



Abdominal Computerized Tomography in the Diagnosis of Meckel's Diverticulitis in the Adult

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Meckel's diverticulum anomaly appears in 2-3% of the population, yet it is rarely diagnosed in the adult prior to surgery [1]. The complications of this condition have non-specific clinical manifestations [1]. Abdominal computerized tomography, with its ability to reveal per-intestinal areas, can be instrumental in diagnosing a Meckel's diverticulum, particularly when it becomes diseased.

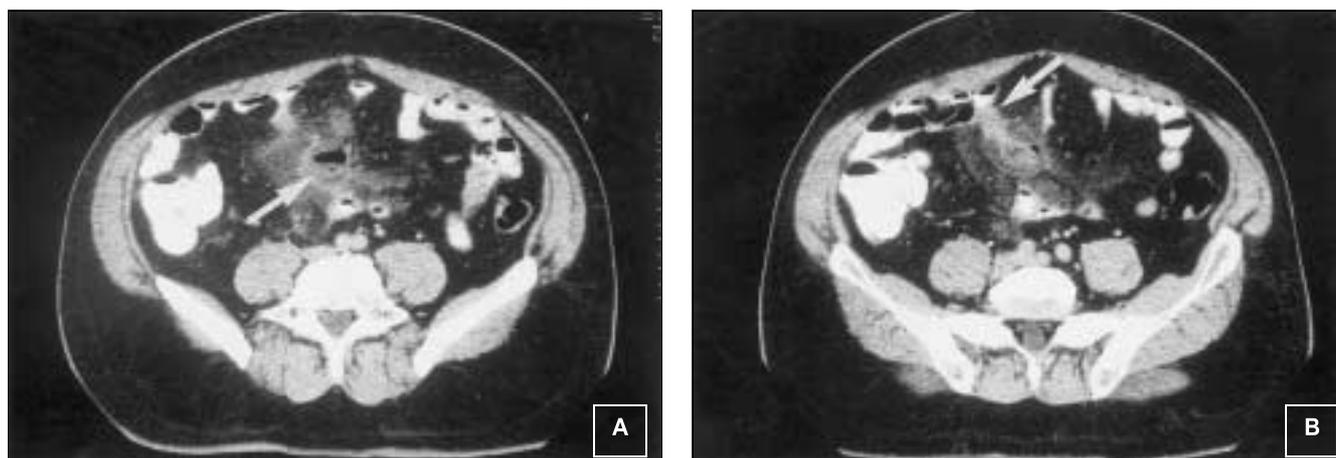
A 50 year old man was admitted with peri-umbilical pain that had begun the previous day. The patient had a fever (38°C), without diarrhea or vomiting. He was moderately obese and had a psychiatric disorder that made physical examination very difficult. There was

mild general abdominal tenderness and distension. The white blood cell count was 14,000/mm³ and serum amylase was normal.

Due to his obesity, ultrasound was not performed, but a CT scan revealed a structure containing air in the mid-abdomen, which seemed different from the bowel loops [Figure]. There was no intraperitoneal free air or fluid. A tentative diagnosis of Meckel's diverticulitis was made, although small bowel diverticulitis other than Meckel's and sealed perforation with abscess formation could not be excluded. Explorative laparotomy revealed a 5 cm long Meckel's diverticulum with a phlegmonous appearance,

which was excised. The pathological specimen showed a muscular tube covered with small bowel epithelium consistent with Meckel's diverticulum and a suspected attached necrotic sub-diverticulum. The patient made an uneventful recovery.

Meckel's diverticulum is a remnant of the vitelline (omphalomesenteric) duct connecting the primitive midgut and yolk sac. Normally this tube is obliterated at about the seventh or eighth week of gestation. Incomplete closure results most commonly in Meckel's diverticulum [1]. The distance between the diverticulum and the ileocecal valve varies, depending on the patient's age (in adults



CT scan of the mid-abdomen. **[A]** A thick walled tubular diverticulum is demonstrated with air (arrow), and marked infiltration of the surrounding fat. **[B]** The structure seems to be connected to a normal appearing small bowel loop (the arrow marks the presumed connection). There are no large bowel loops close to the affected area.

60–100 cm). Only 20–30% of these persons manifest clinical symptoms resulting from complications, including intestinal obstruction, diverticulitis, bleeding (acute or chronic, mainly in childhood), incarceration in Littre's hernia and neoplasm within the diverticulum [1]. Most cases are suspected of having acute appendicitis (40–50%) [2], Crohn's disease or other gastrointestinal or gynecological disorders. Thus radiology may have a major role in the diagnosis of both complicated and uncomplicated Meckel's diverticula.

Regarding imaging studies, a plain abdominal film may demonstrate enteroliths, a foreign body, or a gas collection within the diverticulum present on consecutive films. On small bowel barium studies – whether with a conventional small bowel series or with enteroclysis – the diverticulum usually appears as an outpouching from the ileum on the anti-mesenteric side in variable sizes [1], but of greater caliber than that of the appendix. Most of the diverticula are found in the right lower abdomen. Ultrasound is useful mainly in children. ^{99m}Tc -pertechnetate scan is more effective in children as well since ectopic mucosa is seen more often in childhood

[3]. Angiography may play a role in diagnosis when bleeding occurs.

CT is probably not a good modality for diagnosing an uncomplicated Meckel's diverticulum, since it resembles a normal bowel loop [3]. An inflamed Meckel's diverticulum appears as a well-demarcated saccular lesion, filled with air, fluid or oral contrast, and attached to a distal small bowel loop. Fat infiltration surrounds the lesion. Calcified enteroliths [4] and a fibrous remnant of the vitalline duct (a soft tissue band) may also be seen. The periumbilical location of the lesion and its continuity with small bowel loops suggested the correct diagnosis pre-operatively in our case. To our knowledge the CT appearance of an inflamed Meckel's diverticulum has been reported previously in very few cases in adults [4,5]. CT may also identify other complications such as intussusception, Littre's hernia and tumors, and can exclude similar clinical conditions such as appendicitis, large bowel diverticulitis and Crohn's disease.

Meckel's diverticulitis may have a fairly characteristic appearance on CT including a well-demarcated saccular lesion attached to the distal small bowel

and fat infiltration surrounding it. The diagnosis should be suggested when these images are seen, especially in adults when we are less aware of this possibility.

References

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