Print ISSN: 2321-6379
Online ISSN: 2321-595X

Original Article

Evaluation of Post-operative Adhesive Intestinal Obstruction in a Tertiary Care Center

Kanwar Singh Goel[1], Kedar Nath Garg[2], Gulshan Garg[3]

[1]Professor, Department of General Surgery, Faculty of Medicine and Health Sciences, (SGT Medical College) Under SGT University, Gurugram, Haryana, India, [2]Associate Professor, Department of Medicine, World College of Medical Sciences, Jhajjar, Haryana, India, [3]Assistant Professor, Department of Surgery, Kalpana Chawla Government Medical College, Karnal, Haryana, India

Abstract

Introduction: Peritoneal adhesions are defined as abnormal fibrous bands between organs or tissues or both in the abdominal cavity that are normally separated. Post-operative adhesions are most common cause of intestinal obstruction. Clinical implications of post-operative bowel adhesions may be small bowel obstruction, secondary infertility, and chronic abdominal or pelvic pain, difficulty in peritoneal dialysis, difficulty in intraperitoneal chemotherapy, and difficulty in re-operation.

Materials and Methods: This is a prospective observational study conducted in 50 patients at SGT Medical College, Budhera, from June 2017 to June 2019. Patients admitted in emergency with diagnosis of post-operative intestinal obstruction were considered for study. Detailed history, examination and investigations were done. Patients without symptoms and signs suggestive of any ischemia/strangulation were put on conservative treatment. If the condition deteriorated, patients were considered for surgery. Statistical analysis was carried out as required.

Results: Male patients were more than female patients. Abdominal pain was most common presentation. Most of the patients presented within 4 days of start of symptoms. Patients with history of abdominal hysterectomy, intestinal perforations, and trauma had more chances of obstructions. Most of the patients presented within 5 years from surgery in past. Most of the patients had one episode of obstruction. Most patients got relief in 3–5 days. About 60% patients were managed conservatively. Bands due to adhesions were most common intraoperative findings.

Conclusion: Our study has enriched the literature that those patients who had undergone pelvic surgeries or laparotomy because of perforations, developed adhesions more commonly than others. If conservative treatment is done properly, some patients can be saved from surgery. We have also elaborated the factors which guide us about conservative or operative treatment.

Key words: Adhesion, Conservative, Intestine, Obstruction, Operative.

INTRODUCTION

Peritoneal adhesions are defined as abnormal fibrous bands between organs or tissues or both in the abdominal cavity that are normally separated. About 95% patients are expected to develop post-operative adhesions.[1] Fortunately most patients are symptomless, in others there may be significant morbidity and mortality. The adhesions start few hours after operation. Post-operative adhesions are most common cause (about 65%) of intestinal obstruction.[2] Adhesions occur due to peritoneal injury and inflammation. Fibrin is formed which may get reabsorbed due to inherent fibrinolytic activity of peritoneum, or get organized due to ingrowth of fibroblasts. Clinical implications of post-operative bowel adhesions may be small bowel obstruction,[3] secondary infertility, chronic abdominal or pelvic pain,[4] difficulty in peritoneal dialysis, difficulty in intraperitoneal chemotherapy, and difficulty in re-operation.[5] Due to adhesions laparoscopic approach is almost impossible.[6] Re-operative surgery for adhesions takes long time, blood loss is more and chances of inadvertent enterotomy are high.

Patients with partial adhesive obstruction and without signs of peritonitis or strangulation can be put on conservative treatment. Conservative treatment involves nil by mouth, Ryle's tube aspiration, intravenous fluid, electrolyte imbalance

Access this article online

www.ijss-sn.com

Month of Submission : 11-2020
Month of Peer Review : 11-2020
Month of Acceptance : 12-2020
Month of Publishing : 01-2021

Corresponding Author: Dr. Kedar Nath Garg, Department of Medicine, World College of Medical Sciences, Jhajjar, Haryana, India.

correction, and clinical and radiological observations. Conservative treatment should be continued for 72 h. If close monitoring is done and signs suggestive of complications are not there, then conservative treatment can be continued for even more than 10 days. This is safer than surgery. However, if fever occurs at any time and total leucocyte count (TLC) is more than 15,000/mm^3, then conservative treatment should be stopped and surgery should be considered. Post-operative adhesive intestinal obstruction is a very common surgical problem. It should be resolved at the earliest. Protocols of conservative approach versus surgery have been given in detail, but still lacunae are there. We have proposed this study to enrich the literature, that due to which surgeries, maximum adhesions are formed. How meticulous conservative treatment can decrease the numbers of operations in post-operative intestinal obstruction and which are the factors which will guide us about stoppage of conservative treatment. This study will be a step in these directions.

MATERIALS AND METHODS

Study Design

This is a prospective observational study conducted at SGT Medical College, Budhera, Gurugram, Haryana, from June 2017 to June 2019.

Study Population

Patients admitted in emergency Department of General Surgery, SGT Medical College with diagnosis of post-operative intestinal obstruction were considered for study. Only those patients were included who had recurrent pain abdomen, distension, obstipation, and X-ray showing multiple air fluid levels or ultrasonographic (USG) or contrast-enhanced computed tomography (CECT) abdomen showing evidence of intestinal obstruction and the etiology was post-operative intestinal obstruction due to adhesions. The patients, who had laparotomy <50 days back, or the etiology of obstruction was other than adhesions were excluded from study. Those patients were excluded from study who had laparotomy within 50 days or who had causes of intestinal obstruction other than that due to adhesions.

Operational Definition

Here intestinal obstruction is due to peritoneal adhesions. Peritoneal adhesions are defined as abnormal fibrous bands between organs or tissues or both in the abdominal cavity that are normally separated.

Sample Size

Fifty patients were taken for study.

Sampling Procedure and Data Collection

Patients presenting with intestinal obstruction were considered. Among these, only those patients, who had etiology as adhesions, were considered for study. Even among these, if at a later stage, it was found that the obstruction was not due to adhesions, these patients were excluded from study. Detailed history including age, sex, address, occupation, duration of complaints, details of complaints, features suggestive of strangulation, history of features of intestinal obstruction, any history of admission in hospital, any history of operation in past, if yes, and type of operation was taken. General physical and systemic examination was done. Routine investigations, for example, complete blood count, kidney function tests, liver function tests, urine complete examinations, diabetic profile, and viral markers were done. Investigations to support the diagnosis, for example, plain X-ray abdomen and USG were done. CECT abdomen was done if there was diagnostic dilemma. These investigations were also repeated as per requirement. If patients had no pyrexia, tachycardia, tenderness, guarding, and rigidity and TLC was normal; if the symptoms and signs did not suggest any ischemia/strangulation; patients were put on conservative treatment for 3 days or even longer if vitals were stable. If patients got relieved of the symptoms, passed flatus, they were kept for 1 more day and on full relief, they were discharged, with advice regarding diet, and to report at earliest if symptoms recur. If the condition deteriorated, patients were considered for surgery, if done so, details of intraoperative findings, post-operative complications if any were recorded.

Analysis Plan

The data were collected properly on a performa sheet, data were tabulated and master chart was prepared, entries were made, and statistical analysis was carried out using simple mathematical expressions like, percentage. The data were subjected to appropriate statistical tests wherever applicable. Analysis was made using software SPSS for windows 7. Chi-square test and probability (*P*) value were used to establish status of significance. Quality of study was assured at each and every step.

Ethical Considerations

Before starting the study, approval for this study was obtained from the Institute Ethics Committee for research on human subjects. Written informed consent was obtained from each subject interviewed after asking them to go through the subject information sheet printed in Hindi language (in which subjects were well versed) and a verbal explanation by the interviewer. Confidentiality of the information provided was maintained.

RESULTS

This prospective observational study was carried in SGT Medical College, Budhera, Gurugram, Haryana. Fifty

patients, in whom etiology was intestinal obstruction due to adhesions, only were taken for study. Detail history was taken; physical examinations and investigations were done. Patients without any symptoms and signs of ischemia or strangulations were put on conservative treatment, if patients fared well, they were discharged. If patients had no relief with conservative treatment for 3 days, and patients developed signs and symptoms of ischemia or strangulation, they were considered for surgery. Following results were found.

In our study, age group 41–50 years had majority of 19 (38%) patients, and mean age of patients was 42.36 [Table 1]. Out of 50 patients 32 (64%) patients were male and 18 (36%) patients were female. Among males 14 (44.75%) patients, and among females 6 (33.33%) required surgery [Table 2].

Abdominal pain was present in all the patients, followed by vomiting, obstipation, and distention abdomen in decreasing frequency [Table 3]. Most of the patients presented within 4 days. They took this much time probably because they took treatment from some peripheral centers and became late [Table 4].

Our study reveals that most of the patients who had adhesive bowel obstruction had under gone exploratory laparotomy for abdominal hysterectomy, intestinal perforations, and trauma [Table 5].

In our study, most of the patients presented within 5 years from surgery in past. Some patients presented even 5 years after the past surgery [Table 6].

Our study shows that most of the patients 34 (68%) had one episode of obstruction. In 9 (18%), there were two episodes, in 4 (8%) three episodes and in 3 (6%), there were more than three episodes [Table 7]. We found that 12 (24%) patients had altered vitals, for example, tachycardia, fever, hypotension, etc. Seven (14%) patients had visible gut loops, 23 (46%) patients had exaggerated bowel sounds, and the bowel sounds were absent in 18 (36%) patients [Table 8].

Our most patients 20 (66.67%) got relief in 3–5 days. Some 3 (10%) patients took even 6–9 days [Table 9]. Most of the patients 30(60%) were managed conservatively; however, surgery was successfully done in 20 (40%) patients [Table 10].

We had operated 20 patients. In 6 (30%) patients, the adhesions caused constrictions, in 11 (55%) patients, bands had been formed due to adhesions and in 3 (15%) patients, there were matted adhesions [Table 11].

Table 1: Age distribution

Age	Number of patients (%)
15–0	2 (4)
21–30	9 (18)
31–40	10 (20)
41–50	19 (38)
>50	10 (20)

DISCUSSION

Abdominal adhesions cause great health problem utilizing lots of health care resources, deteriorating quality of life and loss of money. Diagnosis and management of adhesive intestinal obstruction has to be very careful. The conservative management is safe but the time of switching over to operative treatment is controversial. Our study is to enrich the literature regarding which are the surgeries, where maximum adhesions are formed. How meticulous conservative treatment can decrease the numbers of operations in post-operative intestinal obstruction and which are the factors which will guide us about stoppage of conservative treatment. This study is a step in these directions

This is a prospective observational study conducted at SGT Medical College, Budhera, Gurugram, Haryana, from June 2017 to June 2019, in 50 patients.

The mean age in our patients was 42.36 years [Table 1]. Our results are similar to study by Ngim *et al.* 2013,[7] Jain *et al.* 2015,[8] and Kang *et al.* 2010.[9] In our study, female population was less than male population [Table 2]. In studies by Hegre *et al.*,[10] also female population was less. It may be because female populations are more involved in household job; hence, trauma cases are less in them. Pain was presenting feature in all our patients followed by vomiting, obstipation, and distension abdomen [Table 3]. Pain was also seen in all patients in study by Hegde *et al.*[10] Vomiting was seen in 88% patients in study by Aldemir *et al.*[11] If Ryle's tube aspiration

Table 2: Sex distribution

Sex	Number of patients (%)	Conservative management (%)	Operative management (%)
Female	18 (36)	12 (66.67)	6 (33.33)
Male	32 (64)	18 (56.25)	14 (44.75)

Table 3: Intestinal obstructive symptoms

Symptoms	Number of patients (%)
Abdominal pain	50 (100)
Distention abdomen	31 (62)
Vomiting	48 (96)
Obstipation	42 (84)

Table 4: Duration of symptoms

Time period from onset of symptoms to reporting in hospital	Number of patients (%)
Within 4 days	42 (84)
>4 days	8(16)

Table 5: History of operation in past

Past operation	Emergency	Elective	Percentage
Peptic perforation	8	-	16
Enteric perforation	9	-	18
Cholecystectomy	-	3	6
Abdominal hysterectomy	-	10	20
Appendectomy	5	-	10
Abdominal wall hernia	-	3	6
Trauma	12	-	24

Table 6: Duration between surgery in past and adhesive bowel obstruction.

Duration between surgery in past and adhesive bowel obstruction	Number of patients (%)
<2 years	18 (36)
2–5 years	23 (46)
>5 years	9 (18)

Table 7: Episodes of adhesive bowel obstruction

Episodes of adhesive bowel obstruction	Number of patients (%)
1 episode	34 (68)
2 episodes	9 (18)
3 episodes	4 (8)
>3 episodes	3 (6)

Table 8: Clinical findings at admission

Clinical findings	Number of patients (%)
Altered vitals	12 (24)
Visible gut loops	7 (14)
Bowel sounds exaggerated	23 (46)
Bowel sounds absent	18 (36)

is large in volume, it suggests persistent intestinal obstruction. Feculent vomiting suggests requirement of surgical intervention. Most of our patients presented late [Table 4], probably because in our set up patient first goes to very small centers with limited resources and when there is no relief, then he attends tertiary care centers. Regarding history of operations in past, we have found that more cases are from pelvic surgery, appendectomies, and perforations [Table 5]. It is possibly so, because small bowel shifts to site of surgery in lower abdomen or pelvis forming stronger adhesions. Increased incidence of adhesions in perforations may be due to infections. In our study, maximum cases had obstructions within 5 years [Table 6]. The results of studies by Menzies 1990[1] and by Jain *et al.* 2015[8] are similar to our studies. We have found that maximum patients had only one episode of obstruction, but some patients had two, three, or more than three episodes [Table 7]. The reason may be that patients, who had one episode, might have more in future, because still whole life is before them. We have seen that most patients had bowel sounds exaggerated [Table 8] because probably these were the patients who had presented early. Our 30 (60%) patients got relieved by conservative treatment. Out of these, most got relief in 3–4 days. Some took even 6–9 days [Table 9]. This study teaches us that we should treat patients conservatively meticulously and if vitals are stable, the conservative treatment may be carried on for longer time because conservative treatment is better than surgery. With meticulous care, operation had to be performed only in 20 (40%) patients [Table 10]. Intraoperative findings of our study revealed that bands due to adhesions were the cause of obstruction in maximum patients followed by constrictions and matted adhesion. These results are almost comparable with the results of study by Jain *et al.*[8]

Table 9: Duration of relief of symptoms

Duration of relief of symptoms (days)	Number of patients (%)
1	3 (10)
2	4 (13.33)
3	8 (26.67)
4	7 (23.33)
5	5 (16.67)
6–9	3 (10)

Table 10: Management

Management	Number of patients (%)
Operative	20 (40)
Conservative	30 (60)

Table 11: Operative findings

Operative findings	Number of patients (%)
Constrictions	6 (30)
Bands	11 (55)
Matted adhesions	3 (15)

CONCLUSION

Our study has enriched the literature that those patients who had undergone pelvic surgeries or laparotomy because of perforations, developed adhesions more commonly than others. If we do conservative treatment in a meticulous way, keeping an eye on vitals and radiological findings, we can save some more patients from surgery. We have also elaborated the factors, that is, fever, tachycardia, tenderness, rigidity, guarding and raised TLC, which if present, guide us about the stoppage of conservative treatment and switching over to operative treatment.

REFERENCES

1. Menzies D, Ellis H. Intestinal obstruction from adhesions-how big is the problem? Ann R Coll Surg Engl 1990;72:60-3.
2. Parker C, Ellis H, Moran BJ, Thompson JN, Wilson MS, Menzies D, *et al*. Postoperative adhesions: Ten-year follow-up of 12, 584 patients undergoing lower abdominal surgery. Dis Colon Rectum 2001;44:822-9; discussion 829-30.
3. Galinos B, Branco BC, Beat S, Lydia L, Kenji I, Demetrios D. The incidence and risk factors of post-laparotomy adhesive small bowel obstruction. J Gastrointest Surg 2010;14:1619-28.
4. Sulaiman H, Gabella G, Davis MC, Mutsaers SE, Boulos P, Laurant GJ, *et al*. Presence and distribution of sensory nerve fibers in human peritoneal adhesions. Ann Surg 2001;234:256-61.
5. van der Krabben AA, Dijkstra FR, Nieuwenhuijzen M, Reijnen MM, Schappveld M, van Goor H. Morbidity and mortality of inadvertent enterotomy during adhesiotomy. Br J Surg 2000;87:467-71.
6. Dijkstra FR, Nieuwenhuijzen M, Reijnen MM, van Goor H. Recent clinical developments in pathophysiology, epidemiology, diagnosis and treatment of intra-abdominal adhesions. Scand J Gastroenterol Suppl 2000;232:52-9.
7. Ngim O, Udosen J, Essiet A, Efem S, Bassey O. Acute intestinal obstruction from post-operative adhesions in a tertiary health facility, South-South, Nigeria: A one year prospective study. IOSR J Dent Med Sci 2013;7:40-3.
8. Jain R, Gupta B, Mitra A, Nandagawli V, Ranade P. Recurrent postoperative adhesive intestinal obstruction: Role of early operative intervention as a primary management. IJST 2015;3:131-6.
9. Woong JK, Kwang JN, Seok BK, Jin DM. Predictive factor for surgical indication in postoperative adhesive bowel obstruction. J Korean Soc Coloproctol 2010;26:186-9.
10. Hegde R. Comparative study of postoperative adhesions by laparotomy and laparoscopic procedures. World J Lap Surg 2010;3:31-6.
11. Aldemir M, Yagnur Y, Tacyildir I. The predictive factors for the necessity of operative treatment in adhesive small bowel obstruction cases. Acta Chir Belg 2004;104:76-80.

How to cite this article: Goel KS, Garg KN, Garg G. Evaluation of Post-operative Adhesive Intestinal Obstruction in A Tertiary Care Center. Int J Sci Stud 2021;8(10):134-138.

Source of Support: Nil, **Conflicts of Interest:** None declared.