

IMAGING DIAGNOSIS—LARYNGEAL COLLAPSE DUE TO CRICOID CARTILAGE FRACTURE

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Signalment

SEVEN-YEAR-OLD, 42kg, neutered male Labrador Retriever.

History

The dog was hit by a car and immediately after the accident no abnormalities were present. One month later there were changes in phonation and dyspnea. Considerations were laryngeal paralysis, laryngeal neoplasia, abscess, cyst, granuloma, or hematoma. Laryngeal collapse due to chondromalacia was considered less likely due to the breed. The laryngeal lumen was narrow with an irregular mucosal surface and a mass was considered. A biopsy of the mucosal surface was interpreted as inflammation and granulation tissue.

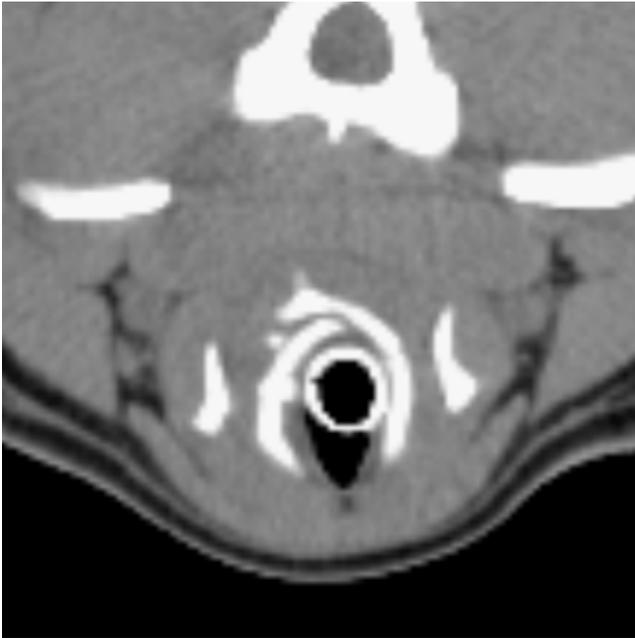


FIG. 1. Transverse image through C2 and the fractured cricoid cartilage. There is an overriding fracture of the mineralized cricoid cartilage. The laryngeal lumen is narrowed. 13004 × 13004mm (1 × 1 DPI).

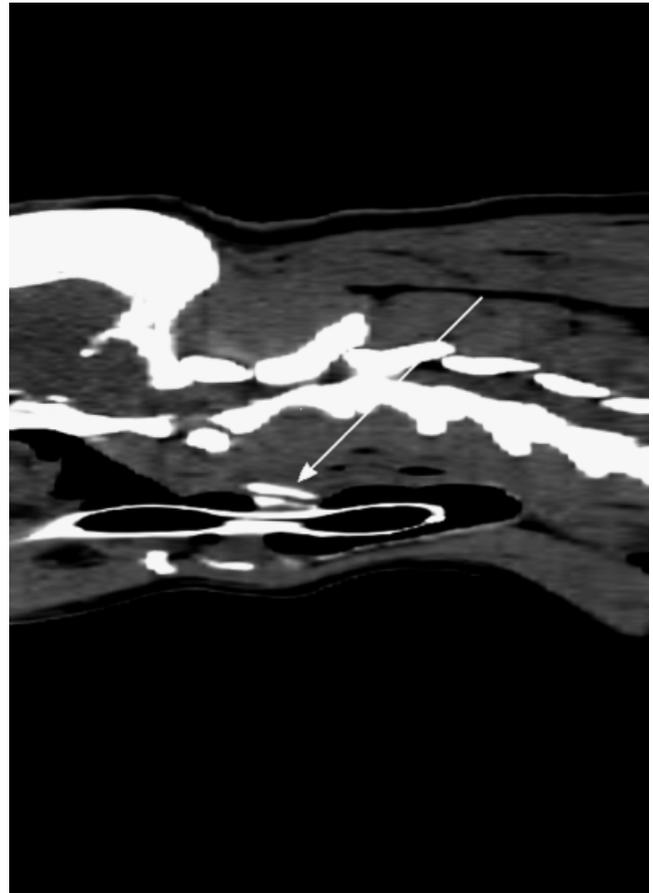


FIG. 2. Sagittal multiplanar reconstruction showing overriding mineralized cartilage fragments at site of fracture. 135 × 189mm (96 × 96 DPI).

Imaging

A laryngeal computed tomography (CT) study was performed to substantiate that a mass of the larynx was present. Placing the endotracheal tube was difficult and the largest tube that could be inserted had an inner diameter of 8 mm. Three-millimeter contiguous transverse images were acquired from the middle mandibular region to the thoracic inlet.* The left dorsal lateral aspect of the cricoid cartilage was fractured with overriding fracture fragments causing axial deviation of the left lateral laryngeal wall and laryngeal lumen narrowing. There was mild uniform thick-

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*HiSpeed CT/i, GE Medical Systems, Milwaukee, WI.

ening of the laryngeal soft tissues but a mass was not seen (Figs. 1 and 2).

Outcome

The patient was managed with exercise restriction and recommendation of as little exposure to temperature extremes as achievable. The owner stated at the time of this report that the patient is doing well with only very mild dyspnea when excited.

Discussion

Laryngeal collapse is rare, usually described in the toy breeds, and is typically associated with degenerative changes of the laryngeal cartilage and brachycephalic airway syndrome.¹ Our report documents the utility of CT in diagnosis of laryngeal collapse due to trauma and laryngeal cartilage fracture. Traumatic laryngeal collapse is presumably rare in the dog and cat. It has been described in humans where subtle changes in laryngeal cartilage structure and function may be more easily recognized as they affect speech as well as respiration.

Imaging modalities typically used for evaluation of the larynx include direct laryngeal examination/laryngoscopy, radiography, and ultrasound. General anesthesia may suppress laryngeal muscular activity making ultrasound of a nonsedated patient a complementary modality when laryngeal paralysis is suspected.² Laryngoscopy evaluates the mucosal surface of the larynx. Narrowing of the lumen of the larynx may be misinterpreted as a mass of the wall in instances of laryngeal collapse. Radiography is limited by superimposition of structures and inherent limited soft-tissue contrast. Ultrasound is limited by acoustic shadowing induced by mineralization of laryngeal cartilages and gas. Computed tomography is excellent at imaging laryngeal wall lesions, which may be difficult to detect or definitively characterize with radiographs, ultrasound, or direct laryngoscopic examination, as illustrated by this case of a dog with traumatic laryngeal collapse that mimicked a laryngeal mass lesion on direct laryngeal examination. CT imaging has been shown to be valuable in characterization of traumatic injuries to the neck/larynx area in humans and in this canine patient.

REFERENCES

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