

Brachycephalic Airway Syndrome





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Brachycephalic Airway Syndrome

Some breeds of dogs and cats are prone to difficult, obstructive breathing because of the shape of their head, nose and upper airways. The most common dogs affected are the “brachycephalic” breeds. Brachycephalic means “short-headed.” Common 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, because of this, the upper airways are compressed and there is obstruction to airflow. The condition worsens with age and may lead to secondary changes. Some cat breeds such as the Persian have similar brachycephalic problems. Veterinary Specialist Services is a world leader in the treatment of brachycephalic obstructive airway syndrome and has published widely in the literature on this topic.

The primary problems seen in brachycephalic dogs include:

- 1 Stenotic nares – where the nostrils are too small to allow adequate passage of air making breathing through the nose difficult.
- 2 Elongated soft palate – the soft palate is too long. In these cases, the soft palate is excessively long and thus obstructs normal airflow. The elongated soft palate creates turbulent airflow resulting in the increased respiratory noise we hear in brachycephalic dogs. The soft palate may also become thicker over time due to inflammatory changes.
- 3 Tracheal hypoplasia – where the trachea (windpipe) is too small. This condition cannot be treated however addressing the other airway issues is of benefit in the majority of dogs.
- 4 Tonsillar hyperplasia or enlarged tonsils. This is common in brachycephalic breeds due to chronic inflammation. Some surgeons advise tonsillectomy at the time of airway surgery.
- 5 Everted or swollen laryngeal sacculles – These sacculles normally sit either side of the larynx. In brachycephalic dogs the increased effort of breathing may result in the sacculles becoming swollen resulting in obstruction of airflow. Swollen laryngeal sacculles is the first stage of collapse of the larynx – a very serious condition.
- 6 Excessive nasal turbinate bones – this occurs in some cases and may require additional surgery if breathing is not improved by correction of the above problems. Nasal CT is required before surgery. This is a very major procedure and often required prolonged hospitalisation post-op.

Other conditions such as hiatal hernia, gastric reflux, tracheal collapse, bronchial collapse, pharyngeal hyperplasia and cardiac disease secondary to increased pulmonary resistance may also occur – especially if corrective treatment is delayed. We find if the primary problems are addressed at an early age (ideally between 1 and 2 years of age) this results in less secondary changes and animals usually require less complicated surgical procedures and have lower complication rates. Early intervention is strongly recommended.

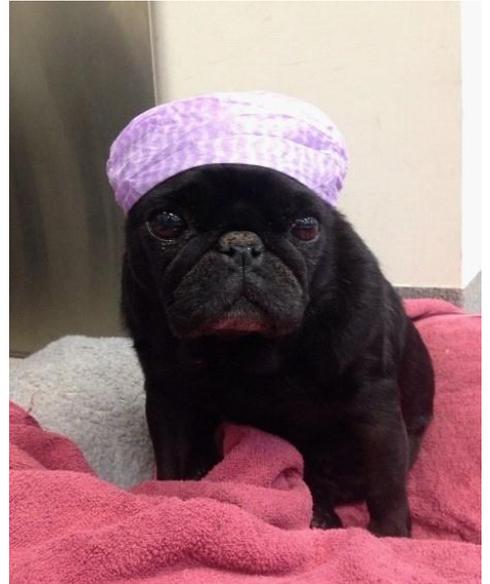
Dogs with brachycephalic airway syndrome usually have a history of noisy breathing, snoring, poor exercise tolerance which may worsen in hot, humid weather. Some dogs will also vomit or gag when swallowing. Episodes of cyanosis (blue tongue and gums from lack of oxygen) and collapse are common in some dogs. Being overweight tends to worsen the problems.

Stenotic nares can be easily diagnosed on physical examination however definitive diagnosis of the other aspects of brachycephalic airway syndrome requires assessment and CT under sedation or anaesthesia.

Do all brachycephalic animals require corrective surgery? In our experience of over 20 years treating brachycephalic dogs and cats over 98% of the animals we see significantly benefit from surgery. They are more comfortable following surgery, breathe more easily and are more active. Our initial approach is the assessment of your pet. We then discuss our recommendations before proceeding with any surgery.

Our routine assessment of brachycephalic dogs involves:

- 1 A thorough physical and neurological examination
- 2 Blood tests to assess animal's general health and screen for any other issues.



3 Patients are then pre-oxygenated – given 100% oxygen for 10 minutes prior to anaesthesia

4 Patients are then anaesthetised to allow assessment of the airways. We examine the soft palate, tonsils, larynx, laryngeal function, chonae and pass a small bronchoscope into the upper and lower airways.

5 Whole body CT to assess the head morphology including turbinate and nasal structure, length and thickness of the soft palate, upper airways, trachea, lungs for tracheal ratio and pneumonia and thorax for hiatal hernia and lower oesophageal anomalies. CT is the only diagnostic modality that can fully assess the intracranial structures particularly the thickness of the soft palate. We also assess for the presence of hemi vertebrae – abnormal vertebrae are very common in brachycephalic breeds.

After we have assessed all available information, we formulate an individual treatment plan for your pet. We will discuss this plan prior to proceeding with surgery.

Treatment:

Following assessment, we prefer to proceed with surgical correction of any abnormalities present at this time under the same anaesthetic. The elongated and thickened soft palate, everted laryngeal ventricles and tonsils are assessed and treated as appropriate. Stenotic nares are also opened / widened. There are many different surgical procedures, and your surgeon will discuss these with you. The exact procedures may not be able to be determined until the patient has been assessed. The goal of surgery is to improve airflow.

Complications

With any surgical procedure complications are possible. There is a small risk with any anaesthetic, as there is in people. The chance of a major anaesthetic complication is very low – only 0.01%.

Patients are monitored very closely immediately after surgery, at VSS all our brachycephalic patients are recovered in our ICU. We have experienced nurses and veterinarians monitoring your pet 24 hours a day. In some cases, significant post-operative swelling can obstruct the airway, making breathing difficult. If this does not respond to a medication, we may need to re-anaesthetise your pet and place swabs soaked in hyper osmotic solution in the pharynx to help reduce the swelling, this resolves the swelling in most cases. Occasionally, if the swelling does not resolve, a (temporary tracheostomy may be required until the swelling in the pharynx subsides adequately. This is a rare occurrence but does this add significantly to the care and also cost of treatment for your pet. In very severe cases addressing the upper airway issues may not be adequate and a permanent tracheostomy may be the only solution, there are significant complications associated with this procedure. A permanent tracheostomy is very rarely required.

Another uncommon complication that can occur is aspiration pneumonia. Despite our close monitoring and drugs to help prevent this some dogs will vomit or regurgitate in the 24-48 hours following surgery. If they breath this fluid into their lungs they can develop aspiration pneumonia. This occurs very rarely but can be potentially life threatening.

The prognosis is good for young animals. They generally will breathe much more easily and with significantly reduced respiratory distress. Their activity level can markedly improve. Older animals may have a less favourable prognosis, especially if the process of laryngeal collapse has already started. If the laryngeal collapse is advanced, the prognosis is poor.

**If you have any questions, please feel free to contact of the Specialist Surgeons at
Veterinary Specialist Services.**



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