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A Case of Neonatal Small Bowel Obstruction due to Ileal Atresia with Meckal's Diverticulum

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1. Introduction

The small bowel is the section of bowel between the stomach and the large bowel (colon). It is about 300cm long in a new born baby at full term and its function is to absorb food.

Atresia—derived from the Greek components *a-* ("no" or "without") and *tresis* ("hole" or "orifice")—refers to a congenital obstruction with complete occlusion of the intestinal lumen; it accounts for 95% of obstructions. Stenosis—derived from the Greek components *stenos* ("narrow") and *-osis* ("process") and denoting narrowing- refers to a partial occlusion with incomplete obstruction and accounts for the remaining 5% of cases.

In 1955, Louw and Barnard demonstrated the role of late intrauterine mesenteric vascular accidents as the likely cause of jejunoileal atresia, rather than the previously accepted theory of inadequate recanalization of the intestinal tract. Since then, other factors (eg, in-utero intussusception, intestinal perforation, segmental volvulus, and thromboembolism) have also been shown to cause jejunoileal atresia

Four types of intestinal atresia have been described by Louw and Barnard classification systems. Type I atresia is described as an internal membrane with serosa continuity and no mesenteric defect; type II involves a proximal and distal blind pouch connected by a fibrous cord with serosal discontinuity; type IIIa has serosa discontinuity with a V-shaped mesenteric defect only and type IIIb is the apple peel deformity which described proximal jejunal atresia and a short ileal segment coiled around the ileocolic artery while type IV is characterized by multiple atresias. Treatments and prognosis are hugely impacted by the types of atresia. Bowel loss is more common in type IIIb and types IV atresia. Type IIIb (Apple peel) atresia is the least common atresia, with prevalence ranging from 5% to 10% in the literature.Type IIIb atresias are more likely associated with volvulus with increased risk of distal bowel vascular compromised and have been seen in families demonstrating an autosomal recessive type of inheritance. Ileal atresias are rare compared to jejunal atresia, and as the atresia becomes more distal, the less the frequency of occurrence.

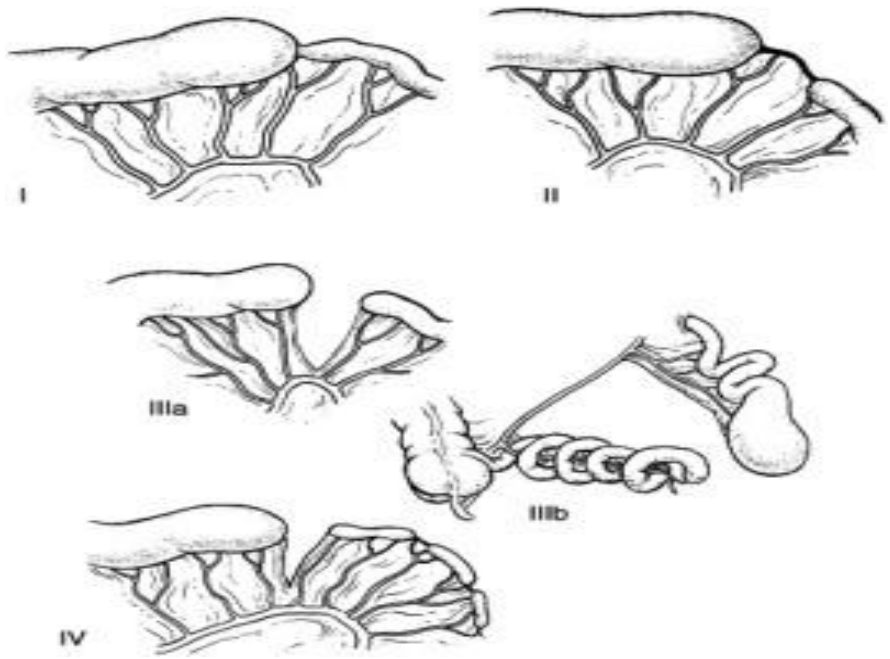

Figure 1: Louw and Barnard (1955) illustrated classification of ileal atresia

2. Case Presentation

A 03 days old male new born is referred to surgical department g g hospital Jamnagar with chief complaint of abdominal distension since birth and not passing stool since birth and 2 episode of bilious vomiting. Amount of vomitus is very small greenish yellow in colour non foul smelling liquid in consistency. There is no complaint of fever diarrhoea blood in stool and blood in vomit.

A baby is delivered at full term with normal vaginal delivery with normal cry after birth. There is no any history of drug

consumption by mother during pregnancy. No history of previous abortion.

On per abdominal examination abdomen is distended with small dilated vein present over both flank regions. No visible peristalsis. No scar mark. No sinus. No visible pulsation with normal skin over abdomen. Rest of all systemic examination revealed normal finding.

A laboratory finding of this patient are **wbc** 20,000 **HB** 10.5 gm/dl, with normal renal and liver function test.

Radiography of abdomen was done suggestive of multiple gas filled bowel loop with triple bubble sign. Ultrasonography was done suggestive of small bowel loop appear dilated loaded and shows sluggish peristalsis with maximum diameter 2.2cm with minimal amount of free fluid in peritoneal cavity. Contrast inhanced CT scan was done suggestive of duodenum and jejunum appears fluid filled and dilated with maximum transverse diameter of 3.3cm involving duodenum suggestive of small bowel obstruction.

Laparotomy was done through right sub costal incision and peritoneal cavity reached. There is dilated proximal small bowel with atresia of ileum 15-20cm proximal to IC junction with both blind loop connected with small fibrous band (type 2 atresia) figure. On rest of bowel examination there is meckal diverticulum is present 30 cm proximal to IC junction. Rest of the bowel shows no congenital malformation. Resection and ileloileal anastomosis done and abdomen is closed and patient is shifted to NICU.

Post-operative event is uneventful. Bowel function is reappear of day 5 and nasogastric tube removed and small oral feed was started. He tolerate oral feed well. All SR done on day and he discharged.

Figure 1: Distended abdomen with dilated vein

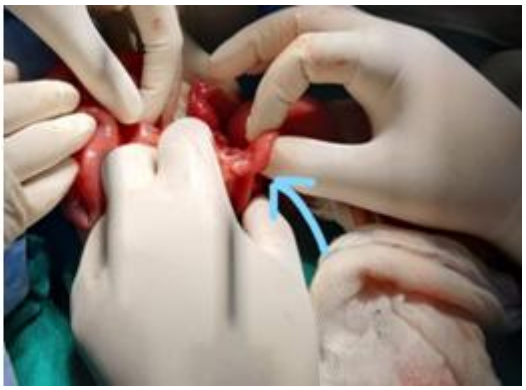

Figure 2: Type2 small bowel atresia

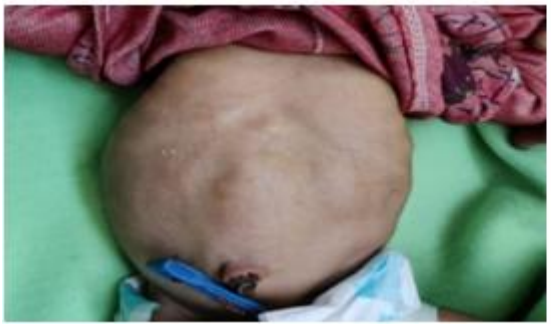

Figure 3: Resection and anastomosis

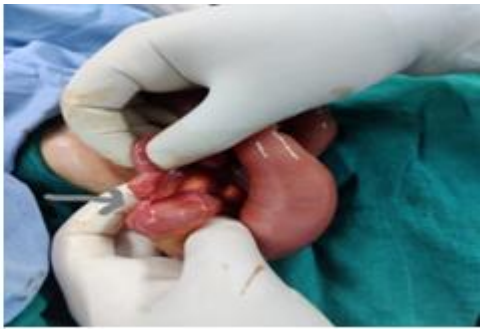

Figure 4: Meckal's diverticulum

3. Discussion

Intestinal atresia usually detected in the third trimester of pregnancy. The diagnosis of Ileal atresia may be difficult. Polyhydramnios is not routinely present and is more common with jejunal rather than Ileal atresia.

Louw et al were believed that the etiological basis of colonic atresia to be a vascular insult to the mesenteric vessels during fetal development. A 2005 study suggests that defects in the fibroblast growth factor 10 (FGF10) pathways may be involved.
Grosfeld et al. classification of intestinal atresia, which is currently the most commonly used classification scheme.

- Type I – Membrane
- Type II – Blind ends joined by fibrous cord
- Type IIIa – Disconnected blind end
- Type IIIb – Apple-peel deformity
- Type IV – Multiple, string of sausages

The delay in diagnosis of colonic atresia beyond 4 days may result in mortality as high as 100% In our case early intervention improve patient condition and reduce mortality rate.

4. Conclusion

Early surgical intervention in neonatal small bowel obstruction reduce the mortality and morbidity.

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