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Post-Operative Acute Abdomen Managed by Re-Interventional Laparotomy

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ABSTRACT

Aim of the study:
The current study was conducted aiming to discuss the post-operative acute abdomen requiring re-interventional laparotomy in regard to clinical presentation, diagnosis, and outcome of surgical treatment

Patient and Methods: The 42 cases were analyzed by direct interview with patients, review of their records, laboratory studies, radiographic examination & operative reports of the initial operation

Results: Mean age 35.5 ,trauma 33% infection intrauma 31%

Conclusion: Detection of acute post-operative complications within the abdomen is a unique challenge for the surgeon

Keyword: Re-interventional laparotomy,acut abdomin

Introduction:

The term acute abdomen is widely understood but is difficult to define precisely[1]. Typically, the symptoms are of acute onset[1-,4]& strongly suggest an abdominal cause; abdominal pain is almost always a prominent feature

he term acute abdomen is widely understood but is difficult to define precisely[1]. Typically, the symptoms are of acute onset[1-,4]& strongly suggest an abdominal cause; abdominal pain is almost always a prominent feature Post-operative acute abdomen is one of the most difficult clinical problems facing the surgeon4 and it represents a unique challenge because of the difficulty in making a precise diagnosis[5]. Symptoms are attributed to normal pain follows laparotomy[1], abdominal pain, nausea, abdominal distension & absence of flatus or bowel movement are frequently normal sequelae of abdominal surgery[6],or may be attributed to paralytic ileus[4]

Judgement:

Physical examination of the post-laparotomy patient is fraught with uncertainty because the principal physical findings suggestive of acute abdomen (tenderness and rigidity) are normally present due to pain of the incision & peritoneal irritation that accompanies surgical manipulation of the intra-abdominal structures Diagnostic laboratory & radiologic examinations offer little assistance to surgeon trying to make a diagnosis of acute abdomen in the post-operative patient. Acute abdominal conditions worsen with time & therefore, the surgeon is compelled to make as rapid a diagnosis as possible

[3,4,5]The judgment to re-operate is a crucial one & the attitude of the surgeon is central to this important decision process. Denial of the possibility that an imperfect operation might have been performed is dangerous for the patient[5]

Diagnosis:

The main problem in management is making the diagnosis, when this is reached, the treatment is generally clear. There are two ways of reaching the diagnosis; first, the classical approach of history, physical examination, and investigations. The second approach depends on the knowledge and experience of the clinician and may be more valuable in management of the post-operative abdomen as the classical approach has its limitations[4]

At the onset, it is essential to bear in mind that acute abdomen unrelated to the operation may arise after surgery.

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These new and independent illnesses must be separated from a complication of a just-completed operation and requires special attention to establish a prompt and accurate diagnosis[7]

Patients:

Patients with early post-operative acute abdomen (within 30 days from the initial operation) who required re-interventional laparotomy were studied prospectively in Al-Yarmouk Teaching Hospital for the period from February 2000 to January 2002There were 42 patients for whom 47 re-interventions were done

Methods:

The 42 cases were analyzed by direct interview with patients, review of their records, laboratory studies, radiographic examination & operative reports of the initial operation

The interpretation of a re-interventional laparotomy was made by review of operative notes & verified by direct communication with the attending surgeon Procedures other than re-exploration under GA were excluded as well as those patients treated conservatively or discharged on their responsibility

Results :

The mean age of the entire group was 32.6±19 years, ranging from 6 to 87 years. There were 22 females (mean age 30±16 years) and 20 males (mean age 35.5± 22 years)

Table 1:The age and sex distribution of patients with acute abdomen included in the study. Included in the study.

Age group (years)	Males	Females	Total	
			No	%
<10	2	3	5	11.9
10-19	3	2	5	11.9
20-29	4	6	10	23.8
30-39	3	5	8	19.0
40-49	4	4	8	19.0
50-59	1	1	2	4.8
60-69	1	1	2	4.8
70-79	1	-	1	2.4
≥80	1	-	1	2.4
Total	**20**	**22**	**42**	**100%**

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10-19	3	2	5	11.9
20-29	4	6	10	23.8
30-39	3	5	8	19.0
40-49	4	4	8	19.0
50-59	1	1	2	4.8
60-69	1	1	2	4.8
70-79	1	-	1	2.4
≥80	1	-	1	2.4
Total	20	22	42	100%

Table 2: The distribution of cases according to their initial operation

Initial operation	Emergency	Elective	Total	
			No	%
Exploration for trauma	14	-	14	33.3
Appendicectomy	5	-	5	11.9
Cesarean section	3	1	4	9.5
Hysterectomy	2	2	4	9.5
Cholecystectomy	-	3	3	7.1
Splenectomy*	-	3	3	7.1
Inguinal hernia operation	-	1	1	2.4
Small bowel resection for SMT	1	-	1	2.4
Overswen, vagotomy plus drainage (for bleeding duodenal ulceration)	1	-	1	2.4
Right hemicolectomy (for Ca colon)	1	-	1	2.4
Total gastrectomy (for Ca stomach)	-	1	1	2.4
Total cystectomy (for Ca bladder)	-	1	1	2.4
Vesicolithotomy	-	1	1	2.4
Formal cystostomy	-	1	1	2.4
Drainage of an intra-abdominal abscess	1	-	1	2.4
Total	28	14	42	100%

*Emergency splenectomy for trauma mentioned under group of exploration for trauma.

Table 3:The distribution of cases according to the causes of re-intervention

Causes	No	%
Intra-abdominal infection	16	38.0
Mechanical intestinal obstruction	10	23.8
Abdominal wound dehiscence	7	16.7
Bleeding	4	9.5
Ischemic bowel	3	7.1
Miscellaneous	2	4.8
Total	**42**	**100%**

Table 4:The intra-abdominal infections according to the initial operation.

Initial operation	No	%
Exploration for trauma	5	31.3
Appendicectomy	3	18.7
Cesarean section	1	6.25
Hysterectomy	1	6.25
Splenectomy	1	6.25
Vesicolithotomy	1	6.25
Formal cystostomy	1	6.25
Total gastrectomy	1	6.25
Inguinal hernia operation	1	6.25
Overswenvagotomy plus drainage	1	6.25
Total	**16**	**100%**

Table 5:The distribution of mechanical intestinal obstruction according to the initial operation

Initial operation	Cases	
	No	%
Exploration for trauma	6	60
Appendicectomy	2	20
Hysterectomy	1	10
Drainage of an intra-abdominal abscess	1	10
Total	10	100%

Table 6:The distribution of abdominal wound dehiscence according to the initial operation

Initial operation	Cases	
	No	%
Exploration for trauma	3	42.8
Caesarean section	1	14.3
Hysterectomy	1	14.3
Total cystectomy	1	14.3
Right hemicolectomy	1	14.3
Total	7	100%

Table 7:The distribution of bleeding according to the initial operation

Initial operation	Cases	
	No	%
Caesarean section	2	50
Hysterectomy	1	25
Cholecystectomy	1	25
Total	**4**	**100%**

Table 8: The distribution of ischemic bowel according to the initial operation

Initial operation	Cases	
	No	%
Splenectomy	2	66.7
Small bowel resection for SMT	1	33.3
Total	**3**	**100%**

Table 9: The distribution of repeated re-intervention according to the initial operation and the reasons for the first and second re-intervention

Initial operation	Cases		The reason for	
	No	%	First re-intervention	Second re-intervention
Exploration for trauma	2	40	-Intestinal obstruction -Intestinal obstruction	-Recurrent obstruction -Leaking anastomosis
Appendicectomy	1	20	Intestinal obstruction	Bowel perforation
Total gastrectomy	1	20	Intra-abdominal infection	Persisting Intra-abdominal infection
Emergency operation for bleeding duodenal ulceration	1	20	Intra-abdominal infection	Persisting Intra-abdominal infection
Total	5	100%		

Table 10: The mortality rate per cause of re-intervention

Causes of re-intervention	Total No. of patients	Death	Death per cause
Ischemic bowel	3	1	33.3%
Intra-abdominal infection*	16	4	25.0%
Abdominal wound dehiscence	7	1	14.3%
Intestinal obstruction	10	1	10.0%
Bleeding	4	-	-
Miscellaneous	2	-	-
Total	**42**	**7**	**16.7%**

*All those died were having diffuse intra-abdominal infection

Discussion:

Acute abdomen in the early post-operative period (30 days after the initial operation[6]) presents a problem of special concern not only because of the difficulty in the detection of acute post-operative complications within the abdomen [5] but also in making precise decision to separate those complications from a new condition unrelated to the operation [5].The need for an emergency exploration during the convalescence of a patient from an operation represents a major diagnostic dilemma for the surgeon and a potentially life threatening situation for the patient [8], and this operation (re-operation) has a bad reputation. In part, this is the result of the complexity of the illness with which such patients present, and in part to the procedure's high mortality rate and the fact that it usually has to be considered as a failure of primary surgery [9-11], and there is an inherent reluctance to report such failures. Relaparotomy was usually necessary in patients who were already sick. This contributes to the inherent reluctance on the part of both surgeon and patient to accept the need for re-operation, it is difficult to start all over again after what may already have been a major operative and resuscitation effort [10]

The literature on re-interventional abdominal surgery is confusing, the incidence and mortality rate are greatly affected by the type of surgery reported. There is also difference between recent and older studies with regard to definitions and indications for relaparotomy rendering comparison of these studies rather useless [9] In our collection, we found that exploration for trauma represents the most.

frequent initial operation (33.3%) followed by appendicectomy (11.9%) and cesarean section and hysterectomy (9.5%) for each.

A study done by Harbrecht*et. al.*[10] in which there were few operations for trauma concluded that early urgent relaparotomies were commonly after colon, gastric, and pancreas operations followed by vascular, appendix, and small bowel. Another study done by Krause, in 1987, showed that the most frequent primary operation was gastrointestinal surgery [9].

This is explained by the fact that our hospital receives a large number of trauma patients and had a busy surgical casualty which affects the types of initial operations. Also we had more emergency initial operations (66.7% emergency *vs.* 33.3% for elective) for the same reason. While in Harbrecht study, 46% of patients having relaparotomies had had emergency initial operation.The commonest age in our study was young age group (20-29 years) (23.8%) while it was between 55-64 years in Harbrecht*et. al.* study and 45-64 years in Krause study [9,10].In our study, the most frequent cause for which re-intervention indicated was intra-abdominal infection (38%), followed by mechanical intestinal obstruction (23.8%), then abdominal wound dehiscence (16.7%), bleeding (9.5%), ischemic bowel (7.1%), and miscellaneous causes in 4.8%.

While the indications for urgent relaparotomy in Harberecht*et. al.* study were infections, disruption, dehiscence, bleeding, obstruction, ischemia, and miscellaneous causes. Infection was the most common indication, causing the most diagnostic difficulties and presenting the most varied findings [10]. In Krause study [9], the indications were infection and disruption of anastomosis, wound dehiscence, haemorrhage, ischemia and necrosis, multiple system failure and miscellaneous indications.

In studies by Mitsura[12] and by Petrov*et. al.*[13] showed that postoperative peritonitis and intestinal obstruction were the most frequent conditions for which laparotomies were carried out these results were similar to ours. Such factors as late hospitalization of patients and generalization of peritonitis, the patient's age, doctor's errors, lateness and type of the first operative intervention played the principle in the development of complications [12] .Diagnosis and decision to re-operate in our study was made mainly on clinical ground in the majority of patients,

difficulty in interpretation of investigations in the postoperative patient in addition to their unavailability in most of situations make their use limited.

Limitations for different investigations discussed as follows;

-**Laboratorytests** (blood count, with total and differential white blood cell count): Those have long been proven non-specific [9], although are suggestive of intra-abdominal infection, the specificity is so low as to make routine diagnostic use of these tests limited [14]

.-**Radiographicstudies**: Plain X-ray, free air within the peritoneal cavity may be seen in the postoperative patient for up to 10 days [4,14], however, the amount of free air should be decreasing rather than increasing, if one observes that the amount of pneumo-peritoneum increases from one day to the next, a perforation or leakage from suture lines should be excluded [4]. The use of contrast media in diagnosis of postoperative leakage was not used in our study although has been widely studied. Simple X-ray studies are the major aid in the diagnosis and decision making in bowel obstruction.

The postoperative abdomen, in which some distension, suture line, stomas, drain sites, and bandages are common, may present great limitations in ultrasonography [9], in addition to the shadowing by overlying bones or ribs, or a localized ileus that makes ultrasound difficult [14]. One of the limitations is that abscess may vary from echo-free to highly echogenic, the latter being difficult to identify and distinguish from surrounding loops of bowel [9]. Ultrasound is also high operative-dependent and results vary according to the expertise of the sonographer. Results of radio-isotope scans are also non-specific [9].

These difficulties have led many to recommend CT scanning as the first-line procedure in the evaluation of symptomatic postoperative abdomen taking in consideration that CT scan done before the 8th postoperative day was of minimal use when searching for intra-abdominal infection [14].Despite the great diagnostic yield of these methods, it should be noted that these should be used with great thought: if localized tenderness is present, no better yield can be achieved by additional ultrasonography, isotope scanning or CT scanning [9].After all Krause stated that success in finding the causative factor that had led to the worsening of the patient was achieved when re-laparotomy had been performed on clinical and combined criteria [9].

Timing of re-intervention:

Interval from the initial procedure to the re-intervention vary widely with the indications, it was 4-27 days in the infection and 6-28 days in the intestinal obstruction, 1-10 days for dehiscence, half an hour-11 days in bleeding, 2-28 days in ischemia, and 2-28 days for those with miscellaneous indications. Krause [9] reported such a wide variation, in addition to that, reports on interval; however, show such a large variation that does not appear to be of any use to comment on that particular matter [9]

More important than taking intervals into consideration is to determine the right time to go ahead with re-exploration. The usual admonition in the literature, with one divergent view, is the necessary re-operation should be performed as soon as possible [9]. The danger of opening the abdomen of a patient in a good health is less than that of waiting the diagnosis is more assured [11]. The inherent reluctance on the part of the surgeon, patient and his/her relatives to accept the need for re-exploration may contribute to unnecessary delay [8,10].

Prolonged unsuccessful management is associated with prolongation of hospitalization time and technical difficulties at subsequent surgical treatment [11].

Treatment was generally by urgent re-interventional laparotomy after resuscitation or after a short period of conservative treatment, then dealing accordingly.

Conclusions:

Detection of acute post-operative complications within the abdomen is a unique challenge for the surgeon because of the

difficulty in making a precise diagnosis, and knowledge and experience of the clinician is valuable in the management of post-operative acute abdomen because of the limitations of the classical approach; history, examination and investigation.

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