AN ANALYTICAL STUDY IN ADHESIVE BOWEL OBSTRUCTION

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ABSTRACT

BACKGROUND

Peritoneal adhesions can be defined as abnormal fibrous bands between organs or tissues or both in the abdominal cavity that are normally separated. Adhesions may be acquired or congenital; however, most are acquired as a result of peritoneal injury, the most common cause of which is abdominopelvic surgery. Less commonly, adhesions may form as the result of inflammatory conditions, intraperitoneal infection or abdominal trauma. The extent of adhesion formation varies from one patient to another and is most dependent on the type and magnitude of surgery performed as well as whether any postoperative complications develop. Fortunately, most patients with adhesions do not experience any overt clinical symptoms. For others, adhesions may lead to any one of a host of problems and can be the cause of significant morbidity and mortality.

MATERIALS AND METHODS

This is a retrospective study of 50 patients admitted in Government Royapettah Hospital with adhesive bowel obstruction between September 2008 to September 2010. All patients were admitted and managed either conservatively or surgically.

RESULTS

1. Adhesive bowel disease is the most common cause for bowel obstruction followed by hernias.
2. Increased incidence is noted in females.
3. Increased incidence of adhesions was documented in gynaecological and colorectal surgeries.
4. Below umbilical incisions have higher propensity for adhesion formation.
5. Laparotomies done for infective aetiology have higher adhesion risks.
6. Most of adhesive obstructions can be managed conservatively.
7. Adhesiolysis preferably laparoscopic can be done. For gangrenous bowel resection and anastomosis or ostomy done.
8. Given the above risk factors, adhesive bowel disease can be prevented to a certain extent.

CONCLUSION

The formation of peritoneal adhesions continues to plague patients, surgeons and society. Although, research in this area is ongoing, there is currently no method that is 100% effective in adhesion prevention nor is there any way to permanently remove them once they have formed. Newer products are being developed that seem promising, but their efficacy has yet to be proven in clinical trials. Until then, surgeons should continue to be meticulous in their operative technique and should seek to minimise injury to the peritoneal surface.

KEYWORDS

Adhesion, Bowel Obstruction, Abdominal Surgery.

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BACKGROUND

Intraabdominal adhesions develop after abdominal surgery as part of the normal healing processes that occur after damage to the peritoneum. The early balance between fibrin deposition and degradation seems to be the critical factor in adhesion formation. Although, adhesions do have some beneficial effects, they also cause significant morbidity, including adhesive small bowel obstruction, infertility and increased difficulty with reoperative surgery. Several strategies have been employed over the years to prevent adhesion formation while not interfering with wound healing. This study summarises much of our current understanding of adhesion formation and strategies that have been employed to prevent them and the epidemiology and pathology of adhesive bowel obstruction.

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Aim of Study

- To compare the incidence of adhesive obstruction in various abdominal incisions.
- To study the correlation between indication for previous surgery and incidence of adhesive obstruction.
- To document the percentage of patients resolved symptomatically by conservative management.
- To analyse the intraabdominal presentation in patients requiring laparotomy.
- To discuss preventive methods deduced from the risk factors in study.

MATERIALS AND METHODS

Study Group

Patients admitted in Government Royapettah Hospital with adhesive bowel obstruction between September 2008 to September 2010.

Study Design

Retrospective.

Methods

History, clinical examination, x-ray, ultrasonogram, CT abdomen and pelvis.

Inclusion Criteria

1. Patient presenting with obstipation.
2. Previous history of abdominal surgery.
3. Diagnosed as adhesive bowel obstruction.

Exclusion Criteria

1. Patients with nonadhesive bowel obstruction.
2. Patients with spontaneous adhesions.

RESULTS AND OBSERVATION

Age (Yrs.)	Number of Patients	Percentage
<10	3	6
10-30	14	28
30-50	15	30
>50	18	36

Table 1. Age Distribution

Sex	Number of Patients	Percentage
Male	17	34
Female	33	66

Table 2. Sex Distribution

	Number of Patients	Percentage
Emergency	36	72
Elective	14	28

Table 3. Elective vs. Emergency

	Number of Patients	Percentage
Infective	23	46
Noninfective	26	52
Non-infective excluding gynaecology	12	34.5%

Table 4. Infective vs. Non-Infective

Procedure	Number of Patients	Percentage
Upper GI	5	10
Biliary	3	6
Gynaecology	14	28
Colorectal	10	20
Small intestinal	11	22
Appendicitis	3	6
Others	4	8

Table 5. Initial Procedure

Incision	Number of Patients	Percentage
Upper midline	3	6
Lower midline	17	34
Complete midline	7	14
Transverse lower abdominal	10	20
Transverse upper abdominal	3	6
P.S. scar	4	8
Appendectomy scar	3	6
Paramedian	3	6

Table 6. Previous Incisions

Time	Number of Patients	Percentage
<6 months	2	4
6 months-1 year	4	8
1-7 years	12	24
7-10 years	15	30
>10 years	17	34

Table 7. Interval of Symptoms

	Open	Laparoscopic	Percentage
Operative	17	2	38
Nonoperative	31	-	62

Table 8. Management

	Number of Patients	Percentage
Bands	4	21.5
Enteroperitoneal	8	42.1
Enteroenteric	6	31.5
Diffuse matted	1	5.2

Table 9. Intra-Abdominal Findings

DISCUSSION

Hernias remained the most common cause of bowel obstruction till recent date. But, in this study as well as in world literature, adhesions were the predominant cause.

In this study, we find that incidence of adhesive bowel obstruction increases with age. Since, age standardisation of the data is not done, the increased incidence in higher age group is due to inclusion bias.

There is higher incidence seen in females in this study. This represents higher incidence of pelvic surgeries and lower abdominal incisions, which are more prone for adhesions.[1]

According to literature available along with increased incidence in females, increased risk of operative management is also reported.

Risk Factors for Adhesion Formation-

1. Lower abdominal incisions.
2. Peritonitis.
3. Intraperitoneal foreign body.
4. Sepsis.
5. Ischaemia, drying, desiccation.
6. Inherent predisposition.

Previous Surgery Details

In this study, we infer that incidence of adhesive bowel obstruction is high in emergency surgeries.[2] This reflects the correlation between occurrence of adhesions and peritonitis and also increased incidence in gynaecological surgeries.

Though not much difference was seen between infective and noninfective surgeries on excluding gynaecological surgeries, there was higher incidence seen in surgeries done with localised or generalised peritonitis.

There is a higher incidence of adhesions seen in gynaecological, colorectal and small intestine surgeries primarily representing lower incision placement, pelvic dissection, free mobility of infracolic bowel and peritonitis.

Incision and Interval of Symptoms

We find that lower midline and transverse lower abdominal incisions have high incidence of adhesion formation primarily due to increased accessibility of the mobile small bowel in the lower abdomen.[3]

Though early postoperative adhesive obstruction was documented in this study a mean interval of ten years was deduced.

Preventive Strategies

The goal of adhesion prevention is to abolish or reduce the incidence, severity, extent and consequences of adhesions while retaining normal healing and preventing infection. There are 6 main mechanisms that interfere with adhesion formation, those that decrease peritoneal damage, those that decrease the initial inflammatory response, those that prevent fibrin formation, those that increase fibrinolysis, those that prevent collagen deposition and those that act as barriers to adhesion formation.

Management

More than half of the patients with adhesive bowel obstruction were managed conservatively by-

1. Nil per oral.
2. IV fluids.
3. Nasogastric tube aspiration.
4. I/O chart, pulse chart, temperature chart.

A period of 48 hrs. conservative management was given failing, which operative management was pursued. Patients developing signs of peritonitis during the period were also operated.

Parameters Monitored in Conservative Management[4]

1. Pulse, blood pressure.
2. Temperature.
3. Abdominal girth.
4. Frequent abdominal examinations.

High Probability of Conservative Management Failure

1. Female gender.
2. Gynaecological procedure.
3. Pulse on admission.
4. Nature of nasogastric aspirate.
5. Single distended loop.
6. Predominant ileal distention.
    - >2 risk factors- 12 times failure rate.
    - >3 risk factors- 30 times failure rate.

Criteria to Convert to Surgical Management[5]

1. Physical signs of strangulation.
2. Blood lactate level increase.
3. Unrelieved complete obstruction >48 hrs.
4. Oral water soluble contrast.
    a) Fails to reach caecum in 8 hrs.
    b) Clear cut off of contrast seen.

Operative Management

Though laparoscopic adhesiolysis is considered the preferred method of management in our study, most cases were managed by open adhesiolysis as they were taken up for surgery on emergency basis.

The common procedures done were band release and interbowel adhesion release. In cases of strangulated bowel, resection of the nonviable bowel was done.[6]

Laparoscopic Adhesiolysis Advantages[7]

1. Less operative time.
2. Decreased wound infection.
3. Decreased ventral hernia.
4. Decreased postop pneumonia.
5. Decreased incidence of enterotomy.
6. Less hospital stay.

If gangrenous bowel resection with anastomosis or ostomy is done.

Enteroenteral kinks were the most common intra-abdominal pathology followed by enteroperitoneal adhesions and bands.

CONCLUSION

1. Adhesive bowel disease is the most common cause for bowel obstruction followed by hernias.
2. Increased incidence is noted in females.
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