Case Report

Primary end-to-oblique anastomosis after partial closure of the dilated proximal bowel in type IIIa ileal atresia: a case report

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We report a case of type IIIa ileal atresia in which the patient underwent end-to-oblique anastomosis after partial closure of the dilated proximal bowel to match the diameter of the distal bowel. A 3-day old male baby had sudden-onset bilious vomiting. Type IIIa ileal atresia was located approximately 20 cm from the ileocecal valve and approximately 20 cm of the proximal dilated bowel was resected. Anastomotic complications such as leakage and passage problem were not seen postoperatively. (Rawal Med J 201;41:514-515)

Key words: Intestinal atresia, end-to-oblique anastomosis, ileal atresia, primary anastomosis.

INTRODUCTION

Intestinal atresia is one of the most frequent causes of bowel obstruction in infants and can occur at any point within the gastrointestinal tract, although the most common site is the small intestine.[1] It requires surgical correction, with many surgeons preferring to perform primary intestinal anastomosis after resection of the dilated proximal bowel to avoid postoperative physiologic obstruction due to a lack of or abnormal peristalsis.[2-5] A side-to-side anastomosis was commonly used in early surgical attempts; however, this method resulted in not only functional obstruction but also blind loop syndrome.[6] Currently, primary end-to-end (oblique) anastomosis is the most common technique used.[6] If a significant size difference exists between the proximal and distal intestinal segments, the dilated proximal segment is resected at a 90° angle, while the distal segment is resected using a slightly oblique transection line that renders the opening approximately equal in size to that of the proximal intestine, with or without an incision along the anti-mesenteric border.[4,7] However, if the size discrepancy still exists despite complete resection of the dilated proximal bowel and an incision along the distal bowel anti-mesenteric border to create a 'fish mouth', another procedure must be considered.[6] We report a case of type IIIa ileal atresia in which the patient underwent end-to-oblique anastomosis after partial closure of the dilated proximal bowel to match the diameter of the distal bowel.

CASE PRESENTATION

A 3-day old male baby born at a gestational age of 39 weeks, 2 days was referred to our hospital because of sudden-onset bilious vomiting. His birth weight was 3260 g. Meconium passage had occurred. Physical examination of the abdomen showed distension that increased over time. Ultrasonography revealed meconium-filled distension of the small bowel, a collapsed small-caliber colon, and a collapsed terminal ileum without air. He underwent laparotomy through an umbilical incision under a presumed diagnosis of ileal atresia. Type IIIa ileal atresia was located approximately 20 cm from the ileocecal valve. Other areas of the bowels were normal. Approximately 20 cm of the proximal dilated bowel was resected, followed by resection of approximately 5 cm of the distal ileum in a slightly oblique manner with an incision along the anti-mesenteric border.

However, primary anastomosis could not be performed because of differences in the diameters of the proximal and distal bowels. Hence, the proximal intestine was partially closed using the Gambee

method to reduce the diameter. Subsequently, end-to-oblique anastomosis was performed. There were no postoperative complications. The patient was discharged after postoperative day 20.

DISCUSSION

In the past, the mortality rate for intestinal atresia was high (2256%), primarily related to late presentation and dysmotility of the dilated proximal bowel, which led to complications due to chronic obstruction and malnutrition.[7,8] Anastomotic leakage and anastomotic obstruction resulting from anastomosis were important contributors to postoperative mortality and morbidity.[2] Currently, however, mortality is primarily associated with complications from prematurity, short-bowel syndrome, and the presence of other major anomalies rather than with anastomotic complications.[9] Currently, anastomotic leakage or obstruction, is reportedly <10%, but it remains an important factor for good postoperative outcomes.[10]

The operative treatment of intestinal atresia is based on the location of the lesion, anatomic findings, associated conditions noted at operation, and the length of the remaining intestine.[5] If the remaining intestine is of a sufficient length, a resection of the dilated and hypertrophied proximal bowel with primary end-to-end anastomosis is the most common surgical technique.[5] The most significant postoperative complications following primary anastomosis include functional intestinal obstruction at the anastomotic site and anastomotic leakage.[2] Increased intraluminal pressure at the anastomotic site can cause anastomotic dysfunction and leakage.

In order to minimize postoperative complications at the anastomotic site, some surgeons recommend that the most dilated 1520 cm of proximal bowel be resected.[4] Gunduz reported a new anastomosis technique for the repair of a divided jejunostomy with a large size difference between the proximal and distal segments.[11] In summary, there are various techniques by which primary anastomosis of the bowel in atresia can be performed. In order to minimize complications, an anastomosis should be performed after minimizing differences in the diameters of the proximal and distal bowel. The use of partial closure of the dilated proximal bowel could resolve this size disparity problem.

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REFERENCES

1. Best KE, Tennant PW, Addor MC, Bianchi F, Boyd P, Calzolari E, et al. Epidemiology of small intestinal atresia in Europe: a register-based study. Arch Dis Child Fetal Neonatal Ed 2012;97:F353-8.
2. Nixon HH, Tawes R. Etiology and treatment of small intestinal atresia: analysis of a series of 127 jejunalileal atresias in comparison with 62 duodenal atresias. Surgery 1971;69:41-51.
3. Louw JH. Resection and end-to-end anastomosis in the management of atresia and stenosis of the small bowel. Surgery 1967;62:94050.
4. Grosfeld JL. Jejunoileal atresia and stenosis, section 3: The small intestine. In: Ravitch MM, Welch KJ, Benson CD, et al, editors. Pediatric Surgery. Chicago: Year Book Medical; 1986. p. 838.
5. Aguayo P, Ostlie DJ. Duodenal and Intestinal Atresia and Stenosis. In: Holcomb, Murphy P, Ostie DJ, editors. Ashcraft's Pediatric Surgery 6th. Philadelphia: Elsevier; 2014, p414-429.
6. Frischer JS, Azizkhan RG. Jejunoileal Atresia and Stenosis. In: Coran AG, Adzick NS, Krummel TM, et al, editors. Pediatric Surgery 7th. Philadelphia: Elsevier; 2012, p1059-1071.
7. Smith GH, Glasson M. Intestinal atresia: factors affecting survival. ANZ J Surg 1989;59:151-6.
8. Touloukian RJ. Diagnosis and Treatment of Jejunoileal Atresia. World J. Surg 1993;17:310-17.
9. Tam PK, Nicholls G. Implications of antenatal diagnosis of small-intestinal atresia in the 1990s. Pediatr Surg Int 1999;15:486-7.
10. Walker K, Badawi N, Hamid CH, Vora A, Haliday R, Taylor C, et al. A population-based study of the outcome after small bowel atresia/stenosis in New South Wales and the Australian Capital Territory, Australia, 19922003. J Pediatr Surg 2008;43:4848.
11. Gunduz M. A new anastomosis intestinal diseases with proximal dilated segments. J Indian Assoc Pediatr Surg 2016;21:90-2.