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CLINICAL STUDY AND MANAGEMENT OF INTESTINAL OBSTRUCTION IN NEONATES

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ABSTRACT

Background: Intestinal obstruction is a common surgical emergency in neonates. There is a regional variation in the etiology of this condition. This study was conducted to determine the aetiology, clinical presentation of intestinal obstruction in neonates, and outcome of surgical management.

Methods: This prospective descriptive study was conducted in department of surgery at a tertiary care teaching hospital at Solapur, Maharashtra, India from september 2015 to December 2017. All the patients, irrespective of sex with diagnosis of intestinal obstruction undergoing surgical intervention were included in the study. Surgical findings were recorded and in the postoperative period patients were followed up for detection of complications and their treatment.

Results: 30 patients were treated for intestinal obstruction with male to female ratio of 1.7:1. Majority of them (66.6%) presented within 48 hours after birth. Abdominal distension and vomiting were the prominent symptoms of presentation. Wound infection was the commonest postoperative complication.

Conclusions: imperforated anus was the most frequent cause of intestinal obstruction in our patients followed by intestinal atresia. Septicaemia was the commonest cause of death in post-operative period. Associated congenital anomalies increased the morbidity and mortality.

Keywords: Intestinal obstruction, Infants, Aetiology, Outcome

INTRODUCTION

Intestinal obstruction is the commonest surgical emergency encountered in newborns. Newborn up to 28 days is referred as neonate.[1] the new-born is both physically and physiologically distinct from the adult patient in several respects. The smaller size, immature organ systems, and differing volume capacities present unique challenges towards perioperative management.

In developing country like India, toady also expert pediatric surgical facilities are not available in every tertiary care centers and pediatric surgical cases are operated by general surgeons. The management of these cases remains challenging and outcome is not so good as compared with the results from the developed countries. Present study was conducted to determine the aetiological spectrum, clinical presentation, and outcome of surgical treatment of intestinal obstruction in infants in our setup.

METHODS

After obtaining the institutional ethics committee approval, present prospective descriptive study was carried out in department of surgery at a tertiary care teaching hospital at Solapur, Maharashtra, India.

Ours is a rural tertiary care center surrounded by many villages. We don't have separate paediatric surgical unit in our set up but have neonatal and paediatric intensive care units. Present study was carried out for a period of (september 2015 to December 2017) on 30 patients.

Inclusion criteria

All the patients up to the age of 28 days, regardless of gender, presented with intestinal obstruction and undergone surgical interventions were included.

Exclusion criteria

- Patients more than 28 days of age and patients with paralytic ileus
- Patients presenting with adhesive intestinal obstruction after index surgery
- Inoperable patients or when the parents/guardian refused surgical treatment.

On admission detailed history and thorough clinical examination was performed as per proforma. The data regarding age, sex, hospital/home delivery, vaginal / caesarean delivery, preterm /Full term, weight of baby after birth, duration of symptoms, associated congenital anomalies, socioeconomic status of parents, were documented. Preterm means less than 37 completed weeks of gestation and full term means between 37 and 42 completed weeks of gestation. Newborns having birth weight less than 2.5 kg were considered as low birth weight babies. After admission, initially all patients were put on intravenous fluids, antibiotics and nasogastric decompression was done. After correction of dehydration and electrolyte imbalance necessary laboratory and radiological investigations were carried out. Laboratory investigations included complete blood count, serum creatinine, serum electrolytes, etc. Radiological investigations included abdominal X-ray, ultrasound and contrast studies in some cases.

The diagnosis of intestinal obstruction was made on the basis of detailed history, clinical findings, and radiological investigations. Blood grouping and cross matching was done before surgery because even a small amount of blood loss may require blood transfusion in newborns. Necessary surgical intervention was performed after adequate resuscitation and after taking due informed written consent of the parents or legal guardian.

Depending upon the diagnosis and condition of patient appropriate surgical procedure was performed. Operative details like cause of obstruction, site of obstruction and operative procedure performed were recorded. In this study, we considered only initial surgical procedure in case of staged operations. Whenever required, specimen was sent for histopathological examination for definitive diagnosis. Postoperatively, patients were

shifted to either neonatal intensive care unit for continuous monitoring. Patients were examined daily for detection of early postoperative complications if any.

After discharge they were followed up for first 6 months for detection of late complications. The data collected were entered into MS-Excel sheets and analysis was carried out using statistical package for social sciences (SPSS-version 16). On the basis of analysis and observation, results were drawn and discussed and compared with other relevant literatures.

RESULTS

During the study period, total 30 patients admitted in surgical ward with the diagnosis of intestinal obstruction and underwent surgical intervention.

Table No. 1 :Age-wise distribution of cases

Sr. No.	Diagnosis	<7 days	7-14 days	14 to 21 days	21-28 days	Total
1.	Imperforate anus	11	0	1	1	13
2.	Malrotation of gut	1	0	2	0	3
3.	Ileal atresia	4	1	0	0	5
4.	Hirschsprung's disease	0	1	0	1	2
5.	Colonic atresia	1	0	0	0	1
6.	Duodenal atresia	1	1	0	0	2
7.	Meconium ileus	1	0	0	0	1
8.	Congenital hypertrophic pyloric stenosis (CHPS)	0	0	0	2	2
9.	Jejunal atresia	1	0	0	0	1
Total		**20**	**3**	**3**	**4**	**30**

(Source :Primary Data)

Majority of patients (66.6%) presented within 7days after birth.

Table No. 2: Sex-wise distribution of cases of Intestinal obstruction

Sr. No	Sex	Number of cases	Percentage	Male : Female ratio
1	Male	19	63.33%	1.7:1
2	Female	11	36.66%	
Total		**30**	**100%**	

(Source :Primary Data)

Out of 30 cases studied, 19 were male and 11 were females. Thus males outnumbered the females with male to female ratio of 1.7:1.

Table No. 3: Distribution according to aetiology of Intestinal obstruction

Sr. No.	Cause of Intestinal Obstruction	Number of patients	Percentage
1.	Imperforate anus	13	43.33%
2.	Ileal atresia	5	16.66%
3.	Malrotation of gut	3	10%
4.	Hirschsprung's disease	2	6.66%
5.	Duodenal atresia	2	6.66%
6.	Congenital hypertrophic pyloric stenosis (CHPS)	2	6.66%
7.	Colonic atresia	1	3.33%
8.	Meconium ileus	1	3.33%
9.	Jejunal atresia	1	3.33%
	Total	**30**	**100%**

(Source :Primary Data)

Imperforate anus (43.33%) was the commonest cause of intestinal obstruction followed by ileal atresia (16.66%) in our study.

Abdominal distension (86.66%) and vomiting (76.66%) were the predominant symptoms of presentation in our patients.

Surgical site infection was the commonest post-operative complication noted in our study. It was closely followed by septicaemia.

Table No. 4: Clinical presentation of neonates with Intestinal obstruction

Sr. No.	Clinical features	Number of patients	Percentage
1.	Abdominal distension	26	86.66%
2.	Vomiting	23	76.66%
3.	Failure to pass meconium	20	66.66%
4.	Constipation	4	13.33%
5.	Visible loops of intestine	02	6.66%
6.	Jaundice	05	16.66%

(Source: Primary Data)

Table No. 5: Surgical Management

Sr. No.	Cause of Intestinal obstruction		Number of patients	Procedure Done
1.	Imperforate anus	High variety	8	Transverse loop colostomy+ PSARP/ASARP + Colostomy closure
		Low variety	5	Cut back anoplasty
2.	Malrotation		2	Ladd's procedure
	Malrotation with midgut(Ileal) volvulus		1	Ladd's procedure with resection of gangrenous ileum and ileo-ileal anastomosis
3.	Ileal atresia		4	Ileo-ileal anastomosis
	Ileal atresia with jejunal perforation		1	Jejuno-ileal anastomosis

4.	Hirschsprung's disease	2	Transverse loop colostomy + Swenson's procedure.
5.	Colonic atresia	1	Colocolic anastomosis
6.	Duodenal atresia	2	Duodeno-duodenostomy
7.	Meconium ileus	1	Laparotomy with enterotomy and irrigation with mucomist
8.	CHPS	2	Ramstedt'spyloromyotomy

(Source: Primary Data)

Table No. 6: PostOperativeComplications

Sr. No	**Post-operative complications**	**Number of patients**	**Percentage**
1.	Suture line infection	6	20%
2.	Septicaemia	4	10%
3.	Incisional hernia	2	6.66%
4.	Anastomotic leak	2	6.66%
5.	Pneumonia	1	3.33%
6.	Excoriation of skin surrounding stoma	1	3.33%
7.	Colostomy prolapsed	1	3.33%
8.	Anal stenosis	1	3.33%
9.	Wound dehiscence/Burst abdomen	1	3.33%

(Source: Primary Data)

Table No. 7: Associated Congenital Anomalies in Neonates with Intestinal Obstruction

Sr. no.	Cause of intestinal obstruction	Number of cases	Type of associated congenital anomaly
1.	Imperforate anus	1	Tracheo-esophageal fistula with CTEV(Congenital TalipesEquinusVarus Deformity)
		1	Down's syndrome
		1	VUR (Vesico-ureteric reflux)
2.	Malrotation	1	Right PUJ (Pelvi-ureteric junction obstruction)
		1	Congenital hydrocele
3.	Colonic Atresia	1	Ectopic right Kidney
4.	Jejunal Web	1	Cyanotic heart disease

(Source: Primary Data)

Table No. 8: OverallMortality and Survival

Sr. No.	Overall outcome of patient	Number of patients	Percentage
1.	Survived	25	83.33%
2.	Died	5	16.67%
Total		**30**	**100%**

(Source: Primary Data)

Overall mortality in our study was 16.67% and survival rate is 83.33%.

Figure 1: Ramstedt's pyloromyotomy in case of IHPS (Source :Primary Data)

Figure 2: Plain abdominal radiograph showing “double bubble” sign suggesting duodenal atresia (Source :Primary Data)

Figure 3: imperforate anus.

(Source :Primary Data)

Figure 4: Sigmoid loop colostomy

(Source :Primary Data)

DISCUSSION

Intestinal obstruction is the common surgical emergency in neonates and its management remains challenging. No age is immune for intestinal obstruction. Most of the patients(66.6%) in our study were presented within 7 days after birth. 10% patients presented between7 to 14 months and 10% patients presented between 14 to 21 days and 13% patients presented between 21 to 28 days .

Males outnumbered the females in this study with male to female ratio of 1.7:1. Similar observations indicating male predominance were reported by other studies.[2,3] These findings are in contrast with the studies conducted by Shakya VC et al, Burjonrappa S et al, Ekwunife OH et al where females were more than males.[4-6]

Imperforate anus was the commonest cause of intestinal obstruction in our study. Small bowel atresia was the second most common cause of intestinal obstruction.[7,8] The pattern of the etiology of intestinal obstruction in this study agrees with previously reported various national and international studies.[9-13]

The most common clinical symptoms at the time of hospitalization in our patients were abdominal distension (86.66%) and vomiting (76.66%). These findings are almost consistent with the other studies.[2,12,14] As a rule, bilious vomiting in a newborn should be considered due to intestinal obstruction unless proved otherwise.[14-16] Wound infection was the commonest post-operative complication noted in our study. Similar observation was also reported by other studies.[12,17]

The overall mortality rate in our study was 16.67%. This figure is comparable with the studies reported by Adeyemi D et al and Nasir GA et al.[18,19] The presence of other associated congenital anomalies increased mortality rate in these patients. In our study, maximum mortality was observed in neonates especially in cases of intestinal atresia. Study conducted by Chirdan LB et al at Jos University teaching hospital, Jos, Nigeria reported high mortality in cases of intestinal atresia.[20] In intestinal atresia, mortality was highest in cases of duodenal atresia in our study. Similar findings are reported in the studies conducted by Vecchia LKD et al.[21] The mortality rates in India and developing countries tend to be very high because the infants are usually underweight and brought late to hospital as compared to the western world.[22,23]

CONCLUSION

Imperforate anus (Anorectal malformation) is the leading cause of intestinal obstruction in our study. Delayed presentation, prematurity, low birth weight and associated congenital anomalies increased morbidity and mortality in these patients. Post-operative management and nursing care is as important as operative skill for eventual recovery of these patients. Early diagnosis and treatment, availability of neonatal intensive care units, leads to better outcome.

REFERENCES

1. Stringer MD. Principles of paediatric surgery. In: Williams NS, Bulstrode CJK, O'Connell PR, eds. Bailey and Love's Short practice of Surgery. 25th ed. London, Hodder Arnold; 2008:71-89.
2. Osifo OD, Okolo JC. Neonatal intestinal obstruction in Benin, Nigeria. Afr J Paediatr

Surg. 2009;6:98-101.

3. Soomro BA, Kella N, Memon GA, Siddiqui MA. Pattern of intestinal obstruction in infants and children. Pak J Med Sci. 2011;27(5):1009-13.
4. Shakya VC, Agrawal CS, Shrestha P, Poudel P, Khaniya S, Adhikary S. Management of jejunoileal atresias: An experience at eastern Nepal. BMC Surg. 2010;10:35.
5. Burjonrappa S, Crete E, Bouchard S. Comparative outcomes in intestinal atresia: a clinical outcome and pathophysiology analysis. Pediatr Surg Int. 2011;27:437-42.
6. Ekwunife OH, Oguejiofor IC, Modekwe VI, Osuigwe AN. Jejuno-ileal atresia: a 2 year preliminary study on presentation and outcome. Niger J Clin Pract. 2012;15:354-7.
7. Seth A, Chanchlani R, Rakhonde AK. Neonatal gastrointestinal emergencies in a tertiary care center in Bhopal, India: A prospective study. IJSS Journal of Surgery. 2015;1(5):1-4.
8. Jain SP, Agarwal GP. Acute intestinal obstruction in infants and children. Indian Journal of Paediatrics. 1964;31(201):300-5.
9. Saha AK, Ali MB, Biswas SK, Sharif HMZ, Azim
   A. Neonatal intestinal obstruction: patterns, problems and outcome. Bang Med J. 2012;45:6-10.
10. Ademuyiwa AO, Sowande OA, Ijaduola TK, Adejuyigbe O. Determinants of mortality in neonatal intestinal obstruction in Ile Ifa, Nigeria. Afr J Ped Surg. 2009;6:11-3.
11. Hanif A, Hasina K, Islam MK, Matin MA, Talukder SA. Neonatal intestinal obstruction: six years' experience in DMCH, Bangladesh, BJMS. 2009;15(1):42-5.
12. Ogundoyin OO, Afolabi AO, Ogunlana DI, LawalTA, Yifieyeh AC. Pattern and outcome of childhood intestinal obstruction at a tertiary hosipital in Nigeria. African Health Sciences. 2009;9(3):170-3.
13. Homa B, Ahmadipour SH, Mohamadimoghadam J, Mohsenzadeh A. The Study of new-borns with congenital gastrointestinal tract obstruction. JKIMSU. 2014;3(2):101-6.

14. Vinocur DN, Lee EY, Eisenberg RL. Neonatal intestinal obstruction. AJR. 2012;198(1):1-10.
15. Kimura K, Baucke VL. Bilious vomiting in the newborn: rapid diagnosis of intestinal obstruction. Am Fam Physician. 2000;61(9):2791-8.
16. Tuschka O, Hyde D. Intestinal obstruction in the newborn. Calif Med. 1956;84(4):237-41.
17. Momani HA, Saleem MM, Ghandoor K, Khalaf MA. Intestinal obstruction in children. JMJ. 2005;39(2):113-6.
18. Adeyemi D. Neonatal intestinal obstruction in a developing tropical country: patterns, problems, and prognosis. J Trop Pediatr. 1989;35(2):66-70.
19. Nasir GA, Rahma S, Kadim AH: Neonatal intestinal obstruction in Benin, Nigeria. AJPS. 2009;6(2):98-101.
20. Chirdan LB, Uba AF, Pam SD. Intestinal atresia: management problems in a developing country. Pediatr Surg Int. 2004;20(11-12):834-7.
21. Vecchia LKD, Grosfeld JL, West KW, Rescorla FJ, Scherer LR, Engum SA. Intestinal atresia and stenosis: a 25 years' experience with 277 cases. Arch Surg. 1998;133(5):490-6.
22. Nasir GA, Rahma S, Kadim AH. Neonatal intestinal obstruction. East Mediterr Health J. 2000; 6:187-93.
23. Ameh EA, Chirdan LB. Neonatal intestinal obstruction in Zaria, Nigeria. East Afr Med J. 2000;77(9):510-3.