



BOAS in Dogs and Cats: What It Is, Why It Happens, and How We Treat It

Quick take

Brachycephalic (“short-faced”) pets—think French Bulldogs, Bulldogs, Pugs, Boston Terriers, Shih Tzu, Pekingese, and in cats, Persians/Exotics—are predisposed to a package of airway narrowings that make breathing harder, especially with heat, excitement, exercise, or sedation.

BOAS isn’t just “snoring”; it’s a progressive, body-wide problem that affects airflow, oxygenation, body temperature, and even the stomach and oesophagus. **Surgery can widen the airway and improve quality of life for most patients**, but—as with any airway surgery—there are real risks your vet team will work to minimize.

1) Pathophysiology: What’s going on inside?

- The “short face” mismatch

Selective breeding for a shorter muzzle compresses the nasal and throat structures into a smaller space without shrinking the soft tissues proportionally. The result is a multilevel obstruction of airflow.

Common contributors include:

- Stenotic nares (narrow nostrils) that resist air entry.
- Elongated and thickened soft palate that drapes too far over the airway opening.
- Everted laryngeal sacculles (tiny tissue pockets) pulled into the airway by chronic high suction pressures.
- Laryngeal collapse—cartilage fatigue and inward folding at the voice box, often a later, more serious stage.
- Abnormal turbinates (nasal scroll bones) that can crowd the nasal passages.
- Hypoplastic trachea (narrow windpipe) in some dogs.
- Macroglossia (relatively large tongue) and tonsillar enlargement can further clog the space.

Because pulling air through a narrow tube requires extra negative pressure, the throat tissues get inflamed and swell, worsening the obstruction—a vicious cycle that can culminate in laryngeal collapse.

- The stomach-airway connection

Many brachycephalic pets also suffer from **gastroesophageal reflux, hiatal hernia, and regurgitation**. Straining to breathe increases negative chest pressure, which can “suck” stomach contents upward, causing esophagitis and more regurgitation. After surgery, post-operative regurgitation is common enough that teams now use standardized anti-reflux protocols to reduce risks like aspiration pneumonia.

- Heat risk and whole-body impact

Dogs dissipate heat by breathing. When airflow is restricted, heatstroke risk skyrockets—a major welfare issue documented particularly in flat-faced breeds.

- Cats get BOAS too (usually milder, often nose-focused)

Cats (especially Persians/Exotics) can show noisy breathing and exercise intolerance. In many, narrow nostrils and heavy nasal folds are the main culprits; palate issues tend to be less dramatic than in dogs. Surgical nostril widening can produce substantial improvement.



2) Recognizing BOAS: Common signs owners notice

- Noisy breathing (snoring, snorting, stertor/stridor) when awake or asleep
- Exercise intolerance; stopping often on walks
- Heat intolerance; preference to lie on cool floors
- Frequent gagging, retching, or regurgitation
- Restless sleep, odd sleep postures (sitting up, neck extended)
- Cyanosis (blue gums) or collapse in severe cases

If you're seeing these, your vet can grade severity using breed-specific functional tests and structured exams (e.g., the Cambridge BOAS approach), sometimes with imaging and upper airway endoscopy to map out each level of obstruction.

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

A. Lifestyle & medical support (important for every brachycephalic pet)

Weight control: extra fat crowds the throat; even small weight loss can help.

Harnesses, not neck collars: avoid extra throat pressure.

Heat management: short walks in cool parts of the day; strict heat-stroke avoidance plans.

Anti-reflux regimen when indicated (diet timing, GI meds as prescribed).

These measures relieve strain but rarely fix the mechanical blockage. Surgery addresses the anatomical bottlenecks.

B. Surgical treatment (the cornerstone in moderate–severe BOAS)

Surgery is tailored to what the surgeon sees in the nose, soft palate, larynx, and sometimes lower airway. Expect your team to recommend a combination of procedures in one anesthetic for the best chance at restoring airflow.

a) Nares widening (rhinoplasty/ala-vestibuloplasty/alarplasty)

Goal: open the nostril rims to lower resistance up front.

Techniques vary—traditional wedge resection, “alapexy,” CO₂ laser sculpting, or ala-vestibuloplasty variants.

In cats, single-pedicle advancement flap techniques reduce heavy nasal folds and open the passage; several case series report rapid improvement with low complication rates.

b) Soft palate surgery

Staphylectomy (shortening a long palate): done with scissors (“cut-and-sew”), CO₂ laser, or BVSD (Bilateral Vertical Suture Divide) / “folded-flap palatoplasty” style techniques to both shorten and thin a bulky palate.

Choice of technique depends on surgeon training and case anatomy. Comparative data suggest similar goals but different short-term complication profiles (see “Complications & rates” below).

c) Laryngeal sacculles

If everted, they're often removed (saccullectomy) to clear the inlet. Some teams defer if swelling is mild; practice varies.

d) Turbinates

Overly crowded nasal turbinates (especially in some Bulldogs and Pugs) may be trimmed under endoscopic guidance in selected cases. This is specialized and not universally performed.

e) Addressing laryngeal collapse

Early collapse may improve once upstream obstruction is corrected.



Advanced collapse may require arytenoid lateralization (a “tie-back”) or partial arytenoidectomy in salvage situations, but these carry higher complication and mortality risks and are used cautiously; permanent tracheostomy is sometimes the most reliable salvage for end-stage collapse.

f) Staged/adjacent procedures

Tonsillectomy if hypertrophic and obstructive; hiatal hernia repair if clinically significant. Standardized protocols before/after surgery (acid suppression, anti-nausea meds, careful feeding plan) appear to reduce regurgitation, aspiration pneumonia, and respiratory distress after surgery.

4) What to expect around surgery

A. Pre-op

- Blood work and airway imaging/endoscopy as indicated.
- Withhold food appropriately; sometimes prophylactic GI meds start 12–24 hours pre-op.
- Discuss heat risk and strict rest plans for the first 10–14 days.

B. Anesthesia & immediate recovery

- Airway-savvy anaesthesia (rapid, smooth induction/recovery; anti-nausea/acid control) is critical.
- Some patients breathe better right away; others need oxygen support for hours.
- A small percentage require temporary tracheostomy (a tube in the neck) for swelling—more on how often below.

C. Long-term care

- Maintain a lean body condition, keep up reflux control if advised, and avoid heat stress.
- Many dogs resume normal walks within weeks and snore less, tolerate exercise better, and sleep more quietly. Prospective data show measurable improvements in fitness and sleep sounds after surgery.

5) Complications and typical rates (what the literature reports)

Numbers vary by hospital, surgeon, technique, and how “major” vs “minor” complications are defined. The ranges below synthesize large studies and reviews so owners can have realistic expectations to discuss with their veterinary surgeon.

A. Overall post-operative complications (dogs)

Across big cohorts, any **short-term complication** has been reported around 15% to 41%.

Example: a 2024 cohort reported 15% overall complications; others show 41% when counting a wide range of “short-term” issues.

Major complications (things like severe respiratory distress, aspiration pneumonia, death) often fall around 7% to 16% in the immediate period.

B. Mortality (dogs)

Contemporary series often cite **~2%–4% peri-discharge mortality**; individual reports vary by caseload and technique.

A 2022 multicenter series reported **2.6% mortality**.



A 2024–2025 analysis across 606 dogs reported **4.0% mortality**, with higher odds associated with one palate technique (BVSD) compared with CO₂ laser or conventional incisional methods.

C. Temporary tracheostomy (dogs)

- Placement needed in roughly **7%–9% of BOAS** surgical patients in some series.
- Once placed, complication rates around the tracheostomy site are high (because living with a tube is fiddly): one study reported ~95% overall (mostly manageable issues like tube obstruction/coughing), with >80% classified as “major” by their criteria; despite that, >97% of cases were successfully managed and decannulated.

D. Aspiration pneumonia (dogs)

Reported from **~0.5% up to ~11%** across studies, depending on selection and timing. Some series note ~4–6% either pre- or post-op on imaging; standardized peri-op GI protocols aim to push this number down.

E. Regurgitation/GERD flares (dogs)

Common after surgery without a protocol; a 258-case study flagged a marked incidence (often cited around 30–40% in the first 24 hours in some comparisons), especially in younger dogs or those with a prior history. Standardized peri-operative plans significantly reduced regurgitation in follow-up work.

F. Technique-specific short-term complication comparisons (soft palate)

In a recent multi-center comparison:

- Cut-and-sew soft palate resection showed higher major complication risk than CO₂ laser in adjusted models.
- Reported major complication rates by technique were in the ballpark of **~11%–20%** (varied by method and case mix). These data help surgeons counsel owners but don't prove one method is always “best”—an individual surgeon's experience can outweigh tool choice.

G. Laryngeal collapse: how common at surgery?

Newer studies suggest some degree of laryngeal collapse is present in most dogs presenting for BOAS surgery, and higher stages correlate with higher post-op complication risk. This underscores the value of early intervention (before the voice box cartilages fail).

H. Cats: complications and outcomes

Published feline data sets are smaller, but nostril-widening procedures in cats report low complication rates and prompt improvement in breathing noise and activity. Because palate and laryngeal disease are less extreme in most cats, the risk profile is generally lower than in bulldog-type dogs, though individual cats can still face anesthesia and recovery risks.

Important perspective:

Definitions matter. Some papers count any cough as a “complication”; others only count events that change outcome or prolong hospitalization. Your surgeon can share their own service's numbers and protocols, which is the most relevant benchmark for your pet.



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

A. Dogs

Most dogs experience **quieter breathing, better exercise tolerance**, and safer heat handling after combined nares + soft-palate (\pm saccules) surgery, with objective studies showing improved fitness and sleep-noise metrics. Owners often report lifestyle changes like being able to complete normal walks and sleep through the night without choking episodes.

! However, some dogs—especially those with **advanced laryngeal collapse, severe GI disease, or hypoplastic trachea**—may have residual noise or need ongoing medical management. Early surgery (before cartilage collapse and severe GI changes) appears linked to smoother recoveries.

B. Cats

Cats with nostril surgery typically show **rapid, durable reductions in snoring/stertor and better activity levels**. Follow-up in published cases reports no or minimal complications and sustained owner-perceived improvement.

7) Owner checklist: Setting your pet up for success

- **Pick timing wisely:** before peak summer heat, and ideally before years of struggling have led to secondary collapse.
- **Treat early in life:** most owners of brachycephalic pets know about BOAS by the time they do their first health check. Most of the changes are progressive and become harder to treat as time goes. Delaying the surgery until the clinical signs have worsened will only make the risk higher in the postoperative phase.
- **Choose an experienced team:** Ask how often they perform BOAS surgery and what their own short-term complication and temporary tracheostomy rates are.
- **Discuss a standard GI/airway protocol:** pre- and post-operative anti-regurgitation and airway care plans can reduce complications.
- **Weight & fitness plan:** Start weight control before surgery and keep going afterward.
- **Home readiness:** Quiet, cool room; soft food if advised; slow reintroduction to exercise; watch for signs of distress or regurgitation.
- **Breed planning:** Pets needing airway surgery should not be bred. Responsible breeding programs are incorporating functional tests to select for healthier airways.

8) Deeper dive on the main surgeries (for the curious)

A. Nares surgery (dogs & cats)

What's done? A small wedge or flap of the nostril rim is removed or re-positioned to permanently widen the opening. CO₂ lasers can sculpt and help reduce bleeding; sutured flap techniques reshape the opening.

Recovery feel: A bit of crusting at the nostrils; pets often breathe more quietly within days.

Complications: Mild bleeding or crusts are common; major issues are rare with good technique. Feline reports are particularly reassuring.



B. Soft palate surgery (dogs > cats)

- **What's done?** Shorten and often thin a long, thick palate to stop it from occluding the airway. Techniques include traditional “cut-and-sew,” CO₂ laser, and BVSD / folded-flap palatoplasty that both shortens and reduces bulk.
- **Recovery feel:** Throat soreness, drooling; strict rest and small, soft meals.
- **Complications:** Swelling, bleeding, regurgitation, aspiration risk. Comparative studies show different short-term complication rates by technique, but the surgeon's skill and peri-op protocol are probably bigger determinants than the instrument.

C. Laryngeal sacculotomy

- **What's done?** Excise the little “balloons” sucked into the airway.
- **Complications:** Post-op swelling is the main worry; some surgeons omit sacculotomy if they expect swelling to be pronounced, aiming to minimize risk.

D. Turbinate reduction (selected dogs)

- **What's done?** Endoscopic trimming of crowded nasal scrolls to widen internal nasal passages.
- **Complications:** Bleeding and swelling; reserved for select cases at experienced centers.

E. Salvage procedures for end-stage collapse

- **Arytenoid lateralization (“tie-back”) / partial arytenoidectomy** can open the voice box but increase aspiration risk; they're a last resort in BOAS.
- **Permanent tracheostomy** (neck stoma) bypasses the upper airway entirely—life-changing for some, but requires committed lifelong stoma care.

9) Compassionate realism about risks

Even with excellent teams, **airway surgery is never “zero risk.”** The good news: modern protocols and earlier intervention are improving outcomes. For perspective you can discuss with your surgeon:

- **Any short-term complication:** ~15–41% depending on definitions and follow-up.
- **Major short-term complication:** ~7–16%.
- **Mortality to discharge:** often ~2–4% in large series.
- **Temporary tracheostomy needed:** ~7–9%; if placed, expect intensive nursing and high device-related complication counts, but success in weaning off the tube exceeds 95% in published cohorts.
- **Aspiration pneumonia:** roughly 0.5–11% (pre- and post-op combined across studies), with protocol-driven care aiming to reduce this.
- **Post-op regurgitation:** common without a protocol; studies cite ~30–40% in the first 24 hours in some groups; younger dogs and those with a regurgitation history are at highest risk. Standardized regimens reduce this.
- **Cats:** published series are smaller but report low rates and good outcomes for nares procedures.

10) Frequently asked owner questions

- **“Will my dog stop snoring?”**
Often snoring reduces, sometimes dramatically, but a little noise can persist—especially if there's residual nasal turbulence or tongue bulk. Objective studies show real improvement in sleep-related breathing noise after surgery.



- **“Is surgery a cure?”**

Think “risk reduction and quality-of-life improvement,” not “cure.” Anatomy improves, but lifelong heat caution and weight control remain essential. Some dogs with advanced laryngeal collapse need additional procedures later. □

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- **“My cat just snores—does she need surgery?”**

Not necessarily. Your vet will rule out other causes and assess nostril shape and nasal folds. When narrow nostrils are the culprit, a relatively minor nostril-widening surgery can help.

- **“Which technique is best?”**

There isn't a one-size-fits-all “best.” Outcomes depend heavily on surgeon experience, full airway assessment, and peri-operative protocols. Comparative studies highlight differences in short-term complications between techniques, but your surgeon's familiarity with a method matters a lot.

11) Selected veterinary references

- ACVS Client Guide: Brachycephalic Syndrome. American College of Veterinary Surgeons. Overview of anatomy, signs, and treatments.
- Cambridge BOAS Programme (Recognition & Diagnosis page). Useful owner info on signs and grading.
- Mitze et al., 2022. “Brachycephalic obstructive airway syndrome: much more than a ...” A broad scientific review of BOAS pathophysiology and management. (Open access)
- Carabalona et al., 2022 (JAVMA). Large series on complications, prognostic factors, and long-term outcomes following H-pharyngoplasty and ala-vestibuloplasty; 2.6% mortality.
- Jones et al., 2024 (PubMed). 606-dog cohort comparing staphylectomy techniques; 4.0% mortality; technique-related differences explored.
- Nanda et al., 2025 (JAVMA). Multicenter comparison of soft palate techniques with short-term complication rates by method.
- Ree et al., 2016 (open access). Risk factors for major complications; reported 7% major complication rate.
- Hill et al., 2025 (JAVMA). Standardized peri-operative protocol reduced regurgitation, aspiration pneumonia, respiratory distress after BOAS surgery.
- Fenner et al., 2020 (Vet Surg). Post-operative regurgitation risk factors—higher in younger dogs and those with prior regurgitation.
- Stordalen et al., 2020 (JSAP). Temporary tracheostomy outcomes: 7–9% of dogs need it; device-related complications common but management success >97%.
- Gallant et al., 2025 (Frontiers). Laryngeal collapse commonly present in BOAS surgery candidates and influences complications.
- Goossens et al., 2025 (Frontiers). Short-term functional improvements in fitness and sleep sounds after BOAS surgery.
- VCA & PetMD (cats). Owner-level overviews of feline BOAS and why nostril surgery is often the key fix.



- Berns et al., 2020 (JFMS Open Reports). Single-pedicle advancement flap for feline stenotic nares—positive outcomes in all reported cases.

12) Bottom line for pet owners

- **BOAS is mechanical and multilevel**—a nose-to-throat problem that the body can't "grow out of."
- Good weight, heat control, and GI management help, but surgery is the evidence-based way to widen the airway and reduce long-term risks in moderate–severe cases. Again, surgery should not be delayed. Any inspiratory efforts should prompt urgent surgery.
- Realistic risk counselling matters: across big datasets, major early complications are single-digit to mid-teens percent, mortality typically ~2–4%, and a small subset need temporary tracheostomy despite careful planning. Protocol-driven care can lower GI-related complications.
- Cats often **do very well** with nostril surgery alone.

If you're considering surgery for your pet, the most useful next steps are to

- (1) ask your vet for a full airway work-up and functional grading,
- (2) request their own outcomes and complication rates, and
- (3) talk through a peri-operative GI protocol to minimize regurgitation/aspiration risk. The decision is personal, but the data—and owner reports—show that timely, well-planned BOAS surgery can be life-improving for many short-faced pets.
- (4) or simply reach out to us.