

Evaluation of Adhesions Induced Intestinal Obstruction following Abdominal Penetrating Missile Injuries

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Abstract

Objectives: To evaluate the incidence of adhesions induced intestinal obstruction after explorative laparotomy due to bullet/shell injury in Al-Kindi teaching hospital/Baghdad.

Methods: Comparative interventional prospective study of cases with adhesions induced intestinal obstruction admitted to the surgical wards in Al-Kindi teaching hospital from the 1st of January 2008 to 31st of December 2008. cases were followed considering the indications of previous laparotomies, the patients age, gender, duration between previous surgery and their presentation with intestinal obstruction

Results: Thirty-six out of the 76 cases with adhesions induced intestinal obstruction (A.I.I.O.) had history of laparotomy for penetrating missile injury, 26 of them were explored as a method of management of A.I.I.O. with mean age (22 for those explored, 37 for those treated conservatively), 16 of them presented within a year or less from the previous surgery.

Conclusion: Cases required surgical interventions for treatment were mainly those following explorative laparotomy for penetrating missile injury they were mainly of young age Groups.

Key words: Intestinal obstruction, penetrating missile injury, laparotomy.

Al- Kindy Col Med J 2009; Vol .5 (1) p:74-76

Introduction

The relation between postoperative adhesions and intestinal obstruction is not a new concept. In 1872, Thomas Bryant described a fatal case of intestinal obstruction caused by intra-abdominal adhesions that developed after removal of an ovarian tumorⁱ.

Adhesions are internal scars that bind organs and tissues that are not normally connected. Adhesions form as a result of trauma due to surgery, infection, ischemia, venous congestion, foreign bodies, raw areas, or other injuries. Adhesions can distort and disturb body functions and cause pain, **intestinal obstruction** and infertility, giving rise to a complex of problems, collectively termed "Adhesion Related Disorder (ARD)"ⁱⁱ

In western countries, where abdominal operations are common, adhesions and bands are the most common cause of intestinal obstructionⁱⁱⁱ, In general, procedures in the lower abdomen, pelvis or both and those resulting in damage to a large peritoneal surface area tend to put patients at higher risk for subsequent adhesive obstruction^{iv}.

In our country due to the action of violence the number of explorative laparotomies due to bullet or shell injury increased after 2003¹, as a result the number of patients admitted in the last years with the diagnosis of intestinal obstruction and had a history of explorative laparotomies due to shell or bullet injury increased. The aim of our study was to assess the incidence and modalities of management of intestinal obstruction occurring in patients who had previously an explorative laparotomy due to penetrating abdominal missile injury, compared to patients with history of other abdominal surgeries.

Methods

This study includes cases diagnosed as A.I.I.O² who were admitted to Al-Kindi teaching hospital from the 1st of January 2008 to the 31st of December 2008 had a history of a previous laparotomy.

According to the pathology found to be the cause of the previous laparotomy patients were categorized into three Groups

- Patients with history explorative of explorative laparotomy for penetrating missile injuries were considered as Group I.
- Patients with history of appendectomy were considered as Group II.
- Patients with history of laparotomies for other causes³ were considered as Group III.

Comparison between these Groups was done according to the age, sex, duration and management.

Results

Analysis of the results (**Table I, Graph I**) shows that management modalities,

In Group I, 26 cases out of 36 (72.2%) required explorative laparotomy to treat their intestinal obstruction while ten (10/36) (27.7%) were treated conservatively. In Group II, 2 cases out of 16 (12.5%) required explorative laparotomy to treat their intestinal obstruction while 14 out of 16 (87.5%) were treated conservatively.

In Group III, 10 cases out of 24 (41.6%) required explorative laparotomy to treat their intestinal obstruction while 14 out of 24 (58.3%) were treated conservatively.

i - Jo-Anne P. Attard and Anthony R. MacLean, Adhesive small bowel obstruction: epidemiology, biology and prevention, *Department of Surgery, University of Calgary, Calgary, Alta*

ii - Dr. David Wiseman, founder International Adhesion Society

iii

iv Jo-Anne P. Attard and Anthony R. MacLean, Adhesive small bowel obstruction: epidemiology, biology and prevention, *Department of Surgery, University of Calgary, Calgary, Alta*

Regarding AGE distribution,

In GROUP I, most of the cases explored were in between 10-29 years of age (76.8%) with a mean age value of 22 years while those treated conservatively were mainly between 20-39 years of age (80%) with a mean age value of 37 years of age. (**Table -2, Graph -2**)

In GROUP II, mean age for cases explored was 20 years while for those treated conservatively was 37 years. (**Table- 3, Graph -3**)

In GROUP III, mean age for cases explored was 35 years while for those treated conservatively was 38 years. (**Table- 4, Graph- 4**)

Regarding sex distribution, (Graph 5.6.7,8)

In GROUP I, four female cases were recorded (4/36) (11.1%), compared to 32 males (32/36) (88.8%), of the 26 explored cases females formed (11.5%) while males formed (88.4%), on the other hand of the 10 cases that were treated conservatively, we have (10%) females and (90%) males.

In GROUP II, five females (5/16) (31.2%) and 11 males (11/16) (68.7%) cases were recorded, out of the 2 explored cases 100% they were females, while for those 14 treated conservatively (78.5%) were males and (21.4%) were females.

In GROUP III, twelve females and 12 males were recorded (50% each), 40% of the cases explored were females and (60%) were males, while (57%) of those treated conservatively were females, and 43% were males.

It was found that the duration between the previous surgery and the current presentation,

In GROUP I, in seven cases of those explored the previous surgeries were done in less than a year and in another 9 they were done from 1 to 2 years making collectively (16/26) (61.5%), compared to the cases treated conservatively where 6 of them (6/10) (60%) had their surgeries done 5 to 7 years ago. (Graph 9)

In GROUP 2, the two cases that were explored had their appendectomy done in less than a year while those treated conservatively 5 cases had appendectomy in between 2 to 4 years and another 5 cases in 5 to 7 years making together (10/14) (71.4%).

In GROUP 3, of the explored cases 7 (7/10) (70%) had their surgeries done a year ago, while 5 of the cases treated conservatively had it in more than 7 years and another 4 had it in between 5 to 7 years making (9/14) (64.2%). (Graph 11)

Discussion

In our study about half of the cases with A.I.I.O. had history of laparotomy for penetrating abdominal missile injury exceeding those with operation for appendicitis 21% though appendectomy is the most common operation performed in our hospital and exceeding other abdominal surgeries which represented 31% of the cases while other studies concluded “operations for Appendicitis and Gynaecological procedures are the most common precursor for intestinal obstruction.”^{iv}, Also compared to a study done in the University of Calgary, Canada “It is estimated that the risk is 1% to 10% after appendectomy, 6.4% after open cholecystectomy, 10% to 25% after intestinal surgery and 17% to 25% after colorectal anastomosis”^{iv}.

We found that about 3/4 of patients of group I required early exploration to treat their intestinal obstruction. Compared to, 12% in group II, and 42% in group III.

Adhesions formation came in larger percentages in those with explorative laparotomy history due to penetrating missile, injury may be caused by many factors^{iv} related to this previous surgery as

√ -Ischemia: suspected preoperatively until the correction of the patient status.

√ -Dryness: the duration of the operation usually longer than other abdominal surgeries leading to more dryness of tissues.

√ -Bowel anastomosis.

√ -Infection.

√ -Venous congestion

√ -Foreign bodies

√ -Other causes

The mean age was around 20 in cases explored in groups I and II while it was 35 in group III, this is to be expected as victims of missile injuries are usually of younger age groups years resembling appendicitis in its age incidence as appendicitis most commonly occurs in young age group.

Those treated conservatively were in late thirties till mid forties, declaring that more serious obstructions occur in younger patient.

In general More males were admitted than females (21 female : 55 male), the percent is very low in females in group I, forming 11.1% compared to 88.8% in males, indicating that males were more vulnerable to missile injury than females. Males were more in group two while it was (fifty/fifty) in group three.

Considering the duration between the previous surgery and current presentation it was clear that the earlier the presentation the more serious the problem as in all groups more than 60% of the patients explored were presented within a year or less after the previous surgery, while those treated conservatively more than 60% had their surgery done in more than five years

Conclusion

Cases with history of explorative laparotomy due to penetrating missile injury form a larger portion than any other abdominal surgeries', even exceeding appendectomy which is well known as the most common emergency operation.

Laparotomy for penetrating missile injury forms the most hazardous' surgical history as nearly three quarters of the patient needed to be explored to treat their intestinal obstruction compared to other abdominal surgical procedures where most of the cases were treated conservatively.

GROUPS		No and percentage of admissions	Treated by explorative laparotomy	Treated conservatively
1	History of explorative laparotomy due to shell or bullet injury.	36/76 (47.3%)	26/36 (72.2%)	10/36 (27.7%)
2	History of appendectomy	16/76 (21%)	2/16 (12.5%)	14/16 (87.5%)
3	History of other abdominal surgeries	24/76 (31.5%)	10/24 (41.6%)	14/24 (85.3%)

Table 1

Cases admitted for intestinal obstruction in Al-Kindi teaching hospital during 2008 and had a positive surgical history, comparing different histories and the different modalities of treatment

	Explored	Treated Conservatively	Total
1d-1y	0	0	0
1y-9y	3/26 (11.5%)	0	3/36 (8.3%)
10y-19y	8/26 (30.7%)	0	8/36 (22.2%)
20y-29y	12/26 (46.1%)	4/10 (40%)	16/36 (44.4%)
30y-39y	3/26 (11.5%)	4/10 (40%)	9/36 (25%)
40y-49y	0	0	0
50y-59y	0	0	0
60y-69y	0	2/10 (20%)	2/36 (5.5%)
70y-79y	0	0	0
80y-89y	0	0	0
90y-100y	0	0	0
Total	26/26	10/10	36/36

Table 2

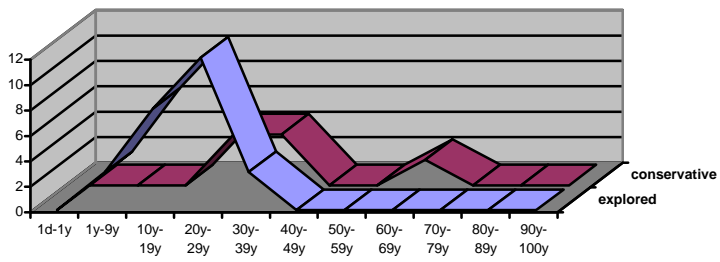
	explored	Treated conservatively	Total
1d-1y	0	0	0
1y-9y	0	0	0
10y-19y	1/2 (50%)	4/14 (28.5%)	5/16 (31.25%)
20y-29y	1/2 (50%)	1/14 (7.1%)	2/16 (12.5%)
30y-39y	0	2/14 (14.2)	2/16 (12.5%)
40y-49y	0	2/14 (14.2%)	2/16 (12.5%)
50y-59y	0	4/14 (28.5%)	4/16 (25%)
60y-69y	0	1/14 (7.1%)	1/16 (6.25%)
70y-79y	0	0	0
80y-89y	0	0	0
90y-100y	0	0	0
Total	2/2	14/14	16/16

Table 3

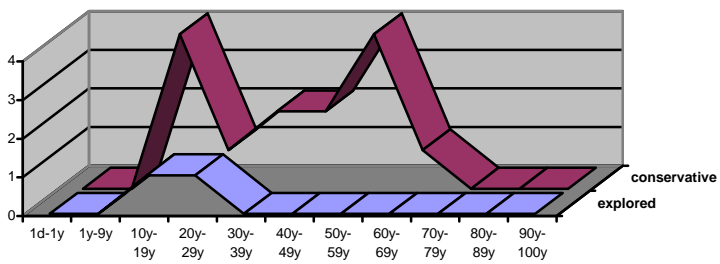
	explored	Treated conservatively	Total
1d-1y	0	0	0
1y-9y	0	0	0
10y-19y	1/10 (10%)	2/14 (7.1%)	3/24 (12.5%)
20y-29y	3/10 (30%)	1/14 (7.1%)	4/24 (16.6%)
30y-39y	3/10 (30%)	2/14 (14.2%)	5/24 (20.8%)
40y-49y	2/10 (20%)	3/14 (21.4%)	5/24 (20.8%)
50y-59y	0	4/14 (28.5%)	4/24 (16.6%)
60y-69y	1/10 (10%)	1/14 (7.1%)	2/24 (8.3)
70y-79y	0	0	0
80y-89y	0	1/14 (7.1%)	1/24 (4.1)
90y-100y	0	0	0
Total	10/10	14/14	24/24

Table 4

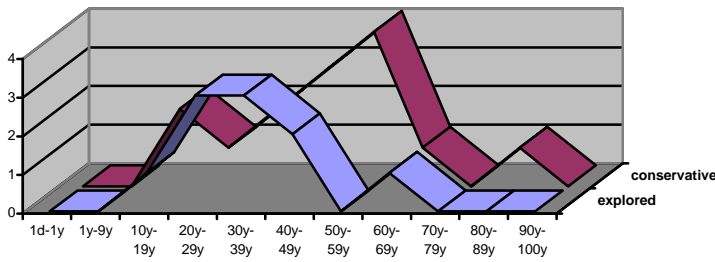
Graph 2: age distribution IN GROUP I



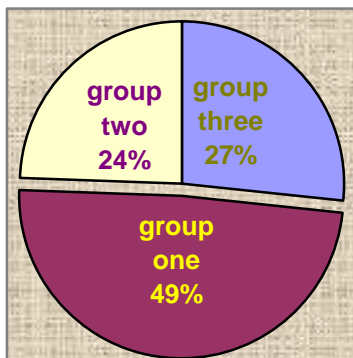
Graph 3: age distribution IN GROUP II



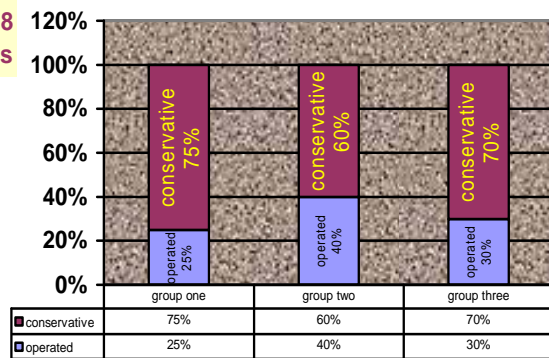
Graph 4: age distribution IN GROUP III



Graph5: surgical history in males showing the percentage of bullet/shell explorative laparotomy



Graph 8 females



References

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