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A Report on Average Hospital Stay between Patients Managed Conservatively and Operatively In Patients with Abdominal Visceral Trauma – A Prospective Study of 50 Cases

Manjit Singh Khalsa[1], Baldev Singh[2], Mohan Raj.S.N[3], K. D. Singh Aulakh[4*]

[1]Associate Professor, Department of General Surgery, Government Medical College, Amritsar.

[2]Professor, Department of General Surgery, Government Medical College, Amritsar.

[3]Junior Resident, Department of General Surgery, Government Medical College, Amritsar.

[4]Assistant Professor, Department of General Surgery, Government Medical College, Amritsar. E-mail: kdaulakh@gmail.com
*Corresponding author

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Abstract

Background: Trauma, a major public health problem worldwide is associated with high morbidity and mortality in every country regardless of level of socialeconomic development. Aim of this study was to assess the average hospital stay in abdominal visceral trauma patients who were managed conservatively and operatively. **Methods:** Prospective study enrolling 50 patients of either sex, of all age groups, were allocated to group A(n= 20) undergoing conservative management, and group B(n=30) undergoing operative management. Hospital stay was observed between the two groups and results were statistically analyzed. **Results:** Among the 50 study group, 20 were managed conservatively (group A) and 30 were managed operatively (group B).Overall hospital stay was observed to be low in patients who underwent conservative management (3.15days) as compared to patients who underwent surgical management (12.03days). **Conclusion:** Hospital stay was longer in duration in operated cases when compared to conservative cases.

Keywords: Abdominal Visceral Trauma, Conservative Treatment, Operative Management.

INTRODUCTION

The history of mechanism of injury is important in predicting the likely pattern of internal damage. Incidence of abdominal injuries is increasing because of increased incidence of road traffic accidents, assaults, and unchecked availability of arms and ammunitions.[1] Four wheelers remain the cause in at least 3/4th of cases and many have poly trauma which is most difficult to evaluate.[2]

Abdominal visceral injuries which include blunt abdominal injuries and penetrating injuries is a frequent emergency cause of acute abdomen associated with significant morbidity and mortality inspite of improved recognition, diagnosis and management.[3] Trauma is the leading cause of death and disability in developing countries and most common cause in young adults. In the world, blunt abdominal trauma is the 7thcause of mortality and abdomen is third most common injured region. Abdominal injuries need surgeries in quarter of cases.[4]

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The incidence of specific organ injuries is as follows; Spleen 25%, Kidney 12%, Intestine 15%, Liver 15%, Retro-peritoneal hematoma 13%,

Mesentery 5%, Pancreas 3%, Diaphragm 2%, Urinary bladder 6%, Urethra 2%, Vascular 2%.[5]

Solid organs like liver and spleen are common organs to be injured in blunt abdominal trauma, whereas small bowel and colon are common organs injured in penetrating abdominal trauma.[6,7] Initial resuscitation along with focused assessment with sonography in trauma and computed tomography abdomen are very beneficial for early and effective detection of injuries in patient with minimal and clinically undetectable sign of abdominal injuries.[8]
Non-operative management can be considered in most of the cases if the hemodynamics are stable, but operative management would be better decision in penetrating abdominal injuries. Initial clearance and resuscitation from place of trauma, pre hospital transportation, initial assessment, thorough resuscitation measures and correct diagnosis are of utmost importance in trauma management.[9,10] Sometimes clinical evaluation of abdominal injuries may be masked by other more obvious external injuries. Unrecognized abdominal injury is a frequent cause of preventable death after trauma. The patients who had sustained blunt abdominal trauma may have sustained injury simultaneously to other system and it is particularly important to examine for injuries of head, thorax and extremities.[11,12]

Mortality in abdominal trauma increases usually because of hypovolemic shock and septic shock or peritonitis developed due to hollow organ injuries.[13]

Though great progress has been achieved in non-operative treatment of abdominal trauma, it is restricted by following factors- hemodynamic instability, age of patient, presence of external abdominal injuries, polytrauma, presence of multiple organ injury, detection of high grade injury on CT, coagulopathy, presence of former injury in injured organ, presence of intraperitoneal blood and need for a blood transfusion of more than a unit.[14,15] However, over time these are not considered as important as previously thought in case of absence of hollow organ injury and presence of hemodynamic stability. As the degree of organ injury increases, the success rate in non-operative treatment decreases.[16]

Overall non-operative management is safe and effective method in the management of abdominal trauma in hemodynamically stable patient without hollow viscus injury and low grade soft tissue injury.[17,18] Ultrasonography is reliable in diagnosis and monitoring of patient in the absence of CT19. The benefits are decreased morbidity and mortality associated with laparotomy as well as decreased length of hospital stay.[20]

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A reduction in road traffic accidents by provision of good and well established road and traffic infrastructures, reduction in assaults by effective and strict implementation of law and order, health education on trauma, general health insurance covering trauma would improve the outcome with a reduction in the health care cost in trauma management.[21]

MATERIALS AND METHODS

The prospective study was conducted in the Department of Surgery, Guru Nanak Dev Hospital attached to Government Medical College, Amritsar after approval from Institutional Ethics Committee. Written informed consent was obtained from the patients.
Cases admitted in the surgical wards of Guru Nanak Dev Hospital,Amritsar were included in the study. A general protocol was followed regarding the management of the cases depending upon the clinical, laboratory and radiological findings.

Following the ISS (Injury Severity Scoring) for various solid organ and hollow viscus injuries, CT grading for mesenteric injury was used to grade and categorize injuries, data was recorded in the attached proforma. Follow up was done at 1st, 2nd and 3rdmonth interval.

Inclusion Criteria

- All trauma patients with abdominal visceral (both intraperitoneal and retroperitoneal) trauma involving solid organ, hollow viscus, diaphragm, mesentery and omentum.
- All age group and sex.
- All modes of trauma like blunt, sharp, fire arms etc.
- Other associated torso injures.

Exclusion Criteria

All cases of head injury and injury of extremities.
Patients with thoracic injuries.

Injury Severity Score (ISS) For Liver Injury.[17]

Type	Subtype	Description of Injury	Grade
Hematoma	Subcapsular	< 10% of surface area, nonexpanding	I
		10-50% of surface area, nonexpanding	II
		> 50% of surface area, nonexpanding	III
		Expanding	III
		Ruptured	III
	Intra-parenchymal	< 10cm in diameter, nonexpanding	II
		>= 10cm in diameter, nonexpanding	III
		Expanding	III
		Ruptured	III
Laceration	Parenchyma	Capsular tear, < 1 cm parenchymal depth	I
		Depth 1-3 cm, < 10 cm in length	II
		Depth > 3 cm	III
	Disruption	25-75% of hepatic lobe, or 1-3 couinaud's segments within a single lobe	IV

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		> 75% of hepatic lobe, or > 3 couinaud's segments with a single lobe	V
Vascular		Juxtahepatic venous injury (retrohepaticvenacava, major hepatic veins)	V
		Hepatic avulsion	VI

Injury Severity Score (ISS) For Renal Injury.[17]

Type	Subtype	Description Of Injury	Grade
Contusion		Microscopic or gross hematuria urologic studies normal	I
Hematoma	Subcapsular	Nonexpanding without parenchymal laceration	I
	Perirenal	Nonexpanding hematoma confined to renal retroperitoneium	II
Laceration	Parenchymal	<1.0cm depth of renal cortex without urinary extravasation	II
	Parenchymal	>=1.0 cm depth of renal cortex without collecting duct rupture or urinary extravasation	III
	Parenchymal	Extending through the renal cortex, medulla and collecting system	IV
	Parenchymal	Completely shattered kidney	V
Vascular		Main renal artery or vein inury with contained haemorrhage	IV
		Avulsion of renal hilum which devascularizes kidney	V

Injury Severity Score (ISS) Splenic Injury.[18]

Type	Subtype	Description Of Injury	Grade
Hematoma	Subcapsular	<10% of surface area	I
Hematoma	Intra-parenchymal	10-50% of surface area	II
		> 50% of surface area, nonexpading	III
		Expanding	III
		Ruptured	III
		< 5cm in diameter	II
		>5 cm in diameter, nonexpanding	III
		Expanding	III
		Ruptured	IV
Laceration	Parenchyma	Capsular tear < 1 cm depth	I
		Capsular tear 1-3 cm in depth, not involving a trabecular vessel	II
		> 3 cm parenchymal depth	III
		Involving trabecular vessels	III
		Involving segmental or hilar vessels, with major devascularisation of the spleen	IV
		Completely shattered spleen	V
Vascular		Hilar vascular injury which devascularizes the spleen	V

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Injury Severity Score (ISS) For Pancreatic Injury.[18]

Type of injury	Involvement	Grade
Hematoma	Minor contusion without duct injury	I
	Major contusion without duct injury or tissue loss	II
Laceration	Superficial laceration without duct injury	I
	Major laceration without duct injury or tissue loss	II
	Distal transection	III
	Distal parenchymal injury with duct injury	III
	Proximal transection	IV
	Proximal parenchymal injury involving the Ampulla	IV
	Massive disruption of the pancreatic head	V

Injury Severity Score (ISS) For Small Intestine

Type of injury	Involvement	Grade
Hematoma	Contusion or hematoma without devascularization	1
Laceration	Partial thickness, no perforation	1
	<50% of circumference	2
	>50% of circumference without transaction	3
	Transection of bowel	4
	Transection of bowel with segmental tissue loss	5
Vascular	Devascularised segment	5

Injury Severity Score (ISS) For Large Intestine

Type of Injury	Involvement	Grade
Hematoma	Contusion or hematoma without devascularization	1
Laceration	Partial thickness, no perforation	1
	<50% of circumference	2
	>50% of circumference without transection	3
	Transection of the colon	4
	Transection of the colon with segmental tissue loss	5

Injury Severity Score (ISS) For Rectum

Type of Injury	Involvement	Grade
Hematoma	Contusion or hematoma without devascularization	1
Laceration	Partial thickness laceration	1
	<50% circumference	2
	>50% circumference	3
	Full thickness laceration with extension into the perineum	4
	Devascularized segment	5

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Injury Severity Score (ISS) For Duodenal Injury

Type of Injury	Involvement	Grade
Hematoma	Involving single portion of duodenum	1
	Involving more than one portion	2
Laceration	Partial thickness, no perforation	1
	Disruption <50% circumference	2
	Disruption 50-75% circumference of 2nd portion Disruption 50-100% circumference of 1st, 3rd,4th portion	3 3
	Disruption >75% circumference of 2nd portion Involvement of ampula or distal common bile duct	4 4
	Massive disruption of duodenopancreatic complex	5
Vascular	Devascularization of duodenum	5

Injury Severity Score (ISS) For Diaphragm

Type of Injury	Involvement	Grade
Contusion		1
Laceration	<2cm	2
	2-10cm	3
	2-10cm with tissue loss <25cm2	4
	Tissue loss >25cm2	5

Injury Severity Score (ISS) For Urinary Bladder

Type of Injury	Involvement	Grade
Hematoma	Contusion, intramural hematoma	1
Laceration	Partial thickness	1
	Extraperitoneal bladder wall laceration <2cm	2
	Extraperitoneal (>2cm) or intraperitoneal (<2cm) bladder wall laceration	3
	Intraperioneal bladder wall laceration >2cm	4
	Intraperitoneal or extraperitoneal bladder wall laceration extending into the neck or ureteral orifice (trigone)	5

Blunt Injury Prediction Score (CT Grading) For Mesentery

Involvement	Grade
Isolated mesenteric contusion without associated bowel wall thickening or adjacent interloop fluid collection	1
Mesenteric hematoma <5cm without associated bowel wall thickening or adjacent interloop fluid collection	2
Mesenteric hematoma >5cm without associated bowel wall thickening or adjacent interloop fluid collection	3
Mesenteric contusion or hematoma (any size) with associated bowel wall thickening or adjacent interloop fluid collection	4
Active vascular or contrast extravasation, bowel tansection or pneumoperitoneum	5

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Data analysis

Data was collected and analysed by using appropriate statistical tools like Statistical Package for the Social Sciences (SPSS) software and Epi Info statistical software

RESULTS

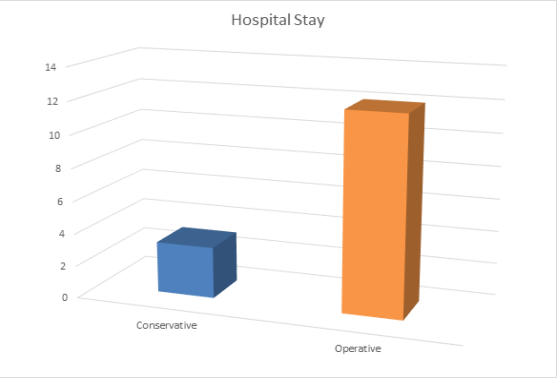

Figure 1: Distribution of average hospital stay.

Average hospital stay for group-A patients was 3.15 days which was low when compared to group-B patients which was 12.03 days. There was a significant difference in hospital stay between the patients managed conservatively and patients managed operatively (p value – 0.001).

DISCUSSION

In the present study 'Report on average hospital stay between the patients managed conservatively and patients managed operatively in abdominal visceral trauma patients', was conducted to assess the average hospital stay between patients managed conservatively and patients managed operatively in abdominal visceral trauma. This included study group of 50 patients, among which 86% were males and 14%, were females. This indicates that most commonly injured population being males could be due to increased outdoor activities and careless and reckless behavior or increased male dominance in driving of males. This was in concordance with results obtained by MahaYassin Omer, AamirAbdullahi Hamza et al who studied 85 patients with penetrating abdominal injuries over period of one year and found that males were predominant 78 (91.8%) whereas females were only 7 (8.2%) making a male to female ratio of 11:1.[4]

Most common injured population was young adults in the age group of 20-40 years which could be due to increased outdoor activities of young population and least injured was age group above 60 years of age. Mean age group was 32.52. This was in concordance with study results obtained by Jones et al who reported mean age of 36 years and 34.9 years in their study population.[22,23]

In my present study, patients were categorized based on mode of injury, type of injury, organ of injury. We found that most common mode of injury was found to be Road side accidents (60%) followed by assaults (14%) and least being bomb blast(2%) and railway accident(2%). This could be due drunken driving, over speeding, refusal to follow traffic rules or because of bad condition of roads. This was in concordance with study conducted by Maurice and colleagues who studied 58 patients with blunt abdominal trauma over 5 years. They found that road

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traffic accidents inflicted 17(89%) injury was most common type of injury.[7]

This study group comprised of total 50 patients. We categorized the patients depending on treatment received. Group A was patients who were managed conservatively. Groups B were patients who were managed operatively. Group A consisted of 20 patients (40%) and group B consisted of 30 patients (60%).

Overall average time taken for patients to reach hospital from site of trauma was 6.84 hours. Average time taken for patients to reach hospital from site of trauma in group A was 6.466 hours and group B was 7.4 hours. There was no significant difference between the two groups. Overall hospital stay was observed to be low in patients who underwent conservative management (3.15days) compared to patients who underwent surgical management (12.03days).

CONCLUSION

Average hospital stay determines the morbidity of patients. Patients with morbidity require longer hospital stay compared to patients with no morbidity. Hospital stay was longer in duration in group-A patients (patients who underwent operative management) when compared to group-B patients (patients who underwent conservative management.

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