# Tubular Intestinal Duplication Harboring Gastric Ectopia Accurately Diagnosed by Tc-99m Pertechnetate Single-photon Emission Computed Tomography/Computed Tomography Meckel's Scan


## Abstract

A 7-year-old girl with an episode of hematochezia and melena, suspicious for bleeding Meckel's diverticulum, was referred for a Tc-99m pertechnetate Meckel's scan. On dynamic planar scan, apart from prompt gastric visualization an oval-shaped, area of inhomogeneous tracer uptake was observed in the left lower quadrant of the abdomen. Subsequent single-photon emission computed tomography/computed tomography localized this to intestinal lumen, thus establishing the diagnosis of intestinal duplication (ID) with functional gastric mucosa. Surgical exploration confirmed the presence of a tubular ID in a distance of 1.5 m from the ileocecal valve and pathologic examination showed gastric mucosa lining the lumen of the duplication.


**Keywords:** *Ectopic gastric mucosa, intestinal duplication, single-photon emission computed tomography/computed tomography, Tc-99m pertechnetate scintigraphy*


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Gastrointestinal (GI) tract duplications are rare congenital malformations across the entire length of the GI tract, most common (44%) across the small intestine, lined with various types of GI mucosa.[1-3] The presence of acid-secreting

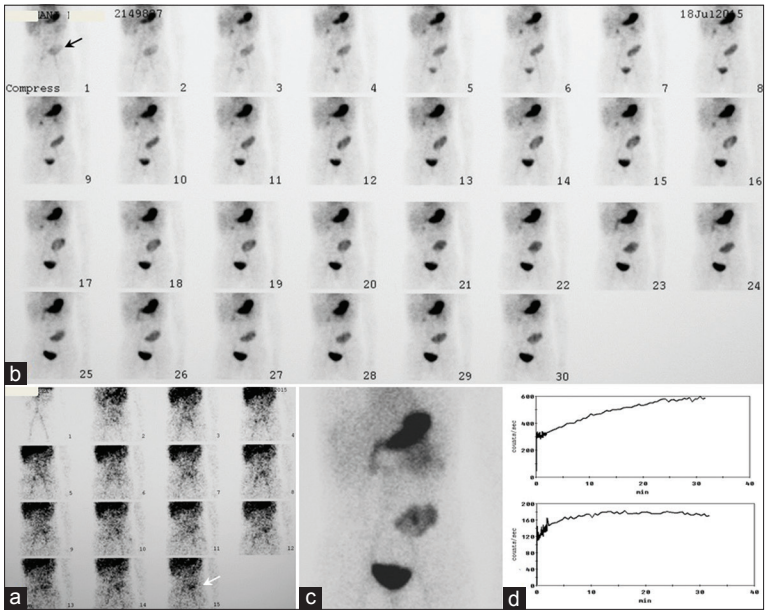


**Figure 1: The case of a 7-year-old girl with hematochezia and melena is presented. A noncontrast computed tomography was negative for abdominal pathology. Suspected for bleeding Meckel's diverticulum, the patient was referred for a Tc-99m pertechnetate Meckel's scan after ranitidine premedication. Planar abdominal scintigraphy after bolus intravenous administration of 74 MBq (2 mCi) Tc-99m pertechnetate; (a) flow phase showing moderately increased blood flow (arrow) at the left lower quadrant of abdomen; (b) subsequent dynamic imaging showing prompt uptake by both the stomach and an oval-shaped area in left lower quadrant (arrow); (c) anterior static image 1 h postinjection: Distribution of activity suggestive of intestinal ectopic gastric mucosa; (d) time-activity curves of the stomach (upper, rising) and the left lower quadrant structure (lower, first rising, then almost horizontal; partial tracer washout through intestinal lumen, induced by hemorrhage-enhanced peristalsis, could explain the nonrising course of the activity curve)**



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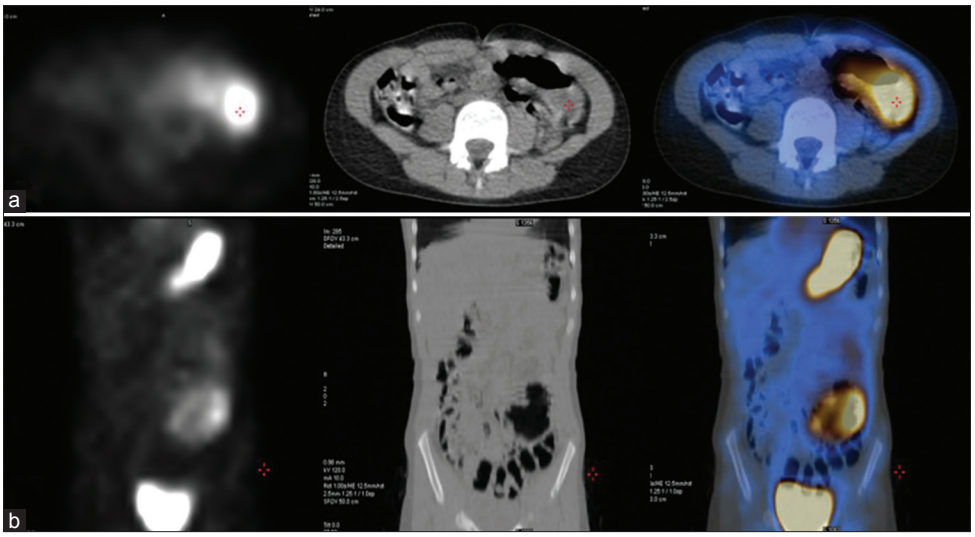


**Figure 2: Single-photon emission computed tomography (GE Healthcare NM/CT 640, 120 steps, 20 s/step, low-dose nondiagnostic computed tomography); (a) transverse, (b) coronal; from left to right single-photon emission computed tomography, computed tomography and fused representative sections for both a and b. Localization of Tc-99m pertechnetate activity on the intestinal wall and lumen suggested the diagnosis of intestinal duplication with functioning ectopic gastric mucosa**

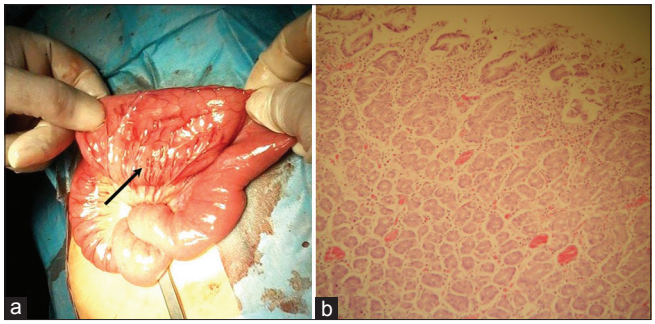


**Figure 3: During surgical exploration a 6 cm length by 2 cm diameter tubular intestinal duplication arising from the mesenteric border was found in a distance of 1.5 m from the ileocecal valve, removed en block with the adjacent segment of the normal intestine and was shown to communicate with the later via a caudal small foramen. (a) Intraoperative photo of the duplication (arrow) before resection. Of notice, the shape similarity with the planar static image. The abudance of dilated subserosal vessels, suggestive of local inflammation, explains the hyperemia observed in the flow study; (b) histological section (H and E, ×100) shows gastric mucosa of body type lining the lumen of the duplication. A muscular layer common to the duplication and the adjacent normal intestine was also identified**

gastric mucosa can produce ulceration and bleeding; gastric mucosa often occurs in tubular intestinal duplication (ID).[3] Nonradionuclide preoperative diagnosis of ID is difficult. Detection of ectopic gastric mucosa in pediatric lower GI bleeding using Tc-99m pertechnetate scintigraphy, in both Meckel's diverticulum and ID, is well established.[4-7] As planar Tc-99m pertechnetate scintigraphy is prone to false positive results arising mainly from activity within the genitourinary tract, hybrid Single-photon emission computed tomography/computed tomography (SPECT/CT) imaging is a useful adjunct best suited for accurate characterization of abdominal radionuclide findings. Despite increasing use of SPECT/CT, reports on pertechnetate scintigraphy for either Meckel's diverticulum localization[8,9] or ID diagnosis[10] are sparse [Figures 1-3].

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## Conflicts of interest

There are no conflicts of interest.

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