

Case Report

Meckel diverticulitis in an adult, laparoscopic resolution





Diverticulitis de Meckel en adulto, resolución laparoscópica

Open access

Citation

Yépez Yerovi F. et al. Meckel diverticulitis in an adult, laparoscopic resolution Scientific journal **INSPILIP**; 2021, V. 5 Number (1)

The author declares to be free of any personal or business association may represent a conflict of interest in connection with the article, as well as having respected ethical principles research, such as have requested the authorizations of the institution where the study, permission to use the data, informed consent and in case to be observational studies and clinical trials, authorization of a CEISH, ARCSA, Environment, among others, according to category. what's more, the license to publish images of the person(s) appearing in the

-  Yépez Yerovi Fabian Edward ^{ab}, fe.yepez@uta.edu.ec
 -  Viteri Carrillo Juan Pablo ^{ab}, jupaviteri33@gmail.com
 -  Dominguez Verdezoto Michelle Alexandra ^c, madominguezverdezoto@gmail.com
 -  Morales Jaramillo Katherine Yessenia ^c, katysk18@gmail.com
- a. General Surgeon, General Hospital of the IESS of Ambato, Ecuador.
b. Professor of Medicine, Technical University of Ambato, Ecuador.
c. Undergraduate student, Technical University of Ambato, Ecuador.

Correspondence: Fabián Eduardo Yépez Yerovi. E-mail: fe.yepez@uta.edu.ec

Identification of the responsibility and contribution of the authors: The authors have similarly stated their contribution to the original idea in conjunction with the study design (FY, JV, MD, KM), as well as data collection (FY, JV, MD, KM), and data analysis and interpretation. (FY, JV, MD, KM), draft writing and article writing (FY, JV, MD, KM). All authors reviewed and approved the final version of the article.

Date of admission: 14/06/2020. **Approval date:** 26/02/2021. **Publication date:** 05/05/2021.

Abstract

Complications associated with a Meckel's diverticulum occur in most cases in pediatric patients, however, an adult may suffer from them in a rare and unusual way, presenting or not presenting symptoms, which can begin as an acute abdomen. It should be taken into account that it is a congenital anomaly resulting from the incomplete obliteration of the most proximal portion of the omphalomesenteric duct, which results in several abnormalities, including Meckel's diverticulum, being largely responsible for the malformations of the yolk sac. Clinical case: the case of Meckel's diverticulum is described in a 33-year-old female patient with a history of a pituitary adenoma under treatment with cabergoline.; After being assessed, admission to the operating room was decided with a diagnostic impression of acute appendicitis. **Conclusions:** the diagnosis of a Meckel diverticulum is complicated due to the clinical picture presented by the patient, combining a low sensitivity and specificity of imaging tests, despite being infrequent in adults, its suspicion is important in the differential diagnosis.

Keywords: Meckel's diverticulum, Acute appendicitis, Diverticulitis, Adult.

Resumen

El divertículo de Meckel se presenta en la mayoría de los casos en pacientes pediátricos, sin embargo, un adulto puede tenerlo, pero es raro e inusual. Si el adulto presenta síntomas, estos comenzarán de forma similar a un abdomen agudo. Hay que tener en cuenta que el divertículo de Meckel es una anomalía congénita que resulta de la obliteración incompleta de la porción más proximal del conducto onfalomesentérico, que da lugar a varias anomalías entre las que se encuentra el divertículo de Meckel, siendo el principal responsable de las malformaciones del saco vitelino. Caso clínico: se describe el caso de Divertículo de Meckel en una paciente de 33 años con antecedentes de adenoma hipofisario en tratamiento con Cabergolina, que ingresa por dolor mesogástrico que se irradia a flanco derecho y fosa iliaca derecha sin causa aparente, además se acompaña de náuseas que derivan en vómitos en dos ocasiones. Tras ser valorada, se decide su ingreso en quirófano con diagnóstico de Apendicitis Aguda. Conclusiones: el diagnóstico de un divertículo de Meckel es tan complicado por la sintomatología que presenta la paciente, combinando una baja sensibilidad y especificidad de las pruebas de imagen, a pesar de ser infrecuente en adultos, es importante considerarlo en el diagnóstico diferencial.

Palabras clave: Divertículo de Meckel, Diverticulitis, Inflamación, Enfermedades Diverticulares

Introducción

Meckel's diverticulum is a congenital anomaly of the digestive tract, it frequently occurs in children as a congenital anomaly, due to incomplete obliteration of the proximal portion of the omphalomesenteric duct. ¹ In adults, complications of a Meckel's diverticulum are unusual, this pathology is found in 2% of the population and approximately 4% of patients develop symptoms throughout their lives, due to associated complications, such as bleeding, obstruction, diverticulitis, and perforation, giving a clinical picture of acute abdomen. ^{2,3} In adults the complication rate is approximately 4%, with a more prevalence in males with a 2: 1 ratio with respect to females; in addition, it is located 60 cm proximal to the ileocecal valve in adults. ⁴ Due to the complications that this pathology may present, there is a limited number of studies that have focused on this affection in terms of the adult population. ² One of the studies that talks about this was done in adult patients,

who underwent surgical removal of a complicated Meckel's diverticulum in a European hospital; The study included a total of 37 patients, who underwent removal of the Meckel diverticulum, of which 24 were men and 13 were women, which shows that the male-female ratio was 1.8: 1, thus demonstrating that there is a higher prevalence in men for this pathology. ²

Among the most frequent complications are three that are: intestinal obstruction, diverticulitis and gastrointestinal bleeding. Of the 37 patients with complicated Meckel's diverticula of which the aforementioned study tells us, a percentage of 35.1% of patients was obtained, which presented diverticulitis as a complication, in the same way the same percentage of 35.1% presented obstruction of the small intestine and 29.8% presented gastrointestinal bleeding. ¹

Another very rare type of complication is mechanical obstruction of the small intestine by Meckel's enteroliths; These are formations of stones that remain in the diverticulum, their formation occurs through the precipitation of calcium in the alkaline environment of the small intestine and the release of these can cause a mechanical obstruction, For their diagnosis, the visualization of these enteroliths is even rarer, because not all stones are radiopaque and for their treatment, these enteroliths require a surgical diverticulectomy or segmental intestinal resection with anastomosis in case the complication occurs. ⁵

Due to its low prevalence, it is not considered among the main differential diagnoses in abdominal surgical pathologies, but when interpreting complementary tests with signs of small bowel obstruction and gastrointestinal bleeding, its presence should be suspected. ⁶

Because not all stones are radiopaque and for their treatment, these enteroliths require a surgical diverticulectomy or segmental intestinal resection with anastomosis in the event of a complication. but when interpreting the complementary tests with signs of small bowel obstruction and gastrointestinal bleeding, the presence of the same should be suspected. ⁶

The clinical manifestations are nonspecific and will depend on the complication that develops for their expression; in the case of hemorrhage, it is caused by the acid secretion of the gastric ectopic tissue or there may be an alkaline secretion of the pancreatic ectopic tissue. These patients present hematochezia, fatigue, irritability and abdominal pain, the physical

examination of these patients usually provides not very relevant data and the bleeding they present may be intermittent, which makes their diagnosis difficult, another complication is obstruction, in this case patients will present with abdominal pain, distention, nausea and vomiting, the physical examination usually reveals a distended abdomen, sensitive to palpation with decreased air-fluid sounds or even data of peritonitis, and in the case that the complication is diverticulitis, in which the symptoms will be fever, pain, nausea and vomiting, it can often be confused with appendicitis, since the physical examination will find tenderness, stiffness and a rebound sign .⁷

In general, the main signs and symptoms that occurred in the patients of the aforementioned study are abdominal pain in 100% of cases, vomiting in 50%, abdominal distention in 33% and fever in 33%¹.

These diverticula are true, since they have all the layers of the intestinal wall due to an embryological persistence of the proximal end of the omphalomesenteric duct. It is described that approximately 60% of Meckel's diverticula have ectopic mucosa with a more predominance of gastric mucosa and also the presence of pancreatic ectopic tissue.⁴

Presentation of the case

A 33-year-old female patient presented with abdominal pain, colicky onset, located in the mesogastrium of three hours of evolution, radiating to the flank and right iliac fossa without apparent cause, accompanied by nausea that reached vomiting on two occasions and dysuria. In his history, he presented a pituitary adenoma under treatment with cabergoline, with no surgical history, or allergies. She has no previous deeds, no living children, but she does have an abortion. The date of your last period is November 4, 2019.

He was admitted with vital signs within normal ranges. During the physical examination she is conscious, oriented, hydrated, moist oral mucosa, normal cardiopulmonary system, abdomen with decreased air-fluid sounds, painful on palpation in the hypogastrium and right iliac fossa with involuntary muscular defense, signs of: positive McBurney, positive Bloomberg, Positive Rovsing, Positive Dumphy; positive ureteral points. Extremities without the presence of edema.

In the emergency department, he was administered 100 mg of tramadol with 100 ml of 0.9% saline solution and laboratory tests were requested. In the

hematic biometry, the only positive finding was a leukocytosis of 13,200 cells per cubic millimeter; while the blood chemistry examination and urine microscopic examination did not show alterations. Subsequently, an ultrasound of the abdomen and pelvis was performed, the report of which indicates bilateral renal lithiasis, as the patient was consulted for surgery, surgical need was ruled out.

The patient requests voluntary discharge and the next day she returns to the health home due to persistence of pain, at the time of evolution, 24 hours have passed since its onset, and this pain manifests itself in the same way. The laboratory tests are repeated, and the leukocytosis of the hematic biometry stands out, this being 13,900 cells per cubic millimeter. The results of the other tests requested are in normal ranges. Analgesia and hydration were administered and the surgery department was consulted, which decided to admit him with a diagnostic impression of acute appendicitis.

A diagnostic laparoscopy is scheduled and the patient is admitted with a preoperative diagnosis of acute appendicitis, and the following findings are obtained during the surgical procedure: plastron consisting of the omentum, terminal ileum, ascending colon, diverticulum with abscess of approximately 10 cm, Meckel's diverticulum (figure 1) at the base wide at 1 meter 10 cm from the ileocecal valve perforated, in addition to finding seropurulent fluid in the cul-de-sac of Douglas; and the appendix was in excellent condition, which is why the postoperative diagnosis is Meckel's diverticulum. An incidental laparoscopic appendectomy, placement of auto suture and excision of the Meckel diverticulum (Figure 2), and lavage of the abdominal cavity were performed.

The pathological anatomy service reports the surgical specimen of Meckel's diverticulum (Figure 3): nodular formation measuring 4x1.2 x 1 centimeter is received, yellowish external surface with fine vasculature and scant homogeneous tissue adhered to the cut, parietal thickness of 0, 6 centimeters, yellowish mucosa with preserved folds. Intestinal wall with a zone of total necrosis of the perforated wall, rest of the wall: acute serositis (Figure 4). While the cecal appendix reports: cecal appendix ce 6x0.7 centimeters with meso of 4.5 x 2 centimeters, external surface yellowish with fine vasculature, at the cut parietal thickness of 0.2 centimeters, dilated lumen containing fecal material, yellowish mucosa (figure 5).

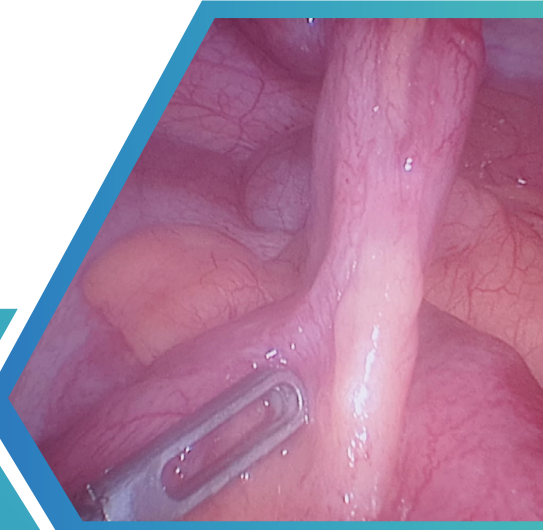


Figure 1. Meckel's diverticulum

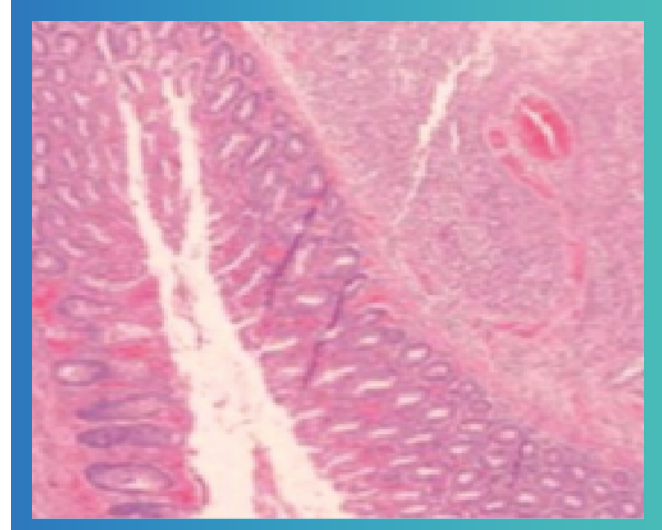


Figura 4. Placa histopatológica divertículo de Meckel.

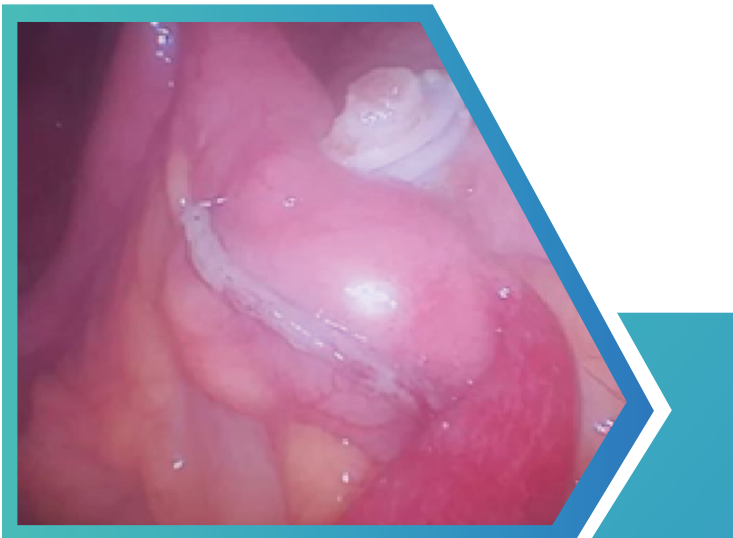


Figura 2. Autosutura de divertículo de Meckel, clips de polímero de apendicec- tomía incidental.

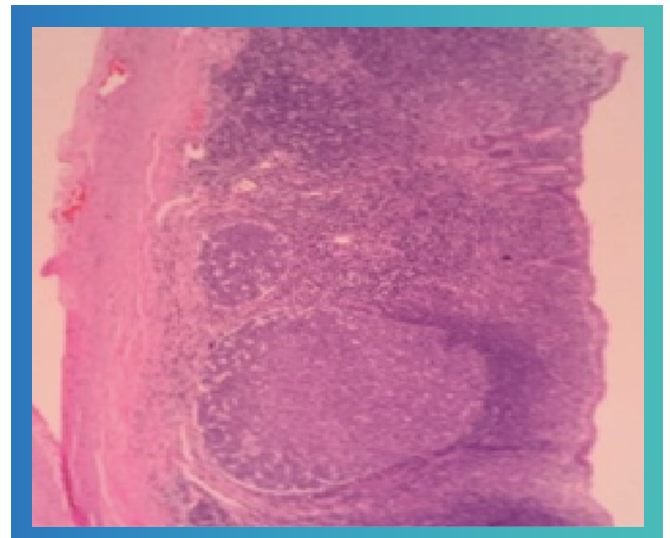


Figura 5. Placa histopatológica apéndice cecal.



Figura 3. Pieza quirúrgica: divertículo de Meckel resecado.

Discussion

The case presented corresponds to an adult female patient who came to the emergency room with abdominal pain accompanied by nausea, vomiting and dysuria. He was diagnosed with bilateral renal lithiasis, whose diagnostic support is abdominal ultrasound. The second diagnosis was made when he returned to the service, this being acute appendicitis. The same that is compatible with the clinical manifestations that it presents, especially due to the positive appendicular signs and frank leukocytosis that the hematic biometry reported. When she was admitted for an appendectomy, the presence of a perforated Meckel diverticulum was found as an incidental finding.

The diagnosis of Meckel's diverticulum represents a diagnostic challenge for doctors, since most are asymptomatic, and if there are clinical manifestations, it is when there are complications such as mechanical obstruction of the small intestine, diverticulitis or gastrointestinal bleeding. In the case described, the preoperative diagnosis was acute appendicitis due to the signs of inflammation resulting from the perforation, whose origin may be the secretion of ectopic gastric or pancreatic tissue, due to the presence of obstruction.⁹

Technetium 99 scintigraphy has high sensitivity and specificity in the pediatric population, increasing its precision by administering a type two histamine receptor antagonist, but its availability is reduced. While other complementary imaging tests have low sensitivity and specificity, such as ultrasound, X-rays, angiography, computed tomography or magnetic resonance imaging. However, they are not without value, since they can demonstrate the presence of small bowel obstruction, and thus find a Meckel diverticulum in surgical interventions performed to treat the obstruction.¹⁰

For a Meckel diverticulum diagnosed by incidental discovery, there is still no clear recommendation for management, but in the event of perforation, inflammation, or hemorrhage, intestinal resection should be performed.⁹ In the case described, the management was adequate, with satisfactory evolution. It was performed by means of excision of the Meckel diverticulum, in addition to a laparoscopic incidental appendectomy.

When acute appendicitis is diagnosed, it is not common to make a differential diagnosis with a Meckel's diverticulum due to the reasons stated above, but its possibility should not be forgotten or ruled out only considering its incidence, being a symptomatic Meckel's diverticulum uncommon in age adult.

Conclusion

The difficulty of diagnosing a Meckel diverticulum is based on the nonspecific clinical picture and the low sensitivity and specificity of complementary imaging tests. Although it is uncommon in adults, the case presented shows the importance of its suspicion in the differential diagnosis of an acute abdomen, which may be more the manifestation of a Meckel diverticulum complicated with obstruction, perforation or diverticulitis.

Conflict of interests: The authors declare that they have no conflicts in the publication of this manuscript.

Funding Source: Own of the authors

References

1. González-Urquijo M, Espino-Rodríguez M, Romero-Dávila A, Rodarte-Shade M, Gil-Galindo G. Persistence of a vitelline artery on a Meckel's diverticulum as a cause of bowel infarction. *Clin J Gastroenterol.* 2019; 13: 386-92.
2. Parvanescu A, Vruzzi M, Voron T, Tilly C, Zinzindohoué F, Chevallier J, et al Complicated Meckels diverticulum, presentation models in adults. *Medicine (Baltimore).* 2018; 97 (38): e12457.
3. Garcia-Quijada J, Bustamante C, Carabias A, Valle A. Case report: Diverticulitis complicating a giant Meckel's diverticulum. *Int J Surg Case Rep.* 2019; 65: 209-212.
4. Diaz M, Mendoza E. Prevalence of complications from Meckel's diverticulum and its surgical treatment in a highly complex hospital in the period 2018-2019. *Cir. parag.* 2019. 43 (3): 16-18.
5. Wauters L, Peeters K, Van Hootegeem A, Goetstouwers P, Delvaux P, Callens J, et al Meckel's enterolith: a rare cause of mechanical small bowel subobstruction. *Acta Gastroenterol Belg.* 2018; 81 (4): 534-537.
6. Chatterjee A, Harmath C, Vendrami CL, Hammond NA, Mittal P, Salem R, et al Reminiscing on Remnants: Imaging of Meckel Diverticulum and its complications in adults. *AJR Am J Roentgenol.* 2017; 209 (5): 287-296.
7. Ruíz-Celorio M, Higuera-de la Tijera F, Pérez-Torres E. Meckel's diverticulum. *Rev.Med.Hosp.Gen.Mex.* 2014;72 (92): 88-92.
8. Decanini TCÓ, Ruiz FBM, Vega JM, Maldonado GEL, Obregón MJG. Trans umbilical laparoscopic-assisted approach (TULA) in Meckel diverticulitis: case report and literature review. *Rev Mex Cir Endoscop* 2019; 20 (1): 19-22.
9. Lequet J, Menahem B, Alves A, Fohlen A, Mulliri, A. (2017). Meckel's diverticulum in the adult. *J. Visc. Surg.* 2017; 154 (4): 253-259.
10. Hansen CC, Søreide K. Systematic review of epidemiology, presentation, and management of Meckel's diverticulum in the 21st century. *Medicine (Baltimore).* 2018; 97 (35): e12154.