

3D CT SCANS IN SECONDS: New and Exciting Capabilities of 16 Slice Helical CT Scanner

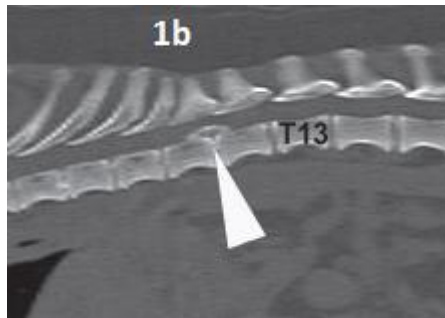
Technology is progressing by leaps and bounds —whether it is our laptop computer, smartphone, or CT (Computed Tomography) scanner. ASEC has just installed a brand new 16 multi-slice helical GE BrightSpeed CT scanner. Only a few veterinary teaching hospitals have a CT scanner of this caliber and ASEC is the first private veterinary practice to have this unit. A single slice (single detector) CT scanner takes only one slice (or image) as the x-ray beam makes a complete rotation around the patient in the donut-shaped gantry. The more detectors a CT scanner has, the more slices per rotation it is able to acquire. A 16-slice CT scanner can acquire 16 slices per rotation. This not only increases the speed of acquiring the images, but also can improve resolution of the initial images and the images that are reformatted into various anatomical planes (such as sagittal and coronal) after the patient has been scanned and has left the table.

This new scanner is allowing us to scan some patients with sedation instead of full anesthesia. We have also scanned a critical cat patient who would not tolerate placement of an intravenous catheter simply by placing him in an enclosed container (induction chamber). We will introduce you to our scanner over the next few issues by several case studies. Please contact Dr. Reichle, our board-certified radiologist, to discuss a potential case for referral.

Case 1

“Frannie” is a 2 year old spayed female Dachshund with chronic back pain that improves with steroid therapy but returns when the medication is tapered. She is reluctant to jump and is moaning in pain. In the past we would have recommended an in-house myelogram (injection of contrast medium into the spinal canal to outline the spinal cord) but now we are routinely performing CT scans of the spine without myelographic contrast. Axial and reformatted sagittal images of the spine clearly show a herniated,

mineralized T11-12 disc (see Figures 1a and 1b).



Case 2

“Bodhi” is 13 year old neutered male shorthaired cat that presented for dehydration and weight loss. A heart murmur was auscultated and azotemia was identified on labwork. Radiographs identified cardiomegaly and an irregularly shaped opacity in the right caudal lung lobe on radiographs (see Fig 2a).

Figure 2a: This VD view of the thorax shows an irregularly marginated soft tissue structure in the right caudal lung lobe (white arrows). This lesion was difficult to visualize on lateral images.

We wanted to perform a thoracic CT scan to better evaluate the lungs and lymph nodes. Due to the patient’s uncooperative nature, an IV catheter could not be placed without heavy sedation. Due to the presence of significant cardiac and renal disease, we wanted to minimize stress and avoid sedation or anesthesia. Therefore, we placed the patient into an acrylic induction chamber with foam pads and towels placed around him to decrease patient motion. Our new CT scanner is so fast that we were able to place the patient in the restraint device, obtain scout images and axial images of the thorax, all in less than 5 minutes. While the patient was not positioned ideally, we were able to obtain axial images of the entire thorax and identify a distinct but solitary lung mass in the right caudal lung lobe (Fig 2b).

Case 3

“Gwen” is a 14 year old spayed female German shepherd mixed breed with weight loss despite normal appetite, lab work and radiographs. CT of the abdomen was chosen as method to thoroughly evaluate all organs. The patient was sedated for this exam. A mostly soft tissue, partially mineralized mass was identified at the junction of the esophagus and stomach (Figures 3a

and 3b). Additionally, a left adrenal mass was identified.

Figure 3b: This is a coronal image of the entire abdomen created from the axial images. The black arrowheads again point to the gastro-esophageal mass. E = esophagus, RK = right kidney, LK = left kidney.

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