CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3533801

Available online at: http://www.iajps.com *Research Article*

INCIDENCE AND SHORT-TERM RESULTS OF TREATMENT OF NEONATAL INTESTINAL OBSTRUCTION

[1]Dr Rohan Habib, [2]Dr Muhammad Waqas Afzal, [3] Dr Hassaan ul Hassan Tahir Ghazi
[1,2]MBBS, Ayub Teaching Hospital Abbottabad, [3]Shiekh Khalifa Bin Zaid/CMH Muzaffarabad, AJK.

Article Received: September 2019 **Accepted:** October 2019 **Published:** November 2019

Abstract:
Neonatal intestinal obstruction (NIO) is a common and difficult emergency in paediatric surgery. To successfully cope, it is needed to make a quick diagnosis and standard treatment. Management of neonatal intestinal obstruction has improved in many developed countries, but still shows high morbidity and mortality in developing countries.
***Aim**: This study was conducted to assess the incidence and short-term effects of neonatal intestinal obstruction.*
***Place and Duration:** In the Department of Paediatric Surgery, Ayub Teaching Hospital Abbottabad for two year duration from March 2017 to March 2019.*
***Methods:** This retrospective study involved 84 patients who surgically treated intestinal obstruction during the first month in the emergency department at the Children's Hospital Lahore.*
***Results:** Of these 84 patients, 50 are males and 34 females. The average age at the time of presentation was 3.5 (2-10) days for duodenal atresia, 2.5 (3-5) days for jejunoileal atresia, 2 (1-10) days meconium ileus with perforation, volvulus seen in 2 (1-5) days, 7 (5-20) days for colonic atresia, 20 (10-30) days for Hirschsprung disease, 25 (5-30) days for patients with congenital inguinal hernia and 2 (1-4) rectum developmental defects. After resuscitation, all patients underwent surgery. Death occurred in 10 patients (12%). Three patients with atresia of the jejunum had leakage of the anastomosis, underwent a new surgery, but died. Three patients with duodenal atresia died after surgery due to sepsis and DIC. Two patients with major anorectal defects died two days after surgery due to associated cardiac abnormalities, and two patients with sepsis and electrolyte imbalance died after surgery.*
***Conclusion:** Anorectal anomalies and congenital inguinal hernia are the most common causes of intestinal obstruction in neonates. Mortality and morbidity remain high compared to statistics from developed countries due to the late presentation and due to improper setting.*

Keywords: *Intestinal obstruction, neonatal, results.*

Corresponding author:
Dr. Rohan Habib,
MBBS, Ayub Teaching Hospital Abbottabad
rohan_habib199@yahoo.com

QR code

Please cite this article in press Rohan Habib et al., ***Incidence and Short-Term Results of Treatment of Neonatal Intestinal Obstruction.,*** *Indo Am. J. P. Sci, 2019; 06(11).*

INTRODUCTION:

Neonatal intestinal obstruction (NIO) is a common and difficult emergency in paediatric surgery. To successfully cope, it is needed to make a quick diagnosis and standard treatment. Diagnosis of this condition, like many other diseases, is made on the basis of a full history and detailed physical examination using radiographic and histopathological examinations [1-2]. Standard resuscitation and emergency admission to the emergency department can prevent and manage serious complications of obstruction [3]. Different classifications of obstruction include: intraruminal (meconium plug syndrome or meconium ileus), functional (Hirschsprung), complete or incomplete [4-5]. Proximal obstruction is usually followed by vomiting and mild abdominal distension, and distal intestinal obstruction is usually followed by more severe abdominal distension [6-7]. For a neonates with intestinal obstruction, a multidisciplinary team covering various medical specialties, nursing and rehabilitation is required for healthy survival [8-9]. Early surgical intervention is necessary to save the new born and avoid side effects unless existing neonatal ICU is available.

MATERIALS AND METHODS:

This retrospective study was held in the Department of Paediatric Surgery, Ayub Teaching Hospital Abbottabad for two year duration from March 2017 to March 2019. There were 84 surgically treated neonates with intestinal obstruction. Patient data were obtained from records. Cases suspected of intestinal obstruction that died before final diagnosis or before surgical treatment were excluded. We also exclude patients discharged from medical advice. We include only babies with intestinal obstruction who have undergone surgery in our ward. It was analysed using statistical data (version SPSS18.0).

Results are expressed as mean, range and percentage.

RESULTS:

Of the 84 patients, 50 are males and 34 females. The average age at the time of presentation was 3.5 (2-10) days for duodenal atresia, 2.5 (3-5) days for jejunoileal atresia, 2 (1-10) days meconium ileus with perforation, volvulus seen in 2 (1-5) days, 7 (5-20) days for colonic atresia, 20 (10-30) days for Hirschsprung disease, 25 (5-30) days for patients with congenital inguinal hernia and 2 (1-4) rectum developmental defects The average age of the presentation at surgeon for each other diagnosis is summarized in Table 1.

Table 1: Types of neonatal intestinal obstruction and age at presentation

Types of intestinal obstruction	Number of patients	Age at presentation to surgeon				
		0-7 days	8-14 days	15-21 days	22-30 days	Mean (days)
Duodenal atresia	10	7	3	0	0	3.5 (2-10)
Jejunoileal atresia	7	7	0	0	0	2.5 (3-5)
Colonic atresia	5	2	3	0	0	7 (5-20)
Hirschsprung disease	15	0	3	7	5	20 (10-30)
Obstructed inguinal hernia	17	0	5	10	2	25 (5-30)
Meconium ileus with perforation	5	2	8	0	0	2 (1-10)
Volvulus	5	2	0	0	0	2 (1-5)
Anorectal malformations	20	20	0	0	0	2 (1-4)

Twenty-five patients (29.7%) had prenatal diagnosis of polyhydramnios and were presented in the early stages to the surgeon. The average weight of patients with various causes of NIO is summarized in Figure 1.

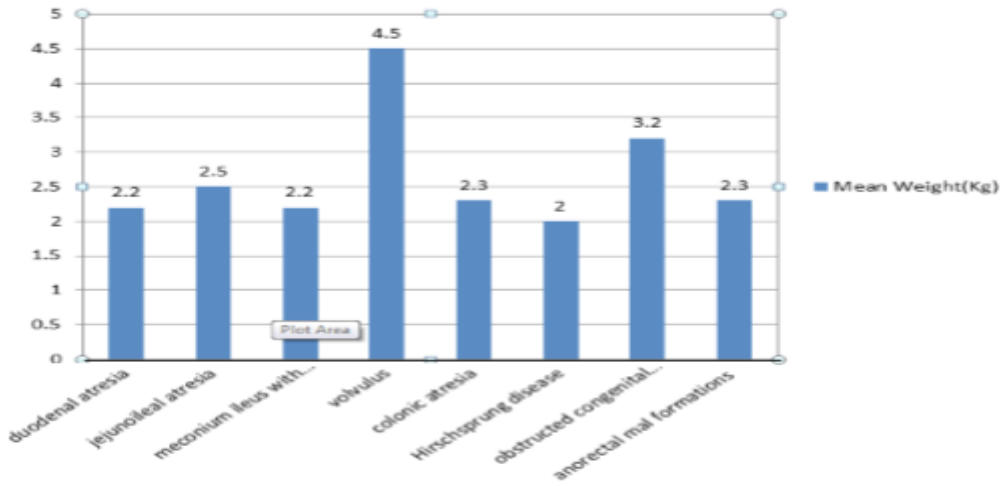

Figure 1: Mean weight of patients with different causes of NIO

All patients underwent surgical resection after appropriate resuscitation. Primary repair was performed on all patients with jejunum atresia. In 6 patients, Diamond duodenduodenostomy was done with duodenal atresia, web excision and duodenotomy was done in one patient and in three patients duodenojejunostomy was done with long gap duodenal atresia. Endorectal extraction was performed in 10 patients with Hirschsprung's disease, and the remaining 5 patients underwent a colostomy before final repair. Primary peritoneal repair and irrigation was performed in 3 patients with meconium ileus and perforation. The remaining 2 patients underwent proximal colostomy and perforation repair. Colon atresia in five patients: 2 type I (mucosal web), 1 type II (fibrous cord) and 2 type III (mesenteric defect); Colon atresia occurred in the right colon in 3 patients and in the left colon in 2 patients. A colostomy was performed in all colonic atresia patients, followed by intestinal anastomosis at 3-4 months of age. The Lads procedure was used for all patients with torsion. Five patients with low rectal defects and 5 patients with large rectal defects were subjected to an anal incision for one-stage ano-rectoplasty. Ten patients with high anorectal defects underwent colostomy and late repair. All patients with congenital inguinal hernia underwent a hernia repair. The average hospital stay was 7 days and ranged from 2 to 20 days. Patients were followed for at least 4 months after surgery. 10 patients died (12%), 3 of them were concurrent jejunal atresia and died despite reoperation. Three patients with duodenal atresia died postoperatively of sepsis and DIC, and 2 patients had a malformation anus and died two days after surgery due to associated heart abnormalities.

Table 2: Incidence of different diagnosis, mortality and Mean hospital stay in patients with NIO

Types of intestinal obstruction	No	Incidence	Mean hospital stay	Mortality
Duodenal atresia	10	11.9%	5 (5±2)	3
Jejunoileal atresia	7	8.3%	7 (7±3)	3
Colonic atresia	5	5.9%	4 (5±3)	2
Hirschsprung disease	15	17.8%	6 (8±2)	0
Obstructed inguinal hernia	17	20.2%	2 (2±1)	0
Meconium ileus with perforation	5	5.9%	3 (3±1)	0
Volvulus	5	5.9%	5 (4±3)	0
Anorectal malformations	20	23.8%	5 (7±3)	2

Two patients with colonic atresia died after sepsis and electrolyte imbalance. The different diagnosis, mortality and average hospitalization rates in patients with NIO are shown in Table 2.

DISCUSSION:

Neonatal intestinal obstruction has very high morbidity and mortality; it can cause severe dehydration, hypoglycemia, electrolyte imbalance and irreversible ischaemia in a very short time[10]. Early diagnosis and treatment are necessary [10]. Other studies followed by a reconstruction for the

neonatologist who invited surgeons at a later date. The average time between the presentation for the neonatologist and the presentation for surgeons was 2.2 days for duodenal and small intestinal atresia; this range reflects the time needed for the surgeon to assess, test and diagnose before inviting him to check these patients [11-12]. In our study, the three most common causes of neonatal intestinal obstruction were anal malformations (23.8%) followed by congenital inguinal hernia (20.2%) and Hirschsprung disease (17.8%) [13]. These results differ from many published series: Öztürk et al. It has been reported that the most common cause of new born intestinal obstruction is Hirschsprung disease, which accounts for 25% of cases, and the second most common cause is inguinal hernia [14]. Congenital obstruction was 23.3%, followed by anal malformations in 17% and small intestinal atresia in 13%. In our study, 20 patients (23.8%) had congenital anomalies that were significantly smaller than the study by Ezomike et al., Where 70% of the associated population had congenital anomalies. In our study, which was better than in other developing countries, such as Nigeria, where Ezomike et al. 41% mortality was reported, mortality was 12%; however, the mortality rate in developed countries ranged from 1 to 7. The length of hospital stay in our study was from 2 to 20 days, and the average length of hospital stay was longer in patients with sensory intestinal atresia than in patients with duodenojejunal atresia [15]. The mean follow-up was 4 months, which is shorter than in developed countries.

CONCLUSION:

We concluded that anorectal malformations and congenital inguinal hernia are the two most common causes of neonatal intestinal obstruction. Mortality and morbidity remain high compared to reports from developed countries due to the late introduction to a paediatric surgeon and the lack of neonatal intensive care units in our country.

REFERENCES:

1. Zhu, Haitao, Runnan Gao, Mashriq Alganabi, Kuiran Dong, Niloofar Ganji, Xianmin Xiao, Shan Zheng, and Chun Shen. "Long-Term Surgical Outcomes of Apple-Peel Atresia." *Journal of pediatric surgery* (2019).
2. Zhu, Haitao, Shan Zheng, Mashriq Alganabi, Xueni Peng, Kuiran Dong, Agostino Pierro, and Chun Shen. "Reoperation after Ladd's procedure in the neonatal period." *Pediatric surgery international* 35, no. 1 (2019): 117-120.
3. Zhu, Tianqi, Xiaoyi Sun, Mingfa Wei, Bin Yi, Xiang Zhao, Wenjing Wang, and Jiexiong Feng. "Optimal time for single-stage pull-through colectomy in infants with short-segment Hirschsprung disease." *International journal of colorectal disease* 34, no. 2 (2019): 255-259.
4. Elliott, T. and Walton, J.M., 2019. Safety of mucous fistula refeeding in neonates with functional short bowel syndrome: A retrospective review. *Journal of pediatric surgery*, *54*(5), pp.989-992.
5. Diamanti, Antonella, Fabio Fusaro, Tamara Caldaro, Teresa Capriati, Manila Candusso, Valerio Nobili, and Osvaldo Borrelli. "Pediatric intestinal pseudo-obstruction: impact of neonatal and later onset on clinical and nutritional outcomes." *Journal of pediatric gastroenterology and nutrition* 69, no. 2 (2019): 212-217.
6. Martynov, Illya, Jochen Raedecke, Jessica Klima-Frysch, Wolfram Kluwe, and Joachim Schoenberger. "The outcome of Bishop-Koop procedure compared to divided stoma in neonates with meconium ileus, congenital intestinal atresia and necrotizing enterocolitis." *Medicine* 98, no. 27 (2019).
7. Padoan, Rita, Natalia Cirilli, Diego Falchetti, Bruno Mario Cesana, and Meconium Ileus Project Study Group. "Risk factors for adverse outcome in infancy in meconium ileus cystic fibrosis infants: A multicentre Italian study." *Journal of Cystic Fibrosis* (2019).
8. Bethell, George Stephen, Anna-May Long, Marian Knight, and Nigel J. Hall. "Congenital duodenal obstruction in the UK: a population-based study." *Archives of Disease in Childhood-Fetal and Neonatal Edition* (2019): fetalneonatal-2019.
9. Stephens, Carol. "P475 Review of the management of bilious vomiting in term neonates and identify differences in management outside working hours in CUMH." (2019): A342-A343.
10. Isa, Muntadhar M., Dian A. Syahputra, and Muhammad Bayu Z. Hutagalung. "Transanal endorectal pull-through in children as the treatment for Hirschsprung'sd in Aceh, Indonesia." *International Surgery Journal* 6, no. 5 (2019): 1443-1446.
11. Yeung, Fanny, Adrian CH Fung, Patrick HY Chung, and Kenneth KY Wong. "Short-term and long-term outcomes after Roux-en-Y hepaticojejunostomy versus hepaticoduodenostomy following laparoscopic excision of choledochal cyst in children." *Surgical endoscopy* (2019): 1-6.
12. Anderson, Jamie E., Laura A. Galganski, Christopher D. Pivetti, Melissa A. Vanover, Jacob T. Stephenson, Rachel Brownlee, Betty Ma,

Diana L. Farmer, and Shinjiro Hirose. "Fetal repair of surgically-created gastroschisis in a lamb model may improve postnatal feeding tolerance and intestinal motility: A pilot study." *Journal of Pediatric Surgery* (2019).

13. Wiggins, Luke M., Winfield J. Wells, Vaughn A. Starnes, and Ram S. Kumar. "Simultaneous systemic to pulmonary shunt and pulmonary artery banding is a viable option for neonatal palliation of single ventricle physiology." In *Seminars in thoracic and cardiovascular surgery*, vol. 31, no. 2, pp. 234-241. WB Saunders, 2019.
14. Le-Nguyen, A., Righini-Grunder, F., Piché, N., Faure, C. and Aspirot, A., 2019. Factors influencing the incidence of Hirschsprung associated enterocolitis (HAEC). *Journal of pediatric surgery*, *54*(5), pp.959-963.
15. Howsawi A, Bamefleh H, Al Jadaan S, Crankson S, Alkhilaiwi R, Al-Essa R, Aljahdali F, Al Nemari J, Al Aqeely K, Al Howti S, Al Juhaiman M. Clinicopathological Characteristics of Hirschsprung's Disease With Emphasis on Diagnosis and Management: A Single-Center Study in the Kingdom of Saudi Arabia. Global pediatric health. 2019 May;6:2333794X19848865.