Journal of Pediatric Surgery Case Reports 88 (2023) 102511

Contents lists available at ScienceDirect

Journal of Pediatric Surgery Case Reports

journal homepage: www.elsevier.com/locate/epsc

Neonatal presentation of transected sigmoid colon following umbilical cord clamping: Hernia of umbilical cord

Charles Newton Odongo [a,*], Felix Oyania [a], Amandine Godier-Furnemont [b], Joshua Moro [a], Martin Situma [a]

[a] Mbarara University of Science and Technology, Department of Surgery, Division of Pediatric Surgery, Uganda
[b] University of California, Department of Surgery, Center for Health Equity in Surgery and Anesthesia, San Francisco, CA, USA

ARTICLE INFO

List of keywords:
Hernia of the umbilical cord
Neonatal emergencies
Abdominal wall defects

ABSTRACT

The umbilicus is a site of numerous embryopathies involving vessels, urachus, mid gut herniation, anterior abdominal wall defects and congenital cysts. Owing to lack of awareness, umbilical cord hernia (HUC) is often misdiagnosed and underreported, with limited data in the literature. We report an isolated case of congenital HUC and perinatal transection of the sigmoid colon during cord ligature by a midwife in a local health center.

A six-day old female neonate presented with discharge of fecal matter through the umbilicus. The clamped cord, became swollen and auto-amputated on day of life three, after which fecal discharge was from the stump was noted. On examination a visible bowel loop containing stool was seen in the umbilical cord. We proceeded with surgical intervention via a small umbilical incision, with findings of transection of the sigmoid colon, no peritoneal contamination, and primary anastomosis was performed. There was event free recovery postoperatively.

HUC is poorly understood and often misdiagnosed as omphalocele minor. One should be cognizant of HUC when noting swelling at the base of the cord so as to avoid any inadvertent iatrogenic enterotomy by close umbilical clamping.

1. Introduction

The incidence of hernia of the umbilical cord (HUC) is low, 1 in 5000 births, with a male predominance [1] compared to postnatal umbilical hernia, partly due to frequent misdiagnosis as omphalocele minor. It may occasionally have meconium discharge from the sac through an associated patent vitello-intestinal duct (PVID) [2]. HUC may be isolated or can occur in association with prematurity, urachus, umbilical cord cysts, artery neuropathies [3] and cloaca has also been reported [2,4,5]. Herniated content can include a solitary intestinal loop or persistent omphalomesenteric duct (POMD) with the potential for traumatic injury in a case of inadequate examination of the umbilical cord and its clamping at birth [6,7].

2. Case presentation

We received a six-day old female neonate born at forty weeks of gestation via spontaneous vaginal delivery. Antenatally, mother tested positive for TORCH and HIV. She had no prenatal ultrasound scan. The child was born with abdominal swelling in the umbilical cord, which was tied off. The presumed cord, became swollen and auto-amputated on day three, and thereafter the mother noted

Abbreviations: HUC, Umbilical cord hernia.

* Corresponding author.
E-mail address: cnodongo@gmail.com (C.N. Odongo).

https://doi.org/10.1016/j.epsc.2022.102511
Received 18 October 2022; Accepted 6 November 2022
Available online 7 November 2022
2213-5766/© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

fecal discharge from the stump and presented as a referral from a peripheral health facility. On presentation the child was afebrile, hemodynamically stable, with normal vital signs for age, and weighed 2.62 kg. On examination, the abdomen was soft and nondistended, with stool visible at the umbilical stump with loop of transected bowel (Fig. 1a). Complete blood count and chemistry were within normal limits.

Following resuscitation, we proceeded to do an exploratory surgery via a small umbilical incision, with findings of complete transection of the sigmoid colon, though there was no significant loss of bowel length (Fig. 1b). There was no intraperitoneal contamination, and an end-to-end primary sigmoid anastomosis was performed. The child recovered well and started breast feeding on postoperative day three. The child was discharged on postoperative day 7 (Fig. 1c), and follow up visits at two weeks, one month and three months were uneventful.

3. Discussion

Congenital hernia of the umbilical cord is a herniation of small bowel and occasionally other viscera into the umbilicus due to failure of complete return of physiologically herniated bowel to the abdomen, and is distinct from omphalocele minor [5,6]. The defect diameter is < 4 cm, and can contain intestinal loops and or intraperitoneal organs [1]. Herniation into the umbilical cord may range from a small portion to the entire small bowel along with a part of the colon [9]. In this case an isolated segment of sigmoid colon that was sacrificed during the cord ligation.

During gestation, a greater part of the bowel lies in the proximal part of the umbilical cord, which become the extracelomic cavity [3]. Normally, the intestines withdraw into the abdominal cavity at about 10–12 weeks of gestation [5,8], the umbilical ring then closes and the extracelomic cavity is thereby obliterated leaving behind Wharton's jelly and umbilical vessels in the cord [5]. In rare cases as in this case, the variable portions of the intestines remain in the extracelomic cavity, which persists as congenital hernia into the umbilical cord.

Hernia of the cord is an entity distinct from other anterior abdominal wall anomalies such as gastroschisis and omphalocele [8]. Intact skin of umbilical ring, intact abdominal wall, presence of a sac comprising of an outer layer of amnion and inner peritoneum and contents varying from loops of the intestine to any movable intraperitoneal organ (depending on the size of the defect) are the features distinguishing this entity from gastroschisis and omphalocele [2,5]. Typically there is a cuff of skin from one half to one inch wide, which extends from the abdominal wall to the neck of the sac as seen in this case [2].

There may be a partial failure of return of bowel to the abdomen as happens in majority of cases or it may be an complete failure as reported by Gadjdhar et al. where entire small bowel including cecum and ascending colon were herniated into the cord and covered by a membrane [7,9]. The diagnosis can be made prenatally, earlier than gastroschisis and omphalocele, with ultrasound findings of small bowel extending into the base of the normally inserted umbilical cord [3,5].

HUC is usually associated with intestinal atresia and patent vitello intestinal duct (PVID) [9], however this case that was an isolated variant [7]. Prenatal ultrasound scan can detect HUC as early as second trimester, earlier than the identification of omphalocele and gastroschisis [2]. Ultrasound findings would include small bowel extending into the base of the normally inserted umbilical cord [5]. Access to prenatal ultrasound for this child, identifying HUC, could have averted the ultimate bowel injury and need for surgical intervention.

Though hernia of umbilical cord is a simply managed anomaly with good outcome, rare complications can present, for example perinatal gut perforation [2,7]. Importantly, recognition of this anomaly, by identifying swelling at the base of the cord, is important to avoid inadvertent iatrogenic enterotomy to gut due to close umbilical cord clamping [2,5]. Careful reduction and a tight strapping until the wound has completely cicatrized has been documented by some authors in the literature, but this has proven unreliable with large hernias [4,7]. Surgical operation should be undertaken as soon as possible after birth when the hernia is large, though unfortunately this is not possible in low resource settings where prenatal ultrasound scan is usually not accessible [4]. Without operation, the dangers are incarceration, strangulation or volvulus, infection of the sac wall, which has no blood supply, with the development of a fatal peritonitis [4].

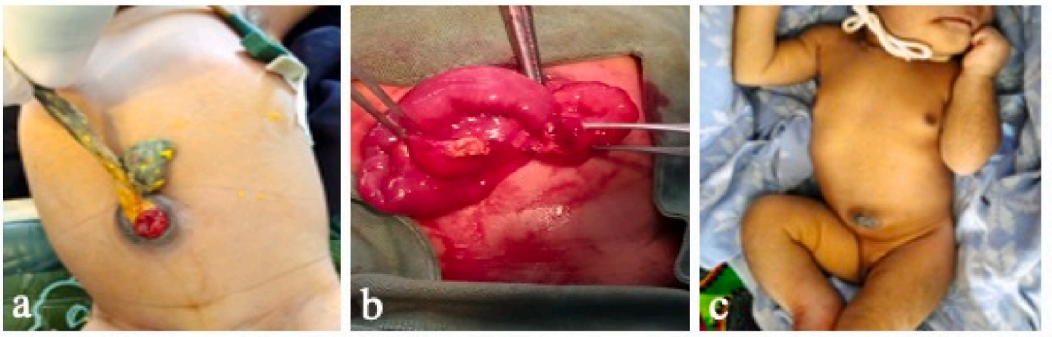


Fig. 1. (a) Transected bowel containing cord, formed stool content visible; (b) Two sigmoid colon segments transected by cord ligation (c) Postoperative day 7, time of discharge.

This particular neonate may have been fortunate despite this incidence the gut content was restricted out of the peritoneal cavity, avoiding peritonitis and sepsis, thereby allowing for primary anastomosis via a small incision, as opposed to routine extended midline or transverse laparotomy incision in infants.

4. Conclusion

HUC is poorly understood and often misdiagnosed as omphalocele minor. The most important preventive measure is awareness of variable anatomy when performing umbilical cord clamping, and that the clamping should be done at a safe distance from the base of the cord, at least 5 cm from the abdominal wall [6]. This case may contribute to awareness by clinicians, nurses, midwives and traditional birth attendants, and increase vigilance when clamping the cord, to avoid adverse events. This is of high importance not only in low- and middle-income countries where many births take place outside of healthcare facilities, but also within high-income countries, given the rarity of such presentations.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

Funding

No funding or grant support.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We would like to acknowledge the Mbarara University Department of Surgery, Dr. Doruk Ozgediz for his insightful comments on the manuscript, all the team members who participated in the care of this child, and especially the patient and mother of the child.

References

[1] Zvizdic Z, Milisic E, Jonuzi A, Vranic S. Umbilical cord hernia associated with complete evagination of the patent omphalomesenteric duct and prolapse of adjacent ileal limbs. Asian J Surg 2021;44(8):1087–8. https://doi.org/10.1016/j.asjsur.2021.05.022.
[2] Pal K. Congenital hernia of the umbilical cord associated with extracelomic colonic atresia and perforation of gut in a newborn. Afr J Paediatr Surg 2014;11(1):74.
[3] Singh A.P, Gupta A.K, Tanger R, Garg D. Congenital hernia of the umbilical cord with patent vitello-intestinal duct in a newborn: a rare case. J. Clin. Neonatol. 2018;7(2):102.
[4] Burns C, Ogryzlo M. Congenital hernia into the umbilical cord; two cases, one associated with persistent cloaca. Can Med Assoc J 1938;39(5):438.
[5] Sharma P, Acharya N. Umbilical cord hernia a rare ventral wall defect: case report.
[6] Zvizdic Z, Milisic E, Vranic S. Intestinal obstruction caused by a clamped persistent omphalomesenteric duct in congenital hernia into the umbilical cord. 2021.
[7] Haas J, Achiron R, Barzilay E, Yinon Y, Bilik R, Gilboa Y. Umbilical cord hernias: prenatal diagnosis and natural history. J Ultrasound Med 2011;30(12):1629–32.
[8] Maekawa S, Kogata S, Sasaki T. A case of hernia of the umbilical cord with an accessory liver. J Neonatal Surg 2021;10:26.
[9] Mirza B, Mirza A, Hashim I, Saleem M. Hernia of umbilical cord: report of three unusual cases. J Neonatal Surg 2015;4(2).