, Leidich *et al* reported that mural replacement by tumor cells occurred after hematogenous or lymphatic metastasis, followed by necrosis.³ Kaneda *et al* described another 3 mechanisms of intestinal perforation, namely, ischemia of the intestine due to embolization of a metastatic tumor, increased intraluminal pressure due to intestinal obstruction, and necrosis of metastatic tumors due to chemotherapy.⁴ The center of the tumor in our patient was necrotic (Fig. 3b). We assume that the bowel became perforated because chemotherapy had necrosed the center of the tumor in the small intestine, which then became fragile.

Although bowel perforation must be treated by emergency surgery, the prognosis is extremely poor when a metastatic tumor causes the perforation. Shiraishi *et al* described only 1 patient who survived for longer than 5 years after resection of a perforated ileum resulting from metastasis of malignant lymphoma of the larynx, and 6 patients who died of cancer or cancer-related complications within 6 months.⁵ Bowel perforation secondary to metastasis from extra-abdominal malignancies is thought to occur in the terminal stages of cancer. The optimal operative course for patients with bowel perforation resulting from a metastatic tumor might consist of

partial resection of the bowel, including the perforated lesion, and creation of a stoma to avoid anastomotic insufficiency.

In conclusion, the poor prognosis of patients with bowel perforation secondary to metastatic tumor should be taken into account when surgical and therapeutic options are considered. The least stressful procedure should be selected to promote rapid patient recovery and an optimal prognosis.⁶ In addition, investigation of the mechanisms of bowel perforation and of metastasis to the intestine from extra-abdominal malignancies is essential. Such studies might reveal that metastatic tumors within or adjacent to the bowel should be prophylactically resected to avoid future perforation.

Acknowledgments

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