香港獸醫專科服務

HONG KONG VETERINARY SPECIALTY SERVICES

Laryngeal Paralysis

Laryngeal paralysis means the “doorway” to the windpipe doesn’t open properly when a pet breathes in. The muscles that should pull the arytenoid cartilages outward are weak or paralyzed, so the opening narrows (or even collapses) during a breath. Dogs struggle most when hot, excited, or exercising; many have a change in voice and loud, harsh breathing. In older medium–large dogs, laryngeal paralysis often reflects a broader, slowly progressive nerve problem (GOLPP). The main surgery, unilateral arytenoid lateralization (“tie-back”), permanently opens one side of the larynx and usually improves breathing and quality of life—while carrying a real, lifelong risk of aspiration pneumonia that owners should understand up front.

1) Pathophysiology: What’s going on inside?

a) The normal setup

In a healthy dog or cat, tiny muscles (especially the dorsal cricoarytenoid) pull the arytenoid cartilages outward during inhalation to widen the airway; during swallowing, the area closes to protect the lungs from food/water. In laryngeal paralysis, those muscles don’t receive or respond to nerve signals properly, so the airway doesn’t open and can be sucked inward with each breath. That’s why you hear stridor—a coarse, harsh, inspiratory noise—and see laboured, open-mouth panting.

b) Why it happens in dogs?

There are two broad categories:

- **Acquired/idiopathic** (most common): typically affects older, large-breed dogs (Labrador and Golden Retrievers are poster children). For many dogs, this is part of GOLPP—a slowly progressive, body-wide polyneuropathy (nerve degeneration) that first shows up in the laryngeal nerves and later may involve the hind limbs or esophagus (causing weakness or regurgitation). Think “aging nerves” rather than a single throat problem.
- **Congenital** (uncommon; shows up in the young): documented in breeds such as Bouviers des Flandres, Dalmatians, Siberian Huskies, Rottweilers, Black Russian Terriers, and American Staffordshire Terriers. These patients are born with abnormal nerve function and can show signs early in life.
- Other (less common) causes include trauma, neck or chest masses, and generalized neuromuscular disease; because GOLPP is so prevalent in older dogs, “idiopathic/acquired” ends up being the label in many cases.

c) Cats get it too (but far less commonly)

Feline laryngeal paralysis is rare relative to dogs. When severe, cats show similar noisy breathing and heat/exercise intolerance; the same tie-back concept can help selected cats, but bilateral procedures in cats carry higher aspiration risk and are avoided.

2) What owners typically notice

- Noisy, harsh inspiratory breathing (stridor), especially with heat or excitement
- Voice change (hoarser, quieter, or “gone”)
- Exercise intolerance, frequent rest stops, anxious expression with wide-open panting
- Heat intolerance, because dogs cool themselves by moving air
- Coughing/gagging with eating or drinking; occasional regurgitation (especially in GOLPP)

- In severe crises: distress, blue gums, collapse—this is an emergency

3) How it's diagnosed

Your vet (or a veterinary surgeon) will combine history and exam with sedated laryngeal exam—observing whether the arytenoid(s) abduct (open) during a breath. Chest x-rays check for aspiration pneumonia and megaesophagus; neurologic exam helps assess for broader polyneuropathy (GOLPP). Some centers add fluoroscopy or advanced imaging when indicated. Owner-friendly overviews from ACVS and Cornell walk through this workflow.

4) Treatment overview: Lifestyle, medical, and surgical tools

A. First-aid and lifestyle measures (helpful for all cases)

- Keep cool, calm, and lean: extra weight and heat both worsen airflow struggles.
- Harness, not a neck collar: avoid throat pressure.
- Tame the excitement: short, slow walks; plan activity during cool hours.
- Meal/eating adjustments: small meatball-style portions, raised bowls if advised, and calm feeding routines to limit gulping and aspiration risk.
- Treat what else is there: control nausea/reflux if present; treat pneumonia if found. Owner guides from ACVS emphasize these basics before and after any procedure.

These steps reduce strain but do not fix the mechanical narrowing.

For dogs with moderate–severe signs or heat/exercise crises, surgery is the proven way to open the airway.

B. Surgical treatment (the cornerstone for most symptomatic dogs)

Unilateral Arytenoid Lateralization (UAL, "tie-back")

- What it is: A permanent suture pulls one arytenoid cartilage outward, widening the "doorway" to the windpipe. This immediately lowers airflow resistance while preserving the other side to help with protection during swallowing. Surgeons generally favor one side (often the left).
- Why "one side" only? Opening both sides increases the space but dramatically raises aspiration risk (food/water slipping into the lungs). Studies and expert consensus discourage bilateral tie-backs for this reason.

Variations/related techniques: "Cricoarytenoid lateralization" (similar concept with different anchor points) and less common intralaryngeal procedures (partial arytenoidectomy, ventriculocordectomy). Short-term outcomes are generally good with lateralization approaches; specific technique choice depends on surgeon experience and anatomy.

C. When it's urgent: In a heat crisis or severe obstruction, teams may cool the pet, give oxygen/sedation, and (rarely) place a temporary tracheostomy to bypass the blockage before definitive surgery. This is a stopgap for life-threatening upper airway obstruction.

D. Cats: Selected cats with severe, confirmed laryngeal paralysis can benefit from unilateral tie-back; results are often good, but the aspiration risk is real and bilateral procedures in cats are avoided.

5) What to expect around surgery

- **Pre-op:** Blood work, chest x-rays (to rule out pneumonia/megaesophagus), sometimes thyroid tests, and a GOLPP-aware neurologic check.

- **If pneumonia or esophageal issues** are present, the team will often treat first and stabilize before surgery.
- **Anesthesia & procedure:** airway-savvy anaesthesia minimizes stress and aspiration risk. The surgeon makes a small incision on the side of the neck, places sutures to pull the arytenoid laterally, confirms opening, and closes. Many dogs go home the next day; some centers even manage stable cases as outpatients with comparable short-term complication rates.
- **Recovery & long-term care:** expect a softer or absent bark, some cough with drinking early on, strict rest, and no swimming (ever).
- **Feeding tweaks** (small "meatball" meals, elevated bowls if advised) help, and a harness forever is a good idea.
- **Weight control** remains crucial.

6) Outcomes and quality of life

Most owners report clear improvements in breathing comfort and activity after a tie-back, often describing their dog as "younger again." Prospective and retrospective studies consistently show improved exercise tolerance and reduced airway distress.

- In one series of dogs after a minimally invasive UAL, >95% of owners reported better long-term respiratory function and exercise tolerance. Many reports note strong owner satisfaction, though coughing with eating/drinking and voice change are common.
- For older dogs with GOLPP, remember that the underlying nerve disease progresses slowly. Tie-back treats the larynx, not the whole neuropathy. Over months to years, some dogs may develop hind-end weakness or oesophageal dysfunction (regurgitation), which contributes to aspiration risk (see below). Counseling is about quality-of-life improvement, not a cure for the entire syndrome.
- Cats: small studies show good improvement with unilateral tie-back when signs are severe enough to warrant surgery, with the caveat that aspiration risk exists and bilateral procedures should be avoided.

7) Complications (what can happen and how often)

Definitions vary across studies (what counts as "minor" vs "major," and how long dogs are followed). The ranges below synthesize commonly cited reports so you can have realistic expectations to discuss with your veterinary surgeon.

The big one: Aspiration pneumonia (AP)

Because a tie-back holds the airway more open, some protection against food/water "going down the wrong pipe" is reduced—especially if a dog also has oesophageal issues/megaesophagus.

Short-term to overall incidence: Many studies cite ~5% to 24% of dogs developing AP at some point after unilateral tie-back. An oft-referenced JAVMA study notes the 5–24% range across the literature.

Long-term cumulative risk:
In a 232-dog study, 18.6% had AP by 1 year, 27–32% by 2–4 years after surgery. AP significantly impacted long-term survival statistics (dogs with AP had lower 3–4-year survival). Important risk factors: Megaesophagus stood out as a key predictor for later AP; interestingly, having AP before surgery did not increase the risk of AP afterward in that cohort (likely because pre-existing AP was treated before surgery).

Historical context: An older (2001) 140-dog series reported 23.6% AP overall, with some deaths from AP beyond one year; bilateral tie-backs fared worse than unilateral. While techniques and aftercare have improved, the data reinforce why only one side is typically lateralized.

Other complications you might hear about (dogs)

- Coughing with drinking/eating, voice change: common and often persistent to some degree; usually manageable with feeding adjustments. Client resources highlight this as an expected trade-off.
- Incisional seroma/infection at the neck site: generally minor and treatable.
- Over- or under-correction (too wide = more aspiration risk; too narrow = persistent noise/exercise intolerance); revision surgery is occasionally needed.

Overall short-term complication rate (any cause): varies by center and study. An outpatient vs inpatient study (44 dogs) found **22.7% overall complications**, with no difference between same-day discharge and hospitalization for stable cases.

Technique comparisons: In one comparison of two UAL techniques across 80 dogs, minor complications were 22–26%. Major complications were 7% for a "standard" technique vs 23% with an "anatomic-preservation" variant; aspiration pneumonia occurred in 7% vs 17%, respectively (single-institution experience; technique choice is individualized).

Temporary tracheostomy (rare)
In life-threatening airway crises or very swollen/compromised larynges, a temporary tracheostomy tube may be placed as a bridge. It's uncommon in planned Lar Par surgeries, but it's part of the emergency toolbox for upper airway obstruction and comes with intensive nursing and device-related complications; once the airway is secure (e.g., after tie-back), the tube is removed.

Cats: complications and outcomes
Cats are less represented in the literature, but case series suggest unilateral tie-back can reliably improve airway obstruction with caution about aspiration pneumonia risk; bilateral procedures are discouraged. Long-term feline data are limited, but early results are encouraging.

8) Prognosis: What improves—and what may persist?

Dogs

- Breathing & activity: Most dogs breathe more quietly, tolerate walks better, and handle warm days more safely after surgery (with sensible heat precautions). Owner satisfaction is high in multiple series.
- Voice: Often softer or absent permanently.
- Some coughing when drinking may persist but frequently diminishes with time and feeding tweaks.
- Longevity: Survival varies with age, co-morbidities, and whether aspiration pneumonia occurs later. Older reports cited median survival around a year for very mixed, often sicker cohorts; more recent experiences (with better peri-op care and selection) often report **years of improved life**—especially when aspiration can be minimized and GOLPP progression is slow.
- GOLPP reality check: Tie-back fixes the airway bottleneck, not the underlying neuropathy. Some dogs later develop hind-limb weakness or esophageal dysfunction; your vet may recommend exercises, environmental tweaks, and diet strategies as things evolve.

Cats

Most cats selected for unilateral tie-back do well, with quieter breathing and better tolerance of activity; careful feeding management and long-term monitoring for cough/regurgitation matter.

9) Owner checklist: Setting your pet up for success

- Pick timing wisely: If your dog is struggling with heat or collapsing from airway distress, earlier surgery can be safer than waiting for a crisis. Treat any pneumonia beforehand.

- **Choose an experienced team:** Ask how often they perform laryngeal tie-backs and what their own rates are for aspiration pneumonia, revision, and short-term complications. (There is real variability across centres.)
- Discuss feeding strategy: Small meatball meals, slow eating, and water management are simple but powerful aspiration-reduction tools.
- Heat & activity: Strict heat avoidance and calm, short walks in cool parts of the day—forever
- Harness only; no swimming: Neck collars increase airway stress, and swimming poses a high aspiration risk for life after a tie-back.
- Watch for warning signs: coughing fits, fever, lethargy, or breathing harder than usual after meals—get checked promptly to rule out aspiration pneumonia.

10) Numbers at a glance (to discuss with your surgeon)

- **Any postoperative complication (dogs):** commonly around 20–35% across mixed cohorts and definitions; one outpatient vs inpatient study reported 22.7% overall.

- **Aspiration pneumonia (dogs):** ~5–24% reported overall; cumulative ~18–32% by 1–4 years in one large series; megaesophagus increases risk.

- Technique nuances: In one 80-dog comparison of two UAL variations, major complications 7% vs 23%, AP 7% vs 17% (institution-specific results; surgeon experience matters).

- **Bilateral tie-back vs unilateral:** Bilateral associated with higher complications and lower survival in an older 140-dog cohort—hence the modern preference for unilateral.

- **Owner-reported improvement:** Frequently >90% report better breathing/quality of life; one minimally invasive UAL series reported **95.5% improved long-term respiratory function**.

- **Cats**: Unilateral tie-back generally effective; avoid bilateral due to aspiration concerns.

- **Perspective:** These are population numbers. Your pet's individual risks depend on age, body condition, the presence of megaesophagus/regurgitation, pneumonia status, and your team's protocols. Ask your surgeon for their service-specific outcomes.

11) Frequently asked owner questions

"Will my dog's bark change?"
Probably. Many dogs already have a hoarser or absent bark before surgery; after a tie-back, the voice often remains softer (or absent). This is a trade-off for easier breathing.

"Can my dog ever swim again?"
Swimming is not recommended after a tie-back because of the high aspiration risk. Wading on leash (no splashing) may be acceptable for some, but discuss specifics with your surgeon.

"Is there a non-surgical cure?"
Unfortunately, no. Weight loss, heat avoidance, and calm routines help, but surgery is what mechanically opens the airway in moderate–severe cases. For dogs in early/mild stages, medical/lifestyle management may be reasonable while you plan.

"What about GOLPP?"
Think of GOLPP as the underlying nerve story. Tie-back fixes the laryngeal outlet, often transforming day-to-day comfort, but it doesn't stop slow nerve changes elsewhere. Work with your vet on weight, fitness, footing, and feeding strategies to support the whole dog as time goes on.

"How long will my dog live after surgery?"

There isn't a single number. Many dogs live years with much better quality of life; long-term survival is most affected by whether aspiration pneumonia happens down the line and by other age-related diseases. In older mixed cohorts (including sicker dogs), median survival around a year has been reported; in more contemporary, stable cases, owners often report multi-year benefits.

12) Selected veterinary references

Owner guides & overviews

- ACVS Client Guide: Laryngeal Paralysis (dogs & cats). Excellent pictures, diagnosis, aftercare tips. (American College of Veterinary Surgeons)
- Cornell Canine Health Center: Laryngeal Paralysis (and GOLPP). Clear description of acquired vs congenital forms and breed lists.
- Michigan State University GOLPP page. Easy primer on the "whole-dog" nerve disease behind many older Labradors with Lar Par.
- VCA: Laryngeal Paralysis in Dogs. Practical owner FAQs on anesthesia risk, aspiration, and aftercare.

Key studies & reviews (dogs)

- Wilson & Monnet, JAVMA 2016; 232 dogs. Risk factors for aspiration pneumonia after UAL: cumulative AP 18.6% at 1 year; ~32% by 3–4 years; megaesophagus increased risk; pre-op AP did not predict post-op AP.

- Hammel et al., JAVMA 2006; 39 dogs. Owner-reported 90% quality-of-life improvement; survival context for mixed, older cohorts.

- Greenberg/Thunberg et al., 2010–2014. Reports support UAL as suitable in cats and dogs, with generally good outcomes.

- Lopez et al., Vet Rec 2019; 80 dogs. Two UAL technique variations: major complications 7% vs 23%, AP 7% vs 17%; survival medians 636 vs 1,067 days (institutional technique comparison).

- Shubert et al., JAVMA 2023; 44 dogs. Outpatient UAL had similar short-term outcomes to inpatient care; 22.7% overall complications.

- Harvey/Snelling et al., 2003–2014. Mixed-center experiences: roughly 8–24% aspiration rates across series; 33% of dogs revisited for some respiratory problem in one older study; under-10-kg dogs had more revisit risk. (Older techniques/cohorts; still informative.)

- Cricoarytenoid vs traditional tie-back (2022). Both effective short-term; technique choice individualized.

Cats

- **Hardie et al., 2009.** Unilateral tie-back improved most cats with severe signs; avoid bilateral due to aspiration risk.
- **Thunberg et al., 2010**. Small feline case series: UAL suitable with good outcomes; larger studies needed.

- **Background on congenital and breed predispositions**

    - Cornell CHC (breed list for congenital cases).

- von Pfeil et al., JAVMA 2018 (Alaskan Huskies) and early neurology literature on inherited polyneuropathies in young dogs.
- Genetics/neuropathy reviews (CNTNAP1 variant; GOLPP concept).