

Background

FAST

DPL

Complications with DPL(0,5-1%)

- Urine bladder
- Bowel
- Mesentery
- Ovarian
- Infections

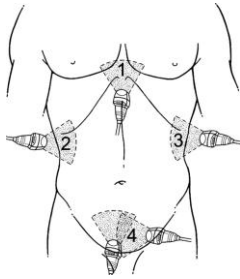
Time:
From fasciotomia to
correctly placed
catheter:
11 minutter (3-40)

From fasciotomia to
backflow 27min

Velmahos 1998
Saunders 1998

ATLS recommendations

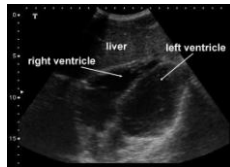
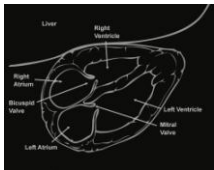
- 4 point examination
- Pericard
- Morrissons pouch
- Perisplenic view (left upper quadrant)
- Pelvic view , the retrouterine pouch (pouch of Douglas) or retrovesical pouch



After Korner, M. et al. Radiographics 2008;28:225-242



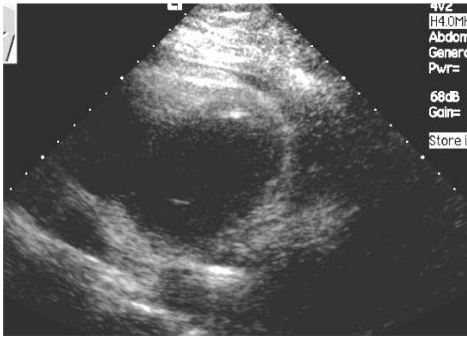
Axial/Coronal view
Left shoulder



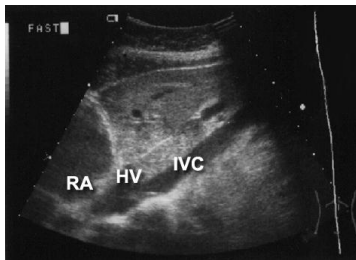
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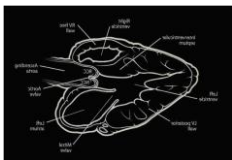


Longitudinal view

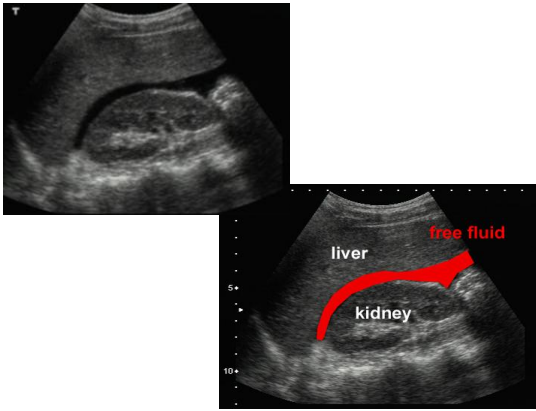
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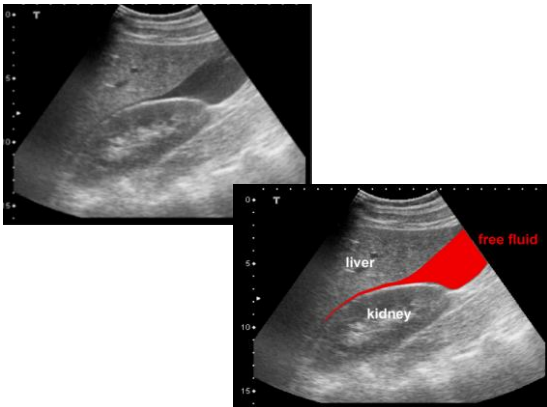


Parasternal view

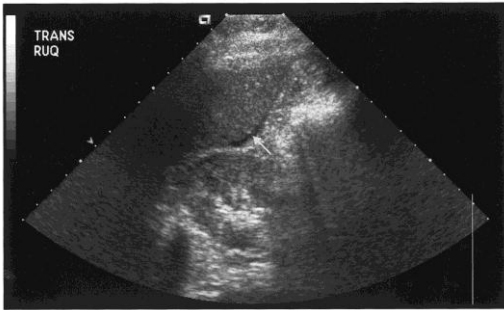


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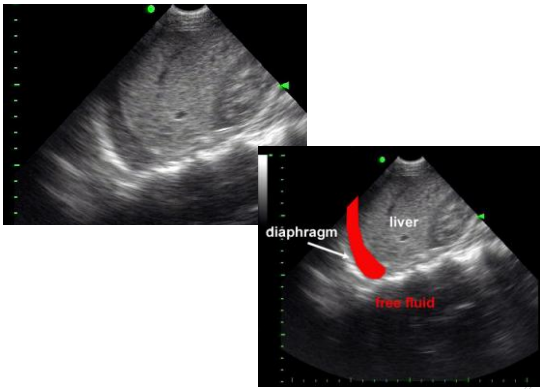
• **Left side:**

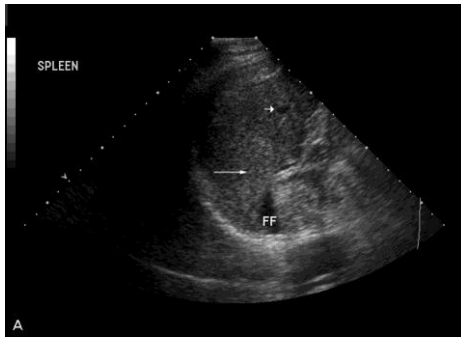
- One intercostal view from posterior axial line to the anterior axial line. Cranial portion of the spleen and diaphragm
- One intercostal or subcostal view from posterior to anterior axial line. Caudal spleen and cranial portion of left kidney.

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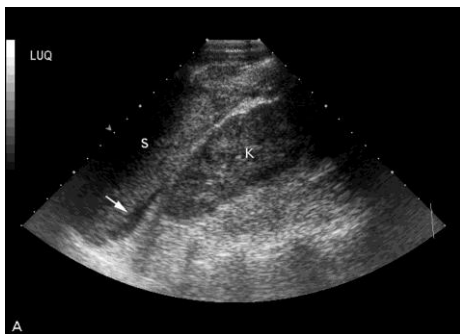


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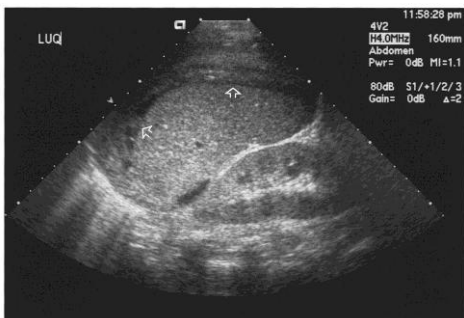
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- Bladder

- One cine-loop longitudinal from left to right with good depth
- One cine-loop from cranial to caudal.

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29



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Pitfalls

- False negative findings due to
 - Overlying bowel gas
 - Empty bladder
 - Obesity
 - Surgical emphysema in chest or abdominal wall
 - Too early scanning
 - Incorrect settings of the equipment

FAST in unstable patients

Author	n	Exam.	Year	Sens.	Spec.
Rozcyski	30	FAST	1998	100%	100%
Kuncir	62	FAST	2007	50%	95%
Gaarder	104	FAST	2009	62%	95%
Cha	70	FAST	2009	46%	Ikke angitt
Kuncir	62	DPL	2007	100%	89%
Cha	i.a.	DPL	2009	80%	100%

Pitfalls

- False positive findings
 - Preexisting ascites
 - Ovarian cyst accidents, pelvic inflammatory disease
 - Physiological amount of free fluid in the retrouterine pouch in women of reproductive age

Recent publications (2012)

FAST Enough? A Validation Study for Focused Assessment with Sonography for Trauma Ultrasounds in a Level II Trauma Center

GALEN HOLMES, M.D., JAVIER ROMERO, M.D., KENNETH WAXMAN, M.D., GRAAF DIAZ, R.N., MSN, M.A.
 From Ventura County Medical Center, Ventura, California

TABLE 1. Results

Result	Number	Percentage
True-positive	11	2%
True-negative	533	84%
False-negative	77	12%
Retropertoneal injury	33	43%
Physiological fluid (no injury)	19	25%
Intrapertoneal injury	25	32%
False-positive	6	1%
Equivocal	6	1%

[Chin J Traumatol](#), 2012;15(5):273-8.

Diagnostic accuracy of Focused Abdominal Sonography for Trauma in blunt abdominal trauma patients in atrauma centre of Hong Kong.

Choung KS, Wong HT, Leung LP, Tsang TC, Leung GK

Author information

Abstract

Objective: Focused Abdominal Sono-graphy for Trauma (FAST) is widely used for the detection of intraperitoneal free fluids in patients suffering from blunt abdominal trauma (BAT). This study aimed at assessing the diagnostic accuracy of this investigation in a designated trauma centre. Methods: This was a retrospective study of BAT patients over a 6 year period seen in a trauma centre in Hong Kong. FAST findings were compared with laparotomy, abdominal computed tomography or autopsy findings, which served as the gold standard for presence of intraperitoneal free fluids. The patients who did not have FAST or gold standard confirmatory test performed, had preexisting peritoneal fluid, died at resuscitation or had incomplete documentation of FAST findings were excluded. The performance of FAST was expressed as sensitivity, specificity, predictive values (PV), likelihood ratios (LR) and accuracy. Results: FAST was performed in 302 patients and 153 of them were included in this analysis. The sensitivity, specificity, positive PV, negative PV, positive LR, negative LR and accuracy for FAST were respectively 50.0%, 97.3%, 87.0%, 84.6%, 18.8, 0.5 and 85.0%. FAST was found to be more sensitive in less severely injured patients and more specific in more severely injured patients. Conclusion: FAST is a reliable investigation in the initial assessment of BAT patients. The diagnostic values of FAST could be affected by the severity of injury and staff training is needed to further enhance its effective use. Key words: Laparotomy, Autopsy, Tomography, X-ray computed, Tomography, spiral computed, Ultrasonography.

Controversies

- No data mortality, hospital stay
- No data on cost reduction
- Usefulness in unstable patients is questionable
- Small, often hand-held scanners at the cheaper end of the market must be used with particular care, as the image quality may be inadequate for some examinations

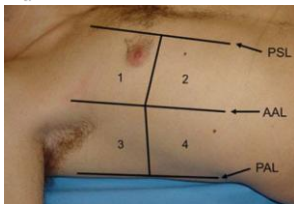
New trends

- Paramedical examination before the patient reaches hospital
- e-FAST

First-line sonographic diagnosis of pneumothorax in major trauma: accuracy of e-FAST and comparison with multidetector computed tomography

Stefania Ianniello · Vincenza Di Giacomo ·
Barbara Sessa · Vittorio Miele

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Technique of Chest US

- Chest US as part of the e-FAST examination
- Before CT and before placement of thoracostomy tube
- All patients hemodynamically unstable
- 7.5 Mhz linear probe

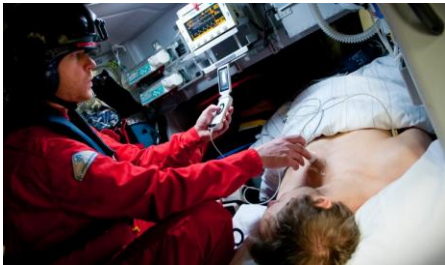
Accuracy

Table 1 Extended (to thorax) values: preliminary results of emergency radiologist

Parameter	Thoracic ultrasound
Sensitivity (%)	77 (67/87)
Sensitivity during 2011	74.5 % (38/51)
Sensitivity during 2012	80.5 % (29/36)
Specificity (%)	99.8 (668/669)
False positive rate (%)	0.13 (1/736)
False negative rate (%)	2.7 (20/736)
Positive predictive value (%)	98.5 (67/68)
Negative predictive value (%)	97 (668/688)
Accuracy (%)	97.2 (67 + 668/67 + 668 + 1+20)
Prevalence (%)	11.8 (87/736)

Data in parentheses are numbers of hemithoraces = 736/ pneumothoraces = 87

lanello 2013



Prehospital FAST and eFAST

- Development of handheld, battery-powered, low-weight US machines has created the possibility of bringing US to the prehospital setting, thus gaining a potential for early diagnosis and treatment
- The data regarding the use of US in the prehospital setting is sparse, often of low quality and describing a broad variety of patients and clinical challenges

Does prehospital ultrasound improve treatment of the trauma patient? A systematic review

Henrik Jørgensen^a, Carsten H. Jensen^b and Jesper Dirks^a

- 14 studies included
- Large heterogeneity
- Lack of quality in all studies
- No radiologist participated
- 885 patients included

Does prehospital ultrasound improve treatment of the trauma patient? A systematic review

Henrik Jørgensen^a, Carsten H. Jensen^b and Jesper Dirks^a

- Results
 - Prehospital ultrasound is working and feasible
 - Favours early diagnosis
 - Potential for change of admittance
 - Time delay 0-6 min
 - Highly reliable in detection of haemoperitoneum and haemopericardium compared with low accuracy of physical examination and haemodynamic measurements
 - Specificity and Sensitivity: 0.93, 0.99!

Does prehospital ultrasound improve treatment of the trauma patient? A systematic review

Henrik Jørgensen^a, Carsten H. Jensen^b and Jesper Dirks^a

- It is currently not possible to conclude that prehospital-performed US improves treatment of the trauma patient.
- However, data indicate that prehospital management is altered by the use of US in respect to early and precise diagnosis, treatment and visitation.

Summary

- FAST requires high experience and a large turn-over of traumapatients for maintainance of practical skills
- More a rule-inn tool than rule-out tool
- Impact on treatment and outcome remains unclear
- Extensions of FAST seem useful in some clinical settings
