

An Experience With Selective Exploratory Protocol in Penetrating Abdominal Trauma.

K JAVEED S A KHAN M R CHOUDHRY

West Surgical Ward, Mayo Hospital, Lahore

Correspondence to: Dr. khalid javeed, Senior Registrar

The study spans over a period of three years. Includes 34 patients. 31 males and 3 females. Age ranged from 16-68 years. Stab injury seen in 21 patients and firearm was the cause in 13 patients. 15 patients were injured on the front and 19 on the back. Seven patients were managed by primary excision and suturing, tractotomy was done in 6 patients. Local wound excision was carried out in 12 patients; rest of the patients were managed by simply packing the injury tract with polyfax gauze. The study period covers no mortality

Key words. Penetrating abdominal trauma, stab abdomen. firearm abdomen..

Abdominal injuries are present in only 7-10% of patients admitted to trauma centers¹. The diagnostic exercise carried out in these patients is very limited and specific modalities are not available. However it is well established that they are difficult to identify by physical examination alone. In order not to miss injuries, the trauma care provider must have a high index of suspicion for their presence. The cost affectivity of the diagnosis or the offered treatment are the major issues for the hospital administrations. The diagnostic exercise comprises of DPL, CT scan, Ultrasonography, Laparoscopy, and other radiologically assisted procedure has not proved to be cost effective. The highest index of suspicion in the trauma patients leads to 70 to 80 % negative exercises². Similarly the mandatory exploratory protocol followed at other centers is also not cost effective as the negative explorations carry high expenses and morbidity. It also increases the hospital stay and adds to the hospital expenses.

These financial limitations are giving rise to another approach towards these injuries. A group of patients can be identified in which the treatment plan is designed considering the general condition of the patients nature and site of injury.

Material and methods

This study spanning over a period of three years was designed for, data collection and statistical analysis. All patients were registered for the study and relevant record was taken on the flow sheets. All patients presented in the emergency department of the Mayo hospital during the working hours of one surgical unit.

Exclusion criteria

Patients below 12 years of age, as they were referred to the pediatric department.

Patients with penetrating abdominal trauma with obvious indications for celiotomy.

Inclusion criteria

All the patients presenting with penetrating abdominal

trauma, with no obvious signs of hemorrhage, peritonism or peritonitis, clinically stable vital statistics, and a suspect of subcutaneous tract.

Preoperative evaluation

- Complete history and physical examination including vital signs.
- Detailed examination of the patient as a whole to look for associated injuries.
- Local examination to document the size, type, and depth of the wound, and viability of the injured area.
- Relevant investigations for the diagnosis of associated injuries, and preparation for anesthesia.

All the required information was noted on a prescribed Performa so the facts can be reproduced for analysis.

Treatment plan

After initial evaluation all the patients were subjected to the appropriate analgesics and antibiotics. Plan based on the clinical judgement and helping investigations was laid down. It comprises of subjective assessment of abdominal tenderness and rebound tenderness, frequent recording of the vital statistics, measurement of the abdominal girth, meticulous record of the intake and output, serial x-rays if required and general response of the patients with time.

All the wounds were examined on the theatre table under local or general anesthesia as per required in individual cases. The depth of the wounds were assessed in all the cases. If required tractotomy was carried in selective cases. Assistance for abdominal ultrasound was asked for to rule out any intraperitoneal injury.

Foreign body was removed only in selective cases where it was palpable and no extra effort was made for its retrieval.

Intact peritoneum was a guarantee for conservative management in stabs with sharp weapons, however this was not applicable to the cases of ice pick injuries. However in case of firearms and traffic accidents the observation continued as internal injury in this situation is

not ruled out by intact peritoneum.

Site of injury was noted in all the cases and an exit wound was also looked for in cases of the fire arm trauma. Patients with a thick layer of abdominal fat are more suitable candidates for conservative approach but thin patients are not out rightly excluded from the study. Tangential tracts of the firearms were also considered suitable for the study.

All the patients were kept in the ward and were observed for any intra abdominal injury. The study also evaluated the effects of delayed explorations in case the injury is diagnosed later; the morbidity and hospital stays were compared with those patients who were explored at the time of admission.

Results

The study spans over a period of three years starting from 1995. All the patients presented in the emergency department during the working hours of one of the four surgical units. All the patients presented with penetrating trauma in the region of the abdomen. The study includes 34 patients, out of whom 31 were males and the other 3 were females. The age ranged from 18 to 68 years. Only those patients who fulfill the criteria of conservative trial were included in the study. Mode and site of injury are shown in the table.

Table 1:

Site of injury	Front	Back*	Firearm	Stab
Rt. Hypochondrium	03	02	02	03
Epigastrium	00	01	00	01
Lt. Hypochondrium	02	04	01	05
Rt. Para umbilical	01	03	02	02
Umbilical	00	00	00	00
Lt. Para umbilical	02	02	01	03
Rt. Iliac fossa	02	04	03	03
Hypogastrium	02	01	01	02
Lt. Iliac fossa	03	02	03	02
Total	15	19	13	21

* Arbitrary denotions corresponding to the similar sites on anterior abdominal wall

Of these patients managed conservatively, in only one patient the injury was missed and a celiotomy had to be carried out after 18 hours of conservative trial. This patient had rising pulse and abdominal tenderness moreover there was bile stained fluid leak from the wound. This was a firearm case with a long tangential tract starting from the left lower chest in the anterior axillary line and exit at the upper end of the left greater trochanter. Intraoperatively a through and through perforation of the distal jejunum was found and resection and anastomosis was carried out. The patient had an uneventful recovery. The diagnostic exercise carried out on the first day of admission comprised of abdominal ultrasound in 5 cases, delayed ultrasound in other 8 patients. Proctosigmoidoscopy was carried out in 3 patients.

All the patients had local management of their wounds. 7 patients had primary excision of the wounds followed by primary suturing. In 6 patients tractotomy was carried out and the resultant wounds were packed. In twelve patients local excisions of the wounds were done and were left open. All the other wounds were packed with polyfax gauze.

Discussion

Trauma is the leading cause of death and morbidity in the younger populations. In the U.K trauma is the cause in 20% of the fatalities³. Unrecognized abdominal trauma is a distressingly common cause of preventable death in trauma. Penetrating abdominal trauma is increasingly seen as a result of urban violence. The primary factor in assessing abdominal trauma is not the exact diagnosis of the injury, but the recognition of the seriousness of the injury in the peritoneal cavity. The initial evaluation and resuscitation should go side by side. Following this a more formal assessment should be carried out., this includes a thorough examination of the anterior and posterior of the abdomen starting from lower chest to the gluteal folds posteriorly and groin crease anteriorly. The perineum and external genitalia should also be looked in the recommended circumstances.

After the initial evaluation the abdominal trauma patients are classified in to three groups. The first group comprises of the patients where the clinical and radiological evidence strongly suggests intraperitoneal injury. The second group comprises of the patients who are clinically stable but present with either evisceration or breach in the peritoneum on tractotomy. Both the above mentioned groups merit celiotomy. However there is a third group where the patients present with penetrating trauma and are stable clinically with no evidence of intraperitoneal injury breach in the peritoneum. This group merits a conservative trial before decision of the celiotomy is taken, no matter whether the injury is by stab or firearm.

This study includes only group three patients. The desire to avoid surgery in these patients is laudable. Nevertheless marked morbidity or mortality caused by failure to conduct timely celiotomy can be a dreaded consequence. In order to avoid such happenings close watch and highest index of suspicion are very important.

The conservative management of the patient in this protocol comprises of serial examinations of the patients. The abdominal girth is monitored, subjective analysis of the complaints like increasing pain loss, of appetite and generalized apprehension is also looked for. The record of the vital statistics is also watched and the frequency is based on the severity of the injury. The entry exit wounds are also looked for any unwanted smell or discoloration. Assistance can also be obtained from the radiology department, by plain or contrast X-rays and ultrasound.

Before 1960, all the surgeons were unanimous that all the patients with penetrating abdominal trauma should be explored to rule out intraperitoneal injury^{4, 5, 6} However

with experience the selective exploratory protocol emerged for stabs^{7, 8}. This experience evolved further and a school of thought started recommending the same for certain cases of the firearm abdomen. This also holds true for the patients with apparent bullet trajectories involving only the liver^{9, 10, 11}

References

1. Nigel-M; Saeger-HD; Massoun-H; J, injuries of the small and large intestines in traumatized patients. Unfallchirurg 1991 Mar;94 (3) 105-9.
2. Morris-J; Eddy-V; Rutherford-E; The trauma celiotomy, the evolving concept of trauma control. Curr probi surg 20; 612, 1996.
3. Arun phervani; Ray hannan; penetrating and blunt abdominal trauma: surgery international vol 41 1998.
4. I-J swan et, al The value of peritoneal lavage in stab wounds of the lower chest and abdomen; journal of the royal college of edinburgh 1986, 31-33.

5. Shires GT, principles of trauma care 3rd edition NY mcgill hill inc, 1986.
6. Marx J-A; penetrating abdominal trauma, Emerg-med-clin-north-Am 1993 Feb 11(1) 125-135.
7. Chmielewski GW, Nicholas JM; non operative management of the gunshot wounds of the abdomen. Am. surg 61:65, 1995.
8. Demetriades D; Velmahos G; Selective non operative management of the gunshot wounds of the abdomen. Arch surg 132: 178; 1997
9. Felliciano DV; Gunshot wounds to the right thoracoabdomen. A prospective study of non operative management. J trauma 37:737, 1994.
10. Hirschberg A; Wall MJ; planned reoperation for trauma. A two years experience with 124 consecutive patients. J trauma, 37: 365, 1994.
11. Mckenny NE; Martin L; 1000 consecutive ultrasounds for abdominal trauma. J trauma, 40(4):607, 1996.