

## BASIC INFORMATION

### Description and Causes

The trachea is the windpipe that carries air from the nose into the lungs. Tracheal trauma is usually associated with dog bites, penetrating neck injuries (such as gunshot or knife wounds), or blunt trauma from being hit by a car. Injury can be caused by accidental overinflation of the cuff on an endotracheal tube used to administer anesthesia or from administration of high air pressures through a mechanical ventilator. Surgical sites in the trachea (tracheotomy, tracheostomy) can fail or break down and produce many of the same signs as are seen with tracheal trauma.

### Clinical Signs

Signs are not always noticed immediately and may be delayed for days or weeks until a portion of the trachea dies or scars. If the trachea is ruptured, air can escape into the tissues of the neck, resulting in air-filled spaces (subcutaneous emphysema) that cause swellings on the neck. These swellings are not painful. They are soft and may crackle or pop when compressed or squeezed. Air can also travel along the tissues down the neck and enter the chest cavity. Once in the chest, this air can cause varying degrees of lung collapse, leading to severe breathing problems, cyanosis (blue gums from lack of oxygen), and occasionally death.

With severe tracheal wounds that are accompanied by swelling in the surrounding tissues or bleeding into the windpipe, dramatic breathing problems may develop immediately. Difficulty breathing, sucking noises at the wound site, coughing of blood, weakness, and collapse may occur.

### Diagnostic Tests

A tentative diagnosis is based on a history of recent or prior trauma to the trachea. Supportive evidence includes:

- Recent dental procedures, especially in cats, in which an endotracheal tube was used
- Obvious bite wounds or lacerations around the neck area
- Air accumulation under the skin in the neck area that may eventually extend all over the body
- X-rays demonstrating the presence of air under the skin and possibly within the chest

Endoscopy of the trachea, which involves passage of a flexible fiberoptic viewing scope, may be used to confirm the presence and

location of the tracheal tear or puncture and to assess the extent of damage. This procedure requires general anesthesia, which can be tricky because it may not be possible to use an endotracheal tube. Your pet may be referred to a veterinary specialist for this procedure.

## TREATMENT AND FOLLOW-UP

### Treatment Options

If the trauma was blunt and no penetration of the trachea occurred, bandaging the neck, administering oxygen, and keeping the animal quiet in a cage for several days may resolve the problem. If the amount of air under the skin causes severe compression of the airway and tracheal collapse, needles may be inserted into the inflated tissue spaces to try and release some of the air.

In severe cases, when there is a lot of air leakage from the trachea and the animal's breathing is compromised, it is necessary to surgically explore the neck and repair the hole in the trachea. In some instances, the damage is so severe that removal of one or more tracheal rings is necessary. The trachea is then repaired and sewn back together. Surgery may also be used to explore the neck area for any other damage that may have occurred to the esophagus or nerves supplying the larynx.

### Follow-up Care

In uncomplicated cases, air under the skin usually goes away within 7-10 days. It can take as long as 4-6 weeks for the air to resolve in some cases. If the air worsens or persists, then surgery to explore the neck area may be recommended. X-rays may be repeated to monitor resolution of the escaped air.

### Prognosis

For trauma from penetrating wounds, early diagnosis and surgical correction often lead to good results, assuming there is limited damage to other structures. Taking a "wait and see" approach to severe tears involving the trachea can result in life-threatening respiratory problems, so surgery is often recommended in these cases.

Depending on the extent of the damage to the trachea and the type of surgery done, some degree of stricture (narrowing) of that portion of the trachea may occur during the healing process. Notify your veterinarian if any respiratory signs develop in the days to weeks after surgery.