Tracheal Collapse and Intraluminal Stents

Veterinary Surgical Centers

What is tracheal collapse?

A dog's trachea is constructed of 30 to 40 C-shaped cartilage rings that are connected by ligamentous tissue. Tracheal collapse is a progressive, degenerative disease that causes the tracheal rings to lose their C configuration. The cartilage of the tracheal rings in patients with collapse has fewer cells with less calcium and chondroitin sulfate compared to normal cartilage. As degeneration continues there will be progressive flattening of the tracheal rings, causing narrowing of the tracheal diameter. This narrowing is graded from 1-4, with grade 4 being the worst.

How is tracheal collapse diagnosed?

The diagnosis of tracheal collapse is based on the patient's history, X-Rays, fluoroscopy, or tracheoscopy. Breeds most commonly affected by tracheal collapse include Yorkshire Terriers, Pomeranians, and brachycephalic breeds, such as Shih Tzus and Pugs. The patient will present with a history of coughing, which may be characterized as a "goose honk." The cough will occur when the patient is excited or under heavy activity, although in some extreme cases the cough will be constant. X-Rays can show the narrowed trachea and confirm diagnosis of tracheal collapse. Fluoroscopy is necessary on an awake patient to visualize the length of the trachea affected when coughing is induced. The trachea can narrow or collapse in the neck, chest, or both. It is critical to rule out other diseases that can mimic tracheal collapse, such as laryngeal paralysis, laryngeal collapse, severe heart disease, or lower airway (bronchi, lungs) disease.

What treatments are available?

Early in the disease process, many of the patients can be managed medically with anti-inflammatory drugs, cough suppressants, sedatives, or bronchodilators. As the disease progresses, some patients may no longer respond favorably to medical therapy or may have concurrent disease that exacerbates the tracheal collapse (chronic bronchitis, heart disease, brachycephalic airway, etc).

Intraluminal stenting for tracheal collapse has shown favorable results, with 76 to 90 percent improvement. Placement of the stents requires general anesthesia with the aid of fluoroscopy. Measurement for the appropriate size stent is taken from X-Rays or the fluoroscopic image. The patient would require a second anesthesia to place the stent. The majority of cases show immediate improvement in clinical signs. Complications may include dry cough, stent shortening, intraluminal scar tissue formation, and stent fracture.

Surgery is a viable option for patients that have failed medical management. Several techniques have been described but the most widely accepted surgical management of tracheal collapse in the neck remains polypropylene rings placed around the trachea,

suturing the trachea to the prosthesis. Overall, the success with this procedure is reported to be 75 to 85 percent, with reported complications including persistent cough, laryngeal paralysis, patients requiring tracheostomies, and intra-operative death. This technique is not a viable option for treatment of tracheal collapse within the chest due to an excessively high morbidity rate.