BRACHYCEPHALIC AIRWAY SYNDROME:

A design challenge from the nose to the lungs to the stomach

Direct Veterinary Surgery
Surgical Solutions Direct to You

Overview—"I don't understand what Brachycephalic Airway Syndrome is; please help me understand the condition and the treatment."

Brachycephalic Airway Syndrome is all too common a malady in dogs of the "bully" breeds—Bulldogs, Frenchies, Pugs, Boston Terriers and other breeds with short nose conformation. Cats are not immune to this anatomy problem; certain breeds and face shapes in cats can have trouble too. The nostrils of the nose get a lot of attention because they are up front and center, but the back of the throat is likely a more serious anatomy location to blame. In truth, the whole package is the challenge that can result in minor to major breathing problems in these patients; below is a list of abnormal anatomy that may be contributing to problems—

- pinched **nostrils** at the leading edge of pinched nasal **passages**
- abundant folds of throat tissues packaged in a relatively small back of the throat area
- excessively large tongue for mouth/throat size
- overly long soft palate on the back edge of the roof of the mouth
- abnormal airflow through the throat resulting in small throat pockets ("saccules" in front of the vocal cords) everting into small balloons (stage I laryngeal collapse)
- small tracheal diameter
- compressed, boxy chest shape creating higher abdominal pressures (pushing on stomach)
- excessive chest effort to breathe causing pressure on esophagus (that runs through the chest) and reflux (GERD- gastroesophageal reflux disease)
- chronic esophagitis (inflammation of esophagus; heartburn)
- stomach emptying problems (resulting in abdominal distension and regurgitation)

The surgical options range from improving the airway and breathing (nostril enlargement, soft palate shortening, removal of everted saccules) to preventing regurgitation and improving stomach emptying. *Many of the above abnormalities cannot be changed*. The few that we can adjust often make a big difference in overall breathing comfort and digestive health.

"Why are these procedures being recommended for my pet?"

Breathing hard is usually the reason to pursue surgical modifications to the nose and throat; the sooner we can reduce the *effort of breathing*, the fewer the problems that develop in the future. Shortening the soft palate removes the "curtain flapping in open window" effect each time a pet breathes in. Removing the everted saccules widens the diameter of the throat for air to flow when breathing in. Enlarging the nostrils also widens the tubes through which air is flowing in, and the effort of breathing is lower.

Noise during breathing (stridor and stertor), the *effort* of breathing, *fatigue* with activity, *trouble* with a hot environment, *distress* with exciting activities are all scenarios to evaluate when making decisions about altering the airways in these pets.

The stomach and esophagus problems with these pets can be their own problems that need to be addressed, or they can create severe complications when surgically managing the airway problems. Careful attention to your pet's eating, swallowing, regurgitation, vomiting, abdominal distension history is also important to the discussion when planning for airway treatment.

"What options do I have to treat my pet's condition (no treatment; conservative, medical, and surgical treatments)

Not all brachycephalic pets need surgical assistance with their breathing; their anatomy is just not causing difficulties.

Excessive body condition (overweight/obesity) will dramatically worsen any pet with brachycephalic syndrome. Fat deposits around the throat and neck, in the chest and in the abdomen all contribute significantly to the airway and GI problems these pets can develop. The first step toward avoiding surgical procedures is to reduce your pet to a lean-ideal body condition. (Please note, most examples of these breeds in the USA are technically carrying excess body weight, so evaluate your references carefully when deciding whether your pet is lean-ideal.)

Medications can help reduce the esophageal and stomach problems common to these breeds that result in "heartburn" and GERD. Feeding routines and type of food (carbohydrate vs. fat vs. protein) can also improve the flow of food through the digestive system and reduce the chances for regurgitation and aspiration (breathing in fluid/food from regurgitated stomach contents.)

Surgery, as mentioned above, is used to improve breathing and airway diameter; it can also be used to treat stomach emptying delays in some patients when medications are not effective enough.

"What postoperative complications do I need to know and understand when considering this surgery?"

The most concerning postoperative complication is the inability to breathe immediately after surgery (when breathing tube is removed) or several days later because of throat swelling or regurgitated fluid/food being aspirated into the trachea. Access to emergency care and 24-hour care is essential.

Prognosis for smooth sailing through anesthesia and airway surgery is **worse for older** patients, **overweight/obese** patients, patients with **pre-existing GI** signs (regurgitation/vomiting), and **highly strung/anxious** patients. Only a quarter of our patients will have complications that require our urgent/emergent intervention in the first few hours to several days postoperatively, but it is *life-saving and essential* for those who do.

"Are there situations when the surgical outcome is not what we hoped it would be?"

The adjustments we can make surgically will offer benefit but should not be thought of as tools to make a brachycephalic pet an athlete with the breathing ability and stamina of non-brachycephalic pets. After surgical modification to the airway, your pet may still have some noise with breathing and some level of fatigue and heat-intolerance. Maintaining an appropriate lifestyle for these breeds is also essential.

"How is my pet's life and lifestyle likely to change after this procedure?

The goal with the airway surgeries is to improve airflow during breathing and thus reduce the effort of breathing. Snoring at night might be reduced. The physical abilities of walking and playing may be extended.

The goal with the stomach surgeries is to improve the flow of food through the stomach. This will, ideally, reduce regurgitation, heartburn, coughing, abdominal distension and discomfort after eating. Support with medications and adjusted feeding routines are commonly required even after surgery on the stomach.

"Are there things I can do to prepare myself, my home and/or my pet for this procedure?"

The most common triggers for respiratory crisis for dogs with Brachycephalic Airway Syndrome are excitement/heat and vomiting/regurgitation. Veterinary visits for anesthesia/surgery can be a big trigger too! Knowing this, plan ahead with the veterinary team to coordinate arrival times, pre-visit medications (calming meds, regurgitation meds).

Plan to be available to supervise your pet closely for a week after surgery.
Plan your potential trip to an ER at any hour of the day (see ER prep handout). Be prepared to answer questions about your preferences regarding the life-saving treatments of temporary tracheostomy and CPR.
Plan to maintain a cool environment and minimal physical activity for several weeks.

Outpatient surgery and anesthesia can be uncomfortable, painful, disorienting, and frustrating experiences for animals; watching your pet work through the early postoperative period and recover from anesthesia and pain medications can be worrisome, scary and frustrating for pet owners. The vast majority of the time this period of difficulty is brief, and *your pet is actually more comfortable and secure at home with you*. Sometimes it doesn't feel like that at two in the morning when your pet is anxious and not consolable, and you are unsure of what to do. You always have the option of transporting your pet to a 24-hour veterinary facility postoperatively. If you do not want to have your

pet home in the first few days postoperatively, please advise your primary care veterinary staff. They will provide contact information for a local 24-hour veterinary facility and help get an estimate for the ongoing care.

It is important that you have proper expectations about this procedure; your experience and you pet's outcome will benefit greatly. Please discuss this information with your veterinarian when working through the decision-making process regarding **Brachycephalic Airway Syndrome**.

Lara Rasmussen, DVM, MS
Diplomate, American College of Veterinary Surgery
DIRECT VETERINARY SURGERY, LLC

(See additional materials at www.directvetsurg.com for pet owners and veterinary professionals.)