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Postoperative Adhesive Small Bowel Obstruction Risk Factors and Management in Wad-Medani Teaching Hospital

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Abstract:

Background: Adhesive intestinal obstruction is a common complication of abdominal surgeries and is the commonest cause of bowel obstruction.
It has high morbidity with associated poor quality of life and predisposition to repeated hospitalization. Most of them can be managed conservatively with fewer complications and a shorter hospital stay
Objectives: To study the risk factors, the most index operation, the time relationship between operation and the onset of obstruction and outcome of postoperative adhesive Small Bowel Obstruction (SBO).
Patients and Methods: This is a retrospective - prospective study of 76 patients admitted with the diagnosis of post operative adhesive intestinal obstruction.
SBO was conducted by analyzing their medical records. Demographic data, clinical presentation including name, type, duration, previous surgical procedures and successful conservative approach versus requirement of operative intervention were assessed
Results: Most of the patient**s** (68.4%) were less than 45years of age. Most of the patients were males (Male: Female 1.5:1). Most of the primary operations were emergency (80.3%), through open surgical approach (98.7%). Appendicectomy (46.1%), was found to be the most common cause of adhesive bowel obstruction followed by gynecological (23.7%) ,colon (14.4%).Obstruction occurs in first year in (42.1%) of patient. 46 (60.5%) patients responded to nonoperative management in 48hrs in(43.5%).30 patients needed surgery: in 14 of them surgery was needed immediately because of suspicion of strangulation and peritonitis.In16patients surgery was performed after failure of 5days period of nonoperative trial .
Intraoperative adhesion between small bowel and scar was found to be the most common cause of obstruction (46.7%) and band adhesion was a common type in 60%. At operation injury to small bowel occured in 10% while resection of small bowel was done in 30%.
Conclusion*:* postoperative adhesive SBO common under 45years, M: F 1.5:1 Appendicectomy was the common primary operation, most of obstruction occured in first year. The majority of patients responded to nonoperative management in48hrs duration .In those with suspicion of strangulation and peritonitis or not improved through 5days of nonopertive management surgery was performed .Adhesion of small bowel to scar was the common cause of obstruction ,most of adhesions were band adhesions ,there were complications like injury and resection of bowel.

Key words: Small bowel obstruction, postoperative adhesive, Abdomenal adhesions.

Introduction:

Adhesions are abnormal deposits of fibrous tissue .Although some adhesions bands are congenital in origin; most of adhesions are the result of an injury to the lining membrane of peritoneal cavity.

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Postoperative adhesions are major source of morbidity, leading cause of small bowel obstruction frequency is in the range of 40% -80% of bowel obstruction in western [1], and it"s responsible for 20% 25% of secondary infertility in female patients who have had laparotomy. [2, 3]

In most patients postoperative adhesion do not cause any problem but in some patients develop lifelong adhesions related disease.

The common risk factors of postoperative bowel adhesion were as follows: age, gender, number and sites of previous operations, surgical approach whether conventional or laparoscopic.

Postoperative adhesion giving rise to intestinal obstruction usually involve the lower ileum. Operations for acute appendicitis and, Gynecological procedures are the most common precursors of this condition. [4]

The a etiology of postoperative bowel adhesion is unclear [3], but peritoneal irritation from whatever cause is basic factor in its formation[4] Many studies have been made to determine the factors that cause adhesion. [4]

These factors are trauma (more manipulation & serosal injury) infection, foreign material (gloves powder ,excessively long ligatures) ,rough handling of tissue , excessive use of dry packs and gauze ,residual blood in peritoneal cavity

,raw peritoneal surfaces and ischemic tissues. [4,6]

Adhesions occur either as single band or matted adhesion [5]. They cause obstruction over a period of time ranging from immediate postoperative period to many years after the initial surgery. [5]

Clinical presentations of postoperative bowel obstruction include: symptoms and signs of small bowel obstruction in patients with a history of abdominal and/or pelvic surgery. A plain abdominal radiograph showing fluid levels and a small bowel dilatation support the clinical diagnosis.

Treatment in most of patients is conservative in the form of nil per oral, NG tube suction, combination with intravenous fluid therapy, is extremely beneficial[4]. If conservative management fails, or if complications such as strangulation or perforation are suspected, the traditional treatment is laparotomy with adhesionlysis and resection of nonviable bowel. The aim of surgery is relieving of obstruction and if possible prevention of recurrence.

M*a*ny substances are used to reduce the formation of adhesions, like Steroids, *Dextran*, Anticoagulants, Streptokinase, and Hyaluronidase. No single substance has been demonstrated to be completely effective and safe in clinical use. [4]

Also there are many techniques which are used to prevent recurrence, ranging from simple technique like the undersurface of the fascial incision by putting the omentum between the bowel and the incision, to intraluminal "stenting" or "splinting" of the bowel with a long intestinal tube[1, 4 ,9] . The use of an intraluminal tube stent in preventing recurrent small bowel obstruction due to adhesions is safe and effective when used on appropriately selected patients like children. [10]

Patients and Methods:

This is a retrospective, prospective, descriptive hospital based study of patients presenting with postoperative adhesive small bowel obstruction who were admitted to Wad Madai teaching hospital (WMTH) in Gezira state, Sudan, over 5years between Sep. 2008 and Aug. 2013. The data were collected by using a patient data sheet, and were analyzed by computer using statistical program for scientific science, SPSS.

Results:

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The data of 76 patients were collected using a patient data sheet, and analyzed by computer using statistical program for scientific science (SPSS).

The overall number of cases seen in (WMTH) with postoperative adhesive SBO during study period were 82 cases, 6 cases were excluded because the surgery revealed that the cause of obstruction was not adhesion. The remainder 76 patients who fulfilled the inclusion criteria of postoperative adhesive SBO were considered as the final study sample.

From this study we found that the age group presentation was distributed as follow:

17 -30 yrs were 28 cases (36.8 %),31-45 yrs 24 cases (31.6 %) , 46 -60 yrs 9 cases (11,8 %), 61-75yrs 10 cases (13.2%) , while ≥ than 76yrs 5 cases (6.6%). Forty six patients (60.5%) were males while females were 30 patients (39.5%).

The operations that caused postoperative SBO were appendectomy (46.1 %), Gynecological operations (23.7%), Sigmoid surgery 8cases represented (10.5%), splenectomy 6 cases represented (7.6%). Most of them were emergency, 61 patients (80.3%), through open surgical approach 75 patients (98.7 %). The time lapse between the primary operation and obstruction was analyzed, and we found that 13.2% of patients developed obstruction within less than one month, 1 month to 1year (28.9%) , 1 - 5 yrs (28.9%) , 5 - 10 yrs(14.5%) , more than 10 years (11.8%).

Of all 76 cases 60.5 % responded to nonoperative treatment compared to 39.5 % who needed surgery .In those who responded to nonoperative treatment (60.5%) successful conservative treatment occurred in 2 days in 43.5% of patients, and in 3 days in 34.8 %, and in 4 days in 15.2%, and 6.5% in > 4 days.

From 30 patients who needed surgery, 14 patients immediately needed surgery, the reminder showed no improvement after 5 days of conservative management. Adhesion between the Small bowel and scar was the cause of obstruction in (46.7%) of patients.

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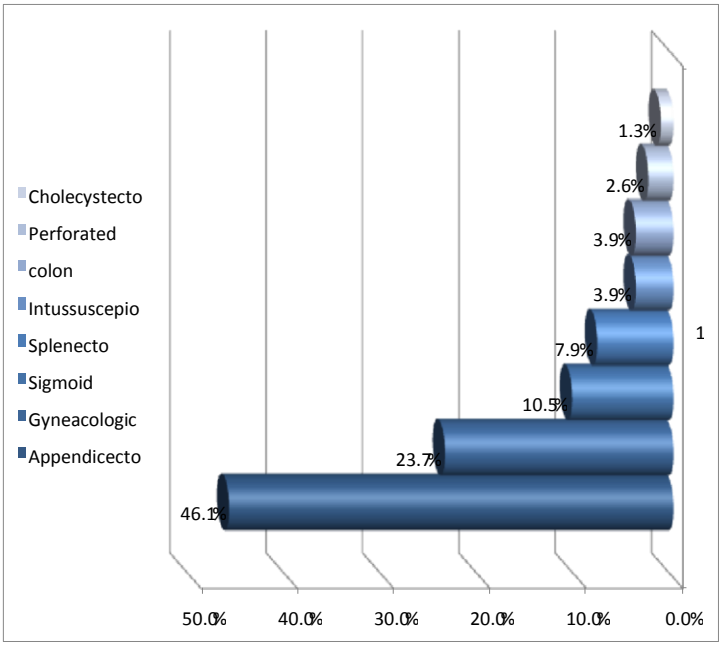

Fgure 1: Primary operation of 76 patients with postoperative Adhesive SBO

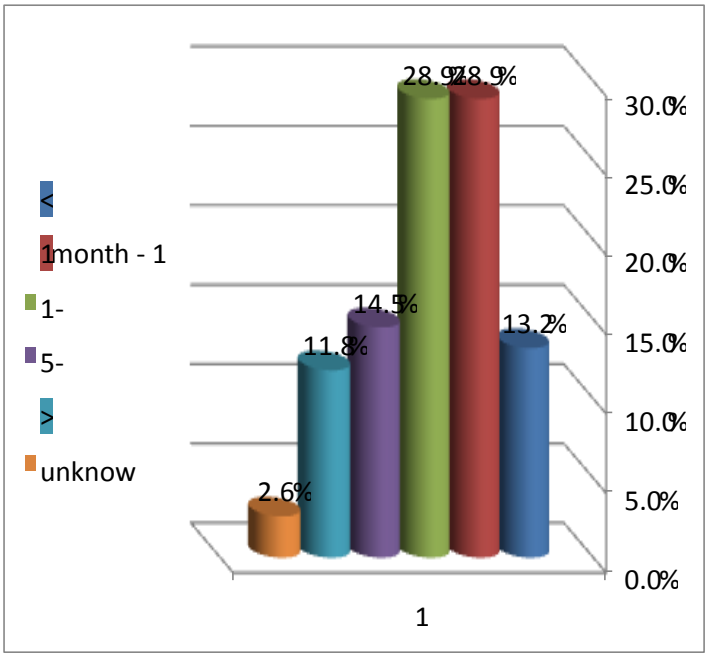

Figure 2: Time elapse from primary operation of 76 patients with postoperative Adhesive SBO

Table 1: Durations of conservative treatment

Duration	Frequency	Percent%
2 days	20	43.5%
3 days	16	34.8%

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4 days	7	15.2%
More than 4 days	3	6.5%
Total	46	100.0%

Table 2: Sites of Adhesions

Sites of Adhesion	Frequency	Percent%
Omentum to scar	4	13.3%
Small bowel to scar	14	46.7%
Small bowel to small bowel	6	20.0%
Multiple Adhesion	6	20.0%
Total	30	100.0%

Discussion:

This study showed that the adhesive SBO was more frequent under the age of 45 years (68.4%). Compared with the literature the risk was higher for patients aged less than 60 years. [11]

In our study the bulk of operations leading to adhesion were appendectomy (35 cases) and Gynecological (cesarean section 13 cases, ectopic pregnancy 3 cases) which occured in patients aged less than 40 yrs while in the literature most were proctocolectomy, total colectomy and ileostomy surgery and those occurring in patients aged more than 50 year

This study has revealed that the postoperative adhesive bowel obstruction is more common in males (60.5%) than in females. As in literature the incidence is highest in males than females. [12]

This study has shown that the operations which frequently lead to adhesive obstruction were Appendectomy (46.1 %), Gynecological operations (23.7%), Sigmoid surgery-Sigmoid Volvulus (10.5%). Compared to the literature, the operations which frequently lead to adhesive obstruction are colorectal surgery (24 per cent), followed by gynaecological surgery (22 per cent), herniorrhaphy (15 per cent) and appendicectomy (14 per cent) [13, 14,15] . The differences between the results of our study and the literature may be due to diseases distribution: the colorectal cancer is less common in

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developing countries than developed countries- incidence 6.5-7.7 cases per 100,000 females-males in developing countries, 50.9-60.8 in more developed countries [15] .In Japan, the most common primary operation was gastrectomy. [16]

Most of the primary operations were emergency (80.3%).Almost all of the surgical approach of primary operations in our study was open approach (98.7%). As reported in the literature de novo adhesion formation after operative laparoscopy has been reported to occur in only 12% of the cases versus 50% after laparotomy [17.18]. The few number of postoperative adhesive SBO following laparoscopy in our study may be due to the small number of laparoscopic surgery done in our hospital (WMTH).

In our study 32 patients (42.1%) presented with postoperative adhesive SBO developed the obstruction within 1 year of the initial surgery, and among those 32 patients 10 patients (13.2%), developed the obstruction within 1 month of their initial operation. In comparison to the literature more than 39% of patients developed obstruction within 1 year of the initial surgery, 55% of them developed obstruction within 1 month of their initial operation. [19]

In this study there were 76 patients. At admission 14 patients (18.4 %) of them presented with clinical findings suggesting small bowel strangulation and hence they were treated surgically immediately after resuscitations. The remaining 62 patients had an initial period of non-operative treatment. The SBO in those 62 patients resolved in 46 patients (60.5%), and in 16 patients (21.1%) the SBO did not respond to nonoperative treatment, and they required surgical intervention. At the end of study 46 patients (60.5 %) responded to nonoperative treatment compared to30 patients (39.5 %) who needed surgery. As reported in the literature nonoperative treatment failure rate is 35%. [20]

The success of conservative treatment (drip and suction) was noted in 46 patients with discontinuation of the naso-gastric decompression in 43.5% of them in 2 days, and in 34.8% of them in 3 days. Our results compare to the literature which reported that complete resolution occurred within 2 days in 73.3 to 88% of patients, and the remaining of patients had complete resolution by 72 hours [21 ,22].

In this study 30 patients needed surgery, 14 patients needed immediate surgery, and 16 patients needed surgery after failure of nonoperative management. The nonoperative management included close monitoring and assessment for the development of strangulation and/or peritonitis. In this study failure of nonoperative management (no resolution of obstruction) was diagnosed after 5 – 7 days and surgery was done. Our results compare with the literature in which nonoperative therapy of up to 5 days' duration can be used safely for the majority of patients who present with postoperative SBO, including those with complete obstruction. A trial of more than 5 days' duration proved ineffective. [22, 23]

Optimal length of conservative management is controversial, however until strangulation features are not seen this approach may be tried.

Water soluble oral contrast as Gastrografin is also a respected approach in conservative treatment of adhesive small bowel obstruction. It has been proven to relieve symptoms and minimize hospital stay. Due to its capability for diagnosis as well as its therapeutic effect, it is gaining popularity.

In this study we observed that in most of patients with strangulation surgery revealed that the cause was bands in 11 patients (78.6 %), while in patients with failure of conservative treatment surgery revealed matted adhesions in 9 patients (56.2%). These results compare with the literature which reported that band adhesion causing SBO is associated with strangulation [24,25].

In this study the most common sites of adhesions which produced obstruction were adhesions between the small bowel and the previous surgical scars-14 patients (46.7%). Those results compare with the

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literature which showed that adhesions between the small bowel and the site of previous surgery caused obstruction in 52% [16 ,26]. The findings in this study match those reported in other studies.

References:

1. Michael. J Zinner &Stanly WAshley Intestinal obstruction In Maingot,s Abdominal operation 11th Ed
2. Banks E.S and shave P.R laparoscopic surgery. In textbook of surgery .the biological basis of modern surgical practice 15th Ed .Edited by Sabiston D.C
3. J.W. Bsander Company, Philadelphia 1997.8000 -8001
4. Ellis H, B.J, Thompson I.N, et al Adhesion related hospitalsion after Abdominal and pelvic surgery. A retrospective cohort study .lancet.1999, 353:1476-1480.
5. Marc Christ0pher Winslet .Intestinal obstruction .In bailey &love short practices of surgery 25th Ed .1192 -1193
6. Miller G. Bowman J .AND Gordon P.H, Natural history of patients with adhesion small bowel obstruction. Brit .J .surgery 2000:87.1240-1247.
7. Current surgical Diagnosis &treatment 11TH Ed .2003 .630-631.
8. Woladiger F .et at 2000 and Adams S, et al 2003.
9. Jean-Jacques Duron MD, PhD. Adhesive Postoperative Small Bowel Obstruction: Incidence and Risk Factors of Recurrence After Surgical Treatment.
10. Tito WA, Sarr MG. Intestinal obstruction. In: Zuidema GD (ed). Shackelford's Surgery of the Alimentary Tract, 4th ed. Philadelphia, PA: Saunders; 1996:375–416
11. Ravikumar Ramanathan Valkodai, Rajamani Gurusami, and Vijayagiri Durajsami. Postoperative adhesive intestinal obstruction: The role of intestinal stenting. J Indian Assoc Pediatr Surg. 2012 Jan-Mar; 17(1): 20–22
12. M. C. Parker*, M. S. Wilson†, D. Menzies‡, G. Sunderland§, D. N. Clark–, A. D. Knight** and A. M. Crowe†† on behalf of the Surgical and Clinical Adhesions Research (SCAR) Group :The SCAR-3 study: 5-year adhesion-related readmission risk following lower abdominal surgical procedures.2005 Blackwell Publishing Ltd.Colorectal Disease, 7,551–558
13. Shyr-Chyr Chen, Zui-Shen Yen, Chien-Chang Lee, Yueh-Ping Liu, Wen-Jone Chen, Hong-Shiee Lai, Fang-Yue Lin, Wei-Jao Chen: Nonsurgical management of partial adhesive small-bowel obstruction with oral therapy: a randomized controlled trial. CMAJ November 8, 2005 vol. 173 no. 10 1165-1169
14. Ellis H: The clinical significance of adhesions: Focus on intestinal obstruction. Eur J Surg Suppl 1997; 577:5–9.
15. Barkan H, Webster S, Ozeran S: Factors predicting the recurrence of adhesive smallbowel obstruction. Am J Surg 1995; 170:361–365
16. Ferlay J, Bray F, Pisani P, Parkin DM. GLOBOCAN 2002: Cancer incidence, mortality and prevalence. In Worldwide IARC Cancer Base, vol 5, version 2.0. Lyon: IARC Press, 2004.
17. Maetani S, Tobe T, Kashiwara S. The neglected role of torsion and constriction in pathogenesis of simple adhesive bowel obstruction. Br j Surg 1984;71:127-30
18. Diamond MP, Daniell JF, Feste J, et al: Adhesion reformation and de novo adhesion formation following reproductive pelvic surgery. Fertil Steril 1987;47:864–86
19. Nezhat CR, Nezhat FR, Metzger DA, et al:Adhesion reformation after reproductive surgery by videolaseroscopy. Fertil Steril 1990;53: 1008–1011.
20. Ravikumar Ramanathan Valkodai, Rajamani Gurusami , and Vijayagiri Durajsami . Postoperative adhesive intestinal obstruction: The role of intestinal stenting. J Indian Assoc Pediatr Surg. 2012 Jan-Mar; 17(1): 20–22
21. Sosa J, Gardner B :Management of patients diagnosed as acute intestinal obstruction secondary to adhesions. Am Surg. 1993 Feb;59(2):125-8.
22. Cox MR, Gunn IF, Eastman MC, Hunt RF, Heinz AW :The safety and duration of non-operative treatment for adhesive small bowel obstruction. Aust N Z J Surg. 1993 May;63(5):367-71.
23. A. Niyaf, R. S. Bhandari, K. P. Singh, Management of adhesive intestinal obstruction Journal of Institute of Medicine, August, 2010;32:2 18 -20

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24. Seror D, Feigin E, Szold A, Allweis TM, Carmon M, Nissan S, Freund HR :How conservatively can postoperative small bowel obstruction be treated? . Am J Surg. 1993 Jan;165(1):121-5; discussion 125-6 .
25. Eric Delabrousse[1], Jean Lubrano[2], Jérome Jehl[1], Pierre Morati[2], Claude Rouget[3], Georges A. Mantion[2] and Bruno A. Kastler :[1]Small-Bowel Obstruction from Adhesive Bands and Matted Adhesions: CT Differentiation . American Journal of Roentgenology. 2009;192: 693-697
26. Cox, M. R., Gunn, I. F., Eastman, M. C., Hunt, R. F. and Heinz, A. W. (1993), THE OPERATIVE AETIOLOGY AND TYPES OF ADHESIONS CAUSING SMALL BOWEL OBSTRUCTION. Aust. N.Z. J. Surg., 63: 848–852.
27. Menzies D. Prospective adhesions: their treatment and relevance in clinical practice. Ann R Coll Surg Engl.1993;75:147–153.