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A PROSPECTIVE STUDY OF THE PENETRATING ABDOMINAL INJURIES AT A GOVERNMENT TEACHING HOSPITAL.

General Surgery

Dr Khalid Muqueem* Associate Professor, Department of Surgery, Vijayanagara Institute of Medical Sciences, Ballari, Karnataka. *Corresponding Author

Dr Maktum Naik Junior Resident, Department of Surgery, Vijayanagara Institute of Medical Sciences, Ballari, Karnataka.

ABSTRACT

Penetrating injuries to the abdomen forms one of the main components of emergent surgical procedures. Many of such patients are young and the only bread winners of the family. The management of these cases has changed drastically since last twenty years. This was a prospective study conducted in our Government Teaching Hospital between April 2015 to March 2016, of patients who presented with penetrating injury to abdomen. A detailed analysis of clinical presentation, imaging reports, provisional diagnosis, management done and any complications was documented. The mean age of the patients was 31.5 years. Majority of these were males. Among etiological factors, Homicidal stab injuries were the maximum 65.6%. Twenty-three patients (71.9%) underwent laparotomy. Penetrating of peritoneum was best indicator for positive findings at laparotomy. Among the injuries noted at laparotomy, small bowel was the most common. There were no mortality of the studied sample during the entire stay at the hospital. Nine patients (28.1%) who were stable and with no evidence of ongoing blood loss, no evidence of gastro-intestinal or genito-urinary injuries were managed by non-operative management.

Penetrating injury patients presents with a variety of symptoms and signs depending upon the nature and site of injury. Hence, management should be tailored to each individual patient.

KEYWORDS

Penetrating injury. Abdominal Trauma. Bowel injury. Stab injury. Bull gore injury. Non-operative Management

Introduction

One of the most common emergencies encountered by a General Surgeon is the Penetrating Abdominal injuries. Young patients in the prime of their life, sustain such injuries, mainly due to rivalries. The principles of management of such cases is changing since the last century from conservative to aggressive approach and then now finally to selective non-operative approach. Advanced investigative techniques, antibiotics and intensive care units and dedicated trauma units, advances in anesthesia and surgery, have all contributed to the change in the management protocols of these patients. Recent trend is selective management of patients with penetrating injury by watchful monitoring and conservative management. [1,2].

In this study, we have evaluated the various presentations, management of penetrating injuries with laparotomy and also documented about few patients managed with selective Non-operative Management (NOM).

Materials and Methods

This was a prospective study conducted in our Government Teaching Hospital between April 2015 to March 2016, who presented with penetrating injury to abdomen. A detailed analysis of clinical presentation, imaging reports, provisional diagnosis, management and any complications was documented. There were about 32 patients included in our study. Patients having severe head injury (GCS ≤ 7) and patients with severe chest injury (those which requires thoracotomy or Intercostal Tube Drainage) were excluded from our study.

Initial resuscitation was done following the ATLS (Advanced Trauma Life Support) protocol, where primary survey is undertaken to recognise and treat immediately life threatening conditions and once the patient is stabilized, secondary survey is undertaken to recognise other serious injuries. Based on the nature of injuries, hemodynamic stability, response to initial resuscitation, the cases are decided whether to be managed conservatively or to be taken for immediate laparotomy. The penetration of peritoneum was ascertained by local wound exploration under local anesthesia. The detailed examination findings, clinical features, imaging features, injuries, intra-operative findings and corrective and curative surgical procedures done, were all properly documented.

Results

Patient demographic data and causes of penetrating injuries of abdomen are shown in Table 1. The mean age of the presenting patients was 31.5 years, with a majority of them being males (78.1%). Majority of patients gave homicidal stab injury by sharp objects as the cause of penetrating abdominal trauma. Next common etiological factor was bull gore injury. Few patients gave history of falling over sharp objects like sharp stick (in one case) and metal rod (in the second case). One patient sustained gunshot injury. Plain abdominal X-ray was done in all the sable patients. Plain abdominal X-ray revealed free gas in the peritoneum in 9 patients (28.1%).

Table 1 Demographic and etiological data of the patients with penetrating abdominal trauma

N=32	
Mean Age (Years)	31.5
Sex Ratio (male/female)	25:7
Mode of penetrating injury	
Stab injury due to homicidal attack	21 (65.6%)
Bull gore injury	8 (25%)
Falling over sharp objects	2 (6.2%)
Gunshot injuries	1 (3.1%)

Various clinical features and findings at laparotomy are depicted in Table 2.

Table 2 Clinical features and intra-operative findings at laparotomy

Findings	
Peritoneal penetration	21 (65.6%)
Generalized tenderness	19 (59.4%)
Omental evisceration	7 (21.9%)
Bowel evisceration	5 (15.6%)
Hemodynamic instability at presentation	6 (18.8%)
Management strategy	
Non-operative Management	9 (28.1%)
Laparotomy	23 (71.9%)
Organs injured (in Laparotomy group, n=23)	
No injury	3 (13.0%)
Liver	4 (17.4%)
Hollow viscus perforation	7 (30.4%)
Mesentery	4 (17.4%)
Liver and Spleen	2 (8.7%)

Twenty three patients (71.9%) underwent laparotomy, in which 3 patients had negative laparotomy. Among other patients, the most common organ injured was Hollow viscus perforation, mainly small bowel.

Detection of peritoneal breach during local wound exploration was a good predictor for detecting injuries during laparotomy.

Most common complication was wound dehiscence, followed by respiratory complications and wound infections, see Table 3.

Table.3 Postoperative complications

Postoperative complications	Numbers
Respiratory complications	3
Wound dehiscence	6
Wound infection	5
Anastomotic leak	1
Postoperative ileus	2

Discussion

Penetrating trauma abdomen is commonly seen in young adults, who are many a times the only breadwinners of their respective families, causing catastrophic economic and emotional problems for the family. Previously, compulsory laparotomy was the norm, leading to unnecessary surgeries and its attendant complications. These unnecessary laparotomies ranged from 23% to 53% in stab injuries abdomen and 5% to 27% in gunshot injuries abdomen [3]. Later trained surgical judgement was encouraged and what emerged was called "selective conservatism" or "selective non-operative management" [1].

In penetrating injury of abdomen, the most common organ injured is small bowel, accounting to 49-60% of all injuries.

Gunshot injuries are more damaging and lead to more complications than the stab injuries. Not all stab injuries breaches the peritoneum and not all those stab injuries that breaches the peritoneum do any intra-peritoneal damage. Hence judicious clinical judgement is very much required in such cases to decide about the timing and necessity of laparotomy [4].

In rural setups like in our Country, bull gore injury is very common among farmers and agriculturists. Bull gore also has a blunt trauma component along with penetrating trauma. Lee et al. [5] retrospectively analysed all cases of stab wound abdomen between 1974 and1983 and found that negative laparotomy rate was 7.8%. The overall accuracy of initial clinical examination was around 88.6%.

Exploration of wound locally is very helpful in ascertaining the severity of injury. If peritoneum is not breached, and other parameters are satisfactory, patient can be safely discharged from emergency department [6]. Diagnostic peritoneal lavage (DPL) as a diagnostic tool was increasingly being deployed in many centres treating penetrating trauma abdomen [6,7]. In our centre we prefer FAST and in selected cases CECT is used to come to a diagnosis about the nature and severity of an injury.

Ultrasound is very useful as a diagnostic tool in detecting hemoperitoneum [8]. CECT is useful in detecting the peritoneal violation and visceral injury. However, it does not accurately detects presence or absence of bowel injury, which is the most common visceral injury [9,10].

Diagnostic laparoscopy in penetrating abdominal trauma is a very useful technique in centres specialising in the same and in good hands. It also readily detects diaphragmatic injuries which may be missed in other modalities. Diagnostic laparoscopy can double up as therapeutic laparoscopy too [11].

Penetrating abdominal trauma patients presenting with shock which is not responding to resuscitation or patients with rapidly deteriorating hemodynamic status and/or physical signs of peritonitis are the candidates for immediate Explorative Laparotomy. Selective Non-operative management can be advocated for patients who are hemodynamically stable and with no signs of peritonitis [12].

In patients with organ or omental evisceration, with stable hemodynamic signs and having no signs of peritonitis, "selective conservatism" can be tried, if the provisions for proper monitoring is available in the hospital. Otherwise, explorative laparotomy is the better option [13,14].

In our study, those patients who were managed by non-operative method were discharged on the third day of admission.

Conclusion

Penetrating abdominal trauma is a common emergency. Mainly young males are affected. Homicidal stab wound is the most common mode, whereas bowel injury is the most common organ involved. Early decision should be taken regarding, managing a particular patient conservatively or by emergent laparotomy. But when suspicion arises and when in doubt and in borderline cases, explorative laparotomy is the best method of treatment.

REFERENCES:

1. Shaftan GW (1960) Indications for operation in abdominal trauma Am J Surg 99:657-664
2. Inaba K, Demetriades D (2007) The nonoperative management of penetrating abdominal trauma. Adv Surg 41:51-62
3. Friedmann P (1968) Selective management of stab wounds of the abdomen. Arch Surg 96: 292-295
4. Croce MA, Fabian TC, Stewart RM et al (1992) Correlation of abdominal trauma index and injury severity score with abdominal septic complications in penetrating and blunt trauma. J Trauma 32 (3):380-387, discussion 387-8
5. Lee WC, Udd JF, Nance FC (1984) Surgical judgement in the management of abdominal stab wounds: utilizing clinical criteria from a 10-year experience. Ann Surg 199:549-554
6. Thompson JS, Moore EE (1981) Peritoneal lavage in the evaluation of penetrating abdominal trauma. Surg Gynecol Obstet153:861-863
7. Feliciano DV, Bitondo CG, Steed G et al (1984) Five hundred open taps or lavages in patients with abdominal stab wounds. Am J Surg 148:772-777
8. Kimura A, Otsuka T (1991) Emergency center ultrasonography in the evaluation of hemoperitoneum: a prospective study. J Trauma 31 (1): 20-23
9. Phillips T, Sclafani SJ, Goldstein A et al (1986) Use of the Contrast-enhanced CT Enema in the management of penetrating trauma to the flank and back. J Trauma 26:593-601
10. Chiu WC, Shanmuganathan K, Mirvis SE et al (2001) Determining the need for laparotomy in penetrating torso trauma: a prospective study using triple-contrast enhanced abdominopelvic omputed tomography. J Trauma 51 (5):860-868, discussion 868-9
11. Ivatury RR, Simon RJ, Stahl WM (1993) A critical evaluation of laparoscopy in penetrating abdominal trauma. J Trauma 34:822-828
12. Biffl WL, Moore EE, (2010) Management guidelines for penetrating abdominal trauma. Curr Opin Crit Care 16 (6):609-617
13. Arikan S, Kocakusak A, Yucel AF et al (2005) A prospective comparison of the selective observation and routine exploration methods for penetrating abdominal stab wound with organ or omentum evisceration. J. Trauma 58:526-532
14. Siddharth BR, Keerthi MSS, Subrahmaneswara BAbu Naidu, Venkanna M, Indian J Surg (June 2017) 79(3):196-200 DOI 10.1007/s12262-016-1459-0