

Upper Airway Syndrome in the Norwich Terrier

What Is It and What Is Its Effect

By Sue Lawrence; NNTC Health & Genetics Sub-Committee Chair for Research on UAS in Norwich Terriers (2006)

Because we (Norwich owners) are seeing more and more of our beloved Norwich with breathing concerns, the **NNTC** has formed a new Health & Genetics Sub-Committee for **Research on UPPER AIRWAY SYNDROME in the NORWICH TERRIER**. Our research encompass' all of the Upper Airway maladies, but is most focused on the Everted Laryngeal Saccules.

What is the Upper Airway Syndrome in the Norwich Terrier?

Well, it covers ALL of the abnormalities that exist within the upper airway, I.E.:

- Elongated Soft Palettes;
- Too Short Soft Palettes;
- Narrow / Misshapen Tracheas;
- Collapsing Tracheas;
- Stenotic Nares (nasal passages that are too small)
- Swollen Tonsils; and now
- Everted Laryngeal Saccules.

These problems can appear singularly or in combination with one or two other symptoms. All compromise the airway and the dog's ability to breathe normally.

We've all heard those dogs that are 'noisy breathers'. You've probably experienced it ringside; at either a conformation or agility show; dogs that sounded rather raspy or moist in their breathing when exerted or excited. If the cause was not the "usual", Elongated Soft Palette; Narrowed or Collapsing Trachea; then it was most likely, shrugged off as "just one of those noisy breathers".

It wasn't until recently we discovered that we had another malady within our breed, the Everted Laryngeal Saccules. These saccules are nothing new to veterinary medicine; they are very common in the Brachycephalic breeds like: Pugs; Bulldogs; Boxers; Shih Tzu, English and French Bulldog, Pekingese, and Boston terrier any of the 'smushed face' breeds. Now, however; we are seeing it rather prevalently in the Norwich.

What are they and why should we be concerned?

All dogs have saccules located within the vocal folds of the larynx; these saccules help the vocal folds resonate sound. Normally these saccules are inverted and harmless, but when **EVERTED** (protruding into the airway) they become of great concern. When challenged (touched) these saccules expand and balloon out into the airway. Dr. Schultz states that he has found them to be of two varieties; Fluid Filled and Tissue Filled: "Most of the saccules are very soft and are filled with fluid. They are not a blister, but more like what we term as a cellulitis. The individual cells are bloated with fluid causing the puffy appearance. We have noticed some saccules that are firm and are much more solid tissue than the soft type. These firm saccules may be different due to scar tissue formation from chronic inflammation. Of the two the fluid filled seems to be the worst type, in as it expands to a size that can cause the airway to be almost completely blocked."

In and of themselves, they were always thought to be a non life threatening condition, but coupled with any one of the other maladies the situation becomes emergent and likely even fatal. Now, Dr. Schultz is seeing cases where the Norwich have **NO OTHER** symptoms and yet their airways are being compromised to the point of almost asphyxiating the animal. Each time the dog has a 'breathing' episode, scar tissue can build; the longer left untreated the more scar tissue that accumulates in and around the airway. Sometimes to the point that even with removal of these saccules, the airway is still compromised. In such cases, the dog's environment must be fairly well monitored. In other words: watch for heat intolerance; limit excitement, both good and bad; and keep the dog at a good weight level.



The pictures at left are of two different dogs that have (had) the Everted Laryngeal Saccules. Both are good representations of what these Everted Laryngeal Saccules look like when challenged and enlarged.

You can see in the top picture that the airway of this dog is almost completely closed and how serious this can be if left untreated. In the right conditions this dog could go into respiratory arrest and suffocate to death!!

The lower case isn't blocking the airway quite as much, but none the less, these are of considerable size and again if left untreated and not removed this dog could be in serious jeopardy under the right conditions. Dogs with these saccules may or may not exhibit symptoms.

How do we know if the dog has this problem? What do we look for?

As mentioned earlier, the dogs sound raspy or rather moist in their breathing. It's a hard sound to really describe, but once heard you'll never forget it. BUT, Dr. Schultz has found several Norwich who's breathing appeared 'normal' in every way; *who are 'silent breathers'*; and they have had them as well. So we can't just go on what we hear. We need to have the dogs physically examined to determine if they have an airway that is (or could be) compromised with these saccules.

How do we check for them?

To accurately exam the upper airway, the dog should be put under anesthesia and should be examined with a laryngoscope. In doing so, the vocal folds can be examined closely for the saccules; and if necessary the total of the upper airway can also be examined. The vet can also take a pictorial record of the saccules and surgery. The exam is done with the dog anesthetized (lightly), the endoscope inserted and the saccules viewed, once determined which type of saccules are present, they are then challenged (touched) to see how they react and how large they expand. Once determined evident, the dog is then put deeper under anesthesia and the saccules removed with a laser. This type of surgical removal is quicker; safer, with less swelling and little blood loss. It also allows for a much more speedy recovery time. This form of surgery carries minimal risks factors for the dog, as compared to other types of surgery. I have been an observer for several of these surgeries and it literally takes longer to anesthetize the dog, then the laser removal of the saccules. Even those dogs with sever upper respiratory symptoms can tolerate this surgery well. **NOTE:** Trying to check for these saccules while the dog is deeply anesthetized for other types of surgery; spay/neuter or a teeth cleaning for example, WILL NOT allow for a proper exam to be done. The saccules will not respond if the dog is too deeply anesthetized.

Is it genetic? And what does it take to prove it?

As we know, EVERYTHING is genetic, but for genetic proof it helps to have lines that are not affected and to breed to affected lines. In this way, it is possible to determine if the gene is dominant or recessive. Genetic testing is becoming much easier in the past few years, but is still very costly and takes quite a bit of time. Many genetic tests are available for a multitude of diseases. Most of these tests are 'breed specific' – for example the test for PRA (Progressive Retinal Atrophy) in Irish Setters will not work for PRA in Toy Poodles.

We know that other airway problems are genetic. But we are seeing so many Norwich with this problem; it seems that if we omit them all from our breeding programs, the breed may become extinct.

There was a study done in the Berne, Switzerland, where 200 Norwich were examined and graded by degree of involvement. These are the points that were looked at and graded; e.g. points were given to: Ventricle mucous membrane (saccules); Length of the soft palate; Thickness of the soft palate; Form of the trachea; Form of the cartilage; Stability of the cartilage; Placement of the cartilage' Oropharynx edema; Roof of the pharynx; Cricoid mucous membrane edema. All the given points were added and then graded from A1 (the best) to E2 (the worst)

As mentioned above the **NNTC** now has a new **Health & Genetics Sub-Committee for research on UAS (Upper Airway Syndrome) in the Norwich Terrier**. We are very lucky to have on our committee Dr. William Schultz; DVM; as well as Dr. Chris Zink; DVM, PHD, Veterinary Sports Trainer; Sandra Bails; Joan Eckert; Ami Hooper; and your author Sue Lawrence as Chair.

Dr. Schultz holds special interests in Respiratory and Reproductive Veterinary Medicine. He is very much a part of this research and is now recording (video taping) ALL dogs in his practice (regardless of breed) that needs to be

anesthetized. So far, Dr. Schultz has seen 54 Norwich and 4 Norfolks. Of these; 52 Norwich have had the saccules and needed surgical removal, with only 2 of the Norfolks having had them, these were very minor in relation to their cousins (the Norwich) and surgery wasn't necessitated. Of those Norwich examined **NONE** of them were found to have any other Upper Airway abnormalities, only the Everted Laryngeal Saccules. This IS something new, as in veterinary school; the vets are taught that these saccules are secondary to another Airway Disease.

We would like to see ALL Norwich owners participate and help in this committee's research.

What we would like from you:

If your dog(s) are showing signs of upper airway restriction, I.E.: raspy breathing; congestion (either nasal or throat); moist or just plain noisy breathing; snoring when at rest; exercise intolerance; heat intolerant; change in bark. Please have them checked, preferably by 'scoping' and send us the results.

The information we need:

- Dog's name & age
- Dog's Pedigree (preferably 4-5 generation, if possible)
- Medical History including:
 1. At what age did the problem(s) arise?
 2. Is your dog a 'barker'?
 3. What were the symptoms your dog experienced:
 - a. Congestion; nasal? throat?
 - b. Cough?
 - c. Exercise intolerance?
 - d. Heat intolerance?
 - e. Change in bark?
 4. When was it diagnosed (age)?
 5. By whom was it diagnosed:
 - a. General Veterinarian?
 - b. Specialist?
 6. What kind of exam was done? Were pictures taken?
 7. If not diagnosed by a specialist; were you referred to a Canine Respiratory Specialist?
 8. What was the treatment:
 - a. Medications?
 - b. Surgery?
 - c. Both?
 9. Did this treatment resolve the problem?
 10. How is your dog doing now?
- Additional Information Requested

Are you and your dog active in **Performance Events**? This can be either a formal event like: Agility; Earthdog; Tracking **or just regular outings where fast / long walking or jogging** is done. If so please answer the following:

- List in order, the top three forms of performance events you participate in.
- Indoors – in air conditioning, when your dog is retrieving or doing another sort of active play, how long does it take before your dog's tongue is curled up & widened at the end?
- Have your dog's breathing difficulties affected your training / competition in any way? Has it altered your dog's fitness program?
- On a scale of 1 to 5 with 1 being the LEAST, how tolerant do you think your dog is compared to other breeds of dogs? Do you think coat color has any influence on heat intolerance?
- If your dog has had surgery: What type of surgery (ies) were done? To what extent did this affect his training and performance under the above categories?

Please let me assure you that ALL information will be kept confidential. All dogs will be given a number, the dog and its information will then be referred to by that number, NOT by dog's name or owner!

Please direct dog's pedigree & medical history information to:

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