Brachycephalic Obstructive Airway Syndrome

BOAS is becoming a frequent diagnosis in our clinic. In 2016 we saw 16 cases for airway surgery and in 2018 we saw 100. However brachycephalic dogs are not only presenting to Anderson Moores with airway problems, but also spinal, orthopaedic and internal medicine diseases.

As the French Bulldog, Pug and English Bulldog become more popular, we are having to evaluate and treat these dogs more and more frequently. When these dogs present to the other services, we have to take account of any respiratory obstruction in order to ensure safe recovery from anaesthesia for diagnostic or therapeutic procedures. Two of our surgeons have recently attended a course run jointly by the Brachycephalic Working Group1 and Cambridge University Veterinary School to become Recognised Assessors of Brachycephalic dogs and we have invested in a Class IV laser to treat intranasal obstruction.

BOAS is a multi level disease and evaluation of the components of the obstruction and the appropriate intervention requires some experience and a careful examination. Respiratory obstruction can be at the level of stenotic nares, nasal turbinates, overlong soft palate, everted inflamed tonsils, collapse of the larynx and in some cases bronchial collapse. A small number of dogs will also have excess pharyngeal soft tissues and cysts or mucocoeles obstructing airflow in the nasopharynx. A 3 minute exercise tolerance test, evaluation of respiratory effort before and after the exercise, and auscultation to characterise and locate upper respiratory tract stertor and stridor allows us to assign a BOAS grade to the dog. Dogs that are graded 0 or I, are unlikely to benefit from surgical intervention, but dogs that are assigned a grade of 2 or 3 should be treated surgically. This grading system has been found to correlate well with plethysmography tests performed at Cambridge and is now a validated test for BOAS2. We then discuss these issues in depth with the owner and explain why it is not normal for their dog to make a noise when breathing at rest, asleep, or exercising. Many owners regard these noises as ‘normal for the breed’ but we all know that these noises are not made by ‘normal’ dogs!

Other contributory factors are also important, for example Pugs are more likely to be overweight, and in some cases aggressive weight management may be sufficient to improve the dog to a non surgical grade. French Bulldogs are more likely to also have regurgitation associated with eating, drinking, exercise or excitement and this creates a significant risk of aspiration pneumonia which can be fatal. Surgical improvement of airflow through the upper respiratory tract may reduce or resolve regurgitation, but some French Bulldogs may also have inflammatory bowel disease or dietary intolerances.

The gold standard investigation involves CT of the head to assess the thickness of the soft palate, obstruction of airflow in the nasal cavity and nasopharynx due to other pathologic structures or crowding of rostral or caudal aberrant nasal turbinates. Endoscopy may also be recommended to document the presence of oesophagitis due to gastric reflux or hiatal hernia.

Surgical management consists initially of aggressive resection of the alar cartilage to open up the external stenotic nares, shortening or thinning of the soft palate (depending on CT findings) and sometimes tonsillectomy and/or removal of everted laryngeal saccules. Management of gastrointestinal disease may also be instigated at this time. We then see these dogs back at 1-2 months post op to repeat the exercise tolerance test and perform clinical evaluation to decide whether they would be a candidate for further improvement of airflow through the nasal cavity with laser turbinectomy.

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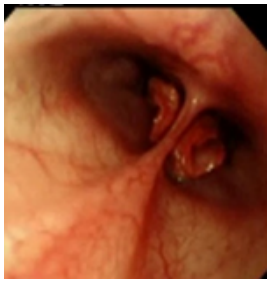
Patients that have laryngeal collapse usually stabilise following nasopharyngeal surgery, but in a minority the laryngeal collapse continues to deteriorate and long term options include a modified laryngeal tieback procedure, arytenoidectomy or permanent tracheostomy.

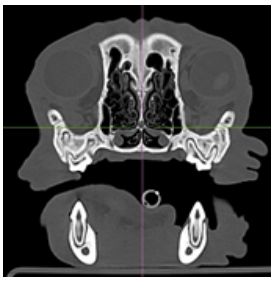
In cases where regurgitation does not improve following airway surgery, we may discuss hiatal hernia surgery with the owners at the follow up appointment.

BOAS is a complex disease involving many factors related to breeding of conformational characteristics, however these dogs are often excellent family pets and wonderful characters. Education of owners about how to purchase and source dogs that are BOAS grad 0 or I may enable these breeds to thrive in the future.

At Anderson Moores our Specialists work together to provide the best and most up to date management strategies of brachycephalic dogs visiting our hospital. The Soft Tissue Surgery team provide advice to other departments as well as advise owners and manage dogs referred for BOAS.
Investigations and surgery for BOAS are discussed sensitively and openly with owners and allow them to make decisions most appropriate to their dog and their financial situation.

Rhinoplasty has been performed on the left nostril





Caudal aberrant turbinates on CT and rhinoscopy

Further reading

F. Downing, S Gibson Anaesthesia of brachycephalic dogs **JSAP Volume 59 (12) December 2018** *This is a useful summary of the many conditions that brachycephalic dogs are predisposed to, and how to develop practical strategies in your practice to reduce anaesthetic risk.*

1. www.ukbwg.org.uk *This is the website for the brachycephalic working group which has resources and links to publications*

2. www.vet.cam.ac.uk/boas/ *This is the website for the Cambridge University Veterinary School BOAS Research Group. This page has many useful images and information on BOAS in the different affected breeds, including audio- videos of different brachycephalic dogs breathing sounds. There is also an explanation of the grading system.*

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