Focused assessment of sonography in trauma

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Epicardial fat pad
When imaging the heart, careful attention must be made in identifying any surrounding fluid. The presence of epicardial fat should be ruled out to have a clear determination of the presence of fluid.

Hemopericardium
An examination of the heart is crucial during trauma to the chest, such as a stabbing, gunshot wound, or motor vehicle collision. The identification of blood surrounding the heart is critical in order to prevent or
treat cardiac tamponade. The contractility of the heart will also assist in determining the severity of the hemopericardium.

**Left chest view**
The view of the left chest is additionally essential with trauma to the chest, such as in a stabbing, gunshot wound, or motor vehicle collision. The diaphragm is a significant marker, which will have the fluid superior to it. Fluid found in this area reveals a traumatic hemothorax.
Fluid in the left chest: Placing the transducer on the left axillary line superior to the rib margin with the indicator facing up, reveals fluid (F) in the patient’s left chest. The spleen (S) and diaphragm (arrows) are clearly visualized. This view is useful when there is trauma to the chest, such as in a motor vehicle collision, stabbing, or gunshot wound.
The examination of the Morrison’s pouch, the recess between the liver and kidney is crucial during trauma to the abdomen or pelvis. Damage to internal organs and blood vessels will result in fluid settling in this area primarily. A clear view of the liver and kidney should be obtained, which normally would not present with fluid in between.

**Morrison’s pouch**

**Fluid in the left chest:** Placing the transducer on the left axillary line superior to the rib margin with the indicator facing up, reveals fluid (F) in the patient’s left chest. The spleen (S), kidney (K), and diaphragm (arrows) are clearly visualized. This view is useful when there is a trauma to the chest, such as in a motor vehicle collision, stabbing, or gunshot wound.

**Normal view of Morrison’s pouch:** In this normal view of the Morrison’s pouch, the recess between the liver and kidney, the transducer is placed in the right axillary line at the rib margin with the indicator facing up. There is a clear view of the liver (L) and kidney (K) with no presence of fluid.
Fluid in Morrison’s pouch: In this view, there is remarkable free fluid (double arrow) in Morrison’s pouch, between the liver (L) and kidney (K). This is valuable during blunt trauma to the abdomen or pelvis causing damage to internal organs and blood vessels, with fluid settling in this area. Keep in mind that rib shadow (asterisk) may obstruct the view.
**Chapter 1: Focused assessment of sonography in trauma**

**Pelvis**

Examining the lower abdomen of a patient after a trauma may reveal free fluid around bowel. This is a sign that major injury has occurred in the abdomen or pelvis.

**Pericardial clot**

While examining the heart, a pericardial clot may be visualized instead of newly escaped blood. This reveals that the trauma has occurred for a significant period and careful examination of heart activity should be performed.
Pericardial clot: This subxiphoid view was obtained on a patient with a gunshot wound to the chest. The chambers of the heart (H) are not clearly visualized; however, an echodense clot (C) between the visceral and parietal pericardium (arrows) may be seen.

Pericardial clot: This subxiphoid view was obtained on a patient with a gunshot wound to the chest. All four chambers of the heart are clearly visualized – the right ventricle (RV), left ventricle (LV), right atrium (RA) and the left atrium (LA). Additionally, an echodense clot (asterisk) between the visceral and parietal pericardium (arrow) may be seen.

Pericardial clot: This subxiphoid view was obtained on a patient with a gunshot wound to the chest. The right ventricle (RV) and left ventricle (LV) of the heart are clearly visualized. Additionally, an echodense clot (asterisks) between the visceral and parietal pericardium (arrow) may be seen.
Chapter 1: Focused assessment of sonography in trauma

**Perinephric fat**
While visualizing Morrison’s pouch and the splenorenal recess, careful consideration of perinephric fat should be obtained. This should not be mistaken for free fluid, which has contrasting echogenicities.

**Right chest**
The view of the right chest is essential as well when performing an exam on the left side with trauma to the chest. The diaphragm is a significant marker, which will have the fluid superior and the liver inferior to it. Fluid found in this area reveals a traumatic hemothorax.

**Perinephric fat:** This view reveals fat (asterisks) surrounding the kidney (K) and a clear view of the adjacent liver (L). This should not be mistaken for free fluid, with its increased echogenicity.

**Fluid in the right chest:** Placing the transducer on the right axillary line, superior to the rib with the indicator facing up reveals fluid (F) in the patient’s right chest. This fluid is bordered by the diaphragm (arrows) below and with a clear view of the liver (L). This view is also useful when there is trauma to the chest, such as in a motor vehicle collision, stabbing, or gunshot wound.
Splenorenal view

The examination of the splenorenal recess is additionally crucial during trauma to the abdomen or pelvis. Damage to internal organs and blood vessels will result in fluid settling in this area primarily. A clear view of the spleen and kidney should be obtained, which normally would not present with fluid in between. Fluid found in the stomach which is superior to the spleen and kidney should not be mistaken for fluid in the chest, which is adjacent to the diaphragm.
Chapter 1: Focused assessment of sonography in trauma

Normal splenorenal view: In this normal view, there is no fluid present in the recess between the spleen (S) and kidney (K). The transducer is placed in the left axillary line at the rib margin with the indicator facing up. Keep in mind that rib shadow (asterisks) may obstruct the view.

Fluid in the stomach with the splenorenal view: In this view of the splenorenal recess, the stomach which is superior to the spleen (S) and kidney (K) is found to have fluid (FS). This should not be mistaken for fluid in the chest, which is adjacent to the diaphragm. Keep in mind that rib shadow (asterisks) may obstruct the view.