

Intestinal Obstruction Caused by Postoperative Adhesions: 5 Years' Experience at a Teaching Hospital

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ABSTRACT

Objective: The objective of this study was to determine the common abdominal surgical procedure causing postoperative adhesive intestinal obstruction, and outcome of its surgical management.

Study Design: Retrospective as well as prospective analysis.

Place and Duration of Study: This study was conducted in the Department of Surgery, Khawaja Muhammad Safdar Medical College, Sialkot from June 2010 to November 2015.

Materials and Methods: Patients operated on for intestinal obstruction with at least one abdominal surgical scar were included in the study. A total of 152 patients were eligible, all ages were eligible irrespective of gender. A minimum of 6 months follow up was set for inclusion in the study. Patients with intestinal obstruction presenting with surgical scars for renal, ureteric and urinary bladder surgery were not included as these surgeries did not involve opening of peritoneum. Patients with Crohn's disease, ulcerative colitis, known malignancies, a past history of abdominopelvic irradiation were excluded. Patients with less than 6 months follow up were excluded from the study.

Results: Out of 152 patients, 74 (48.68%) surgeries for appendicular pathologies, 18 (11.84%) lower segment caesarean section and 9 (5.92%) total abdominal hysterectomy were the main pathologies causing obstruction; while patients had recurrence in 11 (7.23%) and 8 (5.26%) mortality.

Conclusion: Operated adhesive postoperative intestinal obstruction proves to be a clinical entity with high incidence and specific risk factors of recurrence: age <40 years, presence of adhesion or matted adhesion, and postoperative surgical complications. Infected cases of appendicitis, enteric perforations, lower segment caesarean section and total abdominal hysterectomy are the main causes and the treatment may lead to stoma formation, recurrence and mortality.

Key Words: Small Bowel, Obstruction, Adhesion, Water-Soluble Contrast Agent, Recurrence

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INTRODUCTION

All abdominal surgeries how meticulous it may be; culminate in adhesion formation¹. These adhesions can be localized, wide spread and may or may not cause any symptoms and complications. In surgical practice; patients with intestinal obstruction due to postoperative adhesions are regularly admitted to wards with varied presentations and have a range of treatment modalities². Recurrence after operated adhesive postoperative intestinal obstruction are a potential threat for patients and a difficult problem faced by the surgeons. These patients have a lifelong association to the surgical setups and are a reason of frustration to them as well as the treating staff. Recovery or recurrence after one surgery or repeated surgeries; is a hope or surety; one finds it difficult to counsel the sufferers because of

unpredictable natural history of the problem³.

Adhesiolysis laparoscopic or open laparotomy is done to treat the situation depending upon the problem. Retrospective studies suggest that laparoscopic approach shortens hospital stay and reduces complications in these patients^{4,5}. But open laparotomy to handle the complicated adhesions and subsequent resections and stoma formation remains the mainstay of surgical management^{6,7,8}. The brunt of this problem is generally faced and managed at public sector hospitals and the teaching hospitals in particular. We wanted to determine the cause and effects of such patients with intestinal obstruction treated with surgical intervention at our teaching hospital^{9,10}.

MATERIALS AND METHODS

Treatment data of the patients was collected from June 2010 to November 2015. Last patient was enrolled in May 2015. We enrolled 215 who were admitted with intestinal obstruction in the surgical department of Allama Iqbal Memorial Teaching Hospital, affiliated to

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Inclusion Criteria: Patients operated on for intestinal obstruction with one abdominal surgical scar were included in the study. A total of 152 patients were eligible, all ages were eligible irrespective of gender. A minimum of 6 months follow up was set for inclusion in the study.

Exclusion Criteria: Patients with intestinal obstruction presenting with surgical scars for renal, ureteric and urinary bladder surgery were not included as these surgeries did not involve opening of peritoneum. Patients with Crohn's disease, ulcerative colitis, known malignancies and past history of abdominopelvic irradiation were excluded. Patients with more than one abdominal surgical scars were excluded from the study. Patients with less than 6 months follow up were excluded from the study. The patient with follow up of 12 months postoperative but were not traceable for follow up were labeled as lost to follow up; as they were not available to assess recurrences.

In all the patients, fluid balance and electrolyte disturbances were corrected. Prophylactic cefuroxime 1500 mg and metronidazole 500 mg are administered intravenously just before the incision. A nasogastric tube is inserted. A midline incision was made and the abdominal cavity is inspected. The small bowel is examined until the obstructed site is located. Adhesions causing obstruction were divided. Depending upon the circumstances, the state of intestine and soiling with infected contents; resection anastomosis, or stoma formation was carried out. Omeprazole was used during the hospital stay. Prophylaxis for deep venous thrombosis for patient with high risk for DVT. Abdominal binder advised to patients with poor musculature and infected cases.

Retrospective study to determine the indications of abdominal operative procedures as well as prospective analysis of treatment of the obstruction, procedures and its postoperative course was done and findings were recorded in the proforma devised for the study.

The endpoint was dates of recurrences or completion of 24 months followup. The recurrence was strictly defined as a readmission with a clinical presentation of SBO that required conservative or surgical treatment in the surgical ward. In that way, two different points were considered: overall recurrence including operated and non-operated recurrences. Recurrence was precisely defined as postoperative obstruction presenting in 2 years after surgery but not caused by any other pathology. The variables were entered in SPSS version 21 and statistics calculated.

RESULTS

From June 2010 to November 2015. Last patient was enrolled in May 2015. (5 years; end of enrollment and 6 months' follow up period).

During a period 5 years, the patients of intestinal obstruction with varied histories and abdominal surgical scars were admitted and operated: laparotomies were performed in surgical department of Allama Iqbal Memorial Teaching Hospital affiliated with Khawaja Muhammad Safdar Medical College Sialkot, Pakistan. Total of 152 laparotomies were carried out; about 63 patients with intestinal obstruction having abdominal surgical scar, admitted and managed successfully conservatively were not included in the study. The general data of our patients in the study is shown in Table I.

Table No.I: General Demographic Data – Patients admitted with intestinal obstruction

Total no. of patients admitted with intestinal obstruction having one abdominal surgical scar	215
No. of patients managed conservatively/excluded	63
No. of patients requiring surgery	152 (100%)
Age	5 to 85 years
Sex	M:F 61: 91 (40.13: 59.86)
Duration of hospital stay	7-95 days(13± 5 days average)

Table No.2: Retrospective analysis of abdominal incisions-n= 152 (100%)

Surgical Incision	Indications of previous surgery	No.
Grid iron incision	Acute appendicitis	46(30.26%)
	Appendicular abscess	7(4.60%)
	Ruptured ovarian cyst	2(1.31%)
	Torsion of ovary	1(0.65%)
Lanz incision	Acute appendicitis	21(13.81%)
	Typhoid (enteric)Perforation	4(2.63%)
Right Upper quadrant transverse incision	Cholecystectomy	4(2.63%)
	Intussusception	1(0.65%)
Right subcostal incision	cholecystectomy	2(1.31%)
Midline incision	Perforated duodenal ulcer	9(5.92%)
	Enteric perforation	7(4.60%)
	Penetrating injuries/ small intestine	3(1.97%)
	Blunt trauma/ small intestine	2(1.31%)
	Jejunal diverticuli causing intestinal obstruction	2(1.31%)
	Mesenteric ischaemia	2(1.31%)
Pfannenstiel incision	Lower segment caesarean section	18(11.84%)
	Total abdominal hysterectomy	9(5.92%)
Transverse incision (umbilical scar excised)	Para umbilical hernia	8(5.26%)
Umbilical scar/ laparoscopic port site	Laparoscopic cholecystectomy	4(2.63%)

The patients with intestinal obstruction due to adhesion formation caused by previous abdominal surgeries are a regular feature of surgical floor. Those patients who delay in seeking treatment for pathologies requiring opening of peritoneum are more vulnerable to present with intestinal obstruction consequent upon these surgeries; moreover poor surgical technique especially inadequate hemostasis and placement of drains are risk factors for getting into this situation. Treatment of such patients are mostly laparotomies with different surgical procedures and quite a big proportion of these patients land up with intestinal stomas. Previous gynaecological surgery increases the likelihood of operative treatment and complicated obstruction.

Details of the previous surgical scar and pathology are shown in table 2.

Details of prospective analysis of surgical interventions done for intestinal obstruction and outcome data are given in tables 3 & 4.

Table No.3: Spectrum of Surgical procedures carried (n=152)

Adhesiolysis only	23	15.13%
Excision of bands	8	5.26%
Ileostomy	32	21.05%
Colostomy	27	17.76%
Primary repair of intestine	42	27.63%
Resection and anastomosis of intestine	20	13.15%
Associated Omentectomy	31	17.39%

Table No.4: Outcome of the surgical interventions n=152 (100%)

No complications reported for 6 months	84(55.26%)
Recurrence (with follow up of >24 months)	18(11.82%)
Wound infection	26(17.10%)
Wound dehiscence	6(3.94%)
Incisional hernia formation	12(7.89%)
Mortality	8(5.26%)
Lost to follow up (before 24 months)	5(3.28%)

DISCUSSION

Opening the abdomen and peritoneal cavity, in any surgery, may lead to the formation of adhesions and bands) in majority of the patients. With the increased quantum of abdominal surgery these fibrotic tissues are the most common cause of intestinal obstruction. After surgery for such obstruction, the risk of recurrence remains there and the literature reports a rate of recurrence range, 8.7%–53% at 3 years and more afterwards.

Recurrence rate was $11.84\% \pm 3.2\%$ of our study, Fevang et al¹¹ reported a rate of 29% at 25 years, 50% appearing during the 5 first years, ie, 14.5% at 5 years

comparable with our results. Higher rates (33%–55%) were reported in studies by Williams SB¹², Landercasper J¹³ and Miller G¹⁴. This difference may be due to their overall long-term follow up (10–12.8 years) readmissions and especially to their wider inclusion criteria. The incidence in our study may have been different as almost 12 patients who were being followed up were not available for end point decision for recurrence. The median follow-up was 29 months (range, 6–47 months).

The most common surgical procedure which culminated in causing postoperative adhesions leading to obstruction was appendectomy by Grid Iron incision for acute appendicitis; followed by Enteric perforation. Similarly in females; a significant no of patients were having pfannenstiel's incision for lower segment caesarean section and total abdominal hysterectomy. A small no of patients managed for ovarian pathologies were also had a significant share in our study.

The risk factors of recurrence following an operated adhesive postoperative small bowel obstruction were ; age <40 years, complex adhesions, and postoperative wound infections.

Higher mortality in our patients can be attributed to the illiteracy of patients who did significant delay in seeking surgical treatment and reported in established septicaemia. Our death rate (5.26%) and complication rate i.e. recurrence (11.82%) are consistent with those reported in recent studies by Dayton MT¹⁵ and Miller G¹⁶. These results confirm those recently published stressing the deleterious effects of postoperative complications on early and late survival.¹⁷

The study indicates that operated adhesive postoperative SBO to be graded as a high-risk recurrence condition comparable to that of abdominopelvic malignancies.

CONCLUSION

In cases of postoperative intestinal obstruction, the surgeries for acute appendicitis remains the leading cause followed by cases of enteric perforation; while lower segment caesarean section and total abdominal hysterectomy makes the main bulk in female patients. The port site hernias especially at umbilical port is also being reported but less common. The treatment of the postoperative obstruction is quite rewarding but many a patients end up with stomas and recurrences as well; while mortality in patients with delayed presentations has its impact on the outcome.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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