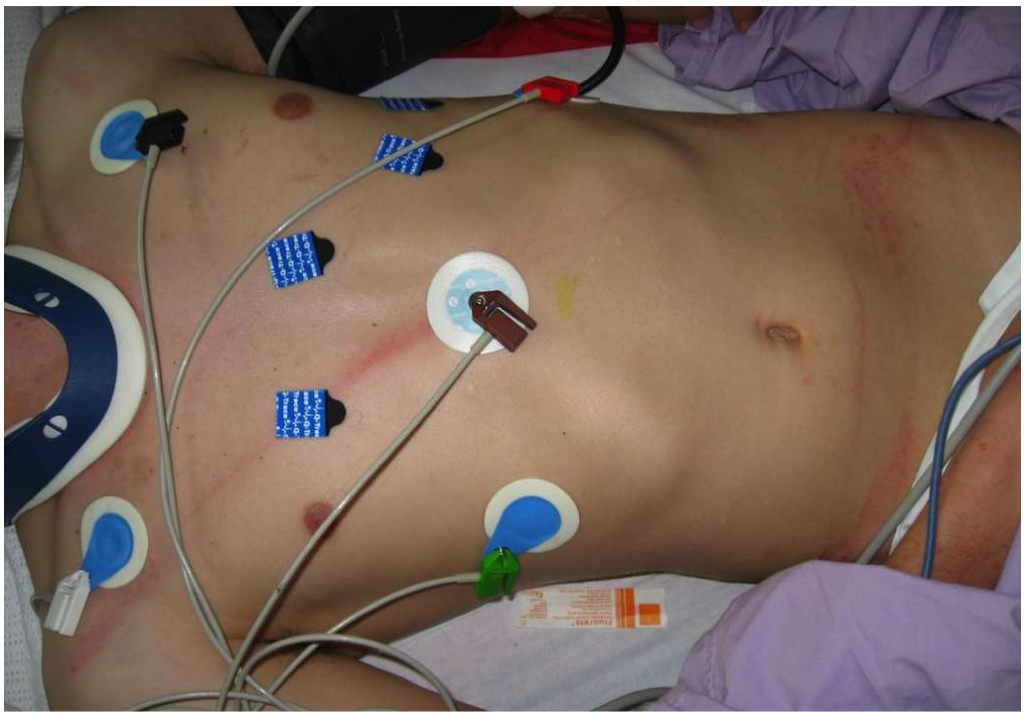
VAQ 2011.2.3 (Photo)

A 28 year old male driver is involved in a high speed motor vehicle accident. He is complaining of chest and abdominal pain.
His observations are:

HR	100	/min	
BP	110/65	mmHg	
RR	18	/min	
O_2 Saturation	97	%	(room air)



a. Describe and interpret his photograph (50%)
b. Outline the role of emergency department bedside ultrasound in his further evaluation (50%)

This man has borderline haemodynamics and external evidence of significant chest and abdominal trauma (seatbelt sign), with pain in both areas. This is concerning for but not diagnostic of significant internal injury. (E-)FAST scanning is well demonstrated to aid rapid decision making in the hypotensive trauma patient (pneumothorax, haemothorax, haemopericardium and free abdominal blood), but its role in is less well defined in a patient such as this where plain radiology and CT imaging are more definitive and may be safely performed, subject to clinical assessment and ongoing dynamics.

a. Photograph

anterior view of male patient from neck to approximately level of greater trochanters
no clearly evident pallor or diaphoresis to suggest shock (though obs suggest some physiological compromise)
monitoring leads
ECG 'dots'
no pelvic binder
cervical collar
driver's pattern seatbelt sign from right shoulder to approx left ASIS and across lower abdomen
abrasion / erythema along most of length particularly at contact points of shoulder, across chest over sternum, approx LLQ and RLQ
flourescein packet on bed, orange staining on abdomen suggests recent corneal examination
possibly for suspected glass or airbag abrasions
small, old, well healed scars on upper abdomen could be from old trauma, laparoscopic port sites, or healed chickenpox.

This would suggest seatbelt pattern abrasion / contusion, and possible corneal injury in a patient with borderline haemodynamics and potentially significant chest / abdomen trauma. A large number of injuries could be present, both torso and extremity (including head and neck).

Of particular concern in the context of this image, the patient's symptoms, and borderline vital signs are:
immediate life threat
- thoracic
  - developing tension pneumothorax
  - pneumothorax
  - haemopericardium
  - great vessel injury (aorta, SVC, IVC)
  - cardiac contusion / laceration
- abdominal
  - solid organ injury
  - hepatic laceration / contusion
  - splenic laceration / contusion
  - renal laceration / contusion / avulsion
- bony
  - rib fracture / flail chest
  - sternal fracture
  - spinal injury
  - pelvis fracture
- (extremity trauma outside scope of photograph but in context of front impact would include posterior hip dislocation and knee injury from dashboard trauma)

less immediate threat
- mesenteric, small bowel (particularly doudenum), large bowel contusion, laceration, shearing injury
- bladder rupture

b. FAST has a well established role in decision making in trauma.
- identification of
  - haemopericardium
  - intraperitoneal fluid (blood) from hepatorenal, splenorenal, and pelvis views
  - this role can be extended to include
    - identification of
      - haemothorax
      - pneumothorax
      - sternal fracture
      - rib fracture
    - cardiac dysmotility (suggesting blunt cardiac trauma)

It can not identify bowel or retroperitoneal injuries or the source of any intraperitoneal fluid identified. (or similar description of limitations)
It may be useful in this case dependent on the assessment (ongoing dynamics, clinical suspicion of cardiac injury, tamponade, solid organ injury) and is increasingly used in uncompromised patients but in a patient stable enough to be transferred for CT after mobile chest and pelvic radiography, this is the preferred modality if intraperitoneal, intrathoracic or axial bony injury is suspected.