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Perforated Giant Meckel Diverticulitis in an elderly patient: Case report and review of the literature

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ABSTRACT

INTRODUCTION: Giant Meckel's diverticula are a relatively rare form of Meckel's, and henceforth their natural history is not clearly defined. They're currently thought of as an infrequent form of ileal dysgenesis. Noted complications include perforation, torsion and bowel obstruction. A much rarer presentation is Giant Meckel's diverticulitis.

CASE: A 71 year old white female presented herself to the Emergency Department of a small urban community hospital, complaining of severe abdominal pain, nausea & vomiting. Her preoperative workup was consistent with Giant Meckel's diverticulitis, with evidence for perforation. She was taken for a laparotomy, which confirmed the diagnosis, and was treated with a small bowel resection. She made an otherwise uncomplicated recovery.

CONCLUSION: Giant Meckel's diverticula and their complications require a high index of suspicion and once diagnosed, they should be managed expeditiously to avoid complications.

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1. Introduction

Meckel's diverticulum is an infrequent (2%) form of dysgenesis of the small intestine [1]. It is also an often overlooked cause of abdominal surgical events, since the symptoms upon presentation are frequently undistinguishable from those of other surgical etiologies. When greater than five centimeters in size they're considered "giant", a much rarer variant. A revision of the available English literature (using the search terms "giant" and "Meckel" with the Boolean operator "AND") employing the PubMed database shows a total of 28 reported cases in adults. The most common recorded symptom at presentation is intestinal obstruction (8 cases), followed by symptomatic enteroliths (6 cases) and torsion producing pain and/or gangrene (6 cases). Additional presentations included anemia, including GI bleeding (5 cases), diverticulitis (3 cases) and combinations of the above (11 cases). Below we present the fourth confirmed case of Giant Meckel's diverticulitis without torsion or obstruction.

For the preparation of this case report we followed the recommendations of the ICJME and the Equator Network (available at <http://www.equator-network.org/>). The formatting of the manuscript follows the surgical extension for the CARE statement (SCARE) [2].

2. Patient information

A 71 year old white female presented to the Emergency Department of a small community hospital in urban Chicago, brought by EMS. Her complaints upon presentation included severe, generalized abdominal pain, nausea and occasional vomiting. The patient stated that she was in her usual state of fair health until about 24 h before admission, when she began experiencing colicky type abdominal pain. During the next few hours the pain intensified, and changed from colicky to continuous, becoming generalized about 2 h before she summoned the emergency response systems (Chicago Fire Department). On presentation she had vomited twice what appeared to be bilious emesis. Her past medical history was significant for Hypertension, for which she was receiving metoprolol tartrate (Toprol XL, AstraZeneca LP, Wilmington DE) 25 mg PO every day and non-insulin dependent Diabetes, that she controlled with diet. She has never received an operation before. She denied any allergies. Her social history was negative for tobacco, alcohol abuse or recreational drugs. Family history was only significant for hypertension.

On physical examination the patient was awake, alert and oriented in person, time, place and situation. Her chest was clear and her heart had a regular rate and rhythm with no murmurs. Her abdomen was distended and firm on palpation in all four quadrants. The surgical consultant elicited guarding and rebound tenderness. Her bowel sounds were present but much diminished. Rectal exam showed no feces on the ampulla. Her external genitalia were normal

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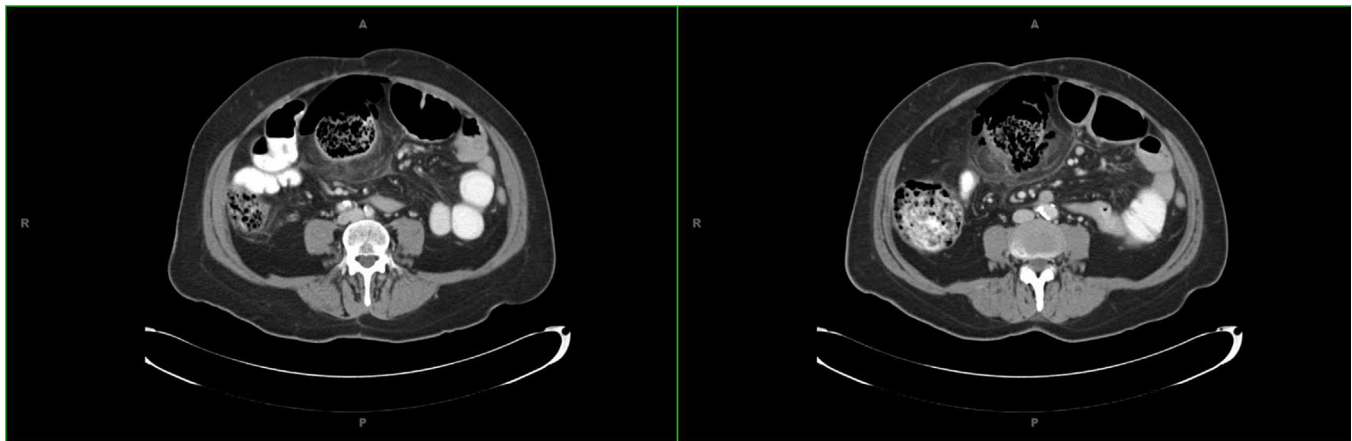


Fig. 1. Preoperative CT scan of the abdomen and pelvis showing a large central mass with inflammation and evidence of contained perforation.

for her age and sex. A formal vaginal exam was dispensed with given the condition of the patient. Her extremities showed no edema. A brief neurological evaluation was unremarkable.

A Foley catheter was inserted and drain scant, dark urine. Her blood work was only remarkable for a White Blood Cell count of 19,500 with a left shift. Her hemoglobin, hematocrit and platelet count were all within normal limits. Her electrolytes were unremarkable, as was her amylase and lipase. A CT scan of the abdomen and pelvis was obtained prior to surgical consultation, which

showed a central inflammatory mass, surrounded by small bowel with evidence of intramural air and possible perforation (Fig. 1). She was promptly taken to the Operating Room for surgical exploration.

3. Surgical technique

Once general anesthesia was induced a generous midline incision was carried down to the peritoneal cavity, where a large mass was found, and determined to be arising from the ileum, without

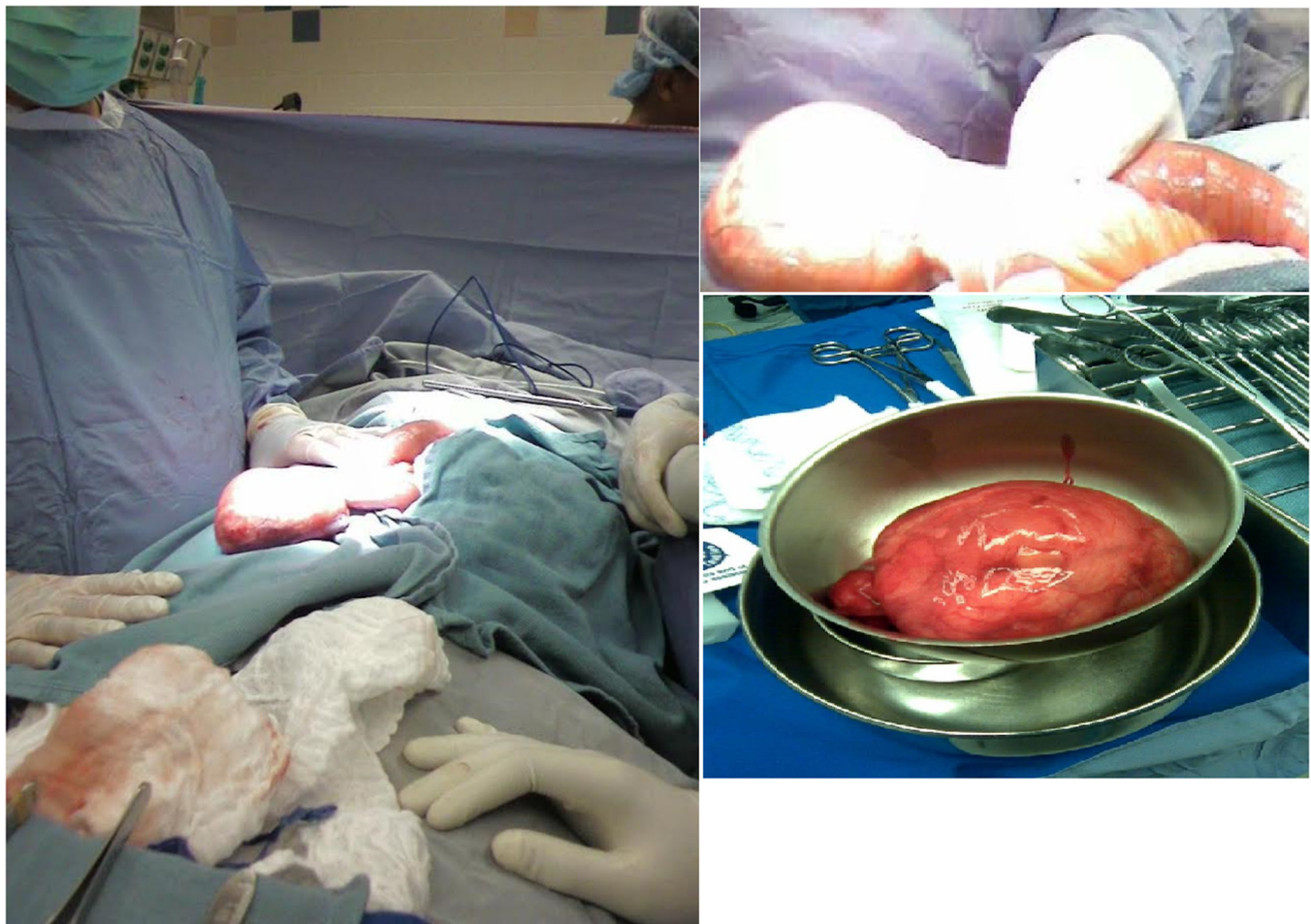


Fig. 2. During the laparotomy a large spherical, pedunculated mass arising from the distal ileum with evidence of inflammation and perforation, consistent with Giant Meckel's diverticulitis.

evidence of intestinal obstruction or torsion. There was evidence of suppurative at the surface of the mass, with stigmas of perforation. The loop of small bowel containing the mass was then resected (Fig. 2), and intestinal continuity restored by constructing a functional termino-terminal anastomosis with a surgical stapler (GIA, Covidien-Medtronic, Minneapolis MN). An incidental appendectomy was performed as well. The diverticulum was spherical, pedunculated, and measured as 29 cm in maximum diameter. Her pathology was reported as Giant Meckel's diverticulum, with both pancreatic and gastric tissue foci, and with evidence of perforation. There was no evidence of malignancy.

4. Follow up and outcome

Her postoperative course was as expected for intestinal resection and anastomosis. She was able to tolerate a diet on postop day 3, which was quickly advanced, and was discharged home uneventfully on postop day 6. The patient was seen in follow up at 2 weeks and 3 months postop. Her incision healed appropriately and her overall clinical condition was otherwise unremarkable.

5. Discussion

The cause of Meckel's diverticulum is the incomplete obliteration of the vitelline duct [3]. It is the most common congenital anomaly of the intestinal tract [3,4]. Clinical feature associated with an increased risk of developing symptoms from a Meckel's diverticulum include age <50, male sex, size greater than 2 cm and the presence of abnormal histology or ectopic tissue (pancreatic and gastric being the most common) [3–5]. The incidence of complications of Meckel's diverticulum in the literature ranges from 4 to 16%. While the current consensus is that the incidence of complications decreases with age [5–7] this patient constitutes an exception.

The incidence of Giant Meckel's diverticuli is currently unknown. Since the first recorded clinical description of this variant [8], all cases reported in the available English biomedical literature were symptomatic: there are no described instances of the incidental finding of an otherwise clinically asymptomatic Giant Meckel's diverticulum. In addition, there are complications of this variant of Meckel's that are directly related to its size, such as enteroliths and the occurrence of axial torsion. These findings seem to suggest that the Giant Meckel's diverticulum may represent a distinct but related clinical entity of the more common Meckel's diverticulum.

This case was different from typical cases of Meckel's diverticulitis due to its large size and perforation on presentation. Reported causes of perforation include foreign body, inflammation, and trauma [5,9]. In this unusual case there was no apparent external cause to the perforation. Illustrating the life threatening complication of perforation in a Giant Meckel's diverticulum suggests that it may be prudent to consider resection of a Giant Meckel's diverticulum diagnosed whether intraoperatively or otherwise (in an asymptomatic patient) in addition of providing insight to the natural progression of Giant Meckel's diverticulum.

Patient perspective

For this case report a formal patient perspective was not obtained.

Additional information

The University of Illinois at Chicago identified no sources of funding for the realization of this project. The authors (RM, IMI and ESS) hereby declare that they have no conflict of interest that pertains to this case report. Written informed consent was obtained

from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request. For the preparation of this case report we followed the recommendations of the ICJME and the Equator Network (available at <http://www.equator-network.org/>). The formatting of the manuscript follows the surgical extension for the CARE statement (available at <http://www.scareguideline.com/>).

Conflicts of interest

The authors (RJM, IMI and ESS) declare that they have no conflict of interest pertaining to this case report.

Sources of funding

The authors (RJM, IMI and ESS) declare that they have no sources of funding pertaining to this case report.

Ethical approval

The authors (RJM, IMI and ESS) declare that this case report is exempted from ethics approval in the institution this case took place.

Consent

The authors (RJM, IMI and ESS) declare that informed consent was obtained from the patient, including for the use of pictorial material, for publication. The consent is available on the patient's paper chart and will be made available to the Editor upon request.

Author contribution

RJM performed the literature review, and assisted with the writing of the manuscript

IMI conceived the study and assisted with the literature review and data collection, and revised the manuscript for style, language and completeness.

ESS collected the data for the case report and wrote the manuscript.

All authors have approved of the manuscript in its current (final form) before submission for consideration for publication.

Registration of research studies

The Case Report has been registered at www.researchregistry.com and the UIN is 3381.

Guarantor

The guarantor for this case report is the corresponding author, ESS.

References

- [1] J. Sagar, V. Kumar, D.K. Shah, Meckel's diverticulum: a systematic review, *J. R. Soc. Med.* 99 (October (10)) (2006) 501–505.
- [2] R.A. Agha, A.J. Fowler, A. Saeta, et al., The SCARE statement: consensus-based surgical case report guidelines, *Int. J. Surg.* 34 (October) (2016) 180–186, <http://dx.doi.org/10.1016/j.ijsu.2016.08.014> (Epub 2016 Sep 7).
- [3] J.J. Park, B.G. Wolff, M.K. Tollefson, et al., Meckel diverticulum: the mayo clinic experience with 1476 patients (1950–2002), *Ann. Surg.* 241 (March (3)) (2005) 529–533.
- [4] M.J. Soltero, A.H. Bill, The natural history of Meckel's diverticulum and its relation to incidental removal. A study of 202 cases of diseased Meckel's diverticulum found in King County, Washington, over a fifteen year period, *Am. J. Surg.* 132 (August (2)) (1976) 168–173.

- [5] J.C. DiGiacomo, F.J. Cottone, Surgical treatment of Meckel's diverticulum, *South. Med. J.* 86 (June (6)) (1993) 671–675.
- [6] R. McKay, High incidence of symptomatic Meckel's diverticulum in patients less than fifty years of age: an indication for resection, *Am. Surg.* 73 (March (3)) (2007) 271–275.
- [7] J.J. Cullen, K.A. Kelly, C.R. Moir, et al., Surgical management of Meckel's diverticulum. An epidemiologic, population-based study, *Ann. Surg.* 220 (October (4)) (1994) 564–568 (discussion 568–9).
- [8] M.L. Michel, R.J. Field, W.W. Ogden Jr., Meckel's diverticulum; an analysis of one hundred cases and the report of a giant diverticulum and of four cases occurring within the same immediate family, *Ann. Surg.* 141 (June (6)) (1955) 819–829.
- [9] J.M. Fuentes-Diaz, C.A. Trujillo-Vasquez, A.M. Parra-Vargas, et al., Strangulated internal hernia by giant Meckel diverticulum presented as acute appendicitis, *Int. J. Surg. Case Rep.* 13 (2015) 61–63, <http://dx.doi.org/10.1016/j.ijscr.2015.06.010> (Epub 2015 Jun 19).

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