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Research Paper

Analysis of the causes of intestinal obstruction in children to see the impact of the results on healthy life

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ABSTRACT

Background: Intestinal obstruction is a big clinical hurdle in paediatric surgery, basically it means the normal aboral movement of intestinal contents is impaired. This issue is seen in children of all age brackets, and the causes can really shift, depending on age as well as the geographic setting.

Objective: We aimed to look at the different aetiological causes of intestinal obstruction in children and also see how the real world clinical outcomes affect patient wellbeing.

Methods: This was a prospective observational design done across several hospital centres in Iraq, from 14 January 2021 up to 7 March 2022. In total, 42 paediatric patients younger than 14 years old who came with intestinal obstruction were included. Data gathering and outcome assessment were carried out with SPSS statistical software, nothing fancy really just that.

Results: Intestinal obstruction turned out to be most common in infants, with the highest number of cases in those under one year, which matches both local and national publications. An obstructed umbilical hernia was found in just 2 patients (1.54%). After surgery, the complications were mostly infective. Surgical site infection was the complication we saw most often at 20%, then postoperative pyrexia came next at 16% together making up 36% of the post-surgical adverse events. Septicaemia was also recorded, as a kind of additional, not the usual main one, but still notable.

Conclusions: The acquired reasons for intestinal obstruction seem to come first in the Iraqi paediatric group, mostly tied to an upper gastrointestinal source. The way patients present clinically, and the overall cause pattern, line up with what has been described in earlier Iraqi studies, so it feels like a steady regional picture. After surgery, infectious complications, specifically surgical infection along with fever are the main forces behind the morbidity seen. Overall, these results point toward reinforcing

perioperative infection control procedures in paediatric surgical wards, in order to get better health outcomes.

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1. INTRODUCTION

Intestinal obstruction, which affects patients of all ages, is described as a stoppage of the forward passage of contents inside the intestinal lumen. [1], [2] Intestinal obstruction is one of the most prevalent reasons for emergency hospitalizations in children worldwide [3]. The male-to-female ratio ranges among 1.8 and 3.5:1, along with many patients arrive before the age of 5 years [3], [4], [5], [6], [7]. The Etiologies of intestinal blockage in children vary greatly, as shown in various areas of the world, geographical regions, age groups, as well as socioeconomic groups [5], [7], [8]. In investigations conducted in several American nations, Hirschsprung's disease constituted the most prevalent cause in Malawi [9], [10]. In other research, intussusception was the leading cause in India, China, and Nepal. [6], [11], [12] In children, reported death rates vary from 3% up to 11.2% [3], [7], [10], with morbidity ranging from 4% to 60%. [7], [12] Surgical site infection (SSI), sepsis, fascial dehiscence, stoma-related problems, and interaction fistula are all prevalent morbidities [7], [13]. There is a substantial burden of unmet surgical demand in low- and middle-income nations, but especially regarding the paediatric population. [14], [15], [16], [17] In Africa, there is just one general surgeon for every million people and 0.26 children's surgeons for every million. [5], [18], [19] There are a total of 0.53 paediatric surgeons per 100,000 people in East Africa, and most of them live in cities. [20] These variables may all play a role in the late presentation and subsequent bad outcomes. This paper aims to analysis of the causes of intestinal obstruction in children to see the impact of the results on healthy life.

2. METHODOLOGY

This study was detected on analysis of the causes of intestinal obstruction in children to see the impact of the results on healthy life conducted in different hospitals in Iraq from 14th January 2021 to 7th March 2022 with 42 cases for intestinal obstruction of children patients who under 14 years. The methodology outcomes were designed and analysed by the SPSS program. In progressing of methodology conducting, this study has implemented examinations of children patients who are under 14 years into both sex, males and females, which can be clarified in Table 1 and Table 2. To follow that, outcomes defined the symptoms of children patients that include abdominal pain, vomiting, constipation, abdominal distension, fever, passage of mucoid bloody stool, and diarrhea, where the outcomes can be determined in Table 1, Figure 1. Clinical Features were determined as causes of intestinal obstruction for children's patients which have on duodenal atresia, malrotation, Hirschsprung's disease, imperforate anus, inguinoscrotal hernia, intussusception, adhesive bowel obstruction, and umbilical Hernia which these parameters found in Table 3. This study was defined operations used of intestinal obstruction for children's patients, which are colostomy, Duodeno-duodenostomy, Entero-enterostomy, herniotomy, Bowel resection and anastomosis, Reduction of Intussusception, Laddís Operation, and Pull-through operation where these outcomes can be

seen in Figure 2. To further of results, post-operative complications were indicated into Surgical infection, Pelvic abscess, Adhesive bowel obstruction, Postoperative fever, Anal stenosis, Prolapsed Colostomy, Septicaemia, and Fecal fistula which the outcomes can be summarized in Table 4.

3. RESULTS AND DISCUSSION

Table 1. Distribution of Intestinal Obstruction for Children Patients Based on Age

N	**V**	**42**
	Mi	0
M		7.5000
Me		7.5000
Mo		1.00[a]
SD		4.07999
Var		16.646
Sk		.000
SEOS		.365
Min		1.00
Max		14.00
S		315.00

Table 2. Distribution of Intestinal Obstruction for Children Patients Based on Sex

		F, 42	**P (%)**	**VP (%)**	**CP (%)**
Va	Females	19	45.2	45.2	45.2
	Males	23	54.8	54.8	100.0
	T	42	100.0	100.0	

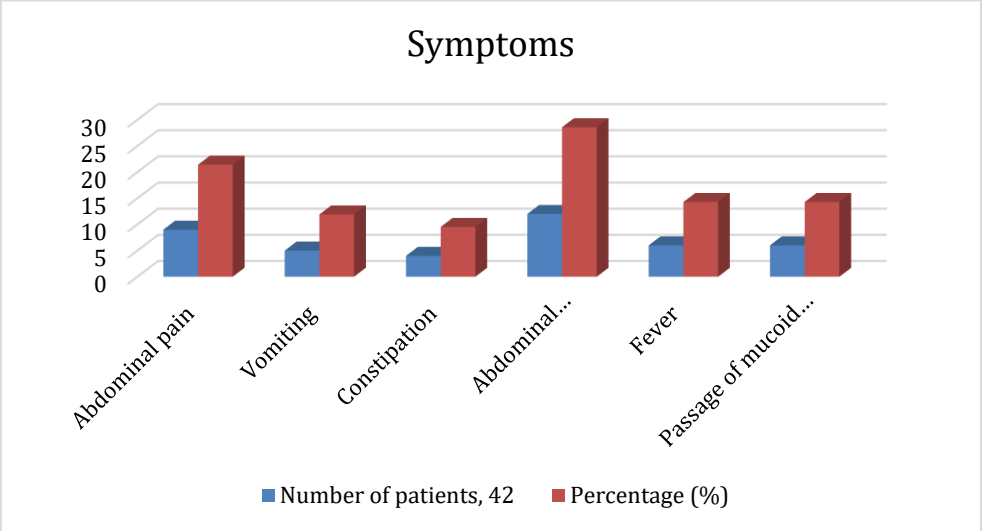

Figure 1. Clinical Features of Symptoms with Intestinal Obstruction for Children's Patients

Table 3. Determinations of the Causes of Intestinal Obstruction for Children's Patients

Causes	**Number of Patients, 42**	**Percentage, %**
Duodenal atresia	4	8%
Malrotation	9	18%
Hirschsprung's disease	11	22%
Worm impaction	3	6%
Inguinoscrotal hernia	5	10%

Adhesive bowel obstruction	8	16%
Intussusception	4	8%
Umbilical Hernia	6	12%

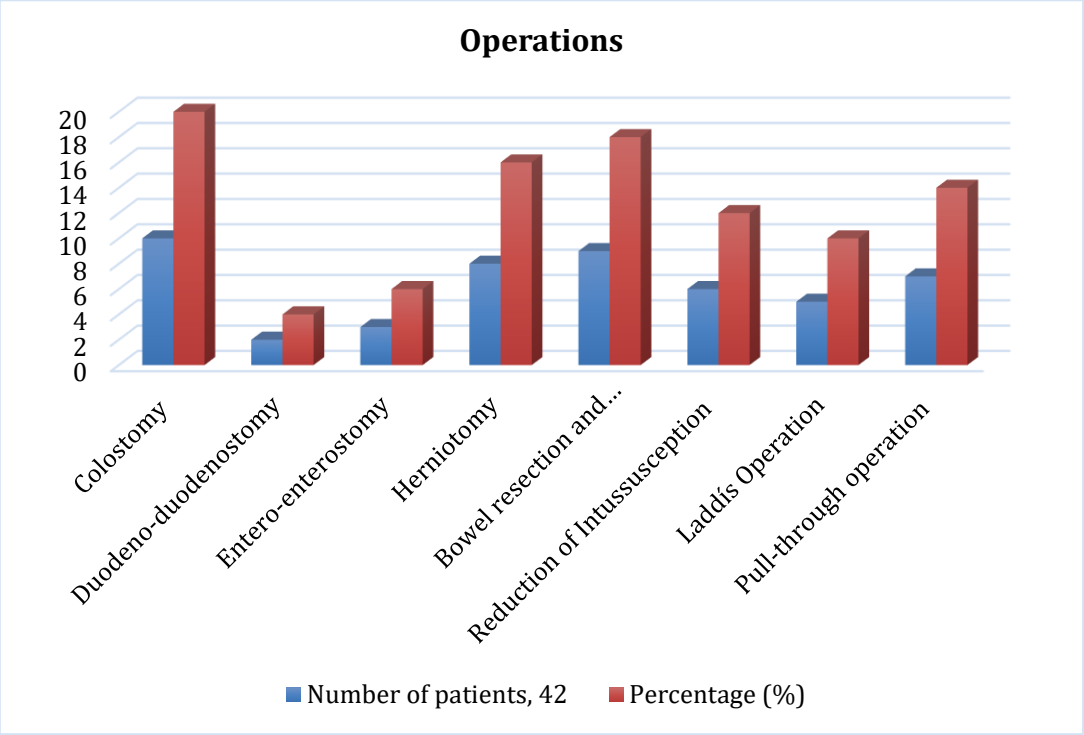

Figure 2. Operations Used of Intestinal Obstruction for Children's Patients

Table 4. Clinical Outcomes of Identifying the Complications after Surgery

Complications	Number of Patients, 42	Percentage, %
Surgical infection	10	20%
Pelvic abscess	7	14%
Adhesive bowel obstruction	1	2%
Postoperative fever	8	16%
Anal stenosis	2	4%
Prolapsed Colostomy	4	8%
Septicaemia	1	2%
Fecal fistula	2	4%

3.1. Discussion

Intestinal obstruction is a prevalent issue in the field of paediatric surgery, affecting children of various age groups. Its manifestation in children can be sudden or ongoing. Previous studies have reported the highest incidence of intestinal obstruction to be under the age of one to two years old; however, our findings indicate that it is predominantly observed in children under the age of 14, with peak occurrence in infancy, consistent with similar reports documented in other regions of the country [21]. Due to that, our outcomes noticed that the males (23) were 54.8%. Had suffered of intestinal obstruction more than females (19) at 45.2%. Moreover, all but a single neonate within the current series exhibited congenital causes of intestinal obstruction, with the sole acquired condition being intussusception. The occurrence of perinatal intussusception is infrequent and uncommon as a cause of intestinal obstruction in children [22]. To further of outcomes, this paper conducted on Italian studies has revealed that the inguinoscrotal hernias were predominantly obstructed external hernias, which indicates that obstructed umbilical hernias were more prevalent than groin hernias. In contrast, our study found that causes were have a high impact on intestinal

obstruction for children's patients, which are Malrotation (9)18%, Hirschsprung's disease (11%) 22%, and Adhesive bowel obstruction (8)16%. Prior research findings have indicated that an augmentation in the quantity of worms present in a child's body can elevate the likelihood of intestinal obstruction resulting from worm impaction. It has been recommended that this risk can be mitigated by means of repeated and extensive treatment, enhanced sanitation practices, and increased health education. These factors are likely to account for the relatively low incidence of worm impaction causing intestinal obstruction in our report, as compared to previous ones [23]. In compare with the last studies result, our study found that the elevated incidence of adhesive bowel obstruction has been attributed to past peritonitis stemming from perforated typhoid ileitis. In this study, a greater frequency of postoperative complications related to sepsis was observed. Predominantly, surgical infection was the most prevalent with (20%), followed by Postoperative fever (16%) as the other common occurrences.

4. CONCLUSION

The study found that most impacted of intestinal obstructions are more common and that these acquired causes are mostly upper gastrointestinal in origin. In comparing with the last studies, the pattern and clinical presentation of intestinal obstruction are similar across Iraq. The negative outcomes of complications refer that Surgical infection (20%) and Postoperative fever (16%) got the high impact on children that occur with 36 % of patients after the operation was conducted.

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Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Dr. Waleed Khalid Ahmed Al-Jumaili	✓	✓	✓	✓		✓		✓	✓	✓	✓			
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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

Not Applicable.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

[1] P. G. Jackson and M. T. Raiji, 'Evaluation and management of intestinal obstruction', Am Fam Physician, vol. 83, pp. 159-165, 2011.

[2] C. A. Hajivassiliou, 'Intestinal obstruction in neonatal/pediatric surgery', Semin. Pediatr. Surg., vol. 12, no. 4, pp. 241-253, Nov. 2003. doi.org/10.1053/j.sempedsurg.2003.08.005

[3] P. B. Ooko, P. Wambua, M. Oloo, A. Odera, H. M. Topazian, and R. White, 'The spectrum of paediatric intestinal obstruction in Kenya', Pan Afr. Med. J., vol. 24, p. 43, May 2016. doi.org/10.11604/pamj.2016.24.43.6256

[4] P. Kumar, 'Assesment of intestinal obstruction in children', Int J Med Heal Res, vol. 3, pp. 160-162, 2017.

[5] Tripp MK. Hhs public access. Physiol Behav 2017; 176:139-48.

[6] C. H. Houben, K. K. Pang, and W. C. Mou, 'Epidemiology of small-bowel obstruction beyond the neonatal period', Ann Pediatr Surg, vol. 12, pp. 90-93, 2016. doi.org/10.1097/01.XPS.0000481055.24776.db

[7] O. O. Ogundoyin, A. O. Afolabi, and D. I. Ogunlana, 'Pattern and outcome of childhood intestinal obstruction at a tertiary hospital in Nigeria', Afr Health Sci, vol. 9, pp. 170-173, 2009.

[8] Almetaher HA. Case series of unusual causes of intestinal obstruction in infants and children. Ann Pediatr Surg 2016; 12:50-8. doi.org/10.1097/01.XPS.0000482112.06959.cb

[9] A. M. Nakanwagi, S. C. Kijjambu, and P. O. Rip, 'Critical care and emergency medicine aetiology and presentation of intestinal obstruction among patients presenting to a tertiary hospital in Uganda', Clin Med, vol. 2, pp. 4-7, 2016. doi.org/10.23937/2474-3674/1510018

[10] A. Gyedu, A. Yifieyeh, and B. Nimako, 'Intestinal obstruction in older children in Komfo Anokye Teaching Hospital: a tertiary referral centre in', Ann Pediatr Surg, vol. 11, pp. 7-12, 2010. doi.org/10.1097/01.XPS.0000455090.05043.54

[11] S. Adhikari, M. Z. Hossein, and A. Das, 'Etiology and outcome of acute intestinal obstruction: a review of 367 patients in eastern India', Saudi J Gastroenterol, vol. 16, pp. 285-287, 2010. doi.org/10.4103/1319-3767.70617

[12] N. K. Hazra, O. B. Karki, and H. Batajoo, 'Acute Intestinal Obstruction in Children: Experience in a Tertiary Care Acute Intestinal Obstruction in Children: Experience in a Tertiary Care Hospital', American Journal of Public Health Research, vol. 3, pp. 53-56, 2015.

[13] K. A. Shiekh, A. A. Baba, and S. M. Ahmad, 'Mechanical small bowel obstruction in children at a tertiary care centre in Kashmir', African J Pediatr Surg, vol. 7, pp. 81-86, 2010. doi.org/10.4103/0189-6725.62852

[14] K. G. Bowman, G. Jovic, and S. Rangel, 'Pediatric emergency and essential surgical care in Zambian hospitals: a nationwide study', J Pediatr Surg, vol. 48, pp. 1363-1370, 2013.

[15] K. Butler, T. M. Tran, and A. T. Fuller, 'Quantifying the pediatric surgical need in Uganda: results of a nationwide cross-sectional, household survey', Pediatr Surg Int, vol. 32, pp. 1075-1085, 2016. doi.org/10.1007/s00383-016-3957-3

[16] S. Roder-Dewan, N. Gupta, and D. M. Kagabo, 'Four delays of child mortality in Rwanda: a mixed methods analysis of verbal social autopsies', BMJ Open, vol. 9, 2019. doi.org/10.1136/bmjopen-2018-027435

[17] E. Abahuje, I. Uyisabye, and R. Ssebuufu, 'Epidemiology of pediatric surgery in Rwanda: A one-year review Original Article Epidemiology of Pediatric Surgery in Rwanda: A one year review', Rwanda Med J, vol. 2016, pp. 11-16, 2017.

[18] G. Collaborative, 'Determinants of morbidity and mortality following emergency abdominal surgery in children in low-income and middle-income countries', BMJ Glob Health, vol. 1, 2016. doi.org/10.1136/bmjgh-2016-000091
[19] A. Toobaie, S. Emil, and D. Ozgediz, 'Pediatric surgical capacity in Africa: current status and future needs', J Pediatr Surg, vol. 52, pp. 843-848, 2017. doi.org/10.1016/j.jpedsurg.2017.01.033
[20] Derbew M. Pediatric surgery in eastern Africa: the unmet need. J Pediatr Surg 2019; 54:21-6. 10.1016/j.jpedsurg.2018. doi.org/10.1016/j.jpedsurg.2018.10.028
[21] E. Villamizar, M. Mendez, E. Bonilla, H. Varon, and S. De Onatra, 'Ascaris lumbricoides Infestation as a Cause of Intestinal Obstruction in Children: Experience with 87 Cases', J Pediatr Surg, vol. 31, pp. 201-205, 1996. doi.org/10.1016/S0022-3468(96)90348-6
[22] A. Adesunkanmi and E. A. Agbakwuru, 'Changing pattern of acute intestinal obstruction in Tropical African Population', East Afr Med J, vol. 73, pp. 727-734, 1996.
[23] E. A. Agbakwuru, O. Akinola, O. Adejuyigbe, and E. O. Komolafe, 'Intestinal Obstruction in a Child with an exceptional Ascaris burden - A Case Report', Nig Qt J Hosp Med, vol. 8, pp. 270-271, 1998. doi.org/10.4314/nqjhm.v8i4.12631

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