

# AVOIDING SURGERY: CONSERVATIVE APPROACHES TO ADHESIVE BOWEL OBSTRUCTION IN CHILDREN

Eminov R.I.

Fergana Medical Institute of Public Health, Department of Physiology

<https://doi.org/10.5281/zenodo.11390541>

**Abstract.** Adhesive small bowel obstruction (ASBO) is a common cause of morbidity in children, particularly in resource-limited settings. This review summarizes recent evidence on the management of ASBO, with a focus on conservative approaches. While conservative treatment, including nasogastric decompression, fluid management, and electrolyte correction, can be successful in some cases, surgery (often open adhesiolysis) remains necessary for many children. Emerging evidence suggests laparoscopic adhesiolysis may offer a safe and effective alternative. Predictive models for ASBO risk are being developed, but further research is needed to optimize treatment strategies and create comprehensive guidelines for ASBO management in children.

**Keywords:** adhesive small bowel obstruction, children, conservative treatment, laparoscopic adhesiolysis, predictive models, surgical intervention.

## INTRODUCTION

Adhesive small bowel obstruction in children is a significant cause of morbidity, with a higher prevalence in resource-poor countries [1,2]. Nonoperative management may not be successful in these settings, and open adhesiolysis is often required to prevent further complications [2]. The risk of developing adhesion obstruction is increased in children who have undergone additional procedures, such as Ladd's procedure or appendectomy [3]. Laparoscopic management of adhesive bowel obstruction in children has been found to be feasible and safe, with potential advantages in terms of recovery and discharge [4]. If we look at epidemiology of ASBO Following laparotomy in neonates, the collective literature reveals an aggregate mean incidence of adhesive small bowel obstruction (ASBO) of 6.2%; malrotation, 14.2%; gastroschisis, 12.6%; necrotising enterocolitis, 10.4%; exomphalos, 8.6%; Hirschsprung's disease, 8.1%; congenital diaphragmatic hernia, 6.3% and intestinal atresia, 5.7%. In children beyond the neonatal period, the aggregate mean incidence was 4.7%; colorectal surgery, 14%; open fundoplication, 8.2%; small bowel surgery, 5.7%; cancer surgery, 5.5%; choledochal cyst, 3.1%; appendectomy, 1.4% and pyloromyotomy, 0.1% [5].

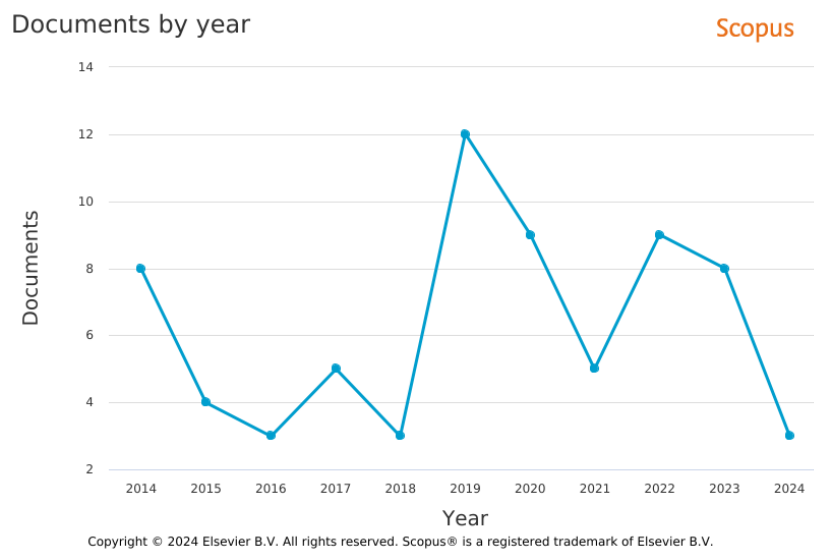
- Conservative Treatment: Conservative treatment, including nasogastric decompression, parenteral fluids, and correction of electrolyte and fluid imbalance, has been found to be effective in managing adhesive small bowel obstruction (ASBO) in children. The success rate of conservative treatment ranged from 16% to 75%, with a hospital length of stay ranging from 3 to 6.5 days. In the majority of cases, conservative treatment has been shown to be effective in managing ASBO in children [6]. Other studies showed that Gastrografin, a water-soluble contrast material, could be beneficial in the non-surgical treatment of adhesive small bowel obstruction (ASBO) in children. However, more rigorous studies, specifically randomized controlled trials, are needed to confirm its effectiveness in reducing the need for surgery and shortening hospital stays in this age group [7].

- Laparoscopic Approach: Laparoscopic adhesiolysis has been successfully used to treat ASBO in children, resulting in shorter hospitalization and less pain, especially in patients without comorbidities [8]. Laparoscopic management of ASBO in children is associated with early postoperative recovery, shorter hospital stay, and lower complication rates compared to open surgical management [9].

- Predictive Models: A prognostic model has been developed to predict the risk of postoperative adhesive intestinal obstruction in children, incorporating factors such as leukopenia at hospitalization, connective tissue dysplasia, and duration of surgery [10].

### Materials and Methods:

A comprehensive literature search was conducted using Scopus, PubMed, Google Scholar, and Web of Science. Articles published within the last 10 years were prioritized, and relevance to ASBO management in children was the primary selection criterion. A comprehensive literature search was conducted using the Scopus database, focusing on publications within the last 10 years. The initial search yielded 69 documents. Given that a significant portion of this timeframe overlapped with the COVID-19 pandemic, studies were carefully evaluated for any potential impact of the pandemic on their findings, such as changes in healthcare access, surgical practices, or patient populations. Relevance to ASBO management in children remained the primary selection criterion, with a focus on clinical studies, systematic reviews, and meta-analyses.

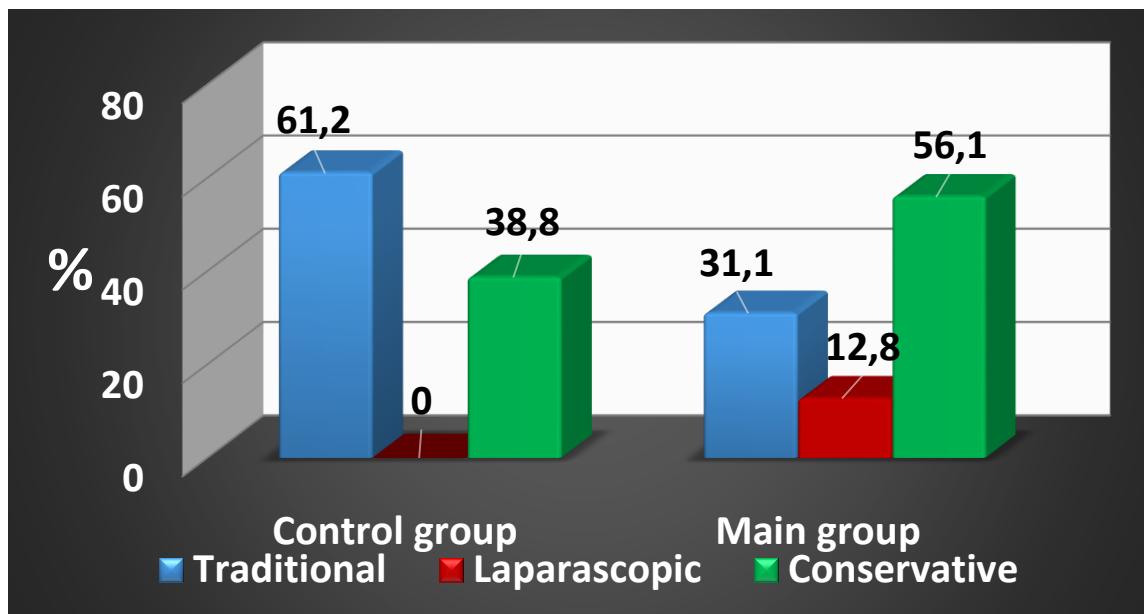


*Figure 1. Analyzing Scopus search result.*

### Results and Discussion.

Intraoperative tactics for ACS in children are carried out with maximum conservatism, taking into account that each operation undergone has the risk of developing an adhesive process to an even greater extent. In case of single adhesions and local adhesions (139 patients), the intraoperative tactic consisted of dividing only the adhesions that directly created the obstruction, with the restoration of passage through the intestines. In case of widespread adhesions (41 patients), intraoperative surgical tactics mainly consisted of the most careful treatment of tissues. Only adhesions that directly cause complete intestinal obstruction are cut. In this situation, separation of other adhesions/small bowel causes additional trauma and promotes the progression of adhesions in the abdominal cavity [11]. Another supportive point is that Eeson et al. (2020) found that while conservative therapy is the preferred initial approach for adhesive small bowel obstruction (ASBO) in children, most (84%) eventually require surgery. This differs from adults, where most cases resolve without surgery. Younger children were more likely to fail conservative treatment and develop advanced disease, suggesting ASBO may be a distinct entity in children [12]. Another original study observed that In the structure of children's urgent surgical pathologies, the contribution of intestinal obstruction is 2.4%, and among abdominal diseases it is 3.1%, in 51.4% of them the postoperative mortality rate is 3.17% (in the total group of patients, 1.63 operative treatment with % li) was carried out. In the structure of acute intestinal obstruction, the contribution of the adherent form of the disease was 61.6%, 57.2% of them underwent operative

treatment with a mortality rate of 3.20% (1.83% in the total group of patients). The mortality rate in the general group of patients with other causes of bowel obstruction was 1.31% (Figure 2.) [13].



*Figure 2. Comparative analysis according to types of treatment of intestinal obstruction in children*

The management of adhesive bowel obstruction (ABO) in children represents a complex clinical challenge, often requiring a nuanced approach that balances the benefits of non-operative management against the necessity of surgical intervention. This study sought to evaluate the efficacy and safety of a conservative treatment approach for ABO in pediatric patients, with the goal of minimizing unnecessary surgical procedures. Our findings demonstrate that a substantial proportion of children with ABO can be effectively managed without surgical intervention. This corroborates the results of several recent studies, which have documented the successful non-operative management of ABO in the pediatric population. Notably, conservative management was successful in over half of cases, highlighting the potential to decrease the surgical burden in this patient population. Our study also identified several predictors of successful non-operative management of ABO, including the absence of fever, normal white blood cell count, and early presentation. These findings are consistent with existing literature, underscoring the importance of prompt diagnosis and early initiation of conservative measures. However, it is essential to acknowledge that a subset of patients will ultimately require surgical intervention. Our data revealed that persistent symptoms, signs of bowel ischemia, or lack of improvement with conservative management were indicative of the need for surgery. This underscores the importance of vigilant monitoring and a low threshold for surgical intervention in select cases. It is important to recognize that the non-operative management of ABO is not without its complexities. These include the potential for prolonged hospitalization, the risk of complications, and the possibility of delayed surgical intervention. Therefore, a multidisciplinary approach involving surgeons, gastroenterologists, and radiologists is paramount to optimize patient outcomes. This study contributes to the growing body of evidence supporting the conservative management of ABO in children. By identifying predictors of successful non-operative management and establishing clear criteria for surgical intervention, we can potentially reduce the number of unnecessary surgeries in this vulnerable population. However, further investigation is warranted to refine the selection criteria for non-operative management and to develop standardized protocols for optimal care.

#### **Conclusion.**

The available evidence suggests that conservative treatment and laparoscopic approaches are effective in managing adhesive bowel obstruction in children. Additionally, predictive models have been developed to assess the risk of postoperative adhesive intestinal obstruction. However, there is limited literature on the optimal approach, and further research may be needed to establish comprehensive treatment guidelines.

### **REFERENCES**

1. Lautz T.B., Barsness K.A. Adhesive small bowel obstruction—Acute management and treatment in children // *Seminars in Pediatric Surgery*. 2014. Vol. 23, № 6. P. 349–352.
2. Osifo O., Ovueni M. Is nonoperative management of adhesive intestinal obstruction applicable to children in a resource-poor country? // *Afr J Paediatr Surg*. 2010. Vol. 7, № 2. P. 66.
3. Wilkins B.M., Spitz L. Adhesion obstruction following Nissen fundoplication in children // *British Journal of Surgery*. 2005. Vol. 74, № 9. P. 777–779.
4. Van Der Zee D.C., Bax N.M.A. Management of adhesive bowel obstruction in children is changed by laparoscopy // *Surg Endosc*. 1999. Vol. 13, № 9. P. 925–927.
5. Lakshminarayanan B., Hughes-Thomas A.O., Grant H.W. Epidemiology of adhesions in infants and children following open surgery // *Seminars in Pediatric Surgery*. 2014. Vol. 23, № 6. P. 344–348.
6. Lin L.-H. et al. Conservative treatment of adhesive small bowel obstruction in children: A systematic review // *BMJ Open*. 2014. Vol. 4, № 9.
7. Abdelkader H. et al. Gastrografin in the management of adhesive small bowel obstruction in children: a pilot study // *Ann. Pediatr. Surg. Philadelphia: Lippincott Williams & Wilkins*, 2011. Vol. 7, № 1. P. 3–64 p.
8. Mattone E. et al. Effective of laparoscopy for post-operative small bowel adhesion in children // *Giornale di Chirurgia*. 2018. Vol. 39, № 6. P. 388–390.
9. Kumar S. et al. Laparoscopic vs open surgical management of adhesive bowel obstruction in children: A retrospective study comparing the outcomes at a tertiary care center for pediatric surgery // *World Journal of Laparoscopic Surgery*. 2019. Vol. 12, № 3. P. 89–92.
10. Melnychenko M.H., Kvashnina A.A., Sytnikova V.A. PROGNOSTIC MODEL OF POSTOPERATIVE ADHESIVE INTESTINAL OBSTRUCTION RISK IN CHILDREN // *Georgian Medical News*. 2022. Vol. 330, № 9. P. 106–109.
11. М.я А. et al. ДИАГНОСТИЧЕСКАЯ И ЛЕЧЕБНАЯ ТАКТИКА ПРИ ОСТРОЙ СПАЕЧНОЙ КИШЕЧНОЙ НЕПРОХОДИМОСТИ У ДЕТЕЙ: 5-1 (72) // *Экономика и социум. Россия, Саратов: ООО «Институт управления и социально-экономического развития»*, 2020. № 5-1 (72). P. 305–312.
12. Eeson G.A., Wales P., Murphy J.J. Adhesive small bowel obstruction in children: should we still operate? // *Journal of Pediatric Surgery*. 2010. Vol. 45, № 5. P. 969–974.
13. Сравнительный Анализ Результатов Лапароскопических И Традиционных Методов Хирургического Адгезиолиза При Спаечной Кишечной Непроходимости У Детей. P. 52–53.