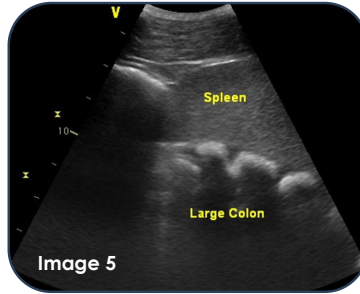
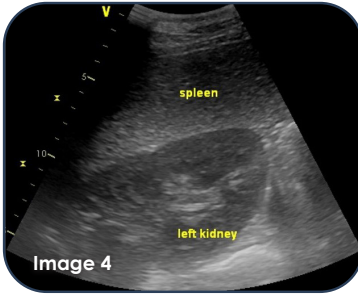


FLASH scanning technique for colic patients

Fast Localised Abdominal Sonography of Horses (FLASH) can be used to aid decision making in horses with colic, and may be more accurate for detecting lesions requiring surgical intervention versus per-rectum palpation^{1,2}. Use of a low frequency probe and liberally applying surgical spirit +/- gel to the hair coat will improve the image. At each ultrasonographic window evaluate for intestinal position, contents, wall thickness, distension, motility, and the presence of free fluid.

Nephrosplenic window

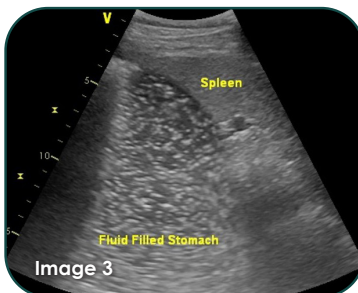
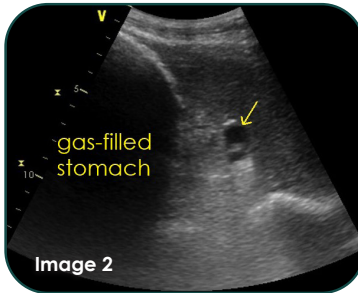
3



Place the probe in the 17th intercostal space (or paralumbar fossa) at the level between the dorsal and middle one third of the left side of the abdomen. The left kidney should be visualised deep to the spleen (**Image 4**). Obstruction of the view of the left kidney by large colon indicates nephrosplenic entrapment (**Image 5**), although it is recommended to pair these findings with per-rectum examination³.

Gastrosplenic window

2

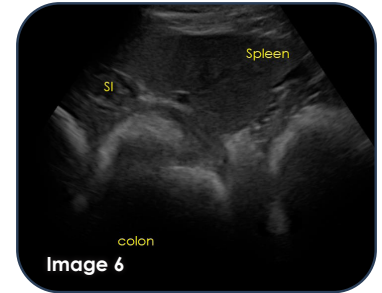


Place the probe sequentially at the levels of the 10th-15th intercostal spaces in the middle one third (dorsoventrally) on the left side of the abdomen. The normal spleen is homogeneous and hyperechoic to the liver and the stomach is visualised dorsal to the spleen (**Image 2**; **arrow= splenic vein**). Evaluation of the stomach is limited to the greater curvature. Gastric contents are not usually seen, unless there is increased luminal fluid (**Image 3**).



Left middle third

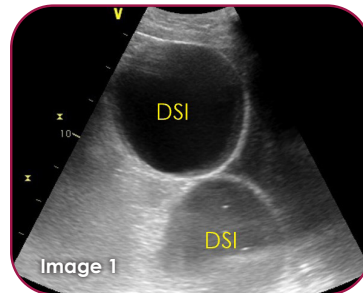
4



Move the probe systematically around the middle one third of the abdomen. Assessment of small intestinal loops and presence of gas filled colon can be assessed in this position.

Ventrum

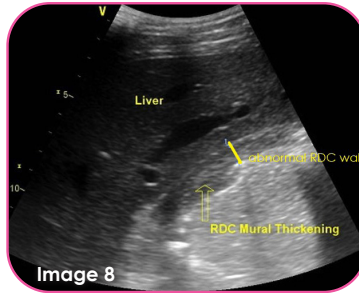
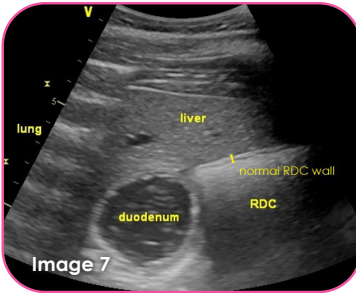
1



intestine, usually identified in the caudoventral abdomen (**Image 1**). Normal loops of small intestine are usually visualised as multiple round, motile densities with no distension.

Place the probe caudal to the sternum on the ventral midline and move caudally. Normal loops of small intestine are collapsed to mildly distended, and are usually identified deep to the spleen and in the inguinal region. The large colon is located in the ventral abdomen. Small intestinal strangulating lesions are associated with distended (DSI) and amotile loops of small

Duodenal window



Place the probe in the 14-15th intercostal space at the level between the middle to dorsal third on the right side of the abdomen. The liver, duodenum and right dorsal colon (RDC) are visible (**Image 7**). The RDC is characterised by a large, smooth curvature. Wall thickness of >4mm is considered abnormal, especially if irregularly thickened (**Image 8**).

Right middle third

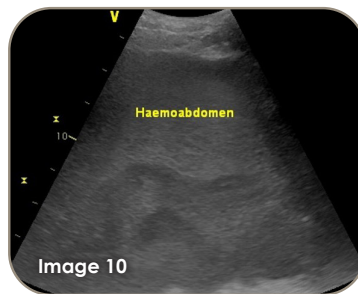
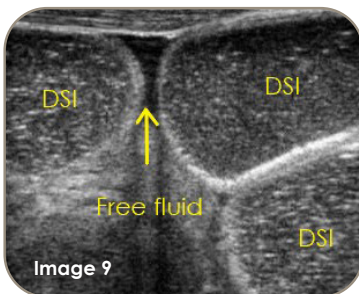
Move the probe systematically around the middle one third of the abdomen. The caecum occupies the dorsal right paralumbar fossa and the apex extends to the ventral abdomen. It appears as a sacculated, gas-filled structure with greater motility than that of the colon.



Cranial ventral Thorax

Place the probe in the intercostal space immediately caudal to the right triceps muscle, ventrally to visualise the cranioventral abdomen, including the liver. Assess for the presence of pleural effusion or diaphragmatic herniation in the thoracic cavity.

Peritoneal fluid assessment



In clinically normal horses, peritoneal fluid may be visible in the cranioventral abdomen. Small pockets of peritoneal fluid (hypoechoic) can be a normal finding and assessment of quantity is subjective and difficult. Increased volume of peritoneal fluid (**Image 9**) may be seen secondarily to pathology such as distended small intestine (DSI). Haemorrhagic fluid is homogeneously echogenic and may appear to swirl (**Image 10**). Increased volumes of fluid which may appear abnormally echogenic (hazy) may indicate peritonitis. Heterogeneous fluid is usually consistent with intestinal rupture.

References/further reading:

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Ultrasound images credit: Lucy Meehan BVSc MSc CertAVP(VDI) DipECVDI MRCVS

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