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General Surgery

SIGMOID COLON PERFORATION IN NEONATE PRESENTING WITH IMPERFORATE ANUS.

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ABSTRACT Spontaneous perforation of the colon is a rare complication in neonates with anorectal malformations (ARMs). There are no detailed studies concerning this complication. Anorectal malformations include a wide spectrum of defects in the development of the lowest portion of the intestinal and urogenital tracts. Many children with these malformations are said to have an imperforate anus because they have no opening where the anus should be. Although the term may accurately describe a child's outward appearance, it is often believed the true complexity of the malformation beneath. Here we discuss a case of new born baby with imperforate anus associated with sigmoid colon perforation.

KEYWORDS : neonate age group, sigmoid colon perforation, imperforate anus.

Introduction:

In infancy and childhood, perforation of the colon is second only to the ileum, but occurrence in the neonatal period is rare. Physical examination of the perineum is often sufficient to diagnose anorectal malformation (ARM) in neonates. The embryogenesis of these malformations remains unclear. The rectum and anus are believed to develop from the dorsal potion of the hindgut or cloacal cavity when lateral ingrowth of the mesenchyme forms the urorectal septum in the midline. Interference with anorectal structure development at varying stages leads to various anomalies, ranging from anal stenosis, incomplete rupture of the anal membrane, or anal agenesis to complete failure of the upper portion of the cloaca to descend and failure of the proctodeum to invaginate. Low and high anomalies were equally affected. The median age at diagnosis was 48 hours. Pneumoscrotum and abdominal wall erythema are occasionally suggestive of perforation. However, delay in diagnosis is not uncommon, even in developed countries, diagnostic delays of 3–43 days have been reported in as many as 21–32% of newborns. In developing countries, like India; initiation of treatment is further delayed by social factors such as poverty, illiteracy, poor transport facilities, and scarcity of specialists. Hirschsprung's disease, enterocolitis, and instrumentation are commonly described etiological factors but anorectal malformations are very rare. A high index of suspicion in neonates with ARM presenting with sepsis and features of peritonitis such as a tense distended abdomen with parietal wall edema and erythema may lead to diagnosis. The type of surgical intervention depends upon the physiological state of patient, site of perforation, type of anorectal anomaly, and degree of peritoneal contamination. Spontaneous perforation of the colon is estimated to occur in 2% of neonates with ARM, and the incidence rises to 9.5% when the diagnosis is delayed. Colon perforation accounts for 15% of pneumoperitoneum seen in neonatal age group. days has been reported in as many as 21% to 32% of newborns even in developed countries, a diagnostic delay of 3 to 43 days has been reported in as many as 21% to 32% of newborns even in developed countries, a diagnostic delay

Case History:

A 3.1 kg male child presented to our emergency department within 24 hours of delivery for imperforate anus, the baby cried soon after birth and passed clear urine. However, baby had not passed meconium since birth, for which he was referred to us. Perineal examination revealed the presence of meconium pearls and absent anal opening, suggestive of low ARM, for which anoplasty was done. On post operative day 2 child start developing abdominal distension. On physical examination, the child was found to be dyspneic, lethargic, and dehydrated. The abdomen was distended and tender. There was no erythema or edema of the anterior abdominal wall.

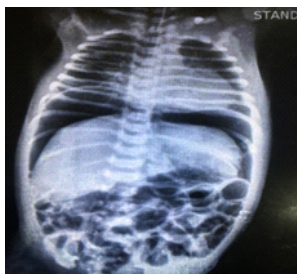

Figure 1: X-ray abdomen standing showing pneumoperitoneum.

An abdominal X-ray suggested a large saddle-shaped air shadow below the diaphragm indicating pneumoperitoneum. Hematological investigations were within normal limits. The child was resuscitated with intravenous fluids and higher antibiotics were started.

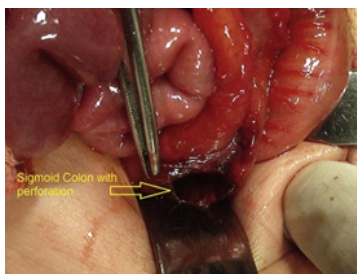

Figure2: intra-operative picture showing perforation.

After stabilizing his general condition, an exploratory laparotomy was done using a supra-umbilical right transverse incision. A gush of air with meconium was noticed with fibrinous flakes over the loops of sigmoid colon. A longitudinal perforation of 5 × 0.5 cm was noticed in the sigmoid colon. There was minimal contamination of peritoneal cavity. There was no evidence to suggest the concurrent presence of necrotizing enterocolitis. The perforation was closed in single layer. A proximal descending colon loop colostomy was done. A thorough peritoneal lavage was given. The postoperative period was uneventful. The patient has been discharged with colostomy and colostomy closure is planned after 6 weeks.

Discussion :

Spontaneous perforation of the colon is estimated to occur in 2% of neonates with ARM and the incidence rises to 9.5% when the diagnosis is delayed. Colonic perforations account for 15% of pneumoperitoneum seen in the neonatal age group. Bowel perforation

increases neonatal mortality of ARM from 3% to 23%. Perforation of the colon in the newborn is a serious and rare complication. Perforations secondary to anorectal malformations are very rare as these malformations are generally diagnosed early and treated before the perforation can occur.

The relative paucity of the literature on spontaneous perforation of the colon in ARM is due to the rarity of its occurrence and inadequate reporting. The exact incidence of bowel perforation in ARM is not known. The median age at the onset or diagnosis of perforation in ARM cases was 48 hours. Bowel rupture frequently occurs in ARM without fistula; however, anomalies with fistula are not spared. Occlusion of a tiny fistula by inspissated meconium may have caused perforation due to raised intraluminal pressure in cases of fistulous ARM (usually decompressed by fistula). Nearly 85% of perforations occurred in boys and the rarity of perforation in females is probably caused by the high frequency of low ARM with a wide rectoforchette fistula.

The etiopathogenesis of gastrointestinal perforation neonates with ARM may be explained by a combination of factors. The downstream occlusion results in proximal intestinal dilatation and increase in intraluminal pressure resulting in tension gangrene. It may undergo perforation even when the closed loop obstruction has been relieved, precipitating an ischemia–reperfusion injury which should emphasize the vital role of close clinical observation of such cases in the postoperative period. The cecum is the most common site. A high index of suspicion in neonates with ARM presenting with sepsis and features of peritonitis should be noted. Although features of pneumoperitoneum on abdominal X-ray have been reported in 60–70% of neonates with gastrointestinal perforation, its presence is confirmatory. The management of gastrointestinal perforation in neonates with ARM aims at aggressive resuscitation and early surgical intervention.

Colorectal perforation is associated with considerable morbidity and mortality in neonates with ARM. Radiographs rather than clinical examination should be relied on for diagnosis of bowel perforation in ARM. Treatment options are chosen according to the subtype of perforation. Because most perforations occurred more than 24 hours after birth, early referral and surgical decompression of the colon may avoid this complication. Based on an extensive literature review, Raveenthiran has identified two distinct patterns of perforation: Type 1 (88%) occurred before surgical decompression of the obstructed colon, whereas Type 2 (12%) occurred postoperatively.

The overall mortality of perforated ARM is 19%. Sepsis and disseminated intravascular coagulation were frequent causes of death. Better understanding of the pathophysiology of perforation in ARM and early surgical decompression of the obstructed colon can be expected to reduce mortality in future. Clearly, the cornerstone to timely diagnosis of an ARM continues to be a comprehensive neonatal examination performed by a pediatrician or a pediatric trainee with sufficient experience.

References:

1. Parelkar SV, Kapadnis SP, Sanghvi BV, Joshi PB, Mundada DD, Oak SN. Neonatal sigmoid colon perforation: A rare occurrence in low anorectal malformation and review of the literature. Pediatr Neonatol 2016;57:232-5.
2. Sandlas G, Kothari P, Sarda D, Karkera P. Spontaneous bowel perforation in a neonate with anorectal malformation. Saudi J Gastroenterol 2011;17:72-3.
3. Turowski C, Dingemann J, Gillick J. Delayed diagnosis of imperforate anus: An unacceptable morbidity. Pediatr Surg Int 2010;26:1083-6.
4. Mathur P, Saxena AK, Bajaj M, Chandra T, Sharma NC, Simlot A, et al. Role of plain abdominal radiographs in predicting type of congenital pouch colon. Pediatr Radiol 2010;40:1603-8.
5. Raveenthiran V. Spontaneous perforation of the colon and rectum complicating anorectal malformations in neonates. J Pediatr Surg 2012;47:720-6.
6. Sinha CK, Grewal A, Ward HC. Short-segment Hirschsprung's disease, cat eye syndrome, and anorectal malformation' A unique association. J Pediatr Surg 2007;42:1454-6.
7. Smith ED, Saeki M. Associated anomalies. Birth Defects Orig Artic Ser 1988;24:501-49.
8. Alexander M, Holschneider AM, Hutson JM, editors. Anorectal Malformations in children. Heidelberg, Springer; 2006.
9. Komuro H, Urita Y, Hori T, et al. Perforation of the colon in neonates.J Pediatr Surg 2005;40:1916-9.
10. Eltayeb AA, Hashem M. Management and outcome of neonatal bowel perforation. Ann Pediatr Surg 2008;4:83-8.
11. Fares AE, El-Saket HM. Neonatal colonic perforation: a case series. Arab J Gastroenterol 2008;9:75-9.
12. Eltayeb AA. Delayed presentation of anorectal malformations: the possible associated morbidity and mortality. Pediatric surg Int 2010;26:801-6.
13. Ly JQ. The Rigler sign. Radiology 2003;228:706-7.
14. Chalapathi G, Chowdhary SK, Rao KLN, et al. Risk factors in the primary management of anorectal malformations in Northern India. pediatr Surg Int 2004;20:408-11.
15. Yamada R, Tsunoda A. The diagnosis and the complications of anorectal anomaly in the newborn. Acta Neonatologica Japonica1974;10:50-3.
16. Tongsong T, Chanprapaph P. Prenatal diagnosis of isolated anorectal atresia with colonic perforation. J Obstet Gynaecol Res 2001;27:241-4.