



EARLY DIAGNOSIS OF CONGENITAL INTESTINAL OBSTRUCTION IN CHILDREN AND THE EFFECTIVENESS OF SURGICAL TREATMENT

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ABSTRACT

Congenital intestinal obstruction is one of the serious surgical conditions encountered in newborns and children and requires early recognition and timely treatment. Delayed diagnosis may lead to intestinal ischemia, perforation, peritonitis, severe metabolic disturbances, and an increased risk of postoperative complications. This article evaluates the clinical features of congenital intestinal obstruction in children, the role of early diagnostic methods, and the effectiveness of surgical treatment. Particular attention is paid to the onset of symptoms, abdominal distension, bilious vomiting, failure to pass meconium or stool, and general deterioration of the child's condition. The diagnostic value of plain abdominal radiography, ultrasonography, and other imaging methods is also considered. Surgical treatment outcomes are assessed according to the type of obstruction, timing of surgery, postoperative recovery, duration of hospital stay, and development of complications. Early diagnosis and timely surgical intervention are important factors in improving treatment outcomes and reducing the risk of severe complications in children with congenital intestinal obstruction.

Relevance of the problem

Congenital intestinal obstruction remains one of the most important surgical conditions in newborns and young children. It includes several different diseases, such as duodenal and



jejunoileal atresia, intestinal stenosis, malrotation with or without volvulus, Hirschsprung disease, and other congenital abnormalities that prevent normal passage of intestinal contents. In newborns, the condition may progress rapidly, so early recognition and timely surgical treatment are especially important [1, 2].

The first signs of congenital intestinal obstruction often appear during the first hours or days of life. Bilious vomiting, abdominal distension, failure to pass meconium, feeding intolerance, and progressive deterioration of the general condition should always raise suspicion of intestinal obstruction. However, clinical presentation is not always typical. Premature newborns are particularly difficult to diagnose because abdominal distension and feeding intolerance may initially be attributed to prematurity or necrotizing enterocolitis [3, 4].

Prenatal diagnosis has become increasingly important in recent years. Modern fetal ultrasonography can identify dilated intestinal loops, polyhydramnios, the “double-bubble” sign, and other findings suggestive of congenital gastrointestinal obstruction. Early prenatal recognition allows delivery to be planned in a specialized center where neonatal intensive care, pediatric radiology, and pediatric surgery are available [5, 6].

At the same time, prenatal imaging does not identify every case. Some forms of obstruction become evident only after birth, while the accuracy of ultrasound depends on the level and type of intestinal obstruction. Therefore, prenatal findings should be combined with the newborn’s clinical condition and postnatal radiological examination [3, 5].

Congenital gastrointestinal obstruction may also be associated with chromosomal abnormalities and other congenital malformations. This is particularly important when obstruction is detected before birth. Recent studies show that associated structural or genetic abnormalities can influence both the choice of treatment and the prognosis of the child. For this reason, a complete evaluation of associated anomalies is an important part of the diagnostic process [7].

Intestinal malrotation is another important cause of congenital obstruction. Its main danger is the possibility of midgut volvulus, which can rapidly impair intestinal blood supply and lead to ischemia and bowel necrosis. Clinical manifestations differ according to age, but vomiting is one of the most frequent symptoms in infants. Early diagnosis is therefore essential for preventing loss of viable intestine and serious postoperative complications [8].

Duodenal atresia also requires surgical correction in the neonatal period. Although outcomes have improved considerably with advances in neonatal anesthesia, intensive care, and surgery, premature infants and children with associated anomalies remain at higher risk of postoperative complications. The timing of surgery should therefore be selected according to the general condition and physiological stability of the newborn. Distal intestinal obstruction may be more difficult to differentiate because several conditions can present with similar symptoms. Hirschsprung disease, meconium ileus, meconium plug syndrome, and intestinal atresia may all cause delayed passage of meconium and abdominal distension. A recent study of neonates with



distal obstruction demonstrated the importance of a stepwise diagnostic approach that may include bowel irrigation, rectal biopsy, genetic testing for cystic fibrosis, and selective radiological studies [9, 10].

Surgical technique also has a major influence on postoperative recovery. In jejunoileal atresia, restoration of intestinal continuity with primary anastomosis is widely used when the condition of the bowel allows it. A recent multicenter study from the United Kingdom showed that primary anastomosis was associated with earlier full enteral feeding, shorter hospitalization, fewer anesthetic procedures, and lower mortality compared with enterostomy formation in selected infants. Despite modern treatment, postoperative complications remain an important clinical problem. Anastomotic leakage, intestinal obstruction, sepsis, wound infection, prolonged feeding intolerance, and short bowel syndrome may occur after surgery. Outcomes are particularly unfavorable in premature and low-birth-weight infants and in patients with associated congenital anomalies [2, 11, 12].

The situation is more difficult in centers with limited neonatal intensive care and parenteral nutrition resources. Recent studies show that delayed presentation, prematurity, associated malformations, sepsis, and prolonged or complicated surgery can significantly worsen early postoperative outcomes. These findings demonstrate that successful treatment depends not only on the operation itself but also on early diagnosis, preoperative stabilization, adequate anesthesia, intensive care, infection control, and postoperative nutritional support [12, 13].

Thus, early diagnosis of congenital intestinal obstruction and timely surgical treatment remain highly relevant problems in pediatric surgery. A coordinated approach involving neonatologists, pediatric surgeons, radiologists, anesthesiologists, and intensive care specialists can reduce diagnostic delay, prevent intestinal ischemia and perforation, decrease postoperative complications, and improve survival. For this reason, further evaluation of early diagnostic criteria and the effectiveness of modern surgical treatment in children with congenital intestinal obstruction is clinically important [1, 11, 13].

Objective of the study

To evaluate the importance of early diagnosis of congenital intestinal obstruction in children and to assess the effectiveness of surgical treatment based on clinical presentation, diagnostic findings, timing of surgery, postoperative recovery, and the frequency of complications.

Materials and Methods

The study was conducted at the Andijan Branch of the Republican Scientific Center of Emergency Medical Care. A total of 86 children with congenital intestinal obstruction who were treated between 2021 and 2025 were included in the study. The patients were newborns and children up to 3 years of age.

Diagnosis was based on clinical examination, medical history, laboratory tests, abdominal ultrasonography, and plain abdominal radiography. Particular attention was paid to bilious



vomiting, abdominal distension, delayed passage of meconium or stool, feeding intolerance, and deterioration of the general condition.

According to the level and type of obstruction, the patients were divided into groups with duodenal obstruction, jejunoileal atresia, intestinal malrotation, and other congenital forms of intestinal obstruction. Surgical treatment was performed after preoperative stabilization of the child's condition. The type of operation was selected according to the anatomical form of obstruction and intraoperative findings.

Results

A total of 86 children with congenital intestinal obstruction were included in the study. The patients were newborns and children up to 3 years of age. Most cases were diagnosed during the neonatal period. Boys were slightly more common than girls.

The first clinical signs were usually seen during the first days of life. The most frequent symptoms were bilious vomiting, abdominal distension, delayed passage of meconium, feeding intolerance, and general weakness. In some children, repeated vomiting caused dehydration and electrolyte imbalance before admission.

Among the 86 patients, congenital duodenal obstruction was diagnosed in 24 children, jejunoileal atresia in 28, intestinal malrotation in 19, and other forms of congenital intestinal obstruction in 15 children.

Table 1.

Main forms of congenital intestinal obstruction

Type of obstruction	n	%
Duodenal obstruction	24	27.9
Jejunoileal atresia	28	32.6
Intestinal malrotation	19	22.1
Other congenital forms	15	17.4
Total	86	100

Jejunoileal atresia was the most common form in our study. Duodenal obstruction was the second most frequent type. Malrotation was also common, especially in newborns with early bilious vomiting. The most common clinical symptom was vomiting. It was observed in 74 children, which accounted for 86.0% of all patients. Abdominal distension was present in 63 children, delayed passage of meconium in 51, and feeding intolerance in 58 patients. General weakness and signs of dehydration were more common in children who were admitted later.

Plain abdominal radiography was useful in most cases. It helped to identify dilated bowel loops, air-fluid levels, and typical signs of proximal or distal obstruction. Abdominal ultrasonography was especially useful in children with suspected malrotation and volvulus. In some cases, both methods were needed to confirm the diagnosis.



Early diagnosis had a clear influence on treatment results. Children who were diagnosed during the first 24 hours after the onset of symptoms usually had a more stable general condition before surgery. They also had fewer signs of dehydration and intestinal ischemia. In contrast, children admitted later more often had severe abdominal distension, electrolyte disorders, bowel wall changes, and signs of peritonitis.

All children underwent surgical treatment after preoperative stabilization. The type of operation depended on the cause and level of obstruction. In patients with intestinal atresia, the affected segment was resected and intestinal continuity was restored by anastomosis. In duodenal obstruction, reconstructive surgery was performed according to the anatomical form. In children with malrotation, the abnormal bowel position was corrected and the obstructing bands were divided.

The postoperative course was satisfactory in most patients. Intestinal function usually began to recover within the first 2–4 days after surgery. Oral or enteral feeding was started gradually after the return of bowel function. Children with uncomplicated obstruction recovered faster than those with bowel ischemia, perforation, or severe infection.

The mean hospital stay was 9.4 ± 3.6 days. It was shorter in children who were diagnosed and operated on early. Patients with delayed diagnosis stayed in hospital longer because they needed more intensive treatment, longer antibiotic therapy, and slower introduction of enteral feeding.

Table 2.

Main postoperative outcomes

Outcome	Result
Recovery of bowel function, days	2.8 ± 1.2
Start of enteral feeding, days	3.4 ± 1.5
Mean hospital stay, days	9.4 ± 3.6
Postoperative complications, n (%)	12 (14.0%)
Reoperation, n (%)	3 (3.5%)

Postoperative complications were recorded in 12 children. The most common problems were wound infection, prolonged intestinal paresis, anastomotic dysfunction, and intra-abdominal infection. Three patients required repeated surgery. These cases were mainly associated with delayed admission, bowel necrosis, or severe peritonitis.

The results showed that the timing of diagnosis was one of the main factors affecting the outcome. Children diagnosed early had a shorter preoperative period, fewer complications, faster recovery of bowel function, and a shorter hospital stay.

Another important finding was that clinical symptoms alone were not always enough to determine the exact type of obstruction. Imaging methods were necessary to define the level of obstruction and to plan surgery. Plain radiography was useful as the first examination, while ultrasonography provided additional information in unclear cases.



Overall, early recognition of congenital intestinal obstruction and timely surgical treatment gave better results. Delayed diagnosis increased the risk of bowel ischemia, perforation, infection, and prolonged postoperative recovery. The best outcomes were observed in children who were admitted early, stabilized before surgery, and operated on before severe intestinal damage developed.

Conclusion

Congenital intestinal obstruction in children requires early recognition and timely surgical treatment. The main clinical signs in our study were vomiting, abdominal distension, delayed passage of meconium, feeding intolerance, and deterioration of the general condition.

Early diagnosis was associated with better treatment results. Children who were diagnosed and operated on during the early stage had faster recovery of bowel function, earlier start of enteral feeding, shorter hospital stay, and fewer postoperative complications.

Plain abdominal radiography and ultrasonography were useful for confirming the diagnosis and identifying the level and possible cause of obstruction. Surgical treatment was selected according to the anatomical type of obstruction and intraoperative findings.

The results also showed that delayed diagnosis increased the risk of intestinal ischemia, perforation, infection, and prolonged postoperative recovery. Therefore, careful clinical assessment, early imaging, preoperative stabilization, and timely surgery are the main factors that can improve the outcome of congenital intestinal obstruction in children.

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