trointestinal bleeding secondary to small bowel tumors arises in a progressive process, leading to chronic anemia and diagnostic difficulties (2). Presentation of a GIST as acute bleeding is rare, and the third part of the duodenum is not routinely investigated while performing upper endoscopy to ascertain the bleeding source.

Duodenal stromal tumors most commonly arise in the second part of the duodenum and about half of them are malignant. On presentation, 41%-47% of malignant GISTs are metastatic (3). These tumors grow expansively without being invasive and sometimes metastasize to the liver or recur locally (4). The most suitable treatment for duodenal GISTs is total surgical resection (5). However, surgical management of duodenal tumors is difficult because of the complex anatomical relationships around the duodenum. In cases of unresectable or metastatic GIST, imatinib mesylate, which is a powerful and selective inhibitor of tyrosine kinase KIT and PDGFRa receptors, can be used (5). As the tumor of our patient was not that large (4 cm) and his ampulla of Vater was preserved, wedge resection of the tumor was sufficient, leaving intact margins, and no additional treatment was planned. In conclusion, duodenal GIST in the third part of the duodenum and its presentation as massive bleeding are extremely rare.

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# Carcinoid tumor within Meckel's diverticulum causing gastrointestinal bleeding

## Meckel divertikülinde gastrointestinal kanamaya neden olan karsinoid tümor

*To the Editor,*

The most common complications of Meckel's diverticulum, which affects approximately 2% of the general population, are bleeding, intestinal obstruction and diverticulitis (1). Bleeding is usually the result of ileal mucosal ulceration that occurs due to acid producing, heterotopic gastric mucosa located within the diverticulum (1). Another possible cause of mucosal ulceration is carcinoid tumor (well-differentiated neuroendocrine tumor), which is also a rare clinical entity (2). Hence, a carcinoid

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tumor occurring within a Meckel's diverticulum is even more uncommon and is usually an incidental finding at surgery or autopsy (3, 4).

A 40-year-old male presented with massive lower gastrointestinal bleeding. His physical examination revealed tachycardia, hypotension and general abdominal tenderness, but his nasogastric aspiration was clear. Despite intravenous crystalloids plus blood transfusion, his hemodynamics remained unstable and he underwent emergency laparotomy. Operative findings identified an incidental Meckel's diverticulum 60 cm proximal to the ileocecal valve with bleeding. Segmental resection was performed. Pathological examination showed a well- demarcated area of mucosal ulceration distal to the opening of Meckel's diverticulum on the antimesenteric border, with small foci of well-differentiated neuroendocrine tumor (carcinoid tumor) (Figure 1).

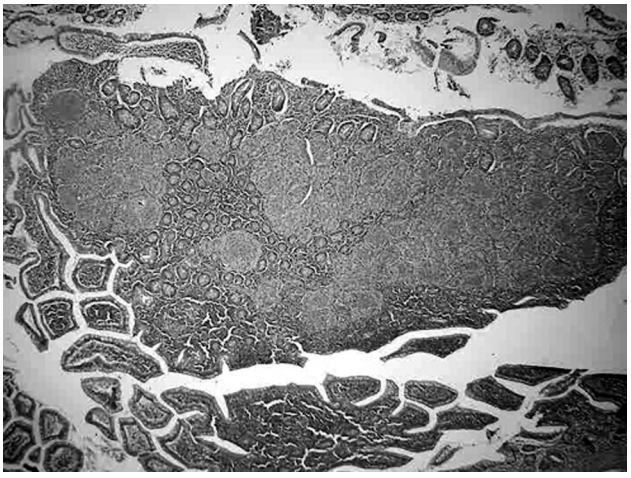

**Figure 1.** Small foci of well-differentiated neuroendocrine tumor (carcinoid tumor) within normal intestinal epithelium of the Meckel's diverticulum.

Meckel's diverticulum is symptomatic most frequently in infants less than two years old (up to 4 to 5%), significantly less symptomatic by 40 years of age (1%) and asymptomatic by 70 years of age (3). Common complications of Meckel's diverticulum include hemorrhage, ileus and obstruction, intussusception, diverticulitis, and chronically draining fistulas and sinus tracts at the umbilicus.

Tumors associated with Meckel's diverticula occur with a frequency of 1% to 5%, and only one-third of those are carcinoid tumor (3). Carcinoids arise from enterochromaffin cells and they are the most common primary tumors of the small bowel. Although found all throughout the small bowel, 40% of carcinoids are found within approximately 60 cm of the ileocecal valve and mostly in the appendix (1). Symptomatic carcinoids present usually as periodic abdominal pain, but they may also present with gastrointestinal bleeding or as the lead point for intussusception and obstruction (3). Other presenting features may include diarrhea, flushing, pain, or wheezing secondary to carcinoid syndrome, although this occurs mostly after hepatic metastasis.

Solitary, asymptomatic, localized nodules of a carcinoid tumor less than 1 cm are generally managed with diverticulectomy or segmental resection (3). Disease with larger or multiple lesions require wide excision of bowel and mesentery, and hepatic resection may be required for metastatic disease.

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