ORIGINAL ARTICLE

Adhesive Small Bowel Obstruction (ASBO) in Children – Role of Conservative Management

K Vijay, MCh, C Anindya, MCh, P Bhanu, MS, M Mohan, MS, P L N G Rao, MCh

Department of Paediatric Surgery, Kasturba Medical College and Hospital, Manipal – 576 104, Karnataka, INDIA

Summary

Adhesive small bowel obstruction (ASBO) is an annoying postoperative complication. Though the diagnosis can be made easily, the role of conservative management in children is controversial. Hence a study was conducted to determine the role of conservative management, and to identify the factors that can predict / influence the outcome of conservative treatment in children with ASBO. Children admitted with ASBO from 1980 to 2002 (22 year period) formed the material for this study. The data was analyzed with respect to the influence of age at the time of presentation, primary disease for which original laparotomy was done, time interval between the primary surgery and the development of ASBO and the number of laparotomies prior to the development of ASBO on the outcome of conservative management. There were 74 episodes of ASBO in 69 children (Five children had two episodes). Out of 74 episodes, 5 episodes (6.75%) needed immediate laparotomy for suspected gangrene. All others were managed conservatively. Of the 69 episodes managed conservatively, 36 responded to conservative treatment (2-5 days) while 33 required subsequent surgical intervention, with 11 of them requiring bowel resection (two for gangrene and 9 for bowel damage during adhesiolysis) and in the rest 22 cases adhesiolysis.

A substantial number of children with ASBO respond well to conservative treatment. Majority of the children developed ASBO within three months after the primary laparotomy. Children below the age of one year (at the time of presentation with ASBO) responded poorly to the conservative management. Children who had primary surgery for Hirschsprung's disease and intussusception also appeared to have responded poorly to conservative management, but statistically not significant. Time interval between the primary surgery and the number of laparotomies before the child developed ASBO did not influence the outcome of conservative management.

Key Words: Post operative adhesions, Adhesive small bowel obstruction

Introduction

Postoperative adhesions are a common cause of small bowel obstruction and rank seventh in the etiology of small bowel obstruction in children [1]. Occurrence of ASBO is unpredictable, can occur days to months or even years after the primary laparotomy. The etiology of adhesions is not clearly known and its prevention is a source of continued controversy. Though the diagnosis can be made easily, its treatment in children is controversial. While some studies indicated that there is no role for conservative management[1,2,3] others claimed varying degree of success[4,5]. Hence a retrospective study was undertaken to assess the role of conservative management and analyze the factors related to its success.

Materials and Methods

The case records of 69 children below the age of 12 years treated for ASBO from October 1980 to May 2002

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Corresponding Author: Vijaya Kumar, Department of Pediataric Surgery, Kasturba Medical College and Hospital, Manipal – 576 104 Karnataka, India

in our department were analyzed. All of them had intraperitoneal surgical procedures prior to this. At the time of admission, a detailed history was obtained and thorough clinical examination was carried out. Children suspected of having intestinal gangrene were taken up for surgery immediately and all other patients were treated conservatively with nasogastric decompression,

a) intravenous fluids
b) antibiotics and
c) correction of electrolyte imbalance.

Patients who did not respond to the conservative treatment were explored. The following were the indicators of failure of conservative treatment worsening in the quality and quantity of nasogastric aspirate (increased amount of aspirate and feculent aspirate)

a) development of localizing abdominal signs
b) tachycardia
c) fever
d) deterioration in general condition and
e) increase in number of air fluid levels on a repeat plain x - ray abdomen.

The outcome of initial conservative treatment was assessed with respect to

a) age at initial laparotomy
b) the primary condition necessitating abdominal surgery
c) duration between the recent laparotomy and development of ASBO
d) effect of number of previous laparotomies.

Results

There were a total of 74 episodes of ASBO in 69 children (single episode in 64 children and two episodes each in five children). Five patients (6.75%) needed immediate surgery for suspected intestinal gangrene, which was confirmed at surgery. Of the 69 episodes treated conservatively, 36 (52.17%) recovered while 33 (47.83%) needed surgical intervention. Relation between the age of the patients and the outcome to the management is shown in Table I. It is of interest to note that the highest number of patients (37.68%) were below the age of one year and they are less responsive to the conservative treatment when compared to the older children. The relation between the primary surgical condition and the response to the treatment is depicted in Table II. It is noteworthy that children who developed ASBO following surgery for Hirschsprung`s disease and intussusception responded poorly to conservative treatment when compared to others. ASBO following surgery for Hirschsprung's disease was poor (26.9% when compared to 67.44% as a whole). Regarding the time interval between laparotomy and development of ASBO, it was noted that majority of children (63.77%) developed ASBO within 3 months of the laparotomy and only about 16% developed ASBO after about one and half years. However, the time interval between laparotomy and development of ASBO did not influence the outcome of conservative management (Table III). When we analyzed the data regarding the number of laparotomies and its influence on the outcome, it was noted that 80% of the children had one laparotomy before they developed ASBO and 20% had more than one. Just like the time interval, the number of laparotomies did not influence the outcome of conservative management (Table IV).

Table I: Age at presentation and response to conservative treatment

AGE (years)	No of patients	Successful	Unsuccessful value	Chi-square	P-value
0-1	26	7	19	5.54	<0.02
1-5	19	14	5	4.26	<0.05
5-10	13	8	5	0.69	NS
10-13	11	7	4	0.82	NS
TOTAL	69	36	35	0.14	NS

NS – Not Significant

Table II: Primary disease and the response to conservative treatment

Sl No	Condition	No of cases	Conservative	Surgical	Chi-square value	P-value
1	Hirschsprung's Disease	13	5	8	0.69	NS
2	Intussusception	10	4	6	0.4	NS
3*	Appendicitis	7	3	4		
4*	Malrotation	6	4	2		
5*	Meckel's Diverticulum	5	4	1		
6*	Anorectal Malformation	5	2	3		
7*	Atresia	5	3	2		
8*	Wilms' tumor	2	1	1		
9*	Eventeration of Diaphragm	2	1	1		
10*	Ischaemic Enteritis	3	2	1		
11	Miscellaneous	11	7	4	0.82	NS

NS – Not significant, * Sample is considered too small for analysis

Table III: Time interval between surgery and development of ASBO and the response to conservative treatment

Time (months)	No of Patients	Successful	Unsuccessful	Chi-square value	P-value
3	44	23	21	0.091	NS
4-18	14	7	7	--	--
>18	11	6	5	0.091	NS

NS – Not significant

Table IV: Number of previous laparotomies and the response to conservative treatment

No of Previous Laparotomiesvalue	No of Patients	Success Conservatively	Unsuccessful	Chi-square	P-value
1	55	30	25	0.455	NS
2	14	6	8	0.286	NS

NS – Not significant

Discussion

Adhesions are common cause of small intestinal obstruction in children and accounts for about 3-29% of all obstructions and ranks seventh in the list of causes for intestinal obstruction in children [1,3,7]. Though the clinical diagnosis is usually easy and not controversial, there is considerable controversy regarding the management. Janik et.al[1] advocated an aggressive surgical treatment as it could be difficult to differentiate confidently the simple obstruction progressing into strangulated one. On the other hand Akgur et.al[5] and Chie et. al[6] observed that the conservative treatment is successful in selective patients. In our own experience, 52.2% of episodes recovered to conservative treatment and we could avoid surgery in them. Of late Hok et. al[8] and Gowen[9] reported success rates as high as 74% and 90% in ASBO with conservative management using Gastrografin meal, and long tube decompression of the bowel respectively. However, both these studies were done in adult patients. Children on conservative management need to be monitored closely for the indicators of failure of conservative treatment.

Among the 33 episodes of failed conservative treatment 11 required resection and anastomosis of the intestine; two for established gangrene and 9 for unrepairable bowel injury during adhesiolysis. In the remaining 22 instances only adhesiolysis was sufficient.

Data analysis of age at presentation and response to treatment is of interest. Children who were of less than one year age at the time of presentation with ASBO responded poorly to conservative treatment when compared to the older children. ($P < 0.02$, Table –I). It is also of interest to note that the children who had primary surgery for Hirschsprung's disease and intussusception and later developed ASBO also responded poorly to the conservative treatment when compared to the others. This could be due to the fact that in Hirschsprung's disease one needs to carry out extensive dissection for pull through procedures, which can lead to an increased incidence of fibrotic adhesions. Similarly in intussusceptions the intussuscepted area may lose its normal texture, resulting in a raw area that may predispose to the adhesions. However, the results are statistically not significant (Table II). Even though ASBO can occur anytime from the early post operative period to years following surgery, in our series majority of cases (63.77%) presented within 3 months of the laparotomy (63.77%). However, the time interval between laparotomy and development of ASBO and the number of laparotomies (prior to the development of ASBO) did not influence the outcome of conservative management (Tables-III and IV). There was no mortality in our series with little morbidity. This indicates the good prognosis in cases of ASBO and justifies our approach to this problem.

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