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ABDOMINAL ABSCESS–A SEQUEL OF EXPLORATORY LAPAROTOMY FOR BLUNT TRAUMA ABDOMEN

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ABSTRACT

Intraabdominal abscess has been a common complication following laparotomy in blunt trauma patients, carrying a high mortality rate. Association between occurrences of intra abdominal abscesses with laparotomies done for blunt abdominal traumas has been studied less frequently. In our study we tried to find out the incidence rate, their locations and severity. A retrospective review of 190 patients who underwent laparotomy was carried out over a period of two years. The incidences of intra abdominal abscesses are determined through clinical and radiological measures. Diagnosis was confirmed by Microbiological cultures. Of 190 patients who had laparotomy for blunt abdominal traumas we identified 32 (17 %) who had intra abdominal abscesses. The most common intra abdominal injuries involved the small bowel. Associated multiple extra abdominal injuries and high transfusion requirements increases the risk of intra abdominal abscess formation. Most of the intra abdominal abscesses were located in upper quadrants. Enterobacteracae sp. played most important role in formation of abscess. Out of 29 (15 %) mortalities following laparotomy 12 (6.4 %) were attributed to intra abdominal sepsis accounting upto 42.8 % of total mortalities. Poor prognostic features are multiple injuries, multiple organisms per abscess, blood 'and blood product transfusion, multiple organ failure. Intra-abdominal abscess is a common complication following laparotomy for blunt trauma abdomen. Multiple factors are responsible for its occurrence including multiple visceral truma, old age and delayed presentations. In spite of aggressive management this carries a high mortality rate.

INTRODUCTION

Blunt trauma abdomen is one of the common causes of presentation at emergency. Severity of the injury commonly dictates the outcome. Mortality in blunt trauma is mostly related to haemorrhagic causes [1-4]. Of the patients who present with apparently severe abdominal trauma all doesn't need an emergency laparotomy. Ominous signs of peritonitis or intra peritoneal bleed not responding to conservative approach need an urgent laparotomy. Many studies are mentioned correlating mortality with emergency laparotomies but none have corroborated a definite linkage between laparotomy, post operative intra abdominal sepsis and mortality. In our study we retrospectively reviewed our experience of intra abdominal abscess and mortality for patients undergoing laparotomies for blunt trauma abdomen [5-8].

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MATERIALS AND METHODS

This study was carried out at Department of Surgery at SSKM Hospital, IPGMER, Kolkata,

West Bengal from the period of July 2013 to July 2015. A total of 476 multiple blunt trauma abdomen admissions were evaluated at our institution. Of them 190 patients who underwent laparotomy were included in our study group.

Inclusion criteria

Only patients above 12 yrs of age, who underwent laparotomy for abdomen related injuries following blunt trauma abdomen were included.

Exclusion criteria

Patients with blunt trauma sustaining injuries not related to abdomen and patients undergoing damage control surgery

The mechanisms of injuries include motorvehicular accidents (60 %), falls (25.1 %) and assaults (14.9%).

The trauma patients who were admitted to our unit underwent initial evaluation and aggressive fluid resuscitation if indicated. Blood transfusion was given to those patients who remained hypotensive (SBP < 90) despite administration of two liters of crystalloids. All patients underwent radiological evaluation of cervical spine, chest and pelvis. Following it, a complete abdominal examination was performed; the patients with evidence of peritonitis or intra peritoneal bleed not responding to conservative approach were explored. Patients with equivocal findings were further evaluated by Ultrasonography or CECT.

After confirmation of the diagnosis, thorough exploration of abdomen was done. Control of active haemorrhage was the first priority followed by control of bowel contents. After definite procedure abdominal wall was closed under closed system drainage as a routine [9-12].

Antibiotic prophylaxis for gram positive, gram negative and anaerobic coverage was started in preoperative period and continued in postoperative period for a minimum of 72 hours. In the post operative period patients were closely monitored for vitals, urine output, WBC count, renal function, hepatic function and the clinical status. Thorough microbial surveillance was done for all cases of fever.

Post operative diagnosis of intra abdominal abscess was based on combination of physical examination, radiological investigations (USG and CT) and microbiological culture reports. Antibiotics were changed according to culture sensitivity reports and control of intra peritoneal collections was done either by radiological guided aspirations or by a relaparatomy [13-16].

RESULTS

Of 476 patients admitted under our care with blunt trauma abdomen, 190 (40 %) underwent laparotomy. Among 190 patients majority of cases were related to small gut perforation with or without mesenteric perforations (64 cases) followed by splenic injury in 50 cases of which 33 needed splenectomy. Abdominal injuries are listed in Table 1.

Clinical signs of sepsis presented as early as at 24 hours and as late as on day 15. The total count ranged from 13,000 to 40,000. Five patients presented with wound dehiscence. Pleural effusion or atelectasis was noted in 4 instances. CT scan abnormalities confirmed the clinical findings. In majority of cases abscesses were intra-peritonial located mostly in the upper abdomen. The locations of intra abdominal abscesses are listed in Table 2.

All patients with localized collections were given a conservative trial by antibiotics and radiological guided aspirations. Septate echogenic collections not amenable for guided aspirations and those with generalised collections were subjected to relaparatomy. Percutaneous catheter drainage was successful in 8 patients, rest of all needed surgical drainage. Various treatment modalities opted for intra abdominal collections are depicted in Table 3.

Microbiological culture revealed E. Coli and Klebsiella as the most common prevailing organism, followed by enterococci and Bacteroids sp. The microbiological culture reports are depicted in table 4.

Of total 190 patients undergoing exploratory laparotomy for intra abdominal trauma 29 died because of surgery, sepsis or related causes. 16 out of 29 cases died of causes directly related to sepsis because of post operative intra abdominal collections. Multi organ failure was the most common cause of death seen in around 22 of 29 of cases. Of these 16 cases had intra abdominal abscess, 3 having positive blood cultures following central venous catheter related sepsis. 2 were having severe lower respiratory tract infections and 1 had sepsis with positive blood culture, without any definitive infective focus. Of others, three had disseminated intra vascular coagulation and other seven died of adult respiratory distress syndrome.

Table 1. Distribution of cases according to frequency of the organ injury

Organs injured	No. of Cases	Percentage
Small Intestine	64	33.68
Spleen	50	26.32
Liver	33	17.37
Renal	22	11.58
Stomach	12	6.32
Colon	9	4.74
Pancreas	0	0.00

Table 2. Distribution of Intra abdominal abscesses according to site

Site	No. of Cases	Percentage
Right upper quadrant	09	28.13
Left upper quadrant	06	18.75
Interloop	05	15.63
General peritonitis	03	9.38
Right paracolic	03	9.38
Left paracolic	02	6.25
Lesser sac	01	3.13
Pelvic	03	9.38

Table 3. Modalities for drainage of Intra abdominal abscess

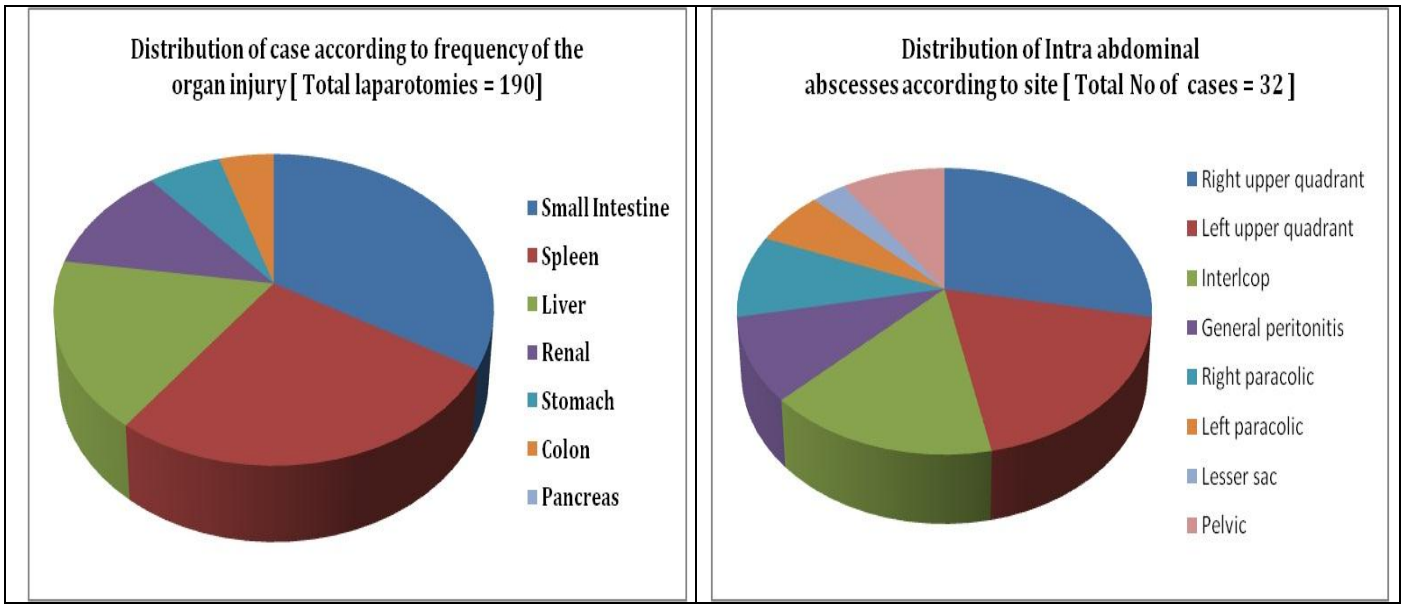
Modalities	No. of Cases [n=32]	Percentage
USG Guided Aspiration	05	15.63
CT Guided Aspiration	03	9.38
Laparotomy	24	75.00

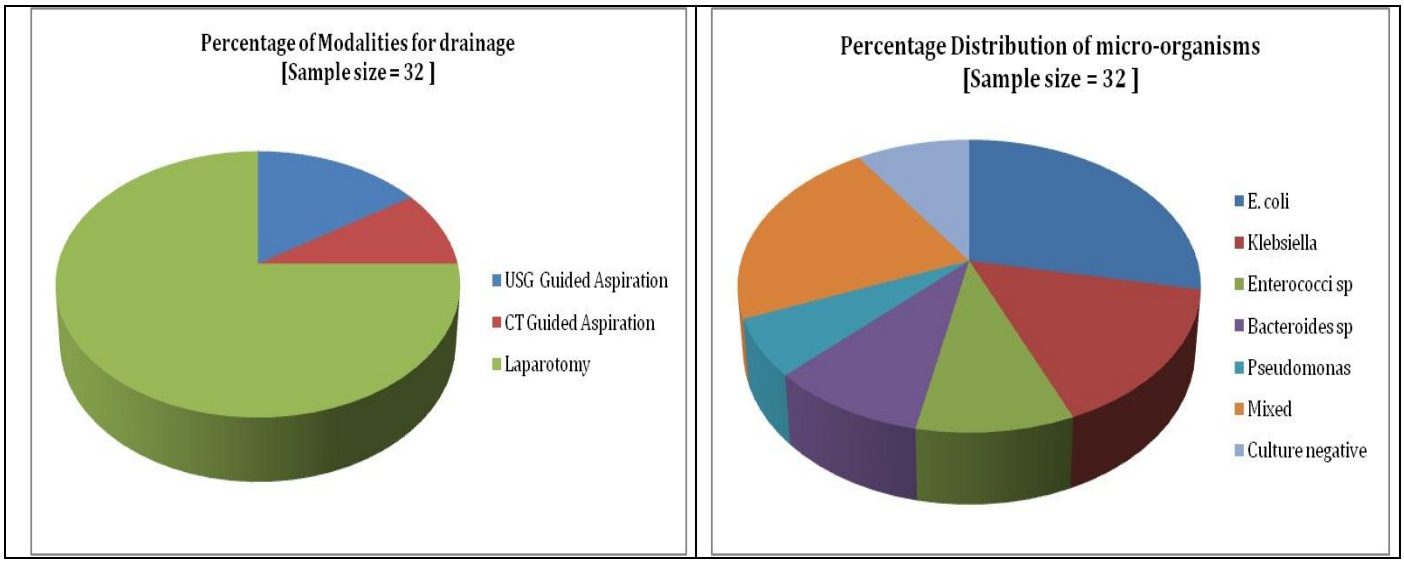
Table 4. Distribution of micro-organisms as per culture reports

Organism	No. of Cases [n=32]	Percentage
E. coli	09	28.13
Klebsiella	05	15.63
Enterococci sp	03	09.38
Bacteroides sp	03	09.38
Pseudomonas	02	06.25
Mixed	07	21.88
Culture negative	03	09.38

Table 5. Assessment of mortality following laparotomy for blunt trauma abdomen

Mortality	No. of Cases	Mortality	Percentage
Total Laparotomies	**190**	**29**	**15.26**
Post OP. IAA	**32**	**12**	**37.50**





DISCUSSION

Sepsis continues to be a primary cause of late death in multiple injured patients. Although reports are available suggesting the risk of intra abdominal abscess following intra abdominal injuries but none is available for relating it as an important cause of mortality.

Most of our patients sustained injuries to small bowel (62 cases) which is itself a trend away from normalcy. All available texts stamped solid visceral injuries are the most common organ injured in blunt trauma abdomen. But Splenic and liver injuries followed small bowel injuries in incidence in our study.

Splenectomy and liver injuries accounts for most of the post operative intra abdominal abscess in upper quadrants of abdomen where as small gut injuries doesn't depict any special pattern of collections.

We relied on CT examinations to aid in the examinations of intra abdominal abscesses and it was positive for 11 of 12 cases (91 %) which are consistent with other series. In rest of the cases USG screening was applied. CT and USG guided aspirations were accomplished in total no of 8 cases. In rest of the patients surgical drainage was done.

In our series gram negative rods were the predominating organisms, which can be easily inferred from the fact of having most of the cases with small bowel related injuries.

In our series there were 32 deaths of which 16 were related to multi organ failure secondary to intra abdominal abscess following laparotomy.

CONCLUSIONS

Intra abdominal abscess developed in 17.2 %cases of our patients undergoing emergency laparotomy for blunt abdominal trauma and contributed about 42.8 % of the total mortality. Post operative Intra abdominal abscess are difficult to prevent (as factors governing its development like gut injury, multiple injuries, delayed presentations, multiple blood transfusions and elderly age; cannot be changed) but with thorough vigilance ,can be diagnosed early. A thorough search for development of post operative intra abdominal collection and its aggressive managements can curtail down this high incidence of mortality attributed to emergency laparotomies for blunt trauma abdomen.

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Nil

CONFLICT OF INTEREST

No interest

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