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Patent omphalomesenteric duct opening into the vermiform appendix

Akintayo David OlaOlorun, Stephen Adesope Adesina, Adepeju Olatayo Adepoju, Isaac Olusayo Amole

ABSTRACT

Introduction: Persistent omphalomesenteric duct anomalies are very rare the world over. These anomalies are in a spectrum and present in various forms, ranging from the infamous Meckel's diverticulum to a fibrous non-patent connection between the umbilicus and the distal ileum, to a patent connection between the umbilicus and the intestine, the patent omphalomesenteric duct. Case Report: A two-month-old female child who was born with a membrane-covered umbilical mass which after sometime, became two swellings with intestinal epithelial covering and fistulous openings. At surgical exploration, she was discovered to have a patent omphalomesenteric duct which opened into the appendix, as well as intestinal malrotation abnormality. Conclusion: The occurrence of patent omphalomesenteric duct opening into the vermiform appendix is a rare occurrence and there should be high index of suspicion when there is failure of healing of the umbilical stump and there is discharge of intestinal contents via the umbilicus.

Akintayo David OlaOlorun[1], Stephen Adesope Adesina[2], Adepeju Olatayo Adepoju[2], Isaac Olusayo Amole[3]

Affiliations: [1]MBBS, FMCGP, Consultant, Family Medicine, Bowen University Teaching Hospital, Ogbomoso, Nigeria; [2]MBBS, MWACP(FM), Senior Registrar, Family Medicine, Bowen University Teaching Hospital, Ogbomoso, Nigeria; [3]MBBS, FWACP(FM), Consultant, Family Medicine, Bowen University Teaching Hospital, Ogbomoso, Nigeria.

Corresponding Author: Isaac Olusayo Amole, Bowen University Teaching Hospital, P. O. Box 15, Ogbomoso, Oyo State, Nigeria, 009234; Ph: +2348057078851; Email: amoleio@yahoo.com

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INTRODUCTION

Persistent omphalomesenteric duct anomalies are very rare the world over. In a report out of Zaria, Nigeria, Ameh et al. saw less than one patient per year. They treated 18 patients in 22 years [1]. These anomalies are in a spectrum and present in various forms, ranging from the infamous Meckel's diverticulum to a fibrous non-patent connection between the umbilicus and the distal ileum, to a patent connection between the umbilicus and the intestine, the patent omphalomesenteric duct. It is normally observed as a connection with the distal ileum but has been known to connect with the cecum, ascending colon and the appendix [2, 3]. We present the case of a two-month-old female child who was referred to us with complaints of failure of healing of the umbilical stump and the discharge of intestinal contents via the umbilicus.

CASE REPORT

A two-month-old female child was referred to us with failure to heal her umbilical stump. She was born the second of a sibship of two, to parents in their thirties after an uneventful pregnancy and delivery. After delivery, her mother noticed that the child had an umbilical mass,

covered by a membrane. The umbilicus was ligated normally and the stump was held in a plastic umbilical clamp. Since this child was born at a prayer house, upon leaving there, her mom went to an orthodox hospital where the caregivers commenced daily dressing changes to the umbilicus. This continued for a while but when the parents and the grandmother noticed a lack of healing of the umbilicus at the time they expected it to have healed, they became concerned. Shortly afterwards, the mother noticed an intermittent discharge of what appeared to be intestinal contents from the umbilicus and this prompted the referral to our hospital.

Upon arrival, the child was examined closely for congenital abnormalities of the heart, spine and anus and there were none. The rest of her physical examinations were normal except for the umbilicus which had what looked like intestinal mucosa in two bumps (Figure 1A–B). There were fistulous openings on either side of the bumps but we could not express out yellowish-brownish fluid suggestive of intestinal contents. The clinical impression after assessing the child was that of a patent omphalomesenteric duct. Further radiological evaluation of this apparent umbilical fistula was not carried out because of the financial difficulties of the young family. The child underwent an umbilical stump exploration via a circum-umbilical incision.

Operative findings: The two bumps were found to be the tip of the appendix which was discovered to be attached to the umbilicus. There was associated malrotation of the intestine, with the cecum freely mobile, not attached to the posterior abdominal wall as expected, and it was located to the left side of the terminal ileum (Figure 2) as opposed to its normal anatomy. The blood supply to the appendix was found to be located anterior to the appendix, cecum and ileum in an aberrant position. The appendix was removed using the standard appendectomy technique, the fascia was closed and the umbilicus reconstructed (Figures 3 and 4). The child made an uneventful recovery. The post-operative diagnosis was patent omphalomesenteric duct which opened into the appendix.

DISCUSSION

The rarity of persistent omphalomesenteric duct remnants of all kinds [1, 4] is such that many physicians will go through their whole medical career without seeing one. It is accepted that abnormal umbilical masses and/or fistulas represent a failure of obliteration and delay of involution of the embryonic vitelline (omphalomesenteric) duct. The most frequently seen of the aforementioned spectrum of findings is the Meckel's diverticulum and it is reported to be present in only 2–3% of people [5], and to be more symptomatic in males. The appendico-umbilical fistula is believed to be a variant of the patent omphalomesenteric duct, one that connected with the appendix instead of the distal ileum or other places like the cecum or the ascending colon [2], and that indeed is the diagnosis in this case.

When an umbilical appendix is present, it is known to be associated with various forms of malrotation of the gut [3, 6]. The aberrant position of the appendiceal blood vessels in this case supports the diagnosis of associated malrotation. The significance of this is that these children are susceptible to the well-known potential complications of malrotation such as midgut volvulus. There can also be twisting of the gut around the attachment of the appendix to the umbilicus. It is imperative to remove the umbilical

Figure 1: (A) Umbilical "bumps" clearly showing intestinal mucosa, (B) Umbilical "bumps", lateral view.

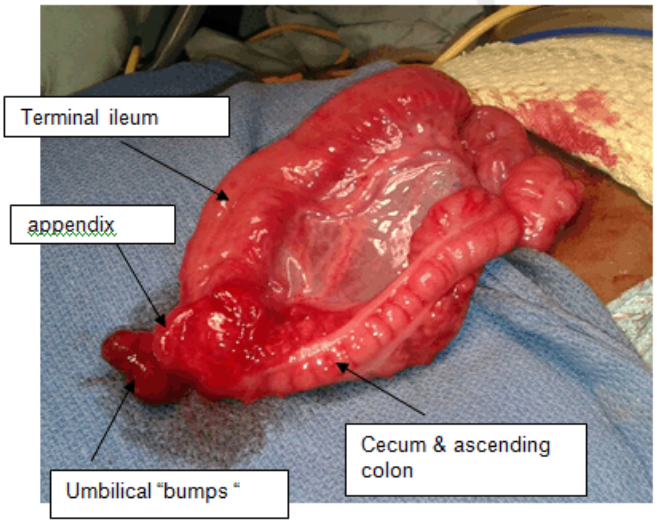

Figure 2: Malrotation of the gut with the cecum freely mobile and to the left of the terminal ileum

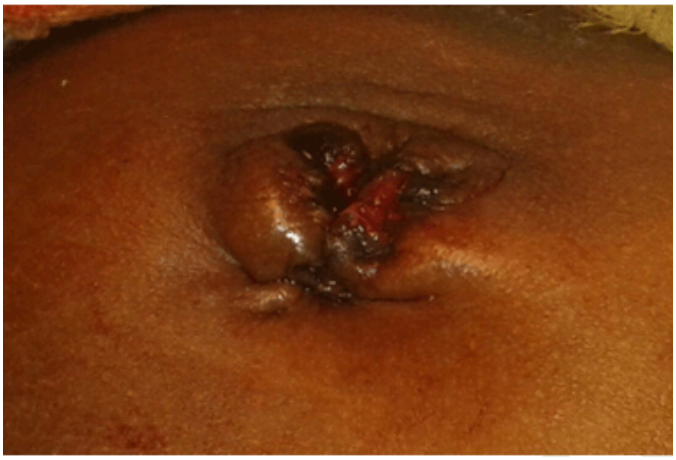

Figure 3: Immediate postoperative umbilical reconstruction

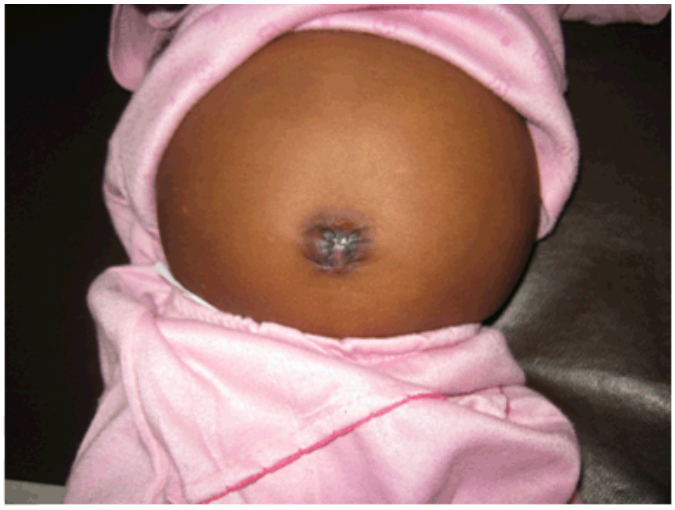

Figure 4: Postoperative (four weeks) picture of the umbilicus.

appendix (or the persisting omphalomesenteric duct) as soon as possible to prevent this complication because of this. Other complications that can occur in persons with Meckel's diverticulum are hemorrhage and growth of Carcinoid tumor [5] and presumably this can also occur when the patent omphalomesenteric duct opens into the appendix instead of the distal ileum. Obviously, having had her omphalomesenteric duct/appendix removed, the child in this case has had these potential complications forestalled. The preoperative diagnosis of cases like this can be clinically difficult and once operated, the procedure chosen to deal with the problem has to be individualized.

CONCLUSION

The occurrence of patent omphalomesenteric duct opening into the vermiform appendix is a rare occurrence and there should be high index of suspicion when there is failure of healing of the umbilical stump and there is discharge of intestinal contents via the umbilicus.

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Author Contributions

Akintayo David OlaOlorun – Substantial contributions to conception and design, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Stephen Adesope Adesina – Acquisition of data, Revising it critically for important intellectual content, Final approval of the version to be published

Adepeju O. Adegoke – Acquisition of data, Revising it critically for important intellectual content, Final approval of the version to be published

Isaac Olusayo Amole – Acquisition of data, Critical revision of the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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