How I Use Endoscopy to Diagnose and Treat Respiratory Conditions

Joao Felipe de Brito Galvao, DVM, MS, DACVIM (SAIM)
VCA Arboretum View Animal Hospital, Downers Grove, IL

Synopsis

Endoscopy has become an invaluable diagnostic and therapeutic tool for the evaluation and management of respiratory conditions in dogs and cats. Advances in flexible and rigid endoscopy, fluoroscopic guidance, and interventional techniques have expanded treatment options for conditions once considered untreatable or requiring invasive surgery. This session will present a range of cases illustrating how endoscopy can be used to diagnose and treat conditions such as nasal foreign bodies, nasal carcinoma, epiglottic retroversion, tracheal malformation and collapse, nasopharyngeal stenosis, and even life-threatening epistaxis via arterial embolization.

The goal of this presentation is to help general practitioners recognize which cases may benefit from endoscopic evaluation and when referral for interventional procedures can significantly improve quality of life and outcomes.

Nasal Embolization for Epistaxis

Super-selective arterial embolization has become the treatment of choice for intractable epistaxis when surgical intervention is not feasible. Through fluoroscopy-guided catheterization, the affected maxillary or sphenopalatine artery can be selectively occluded using coils or embolic particles.

In one case of aneurysmal nasal bleeding, coil embolization via femoral artery access successfully controlled life-threatening hemorrhage. Carotid ligation was reserved as a last resort due to the risk of collateral circulation and recurrence.

Takeaway: Arterial embolization can be life-saving in cases of refractory epistaxis. These procedures require coordination with interventional teams and careful pre-procedure planning, including staging CT angiography.

Epiglottic Retroversion

Epiglottic retroversion is an uncommon but important differential for intermittent inspiratory dyspnea in dogs. It occurs when the epiglottis loses rigidity and retroverts over the rima glottidis during inspiration, obstructing airflow.

Diagnosis is best made via awake fluoroscopy focusing on the larynx. Treatment involves epiglottopexy (tacking the epiglottis to the tongue base) or partial epiglottectomy. Up to one-third of dogs develop aspiration pneumonia postoperatively.

Takeaway: Consider epiglottic retroversion in dogs with episodic upper airway obstruction not explained by laryngeal paralysis or tracheal collapse. Fluoroscopy is the most practical, non-invasive diagnostic method.

Tracheal Malformation

Tracheal malformation refers to a congenital defect in which tracheal rings form a “W” shape, creating focal airway narrowing that can mimic a mass or foreign body radiographically. Unlike tracheal collapse, these lesions are static and often located at the thoracic inlet.

Stenting is the treatment of choice, though the abnormal geometry may predispose to focal pressure points and “gutters” between the stent and tracheal wall. Double stenting can reduce focal stress and improve airflow.

Takeaway: Tracheal malformation presents early in life and may be mistaken for a tracheal mass. Double stenting helps prevent stent fracture and infection secondary to debris accumulation in gutters.

Tracheal Collapse

Tracheal collapse is a chronic, progressive, and often life-limiting disease of small-breed dogs. Weakening of tracheal cartilage causes dynamic airway narrowing during inspiration or expiration.

Medical management includes: - Cough suppression (hydrocodone) - Anti-inflammatories (prednisone) - Antibiotics when secondary infections are suspected - Weight control, stress reduction, and harness use

For severe or refractory cases, **intraluminal stenting** offers immediate airway stabilization. Stenting is not curative but greatly improves quality of life and reduces life-threatening crises. Complications—though less frequent with modern nitinol stents—include granulation tissue, fracture, and migration.

Takeaway: Tracheal stenting can dramatically improve longevity and quality of life. It should be performed by experienced clinicians with proper equipment and fluoroscopic support. Stenting complements, not replaces, medical therapy.

Nasopharyngeal Stenosis

Nasopharyngeal stenosis (NPS) results from narrowing of the caudal nasal passage, often secondary to inflammation, trauma, or reflux injury. It leads to stertor, open-mouth breathing, and chronic nasal discharge.

Diagnosis

- CT of the nasopharynx
- Retropharyngoscopy under anesthesia

Treatment

- **Balloon dilation:** Minimally invasive but high recurrence (50% in cats; rarely successful in dogs).
- **Stenting:**
    - *Uncovered metallic stents*: ~67% success rate; tissue ingrowth in ~33%.
    - *Covered stents*: Higher success rate (up to 100%) but higher infection and oronasal fistula rates.
    - Covered stents prevent tissue regrowth but predispose to chronic infection.

Takeaway:
- **Cats:** Ballooning ± stent yields good outcomes (87% success).
- **Dogs:** Balloon dilation alone is rarely effective; stenting usually required.
- Lesion location affects prognosis—caudal lesions have higher success.
- These cases can be frustrating, but stenting provides a viable solution where few existed before.

Nasal Foreign Bodies and Nasal Carcinoma

Nasal endoscopy remains the gold standard for diagnosing intranasal disease.
- **Nasal foreign bodies** can be elusive but may resolve after nasal flushing.
- **Nasal carcinoma** is common in older dogs and best treated with radiation therapy, offering approximately 12 months of quality survival.

Takeaway: Acute-onset unilateral nasal signs often warrant rhinoscopy. Early detection of nasal carcinoma significantly improves outcomes with timely radiation therapy. Foreign bodies, though rare, can be curable causes of dramatic clinical signs.

Conclusion

Endoscopy and fluoroscopy have revolutionized our ability to diagnose and treat complex respiratory conditions that previously offered limited options. From simple nasal foreign bodies to advanced interventional procedures like tracheal and nasopharyngeal stenting or arterial embolization, these techniques are expanding the boundaries of what's possible in veterinary medicine.

Key Take-Home Messages: 1. **Think endoscopically** for dynamic or obstructive airway diseases.
2. **Fluoroscopy complements endoscopy**—especially for diagnosing dynamic collapse or epiglottic retroversion.
3. **Interventional options now exist** for diseases once managed only medically.
4. **Client communication is key**—set realistic expectations for outcomes and chronic management.
5. **Collaborative care** between GP veterinarians and interventionalists provides the best patient outcomes.