

Brachycephalic Airway Syndrome in Cats

What does brachycephalic mean?

"Brachy" means "shortened" and "cephalic" means "head". The skull bones of brachycephalic cats are shortened in length, giving the face and nose a "pushed in" appearance. Due to the shorter bones of the face and nose, the anatomy and relationships with other soft tissue structures are altered; some of these changes can cause physical problems, particularly with breathing.

Persian, Himalayan and Burmese cats are the most well-recognized brachycephalic breeds of cats.



What is brachycephalic airway syndrome?

Brachycephalic airway syndrome refers to a particular set of upper airway abnormalities that affects brachycephalic cats and dogs. This syndrome is also called *brachycephalic respiratory syndrome*, *brachycephalic syndrome* or *congenital obstructive upper airway disease*. The upper airway abnormalities that occur in this syndrome may include **stenotic nares**, an **elongated soft palate**, a **hypoplastic trachea** and **everted laryngeal sacculs**. An individual cat with brachycephalic syndrome may be affected with a combination of one or more of these abnormalities.

Cats with stenotic nares have abnormally narrowed, small nostrils; the narrowing restricts the amount of air that can flow into the nose. A cat with an elongated soft palate (the soft part of the roof of the mouth) has a soft palate that is too long for the length of the mouth; the excess length partially blocks the entrance to the trachea or windpipe at the back of the throat. These two abnormalities are the most common ones seen in brachycephalic cats. A hypoplastic trachea means that the trachea or windpipe has a smaller diameter than normal. The laryngeal sacculs are small sacs or pouches that are located just inside the larynx (voice box); these sacculs evert (turn outwards) or are sucked into the airway by the pressure associated with the increased respiratory effort caused by the stenotic nares and/or the elongated soft palate. Everted laryngeal sacculs will further obstruct airway flow.

What are the symptoms of brachycephalic airway syndrome?

Any of these upper airway abnormalities can cause increased airway resistance, therefore increasing the effort required to inhale. Generally, the more abnormalities present the more severe the symptoms. Most cats with this syndrome are able to breathe more easily through their mouth than their nose; therefore, the most common symptom seen with this syndrome is mouth breathing.

"Generally, the more abnormalities present the more severe the symptoms."

Mildly affected cats will make some increased noise when they breathe, or they may snore when they are relaxed or are sleeping. Severely affected animals have more pronounced airway noise, appear to tire easily with exertion, and may collapse or faint after playing or exercising. Occasionally, affected cats will have other symptoms such as coughing, gagging, retching or vomiting. Symptoms are often worse in hot or humid weather.

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Over time, cats that are severely affected may develop other secondary problems, including inflammation of other structures in the airways. In the long term, the increased effort associated with breathing can also put an increased strain on the heart.

How is brachycephalic airway syndrome diagnosed?

If you have a brachycephalic cat, your veterinarian may discuss this syndrome with you as part of a routine health examination, or you may bring your cat in for an examination because of an episode of respiratory distress or a fainting spell.

This syndrome will be diagnosed on the basis of the cat's breed, facial conformation, clinical signs and results of a physical examination. Stenotic nares can usually be diagnosed on visual inspection. Diagnosis of an elongated soft palate, everted laryngeal sacculs or other associated anatomical changes within the mouth will require heavy sedation or full general anesthesia.

Since cats with this syndrome have an increased risk of complications associated with general anesthesia, your veterinarian will recommend pre-anesthetic blood work and chest x-rays to evaluate the general health of your cat prior to the diagnostic procedure. If your cat undergoes general anesthesia to diagnose this condition, your veterinarian will recommend that any necessary surgical correction be performed at the same time.

What is the treatment for brachycephalic airway syndrome?

Since obesity worsens the symptoms of brachycephalic airway syndrome, weight loss is an important part of treatment if the pet is overweight. For cats with mild or intermittent symptoms, the condition may be managed conservatively by controlling exercise levels, avoiding hot or humid conditions, keeping the pet in an air conditioned place during the summer, and avoiding stress.

"Since obesity worsens the symptoms of brachycephalic airway syndrome..."

Corticosteroids, non-steroidal anti-inflammatory medications and oxygen therapy may all be useful for short term relief of airway inflammation or respiratory distress. However, medical management of this condition does not correct the underlying anatomical abnormalities.

Surgery is the treatment of choice whenever the anatomic abnormalities interfere with the patient's breathing. Stenotic nares can be surgically corrected by removing a wedge of tissue from the nostrils, allowing improved airflow through the nostrils. An elongated soft palate can be surgically shortened to a more normal length. Everted laryngeal sacculs can be surgically removed to eliminate the obstruction in the larynx.



How successful is surgery?

"The earlier that the abnormalities associated with this syndrome are corrected..."

The earlier that the abnormalities associated with this syndrome are corrected, the better since the condition worsens over time and may cause other abnormalities. Early correction of stenotic nares and/or an elongated soft palate will significantly improve airway function and may prevent development of everted laryngeal sacs.

In the early post-operative period, swelling of the surgical sites may occur and interfere with breathing. Therefore, your veterinarian will closely monitor your pet after the surgery has been performed. The degree of monitoring that will be necessary depends on the surgical procedures that were performed.

What is the prognosis for a cat with brachycephalic airway syndrome?

The overall prognosis for patients with brachycephalic syndrome depends upon how many anatomic abnormalities are present, and how old the cat is at the time of diagnosis and treatment.

Cats that only require surgical correction for stenotic nares and/or an elongated soft palate have a better prognosis than cats with more defects. Cats with a hypoplastic trachea have a variable prognosis. Cats that have other problems such as allergic airway disease or that have developed secondary problems from the airway distress have a poorer prognosis. However, appropriate management can significantly improve the quality of life for these pets.

Is there any other advice?

"Cats with pronounced breathing difficulty or cats that require surgery to correct airway obstruction should not be used for breeding. "

This syndrome is directly related to the conformation or breed standard for brachycephalic cats. Cats with pronounced breathing difficulty or cats that require surgery to correct airway obstruction should not be used for breeding. It is usually recommended that these cats be neutered at the same time that the surgical correction is performed.

This client information sheet is based on material written by: Cheryl Yuill, DVM, MSc, CVH

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