

# Giant Meckel's Diverticulum Associated with a Congenital Diaphragmatic Hernia

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Giant Meckel's diverticulum is a very rare lesion and its association with a congenital diaphragmatic hernia has not been reported previously. We report a case of newborn with a giant Meckel's diverticulum and congenital diaphragmatic hernia. A large round atypical air-filled bowel segment was found by chest radiography preoperatively, and a giant Meckel's diverticulum was located within the left hemithorax during surgery.

**Key Words:** Giant Meckel's diverticulum, congenital diaphragmatic hernia

## INTRODUCTION

Unlike a usual Meckel's diverticulum, giant Meckel's diverticulum is a rare lesion. We report a case of giant Meckel's diverticulum associated with a congenital diaphragmatic hernia.

## CASE REPORT

A 3780-gram male baby was born after 38 weeks' gestation by normal vaginal delivery. At 35 weeks' gestation prenatal ultrasonography was performed and a left-sided congenital diaphragmatic hernia was found. After birth, the patient was admitted to the neonatal intensive care unit with endotracheal intubation. The chest radio-

graphy showed air-filled bowel loops within the left hemithorax and the mediastinum was shifted to the right. One of the air-filled loops was large and round in shape (Fig. 1). On the second day of life, the patient underwent diaphragmatic repair via a left subcostal incision. The stomach, small bowel, spleen and part of the liver were herniated into the left thoracic cavity, but malrotation of the bowel was not observed. During a gentle reduction of the viscera, the distal portion of the small bowel could not be delivered into the abdominal cavity. After forceful traction of the small bowel, a cystic mass was delivered into the abdominal cavity and all herniated viscera were reduced completely (Fig. 2A). The mass was ovoid in shape and arose from the antimesenteric border of the ileum, almost 40 cm from the ileocecal junction. It measured 6 × 4 × 3 cm in the greatest diameter and appeared to derive its blood supply from the mesenteric arcade along the wall of the mass (Fig. 2B). The bowel proximal to the mass was moderately distended with meconium, but the distal bowel had collapsed. The mass was resected and an end-to-end anastomosis was performed. The diaphragmatic defect was closed primarily. When the specimen was opened, it was filled with meconium and its mucosal surface was continuous with the mucosal surface of the proximal and distal ileum. In the microscopic examination, the mass showed the normal structure of the small bowel, but the heterotopic tissue was absent. The gross and microscopic findings strongly suggested that the lesion was a Meckel's diverticulum. The postoperative course was uneventful. On the third postoperative day, the

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Fig 1. Preoperative chest radiography shows a large round atypical air-filled bowel segment.



Fig 2. A. Photograph shows left congenital diaphragmatic hernia (CDH), reduced viscera, and a giant Meckel's diverticulum. B. The diverticulum received its blood supply from omphalomesenteric vessels (OMV).

patient was extubated and oral feeding was begun on the 4th postoperative day. He was discharged on the 20th postoperative day and has been doing well.

## DISCUSSION

Patients with congenital diaphragmatic hernia frequently have associated anomalies, one of which is Meckel's diverticulum.<sup>1</sup> However, its incidence is not high, and in particular, a giant Meckel's diverticulum in association with a congenital diaphragmatic hernia has not been reported.

The incidence of giant Meckel's diverticulum is less than 0.5% of all omphalomesenteric duct remnants.<sup>2</sup> They can be described as two forms.<sup>3</sup>

Type I is a elongated lesion, whereas type II is an ovoid or saccular type. Type I is more common than type II. Miller et al.<sup>3</sup> reviewed only 14 cases of type II giant Meckel's diverticulum in the literature, and others have suggested that the term giant Meckel's diverticulum should be reserved for a type II lesion of more than 5-6 cm in diameter.<sup>4-6</sup> Differentiation between giant Meckel's diverticulum and a segmental dilatation of the ileum is difficult due to their similar presentations.<sup>5</sup> Both lesions are fusiform or saccular, their walls contain all the typical layers of the small bowel, and heterotopic tissue can also be present. However this lesion could be diagnosed as a giant Meckel's diverticulum because it had all of the characteristics of a Meckel's diverticulum. It arose from the antimesenteric margin of the small bowel, was located the distal ileum, contained all of the layers of the normal small bowel, and derived its blood supply from its own branches arising from the mesenteric arcade. These branches are believed to be omphalomesenteric vessels.

A preoperative diagnosis of giant Meckel's diverticulum is difficult on account of its rarity and its nonspecific findings.<sup>7</sup> A large round atypical air-filled bowel segment was initially found by the chest radiography preoperatively, but little attention was paid to it. An intestinal obstruction is one of complications in giant Meckel's diverticulum.<sup>3,4,8</sup> This is due to pressure from the diverticulum or volvulus. In our case, the patient had an impending obstruction because the distal ileum of the lesion had collapsed and the meconium was not filled in it.

It is unclear if the giant Meckel's diverticulum in the chest aggravates the prognosis of the congenital diaphragmatic hernia. Theoretically, a large mass lesion is an aggravating factor, but the postoperative course of our patient was excellent.

In our experience, a giant Meckel's diverticulum should be included the differential diagnosis if a chest radiography shows an atypical air-filled bowel loop within the affected chest of the congenital diaphragmatic hernia, and should be resected in order to prevent possible complications.

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