

Case Report

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A Horseshoe Appendix Duplex in Pediatrics: Do Not Misdiagnose this Anatomical Anomaly!

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ABSTRACT

Introduction: Horseshoe appendix duplex is an extremely rare anomaly with 16 cases de-scribed worldwide. The objective of this work is to bring the 17th global case and to do a re-view of the literature.

Case Report: A 15-year-old boy, received for acute appendicitis. The abdominal ultrasound revealed acute appendicitis with a small collection around. Surgery was performed and we found a horseshoe appendix in the right iliac fossa with the two bases, each communicating with the cecum. Histological examination confirmed the digestive origin of the duplex appen-dix with the four typical histological layers.

Conclusion: The horseshoe shape is the rarest of appendicular duplications. It is most often discovered during appendectomies.

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Introduction

Appendicular duplication (AD) is a rare anomaly with about a hundred reported cases and an incidence estimated by Collins at 0.004%. Its discovery is often fortuitous during appendec-tomies. We report an exceptional discovery of duplication of the ileo-caecal horseshoe-shaped appendix in children [1-4].

Our Observation

It was a 15-year-old boy, received for acute abdominal pain evolving for three days, sitting in the right iliac fossa associated with episodes of food vomiting and an allegation of fever. On admission, there was a fever of 38°C with pain and defense localized to the right iliac fossa. The complete blood count showed hyperleukocytosis at 18,800 elements/mm³ with polymorphonuclear neutrophils (85.2%). The C-Reactiv Protein (CRP) was at 68.7 mg/l. Abdominal ultrasound showed acute appendicitis with a small peri-appendicular collection. The explorato-ry laparotomy showed a horseshoe-shaped appendicular duplication in the right iliac fossa. Both appendages were gangrenous (Figure 1). The rest of the exploration was unremarkable. We performed a double retrograde appendectomy with ligation-section of the two bases. The operative part was a duplicated appendage comprising two arms continuing through a vertex of the duplication. The lateral arm was 6 cm long and the medial was 5 cm long (Figure 2). Histological examination confirmed the digestive origin of the two “arms” of the duplicated appendix with the presence of the four typical histological layers. The postoperative course was simple.

Discussion

In 2017, Nageswaran conducted a literature review on all cases of AD [5]. Initially, the classi-fication was carried out by Cave in 1963 and modified successively by Wallbridge in 1963 then by Biermann in 1993 and finally by Calota in 2010 [6-8]. It has four types, Type A, B, C and D. Type A which is an incomplete “Y” shaped duplication, where both appendages arise from a common base from the cecum. Type B is a complete appendicular duplication with two different implantation bases. It includes four subtypes B1, B2, B3 and B4. The B1 subtype “bird-like type” where the first appendage is normally implanted while the second is variably implanted on the cecum. The B2 subtype “taenia-coli type” where the first appendix sits in a normal position and the second is located on a cecal strip. The B3 subtype where the first ap-pendix sits in a normal position and the second is located on a colonic band under the liver. The B4 subtype where the first appendix sits in a normal position and the second is located on a strip of the left colic angle. Type C is a cecal duplication with an appendix on each cecum. Type D is a horseshoe appendix duplication. It can be frontal or sagittal. It was first described in 1989 by Mesko and accounts for 5% of vermiform appendix duplications. Its incidence is low in the literature. Both sexes are affected. However, there is a male predominance. The circumstances of discovery are acute appendicitis, acute intestinal obstruction, association with non-Hodgkin’s lymphoma and association with villous tubular adenoma of the ascending colon. Some authors report cases of internal hernias with intestinal necrosis. Preoperative diag-nosis of horseshoe appendix is difficult. It is generally isolated without any associated mal-formation.

Morphological examinations such as ultrasound and CT are not very specific in their detection. Histological examination confirms the digestive origin of the two appendicular arms. The therapeutic indication in symptomatic forms is clearly and uniquely surgical. Exploration finds a horseshoe appendix duplex that can be frontal or sagittal. All cases reported in the literature benefit from a double appendectomy from the outset. Takabatake et al. and Choi et al. suggest laparoscopy to look for other associated lesions [9-13].

Conclusion

Appendicular duplication in the form of a horseshoe is a rare anomaly, most often discovered exceptionally during surgical explorations for an appendicular pathology. All surgeons must be aware of VA anomalies because failure to do so exposes them to serious medico-legal consequences.

Conflict of Interest

All authors declare that there is no conflict of interest.

Author Contributions

NDOYE Jean-Marc Ndiaga designed the study and provided intellectual advice; CAMARA Souleymane provided the study design and wrote the article; SEYE Cheikh and NDOUR Oumar provided intellectual advice and revised the manuscript. All authors have read and approved the final manuscript.

Declaration of Image Authenticity

All submitted images are taken by the authors, who confirm that the images are original, with the consent of the patient's parents.

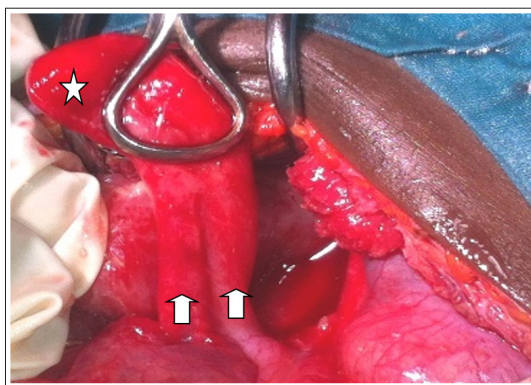


Figure 1: Intraoperative Aspects of the Horseshoe-Shaped Appendix Duplex with One Vertex (Star) and Two Bases (Arrows)



Figure 2: Gross Image of the Appendectomy with a Vertex (Star) and Two Arms (Arrows)

References

1. Biernann R, Borsky D, Gogora M (1993) Double appendicitis-a rare pathologic entity. *Der Chirurg; Zeitschrift für Alle Gebiete der Operativen Medizin* 64: 1059-1061.
2. Cai SY, Lin MF (2007) A case of annular appendix with acute

appendicitis. *Yixue Yingxiangxue Zazhi. Journal of Medical Imaging* 17: 27.

3. Calota F, Vasile I, Mogoanta S, Zavoi R, Pasalega M, et al. (2010) Horseshoe appendix: a extremely rare anomaly. *Chirurgia Bucure* 105: 271-274.
4. Cave AJE (1936) Appendix vermiformis duplex. *Journal of Anatomy* 70: 283.
5. Collins DC (1955) A study of 50,000 specimens of the human vermiform appendix. *Surg Gynec Obstet* 101: 437-445.
6. Choi SJ, Chae G, Park SB, Hong SK, Kim YH, et al. (2019) Horseshoe appendix identified during laparoscopic appendectomy: A case report and literature review. *Medicine* 98: e14104.
7. Collins DC (1955) A study of 50,000 specimens of the human vermiform appendix. *Surg Gynec Obstet* 101: 437-445.
8. Liu J, Dong C, Wang H, Sun D, Liang R, et al. (2018) One type of duplex appendix: horseshoe appendix. *Therapeutics and Clinical Risk Management* 14: 1987.
9. Mesko TW, Lugo R, Breitholtz T (1989) Horseshoe anomaly of the appendix: a previously undescribed entity. *Surgery* 106: 563-566.
10. Nageswaran H, Khan U, Hill F, Maw A (2018) Appendiceal duplication: a comprehensive review of published cases and clinical recommendations. *World journal of surgery* 42: 574-581.
11. Ninos A, Douridas G, Papakonstantinou E, Vidali M, Liapi G, et al. (2010) A horse-shoe double appendix positioned on a non-Hodgkin lymphoma. *Hellenic Journal of Surgery* 82: 73-76.
12. Takabatake K, Ikeda J, Furuke H, Kato C, Kishimoto T, et al. (2016) A case of a horseshoe appendix. *Surgical Case Reports* 2: 1-4.
13. Wallbridge PH (1962) Double appendix. *Journal of British Surgery* 50: 346-347.

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