

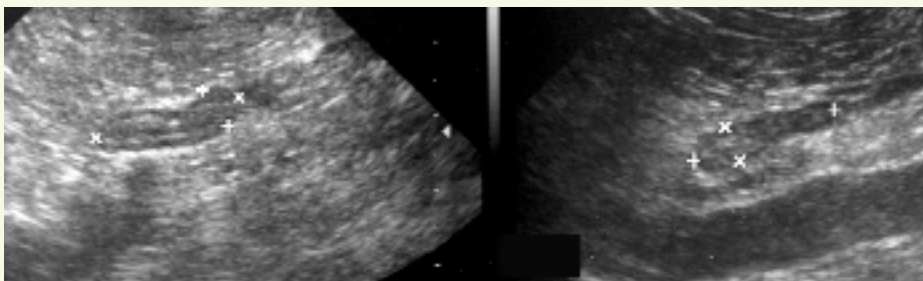
Adrenal Imaging

Eric Herrgesell, DVM, Diplomate AACVR, University of California–Davis

Imaging of the adrenal gland in small animals has changed over the past 10 years. Radiographs have historically been a viable imaging tool, but because of their low specificity and sensitivity, other modalities are now considered more clinically useful. As a first-line imaging tool, ultrasonography is very useful. It can define the normal adrenal gland in size, shape, and echogenicity; adrenal mass lesions are also easily discerned by ultrasonography. In cases of complex adrenal lesions, especially masses that may exhibit vascular invasion, the author often uses contrast-enhanced computed tomography.

The normal adrenal gland is approximately 2 cm in length and up to 0.75 cm in width across the pole; it is best described as a bilobed gland with a thin center section, or isthmus, and two prominent poles. An enlarged adrenal gland can result from enlargement of the gland itself or from a mass within the gland.

Normal Adrenal Glands

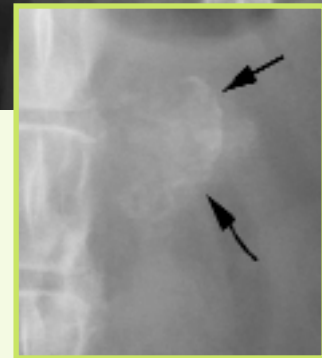
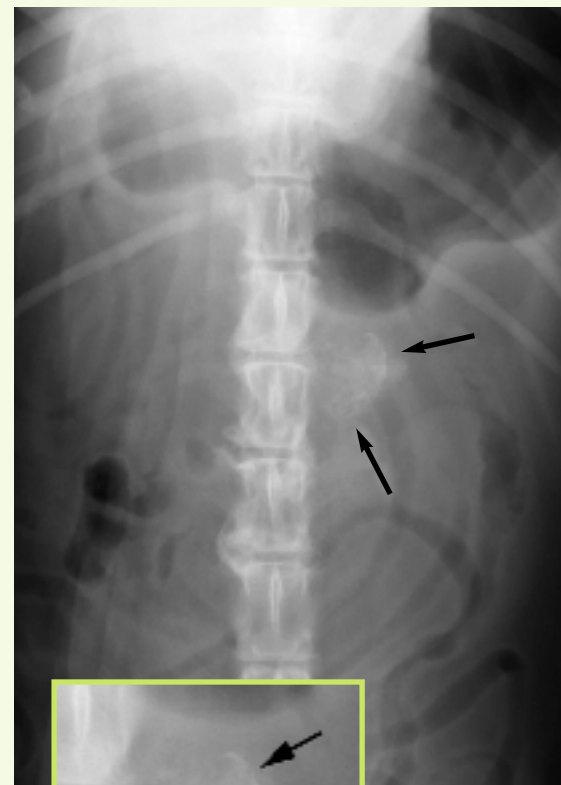


Ultrasonograms of the left (left panel) and right (right panel) adrenal gland. The boundaries of the gland are marked with calipers. Note the bilobed appearance.



Close-up of the left adrenal gland. Note the cortical and medullary definition of the adrenal gland. The adrenal cortex is on the outer portion of the gland and can be readily discerned from the inner medulla.

Hyperadrenocorticism



Ventrodorsal radiographs of a dog with clinical signs of hyperadrenocorticism. The mineralized mass (arrows) is a large tumor affecting the left adrenal gland. Often only a portion of the tumor is mineralized.

Enlarged Adrenal Glands

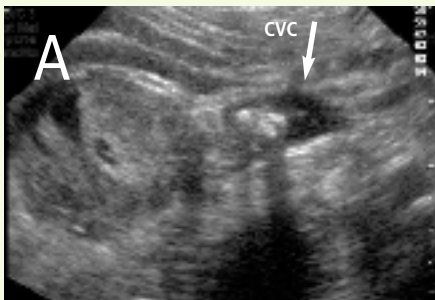


Enlarged, irregular adrenal gland (*arrows*). The gland was more than 3 cm in size. Cortical carcinoma was diagnosed on biopsy.

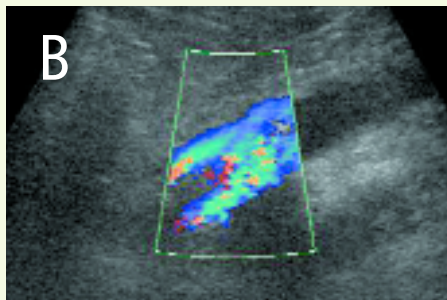


Enlargement of the adrenal gland secondary to a pituitary tumor. Echogenicity is relatively normal. Note that the cranial pole is larger than the caudal pole; some cases of pituitary disease cause asymmetric enlargement of the adrenal glands.

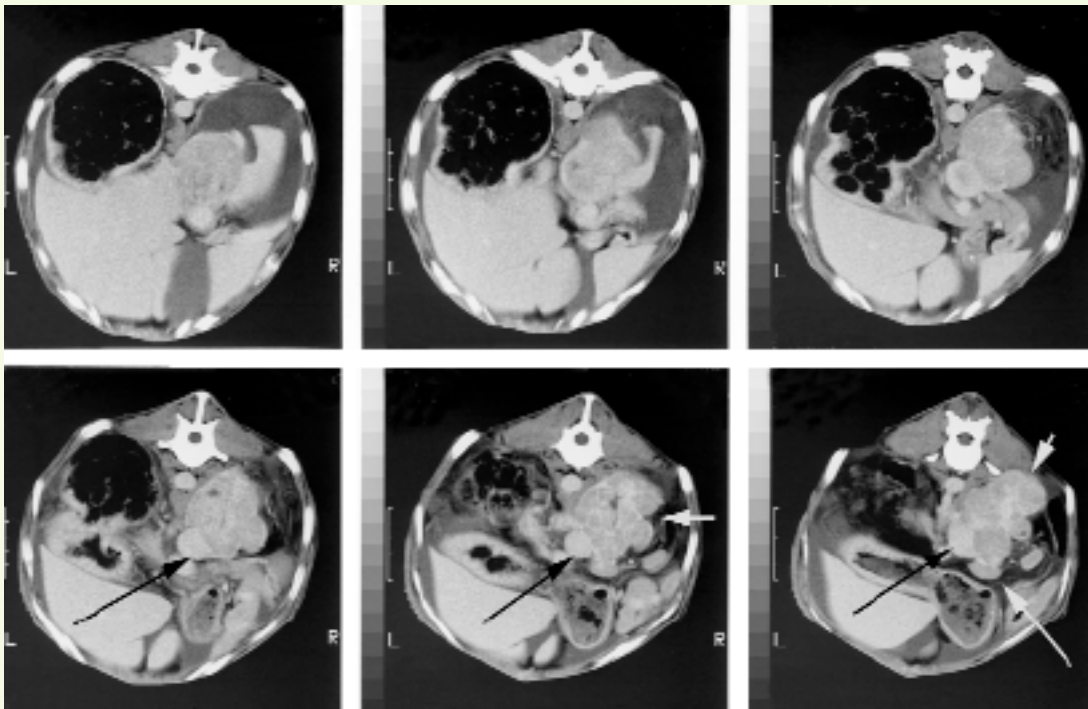
Adrenal Masses



Right-sided adrenal mass invading the caudal vena cava. The echogenic structure in the vena cava (CVC) is either an extension of the adrenal mass into the lumen of the vena cava or a tumor-related thrombus.



Same patient as in Figure A. The image is slightly medial to the mass and shows interrupted blood flow around the mass in the caudal vena cava. The mass in the vessel is often a combination of true mass and adherent thrombus.



Computed tomography series through the region of the right adrenal gland. The images follow contrast administration. Note the large adrenal mass (*white arrows*) and the vena cava adjacent to the mass (*black arrows*). The mass and/or thrombi involves the vena cava and is contrast-enhancing.