

Treatment of tracheal collapse with stents

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Introduction

Tracheal collapse is a common clinical disorder in older small and toy-breed dogs caused by a weakening of the tracheal cartilage and flattening of the rings. Affected animals usually present with different level signs of dynamic upper-airway obstruction including chronic "goose-honk" cough, abnormal respiratory noise, dyspnoea, exercise intolerance, and cyanosis.



Cervical and thoracic inlet tracheal collapse.

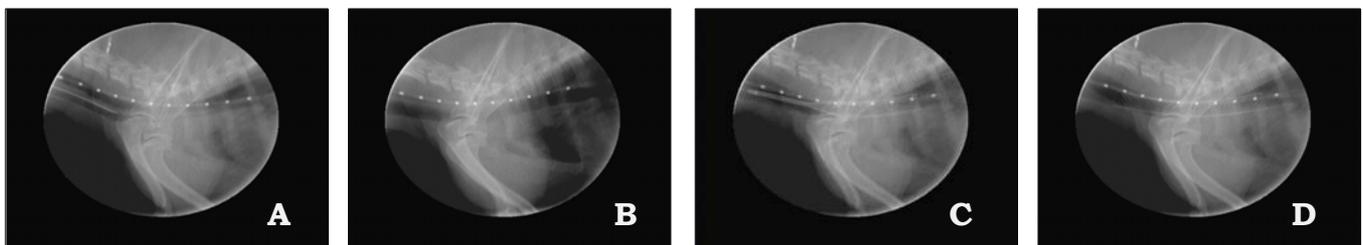


Intrathoracic tracheal collapse.

Various medical and surgical procedures have been described as treatment but unfortunately they are not effective enough. The mainstay medical therapy includes antitussives, sedatives or tranquilizers, bronchodilators, and occasionally antibiotics drugs if indicated. Ring prosthesis have been recommended in unresponsive to aggressive medical management patients with cervical collapse. Placement of an intraluminal self-expanding nitinol stents is a successful palliative treatment for refractory patients and cases of intrathoracic collapse or collapse along the entire length of the trachea.

Clinical cases

From September 2007 to December 2008 endotracheal stenting therapy was performed under fluoroscopic guidance in six dogs with severe tracheal collapse. Tracheal collapse had been confirmed fluoroscopically. Mainstem bronchi collapse had been excluded fluoroscopically in all cases. Three dogs presented thoracic inlet tracheal collapse (50 %), two dogs cervical collapse (33.3 %) and only one dog intrathoracic collapse (16.6%).



Tracheal stenting procedement: A. Esophageal marker catheter. B. Tracheal measurements with positive pressure ventilation. C. Stent deployment. D. Stent liberation.

Results and conclusions

After stent implantation all dogs received a 3-6 week tapering dose of prednisone (initial dose of 1-2 mg/kg/day PO), codeine phosphate (1-2 mg/kg PO q6-12 hours) and 10-14 days of broad-spectrum oral antibiotics.

During the 3 to 9 month follow up clinical signs, including dyspnoea and respiratory distress, dramatically improved in all dogs. The control radiographs showed that there were no side effects such as collapse, shortening or migration of the stents.



A. Stent implantation in a dog with thoracic inlet tracheal collapse.



B. Stent implantation in a dog with intrathoracic tracheal collapse.

In conclusion, the self-expandable intratracheal nitinol stents provide adequate stability to the trachea. They are a minimally-invasive, comparatively easy and brief alternative to surgery and they are effective for attenuating the clinical signs associated with severe tracheal collapse. Disease progression is inevitable, but substantial improvement in respiratory function may be achieved for a period of months to years using those devices.