



## General Surgery

# A STUDY ON ACCURACY OF EXTENDED FOCUSED ASSESSMENT WITH SONOGRAPHY FOR TRAUMA (EFAST) IN DIAGNOSING ABDOMINAL TRAUMA WITH RELATION TO OPERATIVE FINDINGS.

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\*Corresponding Author**ABSTRACT**

**Introduction:** Still now the evaluation of the patient suffering from thoraco-abdominal trauma has continued to act as a challenge for those emergency traumatologist and practitioners. Around 50% of the patients suffering from severe abdominal trauma or some multiple injuries either are unconscious or get a normal exam of their abdominal initially and they are not able to experience a proper exam of abdominal. As a consequence the unreliable nature of the physical exam and history of the traumatic population has made the physician to be highly dependent on the imaging of diagnostic features.<sup>1</sup> **Objective:** To study eFAST ultrasonography findings of abdominal organs in blunt and penetrating trauma patients. To study the mode of injury, frequency of organs involved in the injury. To compare the findings of eFAST ultrasonography with the operative findings of the abdomen. **Methods:** This was a Descriptive Observational study for a period of 18 months on 60 patients who had blunt and penetrating trauma of abdomen and were admitted in TMMC&RC. **Result:** e-FAST is also a significant way for identifying the clinical as well as operative findings of the paper helps in detecting the after effect of the trauma as well. **Conclusion:** It can be concluded from the results of the study that carrying out the E fast is helpful in increasing the sensitivity of the physical examination of the cases as well as the history of them too. Diagnosis of hemoperitoneum along with the understanding of the solid organs can be carried out in a proper method too. e-FAST is also a significant way for identifying the clinical as well as operative findings of the paper helps in detecting the after effect of the trauma as well. There is a need for future randomized studies which would be prospective in nature and finding out the results across a vast area of data.

**KEYWORDS :****INTRODUCTION:**

Still now the evaluation of the patient suffering from thoraco abdominal trauma has continued to act as a challenge for those emergency traumatologist and practitioners. Around 50% of the patients suffering from severe abdominal trauma or some multiple injuries either are unconscious or get a normal exam of their abdominal initially and they are not able to experience a proper exam of abdominal. As a consequence the unreliable nature of the physical exam and history of the traumatic population has made the physician to be highly dependent on the imaging of diagnostic features.<sup>1</sup>

At that time each and every minute can also be a difference between living and dying. DPL or Diagnostic Peritoneal Lavage was being used in the historic times for identifying the availability of blood or free fluid along the peritoneal cavity.<sup>2,4</sup>

**Lack of the exposure towards radiation****1. Noninvasiveness**

One of the most widely used types of imaging modality is computed tomography but as it involves ionizing radiation so it cannot be that is the best option for the patients who are potentially unstable or actually unstable. On the other hand the use of ultrasound has also heightened up in the last decade and that is why sonography has become a type of essential and jumps for the area of trauma resuscitation.

One of the studies that was being carried out in the country of Brazil has shown that from a has been the primary cause for the rate of mortality as well as mortality among the people who are less than 45 years of age and it is also lead that missions of one third of each and every admissions in the intensive care unit.<sup>4</sup>

- Pleural effusion
  - Pneumothorax
  - Pneumothorax
2. Portability  
3. Rapidity<sup>9</sup>  
Reproducibility

Several researchers have also underlined that this particular technique is helpful in replacing the uses of diagnostic peritoneal wash besides computed tomography which did not bring forward any delay in the surgical procedures instead of not performing the exams. Does the careful appraisal of the connection along with the information related to the clinical needs to be helpful in guiding the therapeutic approaches

which are mainly the inhospitable sites like the intensive care unit across the world zones in the rural or the distant places where any other sort of imagery methods and not being available yet.<sup>7</sup>

**4. Simplicity**

The progress in the knowledge of the ultrasound diagnosis and its methods along with the availability of the same in terms of the diagnosis or monitoring of the life threatening injury such as:

- The rupture of the solid organs having abdominal cavity further moving towards the hemorrhagic shock

The research which the court conducted in several countries has also shown that e-FAST has an excellent rate of specificity and sensitivity which rules out the free blood in the peritoneal, pleural and pericardial cavities. Besides that it also moves forward towards a diagnosis of the trauma victims in terms of pneumothorax.<sup>10</sup>

The e-FAST examination facilities detection of the following in the real time. Till now the CECT contrast-enhanced CT stage as the gold standard to diagnose the the injuries present in in inch abdominal along with intrathoracic. But being a time consuming and expensive type of test c e c t cannot be accessible to all patients. Besides that the patient must be taken out from the emergency department to carry out the sea CT and this term turns out to be an ethical one for the patients who are unstable hemodynamically.<sup>8</sup>

**MATERIALS AND METHODS:**

Source of data: Patients who had blunt and penetrating trauma of abdomen were admitted in Teerthanker Mahaveer Medical College & Research Centre, Moradabad as per inclusion and exclusion criteria. Study type: Descriptive Observational study  
Period of study: 18 months  
Total number of participants: 60

**INCLUSION CRITERIA:** All patients presenting with history of blunt and penetrating trauma of abdomen to Emergency Department of Teerthanker Mahaveer Medical College and Research Centre.

**EXCLUSION CRITERIA:** Patients of paediatrics are group (less than 18 years), Patient not willing to participate, Pregnant patients

**METHODOLOGY:** CRC and IEC approval taken and subject included in study satisfying inclusion criteria after getting written and informed consent.

**RESULTS:****Table 1**

e-FAST Findings	No of cases	Percentage
HEMOPERITONEUM WITH LIVER LACERATION	28	46.7
FREE FLUID WITH INTERNAL ECHOES	1	1.7
HEMOPERITONEUM	1	1.7
HEMOPERITONEUM WITH FREE FLUID	4	6.7
HEMOPERITONEUM WITH INTERNAL ECHOES IN MORRISONS POUCH	3	5.0
HEMOPERITONEUM WITH SPLENIC LACERATION	5	8.3
HEMOTHORAX	1	1.7
LIVER LACERATION	1	1.7
NO SOLID ORGAN INJURY OR COLLECTION SEEN	6	10.0
PERISPLENIC HEMATOMA	2	3.3
NIL	8	13.3
Total	60	100.0

**Table 3**

		e-FAST Findings										
OPERATIVE PROCEDURE	HEMOPERITONEUM WITH LIVER LACERATION	FREE FLUID WITH INTERNAL ECHOES	HEMOPERITONEUM	HEMOPERITONEUM WITH FREE FLUID	HEMOPERITONEUM WITH INTERNAL ECHOES IN MORRISON'S POUCH	HEMOPERITONEUM WITH SPLENIC LACERATION	HEMOTHORAX	LIVER LACERATION	NO SOLID ORGAN INJURY OR COLLECTION SEEN	PERISPLENIC HEMATOMA	NIL	P-value
EXPLORATORY LAPAROTOMY	27(96.4)	0(0)	1(100)	4(100)	3(100)	5(100)	1(100)	1(100)	2(33.3)	1(50)	0(0)	0.001
NIL	1(3.6)	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	4(66.7)	1(50)	8(100)	
Total	28(100)	1(100)	1(100)	4(100)	3(100)	5(100)	1(100)	1(100)	6(100)	2(100)	8(100)	

To find the Association between OPERATIVE PROCEDURE and e-FAST Findings, we used Fisher Exact Test).

Table 3 shows the Association between OPERATIVE PROCEDURE and e-FAST Findings, The Association were found statistically significant as the P-value is <0.05

**DISCUSSION:**

Analysis has been performed by the help of SPSS version 20. In order to find out the association between the variables, Fisher Exact test or Chi square test has been carried out and for comparing the mean values independent T test and one way ANOVA test have also been performed where 5% has been considered as the level of significance.

After that in this paper the representation of the frequency distribution as per the Glasgow coma scale maximum of the sufferers were present under the scale value of 13 which included 76.7% which was followed by the scale value of 9 accounting 16.7% of the cases and then lastly both in the scale value of 14 and 15 3.3 percentage of the cases each was noticed.

While representing the distribution of the cases as per the type of injury the highest value of the cases were notice to be there under the yes group of assault category , followed by the yes group of road traffic accidents including 65% and lastly 35% of the cases belong from the yes category of fall from height. It got calculated from the time interval between the occurrence of injury to that with admission that 45% of the cases got admitted within 24 to 48 hours, 40% of the cases got admitted in hospital after more than 48 hours and lastly 15% of the case is got admitted within 24 hours of the occurrence of injury. Lastly, it is also able to point out that 53.3% were not stable hemodynamically.

In our research study 81.7% of the cases got cured and 18.3% of the cases expired. After that moving on to the table of representation of the frequency distribution as per the variable showed that the majority of the cases got cured and the major complaint received by the clinicians

Table 1 shows where 28 subjects were found in HEMOPERITONEUM WITH LIVER LACERATION i.e. 46.7%, 1 subject was found in FREE FLUID WITH INTERNAL ECHOES i.e. 1.7%, 1 subject was found in HEMOPERITONEUM i.e. 1.7%, 4 subjects were found in HEMOPERITONEUM WITH FREE FLUID i.e. 6.7%, 3 subjects were found in HEMOPERITONEUM WITH INTERNAL ECHOES IN MORRISONS POUCH i.e. 5.0%, 5 subjects were found in HEMOPERITONEUM WITH SPLENIC LACERATION i.e. 8.3%, 1 subject was found in HEMOTHORAX i.e. 1.7%, 1 subject was found in LIVER LACERATION i.e. 1.7%, 6 subjects were found in NO SOLID ORGAN INJURY OR COLLECTION SEEN i.e. 10.0%, 2 subjects were found in PERISPLENIC HEMATOMA i.e. 3.3% and 8 subjects were found in NIL i.e. 13.3%

**Table 2**

INTRA-OP FINDINGS	No of cases	Percentage
HEMO PERITONEUM	45	75.0
NIL	15	25.0
Total	60	100.0

Table 2 shows INTRA-OP FINDINGS, where 45 subjects were found in HEMO PERITONEUM i.e. 75.0% and 15 subjects were found in NIL i.e. 25.0%.

from the patient was a pain in the abdomen which was observed in all the 60 cases.

Followed by it the representation of the frequency distribution about the FAST findings show that majority of the subjects were notice to be present under hemoperitoneum with the liver laceration which accounted for 46.7% and it was followed by 10% of the cases from no solid organ injury and then hemoperitoneum with splenic laceration with 8.3% of the cases. The least number of cases with one case each was noticed in hemoperitoneum, free fluid with internal echoes , liver laceration and hemothorax. These values while compared with the researchers it has been noticed that the majority of their cases also filled under the liver laceration with hemoperitoneum followed by the splenic laceration and it accounted for 35% and 12% respectively.

The operative procedure have shown that it was present in 75% of the cases as the exploratory laparotomy rest 25% it was NIL after that while carrying out the representation of the Association in between the X-ray of the chest and its comparison was done with that of e FAST finding using the Fisher exact test, it was observe that Association came up to be very significant statistically sin the P value was less than 0.05 which was 0.001. Even the researchers Desai et al., carrying out the study noticed that in their paper while they had carried out a similar test of comparison between e FAST findings to that with the X-ray of the chest the P value camera less than 0.05 for them as well.<sup>41</sup>

Significant Association was also noticed among the findings of e FAST to that with the operative procedure and the P value came as 0.0001 which is statistically very significant. In regards to this the researchers Schuster et al., and Partyka et al., had also observed in their study that significant results came out for the findings of their e-fast to that with the procedure of operation.<sup>42,43</sup>

In Spite of having some limitations like time constraint we were able to bring and show up the data in a significant way and also it can be hoped that this would be needful to the upcoming researchers as well.

**CONCLUSION:**

It can be concluded from the results of the study that carrying out the eFAST is helpful in increasing the sensitivity of the physical examination of the cases as well as the history of them too. Diagnosis of hemoperitoneum along with the understanding of the solid organs can be carried out in a proper method too. eFAST is also a significant way for identifying the clinical as well as operative findings of the paper helps in detecting the after effect of the trauma as well. There is a need for future randomized studies which would be prospective in nature and finding out the results across a vast area of data.

**Summary:**

A Statistically significant Association is there in between the eFAST findings to that with the X-ray of the chest as well as the X-Ray of the abdomen where previously gas under the diaphragm was noticed in maximum of the cases. Between the operative procedure as well as with the eFAST findings are statistically significant Association was noticed. These findings show that a proper Analyzation has been carried out with the clinical as well as operative findings of the blunt and the penetrating trauma in the abdomen to that with the extended focus assessment with the sonography in regards to the eFAST findings.

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