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Original Research Article

Presentation and Outcomes of Jejunoileal Atresia Treatment in Neonates

Dr. S.M. Khalid Mahmud[1*], Dr. Jahanara Laizu[2], Dr. Rakibul Islam[3], Prof. Aminur Rashid[4], Dr. Nurul Ferdous[5], Dr. S. M. Mahmud[6]

[1]Assistant Professor, Department of Pediatrics Surgery, Dhaka Shishu Hospital, Bangladesh
[2]Associate Professor, Department of Pharmacology, Uttara Adhunik Medical College, Dhaka, Bangladesh
[3]Registrar, Department of Pediatric Surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh
[4]Professor and Head, Department of Pediatric Surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh
[5]Associate Professor, Department of Pediatric Surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh
[6]Registrar, Department of Pediatric Surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh

***Corresponding Author**
Dr. S.M. Khalid Mahmud
Assistant Professor, Department of Pediatrics Surgery, Dhaka Shishu Hospital, Bangladesh

E-mail:
drkhalidmahmud71@gmail.com

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Abstract: ***Background:*** Intestinal atresia is a very common cause of neonatal intestinal obstruction. Jejunoileum is the commonest site of intestinal atresia. The frequencies of Jejunoileal atresia are still few in developing countries. We have not enough research-based information regarding the presentation and outcomes of jejunoileal atresia treatment. ***Aim of the study:*** *The aim of this study was to assess the presentation and outcomes of neonates with jejunoileal atresia.* ***Methods:*** This prospective observational study was conducted in the Department of Pediatric Surgery, Bangladesh Shishu Hospital, and Institute, Dhaka, Bangladesh during period from July 2016 to June 2020-. In total 27 neonates with jejunoileal atresia were included as the study subjects for this study. Patients with suspected jejunoileal atresia (JA) but who died before surgery and duodenal or colonic atresia were excluded from the study. A predesigned questionnaire was used in data collection. All data were collected, processed, and analyzed by using MS Office and SPSS version 23.0 programs as per need. ***Results:*** In this study, the male-female ratio was 1:1.25. The highest number of participants were with Type I atresia which was 37%. In the majority of the participants (59%) as a primary surgical procedure, a single small bowel anastomosis was performed. As early complications 'Clavien-Dindo ≥III' and cholestasis were found among 26% and 37% of patients respectively which were considered the most frequent. On the other hand, as of late complications, short bowel syndrome was found in 22% of patients which was noticeable. Finally, in this intervention 4% cases of mortality were found whereas 96% were survived. ***Conclusion:*** Till now intestinal atresia (IA), as well as jejunoileal atresia, are associated with unacceptably high morbidity as well as mortality because of inadequate neonatal intensive care, late presentation, and lack of parenteral nutritional support, especially in the countries of the third world.

Keywords: Presentation, Outcomes, Complication, Jejunoileal atresia, Neonates.

INTRODUCTION

In total 27 neonates with jejunoileal atresia were included as the study subjects for this study. Patients with suspected jejunoileal atresia (JA) but who died before surgery and duodenal or colonic atresia were excluded from the study. Jejunoileal atresia is a common cause of neonatal intestinal obstruction [1]. The frequencies of Jejunoileal atresia are still few in developing countries. As for example, we can mention, 'a reports from Nigeria

give the mortality rate in Jejunoileal atresia as high as 15.4%-41% [2]. Intestinal atresia (IA) is the third most common cause of neonatal intestinal obstruction in Nigeria, after Hirschsprung disease and anorectal malformations [3]. Although an earlier study had observed that, strangulated inguinal hernia holds this position [4]. Jejunal atresia (JA) is more common than ileal atresia (IA) in a study (jejunal: ileal, 25:13) and in another study from Khartoum [5], in contrast to another study of another third world country, Nepal where ileal atresia was more common [6]. A study reported the average age of presentation of jejunoileal atresia between 3 and 10 days, [7] whereas a prospective study found that, a high number of patients presented earlier than that. [8] As presentations, congenital anomalies associated with jejunoileal atresia (JA) are less common than duodenal atresia [9], intestinal atresia in patients with gastroschisis is well documented [10]. But multiple anomalies were reported in another study [11]. Even a study reported a high cardiovascular anomaly, but another reported associated cystic fibrosis with intestinal atresia [12]. As per the finding of another study, it was also found that rarely there could be an association between pyloric atresia and stenosis [13].

METHODOLOGY AND MATERIALS

This prospective observational study was conducted in the Department of Pediatrics, Surgery Bangladesh Shishu Hospital, and Institute, Dhaka Bangladesh during the period from July 2016 to June 2020. In total 27 neonates with jejunoileal atresia treated in the mentioned hospital were included as the study subjects for this study. Patients were classified into several group types as described by Grosfeld et al. [14]. Patients with suspected jejunoileal atresia (JA) but who died before surgery and duodenal or colonic atresia were excluded from the study. The treatment protocol involved resuscitating all patients, electrolyte derangement, correction of dehydration, correction and maintenance of blood glucose level, correction of anemia before surgery, control of sepsis, and administration of the necessary antibiotic. A plain abdominal radiograph was confirmed to ascertain mechanical intestinal obstruction and the diagnosis of atresia was performed at laparotomy. Resection of proximal dilated (10 cm) and distal (5 cm) bowel from the atresia was done. In patients marked for shortened, bowel tapering or enterostomy was performed. Narrowing of residual proximal dilated bowel was performed by resection of the part of an antimesenteric wall or imbrication/plication. Postoperative care included the administration of dextrose-containing intravenous fluids, analgesia, broad-spectrum antibiotics, intensive monitoring of vital signs by nurses and doctors in the division and intranasal oxygen supplement when required. Oral feeding commenced when bowel function returned. The information regarding demographics, type of atresia, presentation, associated anomalies, and type of surgery, residual length of small bowel after resection, the commencement of oral intake, complications, and the outcome of treatment was recorded. A predesigned questionnaire was used in data collection. All data were collected, processed, and analyzed by using MS Office and SPSS version 23 programs as per need.

RESULT

In this study, among a total of 27 participants, 44% were male whereas 66% were female. So female participants were dominated in number and the male-female ratio was 1:1.25. In this study, in analyzing the jejunoileal atresia as per the Grosfeld *et al*. classification we observed the highest number of participants were with Type I atresia which was 37%. Besides these, 7%, 19%, 11%, and 26% of participants were with Type II, Type IIIa, Type III b, and Type IV atresia respectively. In the majority of the participants (59%) a primary surgical procedure single small bowel anastomosis was performed. Besides these, ileocolic anastomosis (Single), tapering jejunoplasty and primary anastomosis, multiple anastomoses, and resection with Bishop-Koop ileostomy were performed in 19%, 11%, 7%, and 4% patients respectively. As early complications 'Clavien-Dindo ≥ III' and cholestasis were found among 26% and 37% of patients respectively which were considered more frequent? On the other hand, as a late complication, short bowel syndrome was found in 22% of patients which was noticeable. Besides these, anastomotic leakage, anastomotic stenosis, adhesive bowel obstruction, and incisional hernia were observed in 11%, 19%, 15%, and 4% of patients respectively. Finally, in this intervention 4% cases of mortality were found whereas 96% were survived.

Table-1: Age distribution of participants (N=27)

Age (Day)	n	%
<8	14	52%
8-14	8	30%
15-21	3	11%
22-28	2	7%

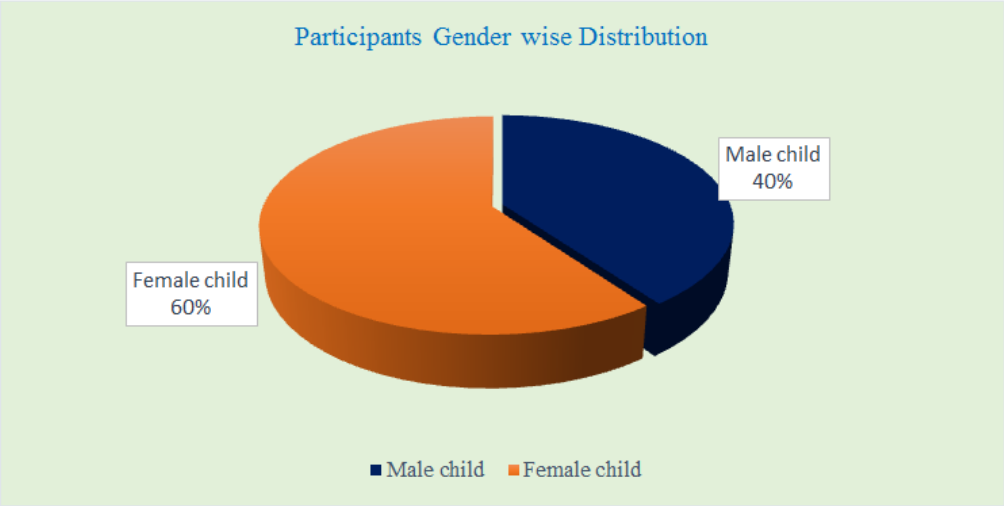

Fig-I: Participants Gender wise Distribution (N=27)

Table-2: Types of atresia among participants (N=27)

Type of atresia (JA)	n	%
Type I	10	37%
Type II	2	7%
Type IIIa	5	19%
Type IIIb	3	11%
Type IV	7	26%

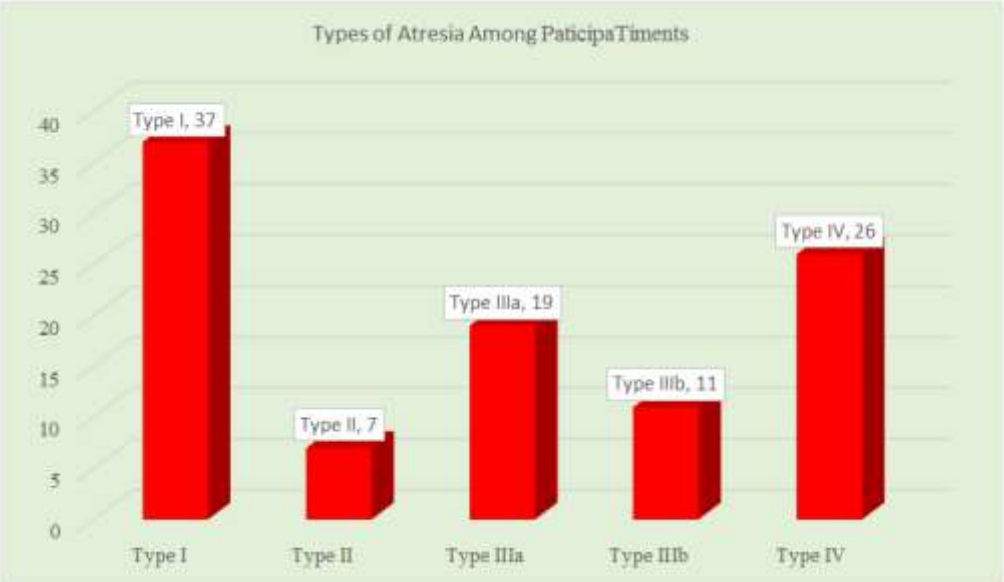

Fig-II: Types of Atresia among Participants (N=27)

Table-3: Primary surgical procedures performed among participants (N=27)

Surgical procedure	n	%
Small bowel anastomosis (Single)	16	59%
Ileocolic anastomosis (Single)	5	19%
Tapering jejunoplasty and primary anastomosis	3	11%
Multiple anastomoses	2	7%
Resection with Bishop-Koop ileostomy	1	4%

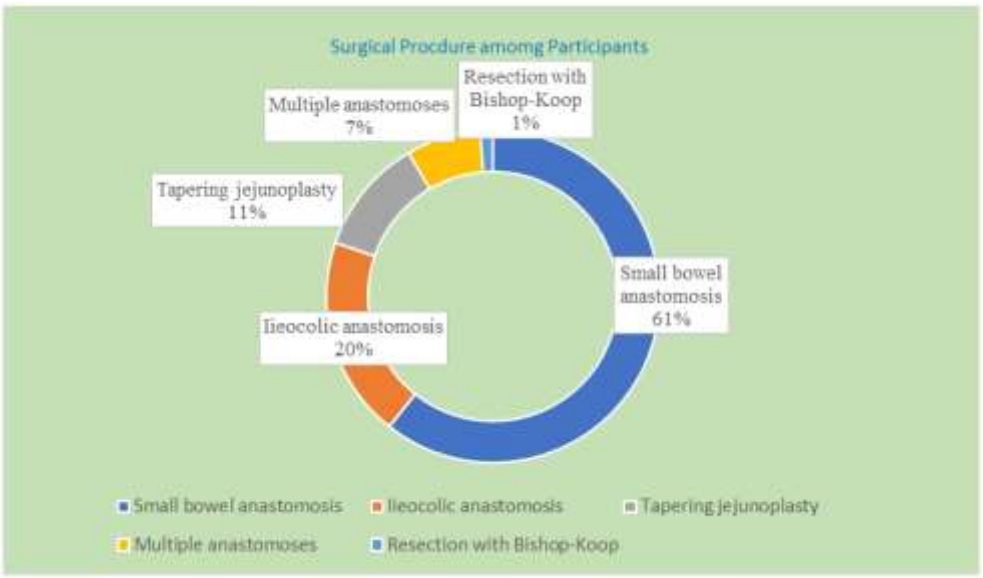

Fig-III: Surgical procedures Among Participants

Table-4: Complication and outcomes among participants (N=27)

Complication	n	%
Early complications		
Clavien-Dindo ≥ III	7	26%
Surgical site infection	1	4%
Wound dehiscence	1	4%
Central venous catheter infection	8	30%
Cholestasis	10	37%
Late complications		
Short bowel syndrome	6	22%
Anastomotic leakage	3	11%
Anastomotic stenosis	5	19%
Adhesive bowel obstruction	4	15%
Incisional hernia	1	4%
Mortality		
Mortality	1	4%
Alive	26	96%

DISCUSSION

The aim of this study was to assess the presentation and outcomes of neonates with jejunoileal atresia. In this study, among a total of 27 participants, the male-female ratio was 1:1.25. In analyzing the jejunoileal atresia as per the Grosfeld *et al*. classification we observed the highest number of participants were with Type I atresia which was 37%. Besides these, 7%, 19%, 11%, and 26% of participants were with Type II, Type IIIa, Type III b, and Type IV atresia respectively. In the majority of the participants (59%) a primary surgical procedure single small bowel anastomosis was performed. Some other studies also found more type I atresia (4, 44.4%; 15, 34.9%; and 10, 34.5%, respectively) [15, 16]. But another study found type II atresia being more common [10]. So, it appears that the spectrum of jejunoileal atresia types varies widely. Besides small bowel anastomosis (59%), we found ileocolic anastomosis (Single), tapering jejunoplasty and primary anastomosis, multiple anastomoses, and resection with Bishop-Koop ileostomy was performed in 19%, 11%, 7%, and 4% patients respectively. As early complications 'Clavien-Dindo ≥ III' and cholestasis were found among 26% and 37% of patients respectively which were considered more frequent. On the other hand, as a late complication, short bowel syndrome was found in 22% of patients which was noticeable. Besides these, anastomotic leakage, anastomotic stenosis, adhesive bowel obstruction, and incisional hernia were observed in 11%, 19%, 15%, and 4% of patients respectively. In some other studies, it was observed that due to extensive resection usually of gangrenous bowel or shortened bowel [10]. A similar study showed a lower rate of complications

in their patients which was about similar to ours [12]. Finally, in this intervention 4% cases of mortality were found whereas 96% were survived. However, in developing counties, the mortality is still regrettably higher because of the limitation of required neonatal anesthetists, highly trained neonatal care personnel, and neonatal intensive services [17, 18].

Limitation of the study

It was a single-centered study with a small-sized sample, So, the findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

Till now intestinal atresia (IA), as well as jejunoileal atresia, are associated with unacceptably high morbidity as well as mortality because of inadequate neonatal intensive care, late presentation, and lack of parenteral nutritional support, especially in the countries of the third world. More efforts and target concentrations are needed to intensify to address the issues of delayed presentation and improvement in neonatal care and facilities. For getting more specific findings we would like to recommend conducting similar studies with larger-sized samples in several places.

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