

# Brachycephalic Syndrome



Certain breeds of dogs and cats are prone to difficult, obstructive breathing because of the shape of their head, muzzle and throat. The most common dogs affected are the “**brachycephalic breeds**”. Brachycephalic means “**short-headed**”.

Common examples of brachycephalic dog breeds include the English bulldog, French bulldog, Pug, Pekingese, and Boston terrier. These dogs have been bred to have relatively short muzzles and noses and the head's soft tissues are not proportionate to the shortened nature of the skull. The excess tissues tend to increase resistance to the flow of air through the upper airway (nostrils, sinuses, pharynx and larynx). Persian cats also have a brachycephalic conformation.



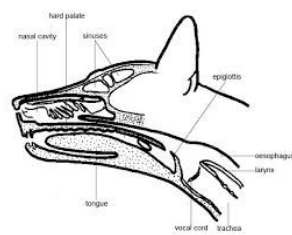
Side view of a dog showing the classic brachycephalic conformation

The term “**Brachycephalic Airway Syndrome (BAS)**” refers to the combination of **elongated soft palate**, **stenotic nares** (narrow nostrils) and **everted laryngeal sacculles**, all of which are commonly seen in these breeds. Sometimes these dogs will also have a **hypoplastic trachea** (narrow windpipe). Over time the increased resistance to airflow can lead to a **collapsed larynx** (the cartilages that open and close the upper airway) or paralysis of the laryngeal cartilages.

1. **Elongated soft palate** is a condition where the soft palate is too long so that the tip of it protrudes into the airway and interferes with movement of air into the lungs.



Oral examination showing an elongated soft palate, extending into the dog's larynx



Normal anatomy the soft palate does not contact the larynx

2. **Stenotic Nares** are malformed nostrils that are narrow or collapse inward during inhalation, making it difficult for the dog to breathe through its nose.

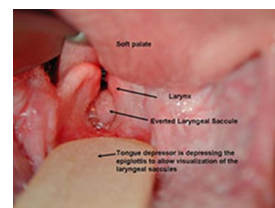


Stenotic nares



Normal nares

3. **Everted Laryngeal Sacculles** is a condition in which tissue within the airway, just in front of the vocal cords, is pulled into the trachea (windpipe) and partially obstructs airflow. Everted laryngeal sacculles look like soft tissue masses protruding into the airway just in front of the vocal folds.



Everted laryngeal sacculles



Normal larynx

## Signs and Symptoms

Dogs with elongated soft palates generally have a **history of noisy breathing**, especially upon inspiration (breathing inward). Some dogs will retch or gag, especially while swallowing. Exercise intolerance, cyanosis (blue tongue and gums from lack of oxygen), and occasional collapse are common, especially following over-activity, excitement, or excessive heat or humidity. Obesity will aggravate the problems. Many dogs with elongated soft palates prefer to sleep on their backs. This is probably because this position allows the soft palate tissue to fall away from the larynx. The signs associated with stenotic nares and everted laryngeal sacculles are similar.

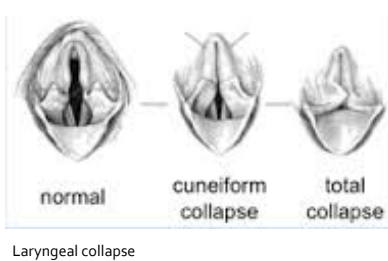


## Diagnosis

**Stenotic nares** can be easily diagnosed on physical examination (as seen in the photograph of the stenotic nares).

Definitive diagnosis of both **elongated soft palate and everted laryngeal saccules** can only be made with the **dog under anaesthesia**. Generally, brachycephalic breeds have a thick tongue that makes visualization of the larynx in an awake animal very difficult. Attempts to restrain the patient and retract the tongue sufficiently to allow visualization of the larynx are generally unsuccessful.

Under anaesthesia, elongated soft palates extend past the tip of the epiglottis (the entrance to the airway). In severe cases the soft palate will extend directly into the laryngeal opening. The tip of the soft palate and the edges of the larynx are often inflamed (swollen and red). In chronic cases, the cartilages of the larynx become inflexible and begin to collapse, further narrowing the airway.

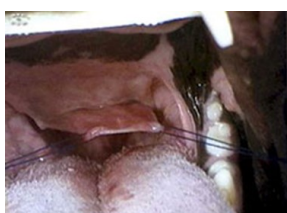


Laryngeal collapse

## Treatment

We strongly recommend early airway intervention. Pups are often assessed, diagnosed and treated in their first year of life. By reducing resistance to airflow through removing excess soft tissue and restoring normal airflow through the upper airways, we can significantly reduce the risk of laryngeal collapse and obstruction occurring later in life.

**Soft palate** abnormalities are treated if your pet shows noisy or difficulty breathing, gagging, coughing, exercise intolerance. Resection of the excess soft palate (staphylectomy) is performed using a scalpel blade or scissors. The palate is stretched and the excess tissue is removed with blade or scissors.



Staphylectomy



Soft palate trimming

If the **laryngeal saccules** are everted, they may be removed at the same time as the soft palate resection.

Correction of **stenotic nares** (if present) helps improve breathing and is done at the same time.



One side of the stenotic nares has been corrected



Appearance of the nose immediately after widening of the stenotic nares

## Aftercare and Outcomes

Pets must be monitored very closely immediately after surgery. Significant inflammation, swelling or bleeding can obstruct the airway, making breathing difficult or impossible. Occasionally a tube must be placed and maintained through an incision in the neck into the trachea temporarily (temporary tracheostomy) until the swelling in the throat subsides enough that the pet can breathe normally. Pets are usually observed in the hospital for at least 8 hours. Post-operative coughing and gagging are common. The **prognosis is good for young animals**. They generally will breathe much easier and with significantly reduced respiratory distress. Their activity level can markedly improve.

In chronic cases in which the laryngeal cartilages have become inflexible, removal of the elongated soft palate and laryngeal saccules may not provide enough relief. In **older animals**, if the process of laryngeal collapse has already started, or if the laryngeal collapse is advanced, the **prognosis is poor**. The creation of a new permanent opening into the trachea in the neck area (called a permanent tracheostomy) may be the only solution, although there are complications associated with this procedure as well.