香港獸醫專科服務

HONG KONG VETERINARY SPECIALTY SERVICES

Tracheal Collapse in Dogs

Quick take

Tracheal collapse is a progressive airway disease where the **windpipe becomes weak** and **flattens** during breathing. It is most common in **small/toy-breed dogs** such as Yorkshire Terriers, Pomeranians, Chihuahuas, Toy Poodles, and Maltese.
Many dogs are managed medically, but dogs with **severe respiratory distress, repeated crises, or poor quality of life may benefit from tracheal stenting.**
Stents can provide rapid airway opening, but they are **not a cure** and most dogs **still need lifelong cough and airway management**.

1) What's going on inside?

The trachea is normally held open by C-shaped cartilage rings.

In tracheal collapse:
- the cartilage weakens,
- the membrane along the top of the trachea becomes floppy,
- the airway narrows during breathing,
coughing and inflammation worsen the collapse.

This creates a **cycle:**
collapse → cough → inflammation → more collapse → more cough

Some dogs also have **bronchial collapse,** meaning the smaller airways inside the lungs are affected too. This is important because a **tracheal stent only opens the trachea**; it does not fix collapsing bronchi.

2) What owners notice

Typical signs include:

- **dry "goose-honk" cough**
- gagging or retching
- exercise intolerance
- coughing when excited
- coughing when pulling on a collar
- noisy breathing
- blue gums or collapse in severe episodes

Emergency signs include severe breathing effort, blue/purple gums, inability to settle, or collapse.

3) Diagnosis

Diagnosis usually includes:

- physical exam
- chest and neck X-rays
- fluoroscopy, which shows dynamic collapse during breathing
- bronchoscopy/tracheoscopy to grade collapse and assess bronchial disease
- bloodwork and heart evaluation if needed

Good case selection is critical before stenting. Dogs with severe bronchial collapse, uncontrolled infection, or major laryngeal disease may have less predictable outcomes.

4) Treatment options - Medical first !

Most dogs start with medical care:

- weight loss if overweight
- harness instead of collar
- cough suppressants
- anti-inflammatory medication
- bronchodilators if lower airway disease is present
- sedatives/anxiolytics during crises
- treatment of airway infection
- avoidance of heat, smoke, excitement, and overexertion

Medical management can help many mild-to-moderate cases for months to years. A comparative study concluded that multimodal medical management can alleviate signs for long periods in mild to moderate disease, **while stenting should be considered for more severe/ refractory cases.**

5) Tracheal stenting

What is a tracheal stent?

A tracheal stent is a **flexible metal mesh tube**, most commonly self-expanding nitinol, placed inside the trachea **under fluoroscopic and/or endoscopic guidance**.
It expands inside the airway and **holds the trachea open** from within.

Why stenting is used

Stenting is usually reserved for dogs that:

- have severe collapse,
- fail medical management,
- have repeated respiratory crises,
- cannot maintain good quality of life,
- have collapse involving the intrathoracic trachea, where external rings are difficult.

Tracheal stenting is reserved for **dogs unresponsive to conventional therapy with seriously compromised quality of life.**

How the procedure is performed

1. Patient is anaesthetised.
2. Trachea is measured carefully with fluoroscopy/CT/radiographs.
3. A collapsed stent is advanced through the mouth into the trachea.
4. The stent is released and expands.
5. Placement is confirmed by fluoroscopy/endoscopy.
6. Most dogs stay in hospital about 24 hours for monitoring.

6) Advantages of tracheal stenting

- minimally invasive compared with open surgery
- rapid improvement in airflow

- useful for intrathoracic collapse
- often life-saving in severe respiratory distress
- avoids dissection around delicate neck structures
- stent placement avoids open surgery and having a lower acute complication rate than traditional surgical ring placement.

7) Important limitations

A stent does not cure the disease.

Owners should understand:

- coughing often improves but may not disappear
- airway inflammation may continue
- bronchial collapse may progress
- stents can irritate the airway
- lifelong medications are often still needed
- repeat procedures may be necessary

Stenting provides a noninvasive alternative to immediately relieve a life-threatening tracheal collapse, however tracheal stents but “do not replace medical management. In fact, most of these patients still continue some medical management.

8) Surgical alternatives

Extraluminal tracheal rings
Plastic rings are surgically placed around the trachea, mostly for cervical tracheal collapse.

Advantages:
- good support for neck trachea
- no foreign body inside airway

Limitations:
- open surgery
- technically demanding
- not ideal for intrathoracic collapse
- risk to nerves, blood supply, and laryngeal function

Combined ring + stent procedures
Rarely, complex dogs may undergo both extraluminal rings and endoluminal stents. A 2026 JAVMA report found long-term complications in 42% of 19 combined-procedure cases, but survival times were similar to previous reports of either technique alone.

9) Outcomes after tracheal stenting

Most dogs improve clinically after stenting.
A 2019 JAVMA study of 75 dogs receiving 119 stents found **major complications in 9% of dogs**; two dogs had stent fractures, one had progressive collapse cranial to the stent, and one had excessive granulation tissue.

Reported **clinical improvement rates are commonly around 75–90%,** though results depend heavily on bronchial disease, stent sizing, and patient stability at the time of stenting.

10) Complications and realistic rates

- **Persistent cough**

Common
Stents can irritate the airway; cough control often still needed.

- **Tracheobronchial infection**

Moderate risk
Systematic review found moderate infection risk.

- **Granulation tissue**

Often reported ~20–30% in some clinical discussions
Tissue may grow at stent ends or through mesh; may need steroids or intervention.

- **Stent fracture**

Uncommon but important
Higher risk at thoracic inlet due to motion.

- **Stent migration**

Uncommon
More likely if undersized or mal-positioned.

- **Collapse beyond stent**

Possible
Disease can progress outside the stented segment.

- **Major complications**

About 9% in one JAVMA series
Includes fracture, progressive collapse, granulation.

- **Perioperative mortality**

Often quoted around 0–10%, higher in unstable dogs
Risk higher with pneumonia, severe distress, inability to tolerate extubation.

A 2024 systematic review concluded that canine tracheal stenting is associated with high risk of coughing and moderate risk of tracheobronchial infection and granuloma formation.

11) Recovery and aftercare

After stenting, dogs usually need:

- hospitalisation for monitoring
- cough suppressants
- anti-inflammatory medication
- antibiotics if infection is present
- strict rest initially
- harness only, never a neck collar
- avoidance of heat, smoke, excitement, and obesity

Most dogs **continue long-term medication**, though often at lower doses or with fewer crises.

12) Long-term expectations

A successful stent can dramatically improve breathing and quality of life, especially in dogs with life-threatening tracheal collapse.

However:
- coughing may persist,
- bronchial collapse may limit improvement,
- repeat imaging may be needed,
-stent-related complications can occur months to years later.

Owners should think of **stenting as airway rescue and stabilisation, not a cure.**

13) Selected references

- ACVS: Tracheal Collapse — owner-level overview and stent complication discussion.
- Weisse et al., JAVMA 2019 — 75 dogs, 119 stents; major complications 9%.
- Robin et al., JVIM 2024 systematic review/meta-analysis — coughing, infection, granuloma risk.
- Congiusta et al., JAVMA 2021 — medical vs stenting outcomes.

Tracheal collapse is a chronic progressive airway disease. Many dogs do well medically, but severe or refractory cases may benefit greatly from tracheal stenting. Stents can rapidly open the airway and may be life-saving, especially in intrathoracic collapse, but they require careful patient selection, expert sizing/placement, and lifelong follow-up because cough, infection, granulation tissue, fracture, and progression beyond the stent remain real risks.