

Meckel diverticulum in exomphalos minor

Hee Ju Sohn, Kwi-Won Park, Na Mi Lee¹, Mi-Kyoung Kim², Seung Eun Lee

Departments of Surgery, ¹Pediatrics, and ²Pathology, Chung-Ang University College of Medicine, Seoul, Korea

A congenital hernia into the base of the umbilical cord is known as an exomphalos and when the size of the defect is 5 cm or less and containing only bowel, it is called as exomphalos minor. We present a case of a newborn with an exomphalos minor within a Meckel diverticulum. He underwent surgical resection of the Meckel diverticulum and repair of the abdominal wall defect. To our knowledge, this is the first reported case of Meckel diverticulum in an exomphalos minor in Korea.

[Ann Surg Treat Res 2016;91(2):90-92]

Key Words: Meckel diverticulum, Omphalocele, Minors

INTRODUCTION

A congenital hernia into the base of the umbilical cord is known as an exomphalos and it is classified as major and minor according to size of the defect [1]. When the size of the defect is 5 cm or less and contains only bowel, it is called as exomphalos minor [1]. We present a case of an exomphalos minor which contained a Meckel's diverticulum and discuss this manifestation with a review of previously published papers.

CASE REPORT

A 3-day-old male neonate weighing 3.5 kg presented with a 2.5 cm protruding mass on his umbilicus with a small amount of discharge (Fig. 1). The mass had not been detected on prenatal ultrasounds. There were no other dysmorphic features and the child's general condition was excellent. Ultrasonography showed a 2.5-cm abdominal wall defect with a small bowel loop emerging through it and lying within the sac. Further evaluations using doppler echocardiogram and brain ultrasonography showed no other demonstrable

findings. Upon being diagnosed with an exomphalos minor, the patient underwent exploratory laparotomy. A semicircular incision was made below the umbilicus and was deepened to the peritoneum. On exploration, a Meckel diverticulum was herniated through the defect of umbilicus (Fig. 2) and adhered to adjacent tissues in the sac. Because of the possibility of luminal narrowing, segmental resection and anastomosis including the diverticulum rather than wedge resection were performed. After primary anastomosis of the resected bowel ends, the entire small bowel was inspected but no other lesions were found. The size of the fascia defect of the umbilical ring was 2.5 cm and it was repaired layer by layer with vicryl. Histopathological evaluation demonstrated a full layer of small intestine including a lining of columnar epithelium suggestive of Meckel diverticulum without other ectopic lesions such as gastric mucosa or pancreatic lesions. The child made an uneventful postoperative recovery and at a 5-month follow-up confirmed normal development.

DISCUSSION

Exomphalos is a congenital defect of the fetal abdominal

Received January 6, 2016, Revised April 5, 2016, Accepted May 2, 2016

Corresponding Author: Seung Eun Lee

Department of Surgery, Chung-Ang University Hospital, Chung-Ang University College of Medicine, 102 Heukseok-ro, Dongjak-gu, Seoul 06973, Korea

Tel: +82-2-6299-3121, Fax: +82-2-824-7869

E-mail: selee508@cau.ac.kr

Copyright © 2016, the Korean Surgical Society

© Annals of Surgical Treatment and Research is an Open Access Journal. All articles are distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.



Fig. 1. Preoperative photograph showing 2.5-cm umbilical mass surrounded by a thin amnion.

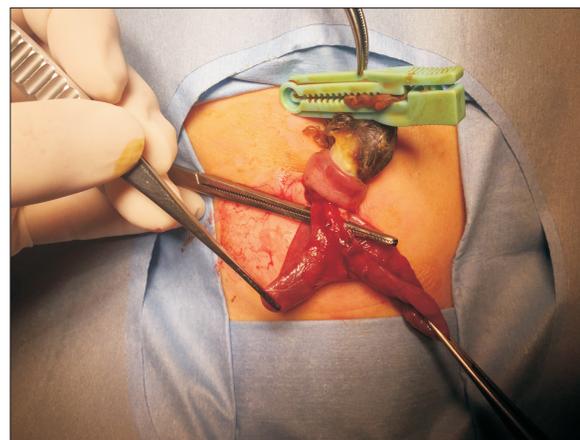


Fig. 2. Intraoperative finding showing a Meckel's diverticulum herniated into the exomphalos minor.

wall resulting from failure of midline fusion of mesodermal myotomes [2,3]. Exomphalos can be classified into major and minor, depending on the size of the defect [1,2]. Exomphalos major is defined as a defect 5 cm in diameter or greater, containing liver and other viscera, whereas exomphalos minor is defined as a defect less than 5 cm in diameter containing only bowel [1,2]. Gastrointestinal tract anomalies such as atresias, duplication cysts, and Meckel diverticulum are more likely to be associated with exomphalos minor than with exomphalos major [2]. Meckel diverticulum results from the failure of the primitive midgut to return to the newly enlarged abdominal cavity and the involution of the vitellointestinal duct [4].

Exomphalos minor is diagnosed prenatally in only about 50% of cases [5]. Thus, nearly half of affected infants are diagnosed after birth, so families are not prepared for either the defect itself or associated anomalies and morbidities. Although neonates with exomphalos minor have better survival rather than neonates with exomphalos major, they remain at risk for a wide variety of complications as they have more chromosomal anomalies, syndromic associations, and dysmorphism than neonates with exomphalos major [2,5]. All neonates with exomphalos minor need a comprehensive evaluation for associated anomalies irrespective of the size of the defect. Since congenital heart defect and renal anomaly are most commonly associated abnormalities, echocardiography and renal ultrasonography are recommended for all the neonates with exomphalos. Because of the preponderance of prevalence of congenital malformations of the gastrointestinal tract and central nervous system in exomphalos minor in comparison to exomphalos major, abdominal sonography and brain ultrasonography should be usually recommended in exomphalos minor [2]. Chromosomal studies especially for trisomy 13, 14, 21 are also recommended in exomphalos minor [2].

Because the length of small bowel available for inspection tends to be somewhat restricted during the surgical repair of exomphalos minor, especially in those cases where sacs are not opened, surgeons must try to explore the whole bowel and consider the possibility of associated gastrointestinal anomalies. Careful inspection of the base of the umbilical cord should be done prior to clamping of the cord because of the possible association between exomphalos minor and the presence of a patent vitello-intestinal duct, as in the present case. Several cases of accidental clamping, ligation, or cutting of the bowel when a small exomphalos is present have been reported [6]. Therefore, the sac should be opened and the contents should be inspected directly.

In conclusion, we present a case of a newborn with an exomphalos minor and Meckel diverticulum. To our knowledge, this is the first reported case of Meckel diverticulum in exomphalos minor in Korea.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Jones PG. Exomphalos (syn. omphalocele). A review of 45 cases. *Arch Dis Child* 1963; 38:180-7.
2. Groves R, Sunderajan L, Khan AR, Parikh D, Brain J, Samuel M. Congenital anomalies are commonly associated with exomphalos minor. *J Pediatr Surg* 2006; 41:358-61.
3. Ng J, Antao B, Mackinnon E. Congenital intestinal fistula with exomphalos minor. *Pediatr Surg Int* 2006;22:619-21.
4. Simms MH, Corkery JJ. Meckel's diverticulum: its association with congenital malformation and the significance of atypical morphology. *Br J Surg* 1980;67:216-9.
5. Vachharajani AJ, Rao R, Keswani S, Mathur AM. Outcomes of exomphalos: an institutional experience. *Pediatr Surg Int* 2009;25:139-44.
6. Asabe K, Oka Y, Kai H, Shirakusa T. Iatrogenic ileal perforation: an accidental clamping of a hernia into the umbilical cord and a review of the published work. *J Obstet Gynaecol Res* 2008;34(4 Pt 2):619-22.