

Trauma Management, FAST and EFAST

Trauma is a major health concern of the modern world and is the second leading cause of death and disability in the age group between 15-44 yrs.¹ Approximately 20 million people are killed or injured every year due to road traffic accident.²

About 2 million accident occurred in Pakistan in year 2006 and 0.418 million were of serious nature.³ The number of road traffic accidents multiplied 17.5 times during a thirty year period (1956-1996) while the number of vehicles multiplied 15.8 times during the same period in Pakistan.⁴ Most of the victims of road traffic accidents are young males belonging to the age group 20-40 yrs. The increase in number of vehicles on the roads in Pakistan currently, particularly two wheelers, is huge and so are the number of road traffic accidents.

The golden first hour is most important in preventing death in trauma patients. The majority of deaths in trauma patient is attributed to 1. Airway Compromise 2. Respiratory Failure and 3. Uncontrollable Haemorrhage. The airway can be managed initially, clearing the air passages and if required passing the endotracheal tube. Equally important is to identify bleeding early, so as to prevent haemorrhagic shock and save lives. FAST and EFAST are non invasive, quick to learn techniques to know whether patients has haemoperitoneum, haemopericardium and pneumothorax.

The term FAST was coined in 1996 and has gone through numerous transformation. Originally FAST stood for 'Focused Abdominal Sonography for Trauma'. FAST as understood today is 'Focused Assessment with Sonography for Trauma' and has been designed to be a bedside, screening examination for detection of haemoperitoneum and haemopericardium in a trauma patient with blunt or penetrating injuries.

The term EFAST – The Extended FAST- came in literature in 2004 to denote not only a rapid assessment of abdomen and pericardium but also the assessment of chest to rapidly rule out a pneumothorax.⁵

FAST is now a part of Advance Trauma Life Support (ATLS) protocol developed by American College of Surgeons. The FAST exam, per ATLS protocol, is performed, immediately after the primary survey of ATLS protocol. The concept behind the FAST is that trauma may also lead to bleeding in the abdomen, heart and chest. Although ultrasound is not 100% sensitive in identifying all bleeding, it is nearly perfect for recognising intraperitoneal bleeding in hypotensive patients, who needs emergency laparotomy and for diagnosing cardiac injuries from penetrating trauma.⁶⁻⁹

Ultrasound of lung fields was once considered impossible. For years it was thought that air does not allow the ultrasound waves to penetrate and that is the reason that probes are lubricated with gel, so as to obliterate the air trapped between the probe and skin, during the examination and allow the ultrasound beam to enter the skin beneath. It has now been realised that ultrasound beams may be reflected by air-tissue interface, and an interpretation of the artifacts that their reflection creates can yield a great understanding of the status of the underlying pleural space and lung parenchyma. Studies have shown that bedside ultrasound is equivalent to or better than chest radiography for identifying a haemothorax or pneumothorax in trauma patient.¹⁰⁻¹³ This is the basis of EFAST exam which can detect pneumothorax and haemothorax in addition to intraperitoneal and pericardial bleeding.

FAST can determine non invasively and rapidly, the presence of free intraperitoneal and pericardial fluid in trauma. The sensitivity reported is 69-95% and specificity 95-100%. Average time to perform FAST exam is 2-4 minutes. FAST exam can be carried out on the bedside without disturbing concurrent assessment and resuscitation effort.

Ultrasound should be taught as a part of basic skill-set of the physician, certainly as a part of physical examination and ideally incorporated as a part of anatomy to bring internal viscera to life.¹⁴⁻¹⁷

Residents, physicians, surgeons working in emergency department must acquire the skill related to FAST exam- an invaluable tool in the management of trauma patient.

Prof Zakiuddin G. Oonwala

MBBS, FRCS(Edin.)FICS(Hon.)

Editor Emeritus, Pakistan Journal of Surgery

Visiting Prof of Clinical Anatomy

Hamdard College of Medicine & Dentistry

Hamdard University

Karachi, Pakistan

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