Giant Meckel diverticulum with enteroliths: a case report of a patient presenting with low back and episodic right lower quadrant pain

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Abstract

Objectives: The purpose of this case report is to describe a patient who presented with low back pain and episodic right lower quadrant pain who had a long-standing giant Meckel diverticulum with enteroliths.

Clinical features: A 49-year-old woman presented to a chiropractic clinic with low back pain and history of intermittent right lower quadrant pain. Lumbar radiography demonstrated calcifications in the pelvic basin that changed position with changes in patient posture. The patient was referred to an abdominal surgeon for consultation and management.

Intervention and outcome: Computed tomography identified calcifications in the small bowel in the region of the ileocecal valve. The patient underwent prophylactic diverticulectomy with no complications. Gross pathology revealed a giant Meckel diverticulum measuring 24 inches (60.9 cm) containing 6 enteroliths.

Conclusions: A timely diagnosis resulted in a favorable surgical outcome for this patient with long-standing giant Meckel diverticulum and enteroliths.

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Introduction

Meckel diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract, affecting 2% to 3% of the population.¹⁻⁴ It results from failure of the omphalomesenteric duct (vitelline duct) to regress during embryologic development. It is

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Fig 1. Upright anteroposterior radiograph of the lumbar spine demonstrates multiple stones in the pelvic basin. Incidentally noted are metallic cholecystectomy clips.

commonly associated with the “rule of 2s”: (1) occurs in 2% of the population, (2) measures approximately 2 inches in length, (3) is located within 2 ft of the ileocecal valve, (4) occurs in children younger than 2 years, and (5) is twice as common (to have complications) in males.^{5,6} The diverticulum length averages 3 cm, with 90% ranging from 1 to 10 cm and a *giant diverticulum* being defined as larger than 5 to 6 cm.^{2,6,7} This anomaly is asymptomatic in most patients but can become symptomatic if complications arise and mimic common gastrointestinal problems.⁵ Complications occur 20% to 30% of the time and can be associated with life-threatening conditions.⁶ Complications occur more frequently in children, with 60% of patients becoming symptomatic before the age of 10 years.² Possible complications include peptic ulceration with hemorrhage; diverticulitis; obstruction; intussusception; volvulus, torsion, or hernia; formation of enteroliths; capsule retention; and neoplasm.^{2,3,8,9} Enteroliths (calculi formed in the gastrointestinal system) are an uncommon complication of MD, occurring in only 10% of cases.^{1,10} The purpose of this case report is to describe an adult woman who

presented to a chiropractic clinic with low back pain and long-standing intermittent abdominal pain that was associated with a giant MD with 6 enteroliths.

Case report

A 49-year-old woman presented to a chiropractic clinic complaining of low back pain and long-standing episodes of abdominal pain. Her medical history revealed a surgical history of laparoscopic cholecystectomy and 3 episodes of severe right lower quadrant abdominal pain in the last 15 years. During each previous episode of pain, the patient was admitted to the emergency department. They found no elevation in her white blood cells and therefore ruled out acute appendicitis, diagnosing her with pseudoappendicitis. The patient did not experience other abdominal complaints. In each 3 previous visits to the emergency department, no imaging studies or interventional procedures were performed.

Physical examination was unremarkable except for the orthopedic examination, which demonstrated positive

Fig 2. Recumbent anteroposterior radiograph of the lumbar spine demonstrates mobility of the stones with a change in position from upright to recumbent, characteristic of stones in an MD.

Fig 3. Upright lateral radiograph of the lumbar spine demonstrates multiple enteroliths with an elongated orientation (retropubic and presacral).

results on the Kemp test and Yeoman test on the right for low back pain. Lumbar spine radiographs were taken at the chiropractic clinic that revealed calcifications within the pelvic basin that changed location with patient position (Figs 1-4). The patient was referred for computed tomography (CT) that revealed enteroliths within an MD near the ileocecal valve (Fig 5).

The patient was referred to a surgeon who explained potential complications including an acute abdomen with potential for small bowel obstruction, volvulus, or intussusception. The patient opted for a prophylactic diverticulectomy. The pathology report revealed the MD to be 24 inches in length containing 6 enteroliths and no ectopic gastric or pancreatic mucosa (Figs 6-7). Postsurgical recovery was unremarkable, and the patient returned for chiropractic care for the treatment of her low back pain.

Discussion

This case report presents a case of an adult woman presenting to a chiropractic office with low back and abdominal pain, who also had enteroliths in an MD. To date, there have been no cases of MD with enteroliths that have been identified by presenting to a chiropractic office reported in the scientific literature. It is unknown if the low back pain was related to the MD.

Incidence of complications relating to an MD decreases with age and is rare.^{11,12} Soltero and Bill¹² reported a lifetime risk of developing complications of 4% in patients up to the age of 20 years, 2% up to the age of 40 years, and 0% above 40 years old (elderly). In a study of 1476 MDs found during surgery at Mayo Clinic between 1950 and 2002, 238 (16%) were symptomatic.¹³ Of the adult patients, the most common presentation for symptomatic MD were bleeding (69 patients; 38%), obstruction (61 patients; 34%), and diverticulitis (50 patients; 28%).¹³ The Mayo researchers found 4 criteria associated with symptomatic MD: (1)

Fig 4. Recumbent lateral radiograph of the lumbar spine demonstrates clustering of the enteroliths. Stone mobility is a characteristic feature of MD stones.

Fig 5. Computed tomographic scan of the abdomen demonstrates multiple stones within the MD.

male sex, (2) patients younger than 50 years, (3) diverticulum length greater than 2 cm, and (4) diverticula containing ectopic tissue.¹³ Clinical symptoms of complications associated with MD include abdominal pain, nausea, vomiting, fever, bilious vomiting, abdominal distention, constipation, and gastrointestinal bleeding.^{2,14} Surgical resection is recommended when complications occur, but resection of asymptomatic MD is controversial among surgeons.^{2,15}

Commonly, enteroliths appear on radiographs as peripheral calcification with a lucent center and are mobile with a change in patient positioning, which is a key finding (Fig 8).^{2,16} Less than half of these stones are calcified and can be seen on radiograph, which makes CT a key diagnostic factor.^{10,16} Most primary enteroliths form because of stasis within the bowel and can be related to a narrow-necked MD.^{4,10} Secondary enteroliths are rare and are most likely embryologic rather than related to stasis.¹⁰ The incidence of complications related to MD decreases with age, with stone formation being a rare complication. Prompt and accurate diagnosis is vital, as surgical intervention is recommended when complications occur.^{2,17}

Fig 6. Surgical specimen of the MD with 2 stones in place.

Fig 7. A photograph of one of the enteroliths.

Meckel stones could be misinterpreted as gallstones, which were a consideration in this patient with a history of cholecystectomy. It initially was thought that some stones escaped into the peritoneal cavity during surgery. Upon CT evaluation, the MD was evident; and the stones were confirmed to be within the diverticulum.

Conclusion

This case report describes a case of a female adult patient with multiple enteroliths in an MD. A timely

Fig 8. A radiographic examination of one of the enteroliths demonstrating a lucent center and a dense calcified border as was seen on radiograph.

diagnosis resulted in a favorable surgical outcome for this patient with long-standing giant MD and enteroliths.

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