

Research Article

MICROCOLON AT THE BEGINNING OF LIFE: A CASE SERIES

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ABSTRACT

Introduction: Lower bowel obstruction is common abdominal emergency in neonates, with various underlying etiologies from mild to life threatening conditions. Microcolon is an important radiologic feature on fluoroscopic contrast enema studies in neonates with bowel obstruction. **Case Series:** First case was showed microcolon with distal ileal obstruction. On laparotomy exploration found that type I ileal atresia at distal mucosal segment with an intact bowel wall and mesentery. Second case was appeared microcolon with ileo-caecum obstruction. Intra-operatively found that type 3A ileal atresia at the terminal ileum with a V-shaped mesenteric defect between the proximal and distal segment. Third case was caused by meconium ileus and revealed microcolon with multiple filling defects intralumen colon. **Discussion:** Microcolon results from intrauterine underutilization or what is termed "unused colon", including entities in which meconium is not passed through the colon during in utero development. It's indications for contrast enema studies to determine the site of level of obstruction is at the ileum or at any segment of the colon. **Conclusion:** Appropriate imaging evaluation plays an important role in diagnosis for immediate treatment and avoids complications to maintain neonate's bowel integrity and function.

Keywords: microcolon, neonates, ileal atresia, meconium ileus.

INTRODUCTION

Lower bowel obstruction is a common abdominal emergency in neonates, with various underlying etiologies ranging from mild to life-threatening conditions. Congenital anomalies of the gastrointestinal tracts are a significant cause of morbidity in neonates, with an incidence ranging from 1.3 to 2.8 out of 10000 live births.¹⁻² Neonates with abdominal distention may have accompanying symptoms of failure to pass meconium in the first 24-48 hours of life, which requires prompt assessment and is highly presumptive of intestinal obstruction. The microcolon is an important radiologic feature in fluoroscopic contrast enema studies in neonates with bowel obstruction. The outcome of a microcolon will depend on its underlying causes. Disease entities manifesting as microcolon include meconium ileus, small left colon syndrome, small intestinal and colonic atresia, and Hirschsprung disease.³⁻⁴ The aim of this case series is to describe the typical imaging findings of this disease and its possible etiology.

CASE SERIES

First case: A 4-day old male infant came with the complaint was failure to pass meconium since birth, progressive abdominal distension, and bilious vomiting. The baby was born on 36 weeks of gestational age with 3000 g of weigh through caesarean section. The mother did routine antenatal care on obstetrician. On physical examination was stable, well hydrated with warm extremities. Abdominal examination showed distended abdomen with reduced bowel sounds. Rectal toucher exam revealed a normally placed anus of normal tone with an empty rectum and no stool Abdominal radiograph showed multiple dilated intestinal loops with minimal of gas on colon and rectum (Figure 1a). Contrast enema demonstrated microcolon with contrast flow filled rectum, sigmoid colon, descending

colon, transverse colon, ascending colon and partially distal ileum. The appearance was obstruction in the distal ileum which contrast did not appear to the proximal obstruction then contrast was backflow (Figure 1b). The neonate was taken for exploratory laparotomy. The finding was type I ileal atresia at distal mucosal segment with an intact bowel wall and mesentery which obtained 15 cm proximal from ileocaecal junction then resection +/- 15 cm of ileum and end to end ileo-ileal anastomosis was done (Figure 1c). The neonate discharged on the 7th post-operative day after a full recovery.

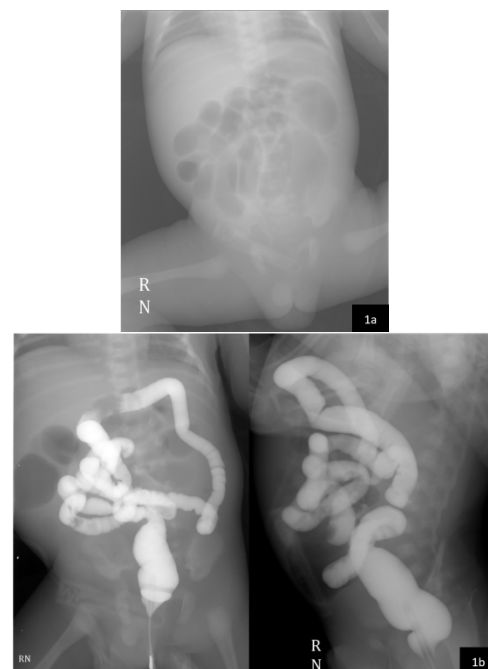


Figure (1a). Abdominal radiograph showed multiple dilated intestinal loops with minimal of gas on colon and rectum. (1b). Contrast enema demonstrated microcolon with contrast flow filled rectum, sigmoid colon, descending colon, transverse colon, ascending colon and partially distal ileum.

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Figure (1c). Intraoperative findings type I ileal atresia at distal mucosal segment with an intact bowel wall and mesentery which obtained 15 cm proximal from ileocaecal junction then resection +/- 15 cm of ileum.

Second case: A 7-day old male baby was born at 39 weeks gestational age with distended of abdomen from 5 days before, bilious vomiting, and failure to pass meconium since birth. His birth weight was 3500 g and the mother had history of polyhydramnion. On physical examination, neonate was stable but that found distended abdomen and increased bowel sounds. Rectal examination, showed an empty rectum with no stool on finger. Abdominal radiograph showed multiple dilated bowel loops with absence of gas on rectum (Figure 2a). Contrast enema demonstrated a microcolon with contrast filled on rectum, sigmoid colon, descending colon, transverse colon, ascending colon, redundant caecum and partially distal ileum. Obstruction was appeared in the distal ileum then contrast was backflow (Figure 2b). On exploratory laparotomy that found type IIIA ileal atresia with two blind ends and separated by a V-shaped mesenteric defect. The proximal segment was dilated filled with meconium and collapsed distal segment and it was located +/- 40 cm from ileocaecal valve and the ileostomy double barrel was done.

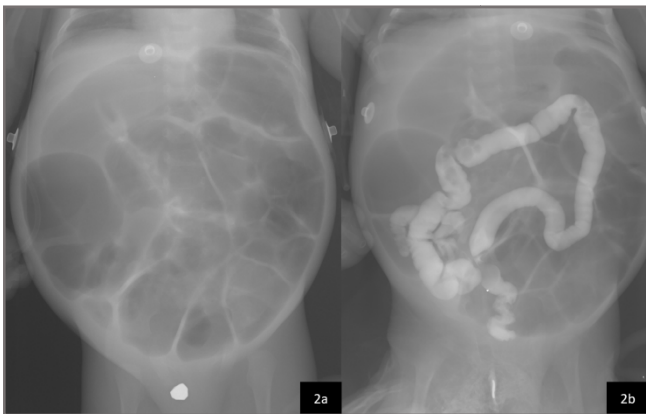


Figure (2a). Abdominal radiograph showed multiple dilated bowel loops with absence of gas on rectum. (2b). Contrast enema demonstrated a microcolon with contrast filled on rectum, sigmoid colon, descending colon, transverse colon, ascending colon, redundant caecum and partially distal ileum

Third case: A 5-day old male infant came with the complaint was abdominal distension of last 2 days with failure to pass meconium since birth. The neonate was born at 36 weeks gestational age with 3000 g of birth weight. The mother had history with normal uncomplicated labor was helped by a doctor. On physical examination, neonate was stable but that found mild distended abdomen. Abdominal radiography was increased of bowel gas distribution (Figure 3a). Contrast enema showed microcolon from rectosigmoid to ascenden colon with multiple filling defects (Figure 3b). The next day the abdominal radiography was taken again, there

was no residual contrast and abnormality. Third case was caused by meconium ileus (Figure 3c).

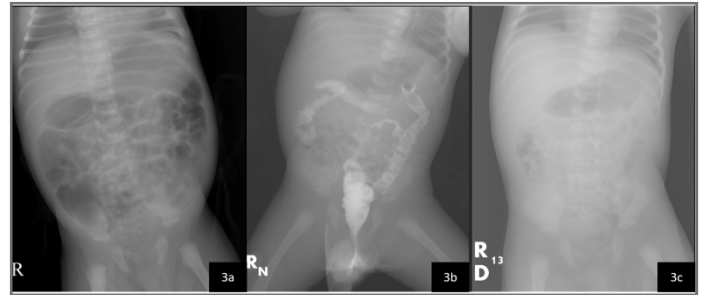


Figure (3a). Abdominal radiography was increased of bowel gas distribution. (3b). Contrast enema showed microcolon from rectosigmoid to ascenden colon with multiple filling defects. (3c). The next day, abdominal radiography showed no residual contrast and abnormality.

DISCUSSION

A microcolon, termed "unused colon," is defined as a colon of abnormally small caliber but of normal length. There is no definite or absolute standard of measurement for this entity, although some state that a colonic segment with a caliber less than the interpedicular space of the L1 vertebra is considered a microcolon.⁴ There are variations in the radiologic pattern of the microcolon, ranging from a focal to a long segment or even a diffused pattern. The situation occurs when little or no small bowel contents reach the colon during fetal life, and the entire colon therefore remains thin and ribbon-like. This may be due to obstruction in the small intestine as a result of a vascular insult during fetal life. The disease is more common in males, with a ratio of 7:6, and in Caucasians.⁵⁻⁶

Jejuno-ileal atresia and meconium ileus are the diseases that include microcolon patterns in contrast enema. Abdominal radiographic features include many (3 or more) dilated and air-filled small intestinal loops with a paucity of air within the colon and rectal regions. Jejuno-ileal atresia is thought to be caused by a prenatal vascular event resulting in ischemic obliteration of the intestinal lumen. Contrast enema evaluation shows a complete microcolon from the rectum all the way to the cecum.⁶ The classifications of intestinal atresia are: type I (23%) with mucosal web atresia with intact bowel wall and mesentery; type II (10%) with blind ends separated by a fibrous cord; type IIIa (15%) with blind ends separated by a V-shaped gap mesenteric defect; type IIIb (11–22%) with apple-peel atresia; and type IV (25%) with multiple atresias. Structural obstruction due to atresia requires surgical management.⁷

Meconium ileus is a functional low-intestinal tract obstruction that involves the terminal ileum. Contrast enema reveals a microcolon from the rectosigmoid area all the way to the cecum, with multiple filling defects indicative of meconium. A contrast enema is performed and serves a dual purpose, being both diagnostic and therapeutic.⁴⁻⁶ Neonatal intestinal obstruction, depending on the site, presents with increasing abdominal distension, vomiting, and delay or no passage of meconium. Imaging may be the only clue to the diagnosis, which is necessary for early detection and the determination of the extent of the lesion and possible associated lesions. It is useful in planning treatment options and follow-up. In neonates, the large and small bowels cannot be distinctly distinguished because the intestinal loops are featureless and sometimes do not lie in the predictable anatomical position of the air-filled bowel loops. A high intestinal obstruction pattern usually shows a few scattered air-filled loops in the upper abdomen. Low gastrointestinal obstruction generally has

plain radiographic features of many dilated and air-filled small intestinal loops with a paucity of air within the colon and rectal region.⁷⁻⁸ This distinction is important in deciding the appropriate imaging step. Familiarity with these gastrointestinal abnormalities is essential for a correct diagnosis and appropriate management.

CONCLUSION

Appropriate imaging evaluation plays an important role in diagnosis for immediate treatment and avoids complications to maintain neonate's bowel integrity and function. The clinical presentation and radiographic findings are essential for differentiation of microcolon and to provide an accurate pre-operative diagnosis.

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