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Case Report

Apple peel jejunal atresia: a case report

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ABSTRACT

Jejunal atresia type 3B (Apple peel variant) is a rare congenital anomaly of the small intestine associated with high mortality and morbidity, mainly due to complications following surgery and loss of functional bowel segment. We describe a preterm neonate presenting on day of life (DOI) 1 with abdominal distension and bilious vomiting, who was operated on DOI 2. No resection of bowel segment was performed; side to side anastomosis done. Post-operatively, the neonate was started on enteral feeds on DOI 10, tolerated well, and was discharged on DOI 18 in a stable condition.

Keywords: Jejunal atresia**,** Ischemic necrosis, Bowel obstruction

INTRODUCTION

Jejunal atresia is an uncommon cause of neonatal intestinal obstruction, with an incidence of approximately 1 in 5000 live births.[1-4] It results from intrauterine mesenteric vascular accidents leading to ischemic necrosis and resorption of the affected bowel segment. Five anatomical types have been described, among which type 3B (Apple peel or Christmas tree deformity) is the rarest, accounting for <10% of all cases.[2,5] This variant is characterized by absence of the proximal superior mesenteric artery with a short segment of small bowel spiraling around a single ileocolic artery. It is often associated with micro colon, prematurity, and polyhydramnios.[6] Historically, survival rates were poor due to massive bowel loss and nutritional failure.[4,7] However, advances in neonatal intensive care, availability of total parenteral nutrition (TPN), and bowel-preserving surgical techniques have markedly improved outcomes in recent decades.[1,8]

CASE REPORT

A 1-day-old preterm neonate (35 weeks, birth weight 980 g) born by lower segment caesarean section in view of severe polyhydramnios presented with abdominal distension and bilious vomiting. The baby cried immediately after birth. Antenatal history revealed maternal hypothyroidism on thyronorm therapy. Antenatal ultrasonography had shown multiple dilated bowel loops with polyhydramnios, suggestive of proximal small bowel obstruction.

On admission to the NICU, the baby showed signs of dehydration, with low volume pulses, cold extremities, and delayed capillary refill time. Arterial blood gas revealed metabolic acidosis. The neonate was started on intravenous fluids, dobutamine infusion, kept nil per oral (NPO), and administered broad-spectrum antibiotics.

Abdominal X-ray demonstrated a triple bubble sign,

while abdominal ultrasound revealed dilated proximal small bowel loops with collapsed distal bowel, consistent with jejunal atresia. After stabilization, exploratory laparotomy was performed on DOI 2.

Intraoperative findings revealed a type 3B (Apple peel) jejunal atresia, with distal microcolon and twisting of the distal ileal loops around the mesentery. A side-to-side anastomosis between the dilated proximal jejunal segment and distal jejunum was performed without resection of any bowel segment.

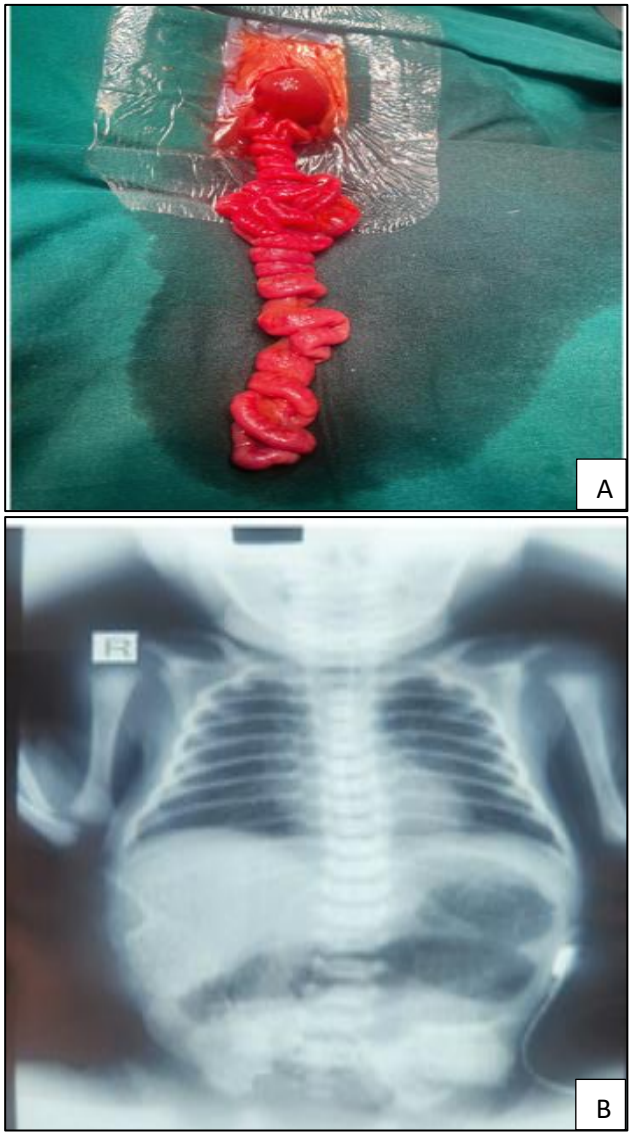

Figure 1: (A) Type 3B (Apple peel) jejunal atresia. (B) Triple bubble sign

Post-operatively, the neonate was kept on mechanical ventilation and TPN. Warm saline enemas were administered thrice daily, and nasogastric (NG) aspirates were replaced regularly. The baby was extubated and placed on non-invasive positive pressure ventilation (NIPPV) on DOI 4, and passed stools following enemas. Respiratory support was discontinued on DOI 6.

NG aspirates persisted until DOI 9, when the baby developed recurrent vomiting. Prokinetic therapy with intravenous metoclopramide (perinorm) was initiated. As NG aspirates gradually reduced, feeds were introduced on DOI 10 and progressively increased. Occasional episodes of vomiting were managed conservatively. Warm saline enemas were continued until spontaneous stooling was established.

The baby gained weight steadily, tolerated full enteral feeds, and was discharged on DOI 18 in stable condition. Serial follow-up at 1 and 3 months showed adequate growth with no complications.

DISCUSSION

Apple peel jejunal atresia poses serious surgical and postoperative challenges because of the shortened mesentery, compromised vascular supply, and risk of massive bowel loss.[5-7] Mortality in the past was as high as 70-90%, largely due to short bowel syndrome, malnutrition, and sepsis.[4,7]

Indian experience

Several Indian series have documented outcomes of jejunoileal atresia. Sharma and Gupta reported survival in 41 cases, highlighting that timely surgery and improved postoperative care significantly improved prognosis.[1] Bhatnagar et al reviewed outcomes of apple peel atresia in a tertiary care center and found that survival improved with preservation of bowel length and TPN support.[2] Raveenthiran, in a study of 12 patients with apple peel atresia, emphasized the importance of bowel-preserving techniques and staged procedures when required.[3]

International experience

Historically, Grosfeld et al reported survival of 70% in jejunoileal atresia but noted poor prognosis for type 3B cases.[4] Davenport et al reported their 15-year experience, where survival improved with better perioperative care.[5] Stollman et al emphasized that Apple peel atresia is 'not just a surgical problem,' underscoring the critical role of TPN, neonatal intensive care, and careful nutritional rehabilitation.[7] Burjonrappa et al provided a comparative analysis, noting that histopathological evaluation often reveals intrinsic bowel dysmotility, which explains persistent postoperative feed intolerance.[6]

Critical points in management

Preservation of bowel length is crucial, as resection predisposes to short bowel syndrome.[1,2] Nutritional support with TPN remains essential in the early postoperative period.[7,8] Prokinetic therapy can aid in overcoming postoperative dysmotility.[6] Adjunctive measures such as warm saline enemas may stimulate colonic motility until spontaneous stooling resumes.[3]

Unique aspect of this case

Unlike many reported cases, our neonate was extremely low birth weight (<1 kg), yet achieved successful outcome without bowel resection. This highlights that even high-risk neonates can survive with aggressive stabilization, careful surgical planning, and staged nutritional rehabilitation.[2,5,7]

CONCLUSION

Apple peel jejunal atresia is a rare but life-threatening condition. Success depends on early diagnosis, bowel-preserving surgical strategies, intensive postoperative care, and nutritional support. Our case demonstrates that even extremely low-birth-weight neonates can achieve favorable outcomes when bowel preservation is prioritized and meticulous postoperative care is provided.

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