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AN OBSERVATIONAL STUDY ON MODES OF MANAGEMENT FOR ADHESIVE SMALL BOWEL OBSTRUCTION

General Surgery

Varun Arunagiri — Senior Resident, Department of General Surgery, Madras Medical College, Chennai, Tamilnadu, India.

Maayandi Parimala* — Associate Professor, Department of General Surgery, Government Villupuram Medical College and Hospital, Villupuram, Tamilnadu, India. *Corresponding Author

Jeyaraj Ravishankar — Assistant Professor, Department of Transfusion Medicine, Government Villupuram Medical College and Hospital, Villupuram, Tamilnadu, India.

ABSTRACT

Background and aims: Small bowel obstruction can be managed both conservatively and surgically based on the clinical symptoms and signs in the patient. The aim of this study was to observe the patients with small bowel obstruction and compare their symptoms with type of management.

Materials and methods: This was a prospective observational study conducted at surgical tertiary care centres in Chennai, Tamilnadu, India. Patients with symptoms of small bowel obstruction were observed and analyzed between September 2012 and November 2013. Purposive sampling technique was employed to select patients with age between 18 and 75 years. Data entry and analysis was done using SPSS version 17.

Results: Of the 100 patients observed, small bowel obstruction was seen more in 26-45 age group (55%), more in females (54%), abdominal pain was the most common symptom (85%), appendectomy was the commonest preceding surgery (33%), dilated bowel loops was the common radiographic finding (73%) and most patients were managed conservatively (86.9 %).

Conclusion: Small bowel obstruction is better managed conservatively. As the prediction of patients who will require surgery is difficult, a scoring system is proposed, where patients with a score of more than 4 will need surgical intervention.

KEYWORDS

Small bowel obstruction, clinical symptoms, scoring system

INTRODUCTION:

Adhesive small bowel obstruction accounts for more than 60 % of the Small Bowel Obstruction.[1] A breach in the peritoneum during any abdominal surgery will lead to adhesions. Adhesions can occur in 95% to 100% of patients who undergo abdominal surgery. But occurrence of Adhesive Small Bowel Obstruction is only in 1 to 10 % of appendectomy, 6 % of open cholecystectomy, 10 to 25 % of intestinal surgeries and 17 to 25 % of colorectal surgeries.[2] There are also other causes of Adhesive Small Bowel Obstruction apart from post-operative causes like Tuberculous Abdomen, Inflammatory Bowel Disorders and malignancy. But these causes are far less compared to post-operative small bowel obstruction. Adhesions are inevitable after Laparotomy. Inflammation and wound healing lead to fibrin formation and degradation which can result in adhesions.[3] Many interventions are under trial to prevent formation of adhesions, but researchers make sure that the interventions do not interfere with wound healing.

The management of the adhesive small bowel obstruction is either conservative or surgical. The severity of the symptoms and signs varies in small bowel obstruction, varies from patient to patient depending on the type of previous surgery the patient underwent, the number of attempts and many other factors. In the present study, the symptoms and signs were analyzed to categorize the patient for conservative and surgical management. The aim of the study was to observe patients with small bowel obstruction and compare their symptoms with type of management. It was also proposed to develop a hypothesis and scoring system for management of small bowel obstruction.

MATERIALS AND METHODS:

This was a prospective observational study conducted at the Department of General Surgery, Department of Surgical Gastroenterology and the Department of Obstetrics and Gynaecology of Government Kilpauk Medical College and Government Royapettah Hospital. The study period was between September 2012 and November 2013 to include 100 patients who came with symptoms suggestive of small bowel obstruction. Purposive sampling method was employed. Patients with age between 18 and 75 years and history of previous surgery, presenting with symptoms of small bowel obstruction like abdominal pain, abdominal distension, vomiting, fever, constipation or obstipation were included in the study. Patients were explained of the details of study and informed consent was obtained. Patients who underwent surgery for intra-abdominal malignancy, pregnant women and those not willing to give informed consent were excluded from the study. After detailed clinical examination, relevant investigations were performed. Abdomen radiography showing dilated bowel loops or multiple air fluid levels was confirmatory. The primary observation was whether the presenting symptoms determined type of management and whether any specific symptom, which led to surgical intervention, could be identified. Secondary data on type of previous surgery, number of previous episodes, the details of current surgical management and the time required for relief of symptoms in those undergoing conservative management were recorded and analyzed. Socio-demographic data was recorded in standard proforma. Data entry and analysis was done using SPSS software version 17.0. Descriptive data was given in summary statistics.

RESULTS:

Data was obtained from 121 patients (n = 121) who had symptoms of small bowel obstruction, but data of 5 patients (n =5) was excluded, as during investigations, the patients did not had small bowel obstruction and 16 patients (n = 16) were excluded as they did not had history of previous surgery.The remaining 100 patients (n = 100) who were confirmed to have small bowel obstruction were observed and their data was analyzed.

Small bowel obstruction was seen more in the 26-45 age group 55%, (n = 55). Females were affected more 54% (n = 54). Abdominal pain was the most common symptom seen in 85% of patients (n = 85) followed by abdominal distension (58%). Appendectomy was the most common preceding surgery found in 33% of patients (n = 33) followed by lower segment Caesarean section (21%, n = 21). Appendectomy was the common preceding surgery in males (47.83%)(n = 22/46) followed by intestinal perforation (34.78%) (n = 16/46). In the patients with perforation, duodenal ulcer perforation was the most common cause of adhesion and obstruction (62.5%) (n = 10/16).Caesarean section was the common preceding surgery in females (38.89%) (n = 21/54) followed by Appendectomy (20.37%) (n = 11/54). 90% of patients (n = 90) had previous similar episodes of bowel obstruction. Dilated bowel loops were observed by radiography in 73 patients (73%) while multiple air fluid levels were observed in 27% (n = 27/100). 84% of patients (n = 84) were managed conservatively with most patients (n = 73) (86.90%) experiencing relief within 48 hours. But 13.09% of patients (n = 11/84) needed surgical intervention, following failed conservative management. 27 % of patients (n = 27) underwent surgical management, in whom open adhesiolysis was the common intervention (66.67%) (n = 18/27).

The various symptoms of small bowel obstruction were evaluated for significance in management and to recognize the symptoms which predicted immediate need for surgical intervention. (Table 1).

Table 1. Significance of symptoms of small bowel obstruction to predict surgical intervention

Sl. No.	Symptom	Sensitivity	Specificity	Positive predictive value	Negative predictive value
1.	Abdominal pain	31.70%	100%	100%	20.55%
2.	Vomiting	41.86%	85.94%	66.67%	68.75%
3.	Abdominal distention	37.93%	90.74%	81.48%	57.65%
4.	Fever	96.30%	98.63%	96.30%	98.60%
5.	Constipation	48.39%	82.61%	55.56%	78.08%

DISCUSSION:

In the present study, 100 patients with post-operative small bowel obstruction were observed for symptom profile and their implication on management protocols. Post-operative patients are more prone for adhesions due to decreased blood supply and decreased oxygenation, which leads to poor fibrinolysis. Abdominal colicky pain varies according to the site of obstruction with frequent pain in high jejunal obstruction to less frequent pain in ileum. Vomiting has a better specificity for obstruction and is especially ominous when vomitus becomes severe from bilious to feculent. Rapid rise of abdominal girth necessitates surgical intervention. Constipation is not specific as it can occur with colonic obstruction also. Fever as a symptom of small bowel obstruction had a high sensitivity and specificity for definite surgical intervention, as it foretells bowel gangrene or peritonitis.

89% of the affected patients were between 26-65 years (n = 89/100). This was similar to the studies by Al Salamah et al. who observed 71.8% (n = 125/195) and Adhikari et al. who observed 64.03% (n = 235/367) of patients in the 20-60 age group.[4,5] Small bowel obstruction was commonly seen in females (54%) in the present study but this observation was in contrast to the study by Adhikari et al. who observed male predominance with 75.20% (n = 276/367).[5]

Abdominal pain was the most common symptom in the present study (85%) (n = 85/100) followed by abdominal distention (58%) (n = 58/100) which was similar to the study by Al Salamah et al. (82.2%) (n = 143/195) followed by vomiting (67.2%) (n = 117/195). The significance of symptoms in determining mode of intervention was comparable to the study results obtained by Al Salamah et al.[4] Eskelinen et al. in their study on 1333 subjects found abdominal pain to have a sensitivity of 75% and a specificity of 99%.[6]

Appendectomy was the common preceding surgery in the present study (33%) (n = 33/100) while small bowel surgery was the common preceding surgery in the study by Al Salamah et al. (31.9%) (n = 43/195).84% of patients were managed conservatively of whom 73% had successful outcome. This was similar to the finding by Adhikari et al. who found that 59.64% of adhesion cases were successfully managed by conservative means.[4,5]

Dilated bowel loops in radiography have varying sensitivity but in resource limited setting like India, they prove valuable as one of the first investigations. Dilated bowel loops were seen in 73% and air fluid levels were seen in 27% in the present study which was comparable to the sensitivity obtained by Thompson et al. and Maglinte et al.[7,8] In the present study, open adhesiolysis was the common procedure and laparoscopic adhesiolysis was advocated for patients who failed conservative treatment. Sallinen et al. in their trials have proved that laparoscopic adhesiolysis had better outcomes, but it was advised for patients with single band adhesions and uncomplicated patients without predictors of failures.[9]

Positive predictive value (PPV) and Negative predictive value (NPV) for clinical symptoms to indicate surgical intervention were comparable to the results obtained in the study by Al Salamah et al.[4] The PPV and NPV were similar for the symptoms like abdominal pain and abdominal distention and lesser for vomiting and constipation. Fever as a symptom was helpful in indicating need for surgical intervention.

The ability to identify patients who can be treated conservatively has improved greatly, but accurate and early identification of those patients who will ultimately require surgical intervention remains a challenge, especially when their presenting symptoms are moderate.[6,7]Comparing all the observed symptoms of small bowel obstruction with the management options, a scoring system was developed to select patients for mode of management. The score is assigned in such a way that any value more than 80% is given a score of one. The total attainable score was 6 (Table 2).

Table 2. New scoring system proposed from the present study to predict surgical intervention in patients with small bowel obstruction

Sl. No.	Symptom	Sensitivity	Specificity	Score
1.	Abdominal pain	31.70%	100%	1
2.	Vomiting	41.86%	85.94%	1
3.	Abdominal distention	37.93%	90.74%	1
4.	Fever	96.30%	98.63%	2
5.	Constipation	48.39%	82.61%	1
Patients with score ≤ 2			Conservative management	
Patients with score ≥ 5			Surgical management	

From the present study, it was observed that patients who had a score of 2 or less were successfully managed conservatively. Patients who attained a score of 5 or 6 required immediate surgical intervention. Those with a score of 3 or 4 can be subjected to conservative management for 48 hours and if found to not respond, they can be taken up for elective laparoscopic adhesiolysis.

VA conceptualized the study, collected data and prepared manuscript. MP edited the manuscript and approved it. JR analyzed data and edited manuscript.

DECLARATIONS:

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