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Research Article

**ROLE OF ULTRASONOGRAPHY IN DETERMINING THE  
RESULTS OF BLUNT ABDOMINAL TRAUMA**Dr. Muhammad Umer Gul<sup>1</sup>, Dr. Tahreem Maqsood<sup>2</sup>, Dr. Mubashra Shamshad<sup>3</sup>

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**Abstract:**

**Aim:** The main purpose of this study was to assess the accuracy of abdominal ultrasound in victims of blunt trauma and to determine its sensitivity and specificity among these patients.

**Method:** This descriptive cross-sectional study was held in the emergency department and Surgical Unit of Jinnah Hospital Lahore for One-year duration from March 2018 to March 2019.

**Study design:** A descriptive cross-sectional study.

**Place and duration:** In the emergency department and Surgical Unit II of Jinnah Hospital Lahore for One-year duration from March 2018 to March 2019.

**Conclusion:** The timely availability of ultrasound after blunt trauma can in most cases speed up diagnosis and decision on surgery. Hemodynamically unstable patients should be operated early to prevent morbidity and mortality. Discounts should be available throughout the day in emergency surgical situations to facilitate decision making.

**Keywords:** Blunt abdominal trauma, ultrasound, FAST (focused assessment with sonography in trauma)

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**INTRODUCTION:**

Trauma is a major cause of morbidity and mortality worldwide. The incidence of blunt trauma increases due to a higher rate of car and motorcycle accidents. There are various diagnostic methods for blunt abdominal trauma, such as simple abdominal radiographs, ultrasound, magnetic resonance imaging and computed tomography. In the past two decades, abdominal ultrasound has played a leading role in research on trauma. This technique is portable, noninvasive, simple and cost-effective. Ultrasound can detect intraperitoneal fluid, which requires further evaluation and possible laparotomy. With the introduction of second-generation ultrasound contrast agents, contrast-based ultrasound (CEUS) has complemented the traditional FAST system (trauma focused evaluation). The results of several controlled studies show excellent diagnostic accuracy of CEUS excluding clinically significant parenchymal lesions. Especially in younger, hemodynamically stable patients, this technique can contribute to the reliable exclusion of parenchymal lesions without the use of ionizing radiation. With regard to North America and Western Europe, many studies highlight the role of computerized discovery (CT) with contrast. CT scanners have evolved to create fast and highly accurate images that revolutionize injury management protocols. Another aspect of a closed abdominal injury is pancreatic injury. Physical examination and serum amylase cannot be diagnostic mostly after blunt trauma. Computed tomography (CT) can determine pancreatic injury or procedure more accurately than other diagnostic methods.

**PATIENT AND METHOD:**

This descriptive cross-sectional study was held in the emergency department and Surgical Unit II of Jinnah Hospital Lahore for One-year duration from March 2018 to March 2019. Patients with blunt abdominal trauma who reported to emergency department were enrolled. Written consent from all patients or their relatives was taken and 100 patients was included in the study. Permission was obtained from the hospital's ethics committee. Data were statistically analyzed. The mean time interval for diagnostic ultrasound was recorded. CT scan was performed in stable patients with equivocal ultrasound. The clinical course, operational results and tests were recorded. All patients with abdominal trauma were included. Patients under the age of 12 years were excluded from the study. Similarly, patients with penetrating abdominal trauma were transferred to the operating room without ultrasound.

**RESULTS:**

In total, one hundred patients met the inclusion criteria. Ninety patients are men and ten women. Eighty patients were under the age of forty. Seventy patients were workers. Eighty patients were injured in a traffic accident. The study showed that forty-four patients had hemoglobin levels below 10 g / dl. Sixteen patients had evidence of radiographic pneumoperitoneum without ultrasound. Seventy-five patients had free intraperitoneal fluids during abdominal ultrasound. These sixty-eight patients underwent reconnaissance laparotomy. According to the results of ultrasound, all operated patients gave positive results.

**Table showing the type of injury.**

Liver	60
Total no. showing free fluid	75
Spleen	5
Intestine	10
Mesentery	26
Pancreas	2
More than one organ	12

**DISCUSSION:**

Trauma, which is a disease of young people, remains a challenge with significant morbidity and mortality. The incidence of closed injuries is increasing due to road accidents<sup>2</sup>. Trauma affects more people at a

young age. In our study, 80% of patients were between 21 and 40 years old. Men around the world are constantly maintaining higher mortality rates. Possible explanations for the greatest load observed among men may include a higher level of risky

behavior and risk among occupations. Our study shows that 90% of patients participating in blunt abdominal injuries are men.

Our study shows that 80% of the blunt areas of the abdomen had a traffic accident. There are differences in the results of international research. One study shows that 60% of patients with blunt abdominal injuries are caused by traffic accidents.

In our study, the ultrasonic representation of free fluid shows 92.7% sensitivity, 100% specificity, 100% positive predictive value, and 93.75% negative predictive value. Richards et al reported 60% sensitivity, 98% specificity, 82% positive predictive value and 98% negative predictive value for diagnosing abdominal injuries. Early laparotomy was recommended in blunt trauma because the presence of more than the minimum amount of free fluid in the absence of permanent organ damage was associated with clinically significant visceral changes. The value of ultrasound is largely limited to organ lesions not related to free fluid. Sensitivity and specificity were 90% and 100%, respectively. In another study, ultrasound accuracy was 94.2%, sensitivity 91.9%, specificity 96%, and predictive value 94.9%. 17% of our patients had free fluid. There were no visceral changes and they were treated conservatively. Other studies have confirmed the association of free fluid with blunt abdominal changes between 2 and 3% without any visceral damage. FAST is useful as the first diagnostic tool to detect intra-abdominal fluid after abdominal trauma. FAST results can be optimized by properly training and understanding the limits of ultrasound. It has been reported that DPL diagnoses a suspicion of internal abdominal injury that is difficult to interpret in a hemodynamically unstable patient, when there is no ultrasound device, no one is trained to perform FAST results. In contrast, intravenous CT with increased contrast is the preferred diagnostic method in hemodynamically stable patients. It is useful for detecting free air and intraperitoneal fluid, determining the degree of damage to permanent organs, detecting retroperitoneal changes, and assisting in conservative treatment decisions.

### CONCLUSION:

The timely availability of ultrasound after a closed injury can in most cases speed up the diagnosis and decision on surgery. Hemodynamically unstable patients should be operated early to prevent morbidity and mortality. Surgery should be available 24 hours a day in emergencies to help make decisions about ultrasound scanning.

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