

## BASIC INFORMATION

### Description

The cartilage rings of the trachea (windpipe) are shaped like the letter C, lying on its back. A small membrane covers the top of the ring. In some dogs, the tracheal cartilages lose their rigidity, and the membrane stretches. The rings collapse, the windpipe flattens, and mild to severe obstruction of the airway develops. Tracheal collapse occurs primarily in small-breed dogs, such as the miniature poodle, Yorkshire terrier, Pomeranian, and Chihuahua.

This is an acquired, not congenital, disease. Some dogs can start showing signs of tracheal collapse at a relatively young age, but it is usually a disease of older dogs. Tracheal collapse can occur in the neck region, within the chest, or in both locations.

### Causes

The cause is not well understood, but proposed theories include genetic factors, nutritional influences, neurologic problems, and degeneration of the tracheal cartilages.

### Clinical Signs

Abnormal respiratory noises, difficulty breathing, cyanosis (blue gums and tongue from lack of oxygen), exercise intolerance, and possibly fainting may occur. An intermittent “goose-honking” cough that has a sudden onset is a common sign. Applying pressure to the trachea often induces a cough.

### Diagnostic Tests

Flattened cartilages may be detected when your veterinarian palpates (feels) the neck area. Chest x-rays demonstrate tracheal collapse in only 60% of affected patients, but they help rule out heart and other lung diseases as a cause of the signs. Video x-rays (fluoroscopy) show the movement of the trachea throughout the entire respiratory cycle and detect some cases of tracheal collapse that are missed on plain x-rays. Fluoroscopy is available at some referral institutions and veterinary hospitals.

The definitive diagnostic method is endoscopy (tracheobronchoscopy), which involves passage of a fiberoptic viewing scope into the trachea. This procedure demonstrates the degree and exact location of the collapse. Endoscopy also allows collection of samples for bacterial culture, as many affected dogs have a secondary infection. During the procedure, laryngeal function may also be evaluated, because 25-30% of dogs with tracheal collapse also have laryngeal paralysis. Tracheobronchoscopy has some inherent risks and is not performed in all patients with suspected tracheal collapse.

## TREATMENT AND FOLLOW-UP

### Treatment Options

Medical therapy usually is effective in dogs with mild collapse and signs. It often includes cough suppressants, drugs to dilate the bronchial tree, and antibiotics for secondary infections. Anti-inflammatory steroid medications (tablets or inhaler) may be used on a short-term basis to reduce inflammation of the lining of the trachea. Some dogs benefit from use of tranquilizers during periods of excitement that could result in severe respiratory distress.

Dogs with additional types of upper airway disease, such as laryngeal paralysis, may benefit from surgical correction of these disorders. Avoidance of high environmental temperatures and situations that induce excitement helps many of these patients. Obese dogs are placed on a weight-reduction diet.

Because of the inherent risks and potential complications related to tracheal surgery, most of these cases are managed medically whenever possible. Surgery is reserved for those dogs with severe collapse and little or no response to medical therapy or for those that become refractory to medications. If the collapse is at the very end of the trachea, where the bronchi of the lungs begin, it is usually considered unsuitable for any type of surgery.

The purpose of tracheal surgery is to support the tracheal cartilages and expand the tracheal diameter. Support of the tracheal cartilages can be accomplished by using prosthetic tracheal rings that are applied on the external surface of the windpipe. This type of surgery is usually limited to those dogs with collapse in the neck region. Placement of stents inside the trachea can be used to correct collapse of the trachea within the chest or the neck. The stents are usually inserted using endoscopy or fluoroscopy.

### Follow-up Care

Close monitoring is required in the immediate postoperative period, so the dog may remain hospitalized. Because the placement of external tracheal rings is difficult and tedious, laryngeal paralysis may develop that requires another surgery (to treat the paralysis). Chronic coughing is associated with either surgery, but especially with stent placement. The coughing can often be managed with concurrent medical therapy.

### Prognosis

Medical therapy can provide relief, in many cases for the life of the patient. When surgery is successful, it often reduces the clinical signs and improves the quality of the dog's life. The duration of the benefit from surgery is variable, because tracheal collapse is a progressive disease.