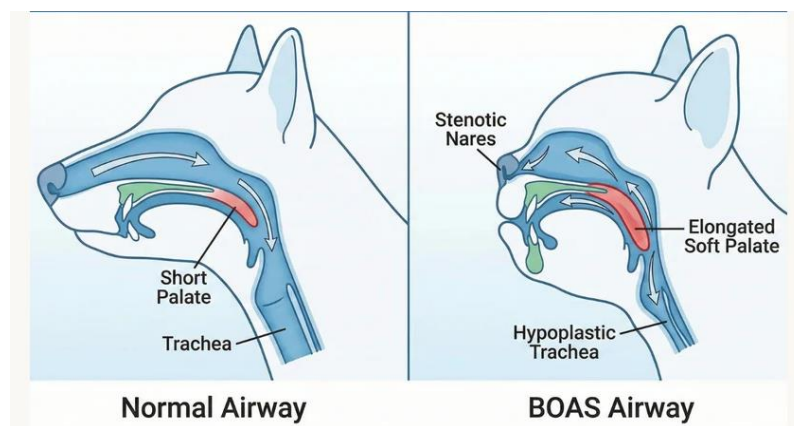


BRACHYCEPHALIC OBSTRUCTIVE AIRWAY SYNDROME (BOAS)

Brachycephalic means short-headed (short-nosed), and many breeds of dogs have been bred for this type of appearance. Bulldogs, Boxers and Boston terriers are examples of breeds with a short-nosed, “pushed-in,” or brachycephalic face. The bones and associated structures of the head are shaped in such a way as to give these dogs the typical appearance of their breed. However, this shape also causes mild to severe breathing problems because the upper airway often is too small—especially the nasal passages, glottis (throat), and trachea (windpipe).



The term brachycephalic airway syndrome describes the anatomic abnormalities and the respiratory problems associated with having an excessively short nose and face. This applies to short-nosed dogs more often than short-nosed cats like Persians. There are different ways in which the upper airway of brachycephalic dogs can be misshapen and cause problems. Any or all of them may be present in a particular dog.

- **Stenotic nares:** Narrow, small nostrils make it difficult for the dogs to draw in air through the nose.
- **Elongated soft palate:** Excessive tissue of the soft palate can obstruct the flow of air through the pharynx and larynx (upper throat). This is the most common component of the brachycephalic airway syndrome.

- **Everted laryngeal sacculles:** These small sacs in the very back of the throat are normally inverted (tucked away) and cannot be seen. With excessive negative pressure, which occurs when these dogs inhale, they can be sucked inside out—everted—and further obstruct the airway.
- **Hypoplastic trachea:** The windpipe, or trachea, may be narrower in diameter than normal, resulting in increased resistance to airflow when the animal breathes.

The symptoms of this syndrome vary based on the severity of the anatomic irregularities. The abnormal structures are present from birth, but obvious problems often do not arise until the dog is over 2 years of age. Some dogs only develop mild symptoms and do not require intervention. Heavy snoring during sleep, or the typical “snorting” of an excited bulldog or Boston terrier are mild examples, and many dogs are not otherwise affected. However, at the other extreme, some dogs develop such a degree of airway obstruction that they have trouble breathing at all, especially on inhaling.

The condition tends to slowly worsen over time. Increased resistance of airflow over a long period of time can cause increased obstruction and weakening of other parts of the throat, and complications such as laryngeal collapse can occur. Such severely affected dogs may become *cyanotic* (bluish tongue and gums caused by oxygen deprivation) and experience *exercise intolerance* and *syncope* (fainting). These very serious symptoms are exacerbated by obesity, hot weather, and excitement, and dogs with brachycephalic airway syndrome should avoid these conditions, especially if respiratory difficulty is noted to worsen. If an episode of *dyspnea* (difficulty breathing) is severe enough, the dog could die from brachycephalic airway syndrome.

Confirming that brachycephalic airway syndrome exists in a certain dog is based on your description of the symptoms you have observed, any medications or treatments and whether they made any difference, and so on. Your veterinarian will be interested in details such as when the breathing difficulties occur, how severe they are, and if they are worsening (more severe, more frequent, or both) over time. There are many respiratory disorders that produce symptoms similar to brachycephalic airway syndrome but that are completely different disorders. Therefore, your veterinarian will want to identify whether any of the anatomic components of the syndrome is present in order to choose the best treatment. The physical examination can confirm *stenotic nostrils* (small nostrils), but the other three components of the syndrome require special examination. Under sedation, an inspection of the larynx using a laryngoscope (speculum with a light) can detect an elongated palate and everted laryngeal sacculles. Radiographs (x-rays) of the chest may be taken to rule out other airway or lung diseases and to visualize the size of the trachea.

The aim of BOAS surgery is to improve the ease of breathing, improve sleep quality, and allowing them to live more active lifestyles with less exercise intolerance.

Dogs that receive surgery benefit from:

- easier breathing
- better sleep
- improved exercise tolerance
- reduced overheating
- less gastrointestinal distress associated with BOAS

This can significantly improve daily comfort and activity levels and reduce risk of heat stroke and emergencies.

Brachycephalic dogs are at higher risk for:

- overheating
- cyanosis
- respiratory crises during stress or exercise

Correcting airflow earlier lowers the risk of emergency events, especially in warm climates or active dogs.

Surgery may also reduce gastrointestinal problems. Improving airway mechanics can reduce the negative pressure that contributes to GI symptoms.

BOAS is commonly associated with:

- reflux
- regurgitation
- vomiting
- hiatal hernia irritation
- Silent regurgitation with random lip smacking

Highest-risk patients

Complication risk rises with:

- obesity
- older age

- severe BOAS
- laryngeal collapse
- previous cyanotic episodes
- heat stroke history
- concurrent aspiration pneumonia
- severe GI disease

While brachycephalic anesthesia is always higher risk, younger dogs without advanced airway disease, obesity, or chronic inflammation may tolerate anesthesia better than older dogs with severe compromise.

Prevention Benefits: We can't halt or prevent the progression of airway disease. This is because of the structures we can not fix and they continue to cause restriction to breathing.

Chronic airway obstruction creates constant negative pressure when the dog breathes. Over time, this can permanently damage the airway:

- laryngeal collapse can develop
- tissues become inflamed and thickened
- secondary airway changes become irreversible

Early correction may slow this progression before structural damage occurs.

Dogs treated before advanced disease often:

- recover faster
- have fewer complications
- achieve greater improvement in breathing and exercise tolerance

Once severe collapse or chronic inflammation develops, surgery may still help, but results are often less dramatic.

Risk of BOAS Surgery

- **Anesthesia**
- **Aspiration risk:** Many BOAS dogs have reflux or regurgitation, increasing risk of: aspiration pneumonia. This can occur from: regurgitation, vomiting, impaired

swallowing. Signs usually develop within hours to days after surgery: fever, cough, and labored breathing. This is one of the more serious complications.

- **Airway swelling (very important):** After surgery, tissues can swell significantly. Even successful surgery can temporarily make the airway narrower for several hours. This is why oxygen support, intensive monitoring, delayed extubation (leaving a breathing tube in for as long as your pet needs), and emergency reintubation capability (replacing the breathing tube if they are not breathing well) are so critical.
- Some dogs require temporary reintubation or even temporary tracheostomy.
- **Regurgitation and GI upset:** Very common after BOAS surgery due to chronic reflux disease, anesthesia effects, and airway swelling. Dogs may have also develop gagging, lip smacking, vomiting, and even poor appetite.
- **Bleeding:** Usually mild, but bleeding from soft palate or nare surgery can contribute to airway irritation or obstruction.
- **Residual noisy breathing or incomplete improvement:** Surgery improves most dogs, but not all noise disappears. Severe laryngeal collapse may persist and obesity can limit improvement. Dogs with advanced disease tend to have less dramatic improvement.

Recovery

- Patients are typically kept in the hospital for 1-3 days following surgery.
- It takes 1 month for all the post op swelling to resolve and for you to appreciate the new improved clinical signs associated with the surgery.
- You will be scheduled a discharge appointment to go over all home after care for your pet.
- We will provide post-operative medication to go home.
- The only exercise your pet should have over the first 2 weeks is a short walk outside to go to the bathroom.
- You will need to feed soft canned food in small meatballs, with the head elevated for the first 2 weeks.
- Watch your dog closely for 20–30 minutes after they eat to ensure no choking or immediate regurgitation.
- Avoid collars entirely, as they put pressure on the airway. Use a properly fitted chest harness.

When to Call the Vet Immediately

Contact Quartet, or your local emergency veterinarian, if your dog exhibits any of the following:

- Difficulty breathing, gasping, or blue-tinged gums; increased respiratory rate effort
- Heavy, uncontrollable bleeding from the nose.
- Uncontrolled vomiting or frequent regurgitation

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