

Pneumothorax in Cats-Causes, Symptoms & Treatment

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[About](#) [Causes](#) [Symptoms](#) [Diagnosis](#) [Treatment](#)

At a glance:



About: Pneumothorax is a collapsed lung which occurs when air enters the space between the lung and the chest wall pushing on the outside of the lung, causing it to collapse.



Causes: Common causes include penetrating wounds, a fractured rib, trauma, pulmonary bleb, parasitic worms, abscess, pneumonia and medically induced.



Symptoms: Difficulty breathing, blue-tinged gums, restlessness, lying, sternal recumbency and loss of appetite.



Diagnosis: Presenting symptoms along with imaging which will also be able to diagnose the underlying cause.



Treatment: Treat the underlying cause and relieve symptoms which may include thoracocentesis, tube thoracostomy, pain relief and oxygen therapy.

About:

Pneumothorax (new-mo-thorax) is an abnormal accumulation of air in the pleural cavity which is between the lungs and the chest wall. Normally there is a small amount of serous fluid in the pleural space which acts as a lubricant during breathing. Air entering the pleural space means there is less room for the lungs to expand when the cat inhales and causes the lung(s) to collapse (which is why you the term *collapsed lung* is often used when describing pneumothorax).

It may be primary or secondary. Primary occurs in otherwise healthy cats, secondary is usually the result of an underlying condition.

Pneumothorax may develop in cats of any age, sex or breed. Cats who roam (particularly intact males) may be at greater risk of traumatic pneumothorax due to their susceptibility to roam and get into fights.

Causes:

There are three classifications of pneumothorax in cats depending on the cause.

- Traumatic
- Spontaneous
- Iatrogenic

Pneumothorax can affect one or both of the lungs, bilateral (both lungs) is more common and can be open or closed. Air can enter the pleural space in one of two ways, from a penetrating wound through the thoracic wall, which allows air to enter from the outside (open), or air leaking from respiratory tract or esophagus into the pleural space (closed).

Open pneumothorax occurs when there is an unsealed opening in the chest wall and is most commonly associated with traumatic pneumothorax. Air is able to enter the pleural space from the external environment during inhalation. This results in a loss of negative pressure in the pleural cavity which is necessary to keep the lung expanded as a result, the lung collapses. Air is pulled into the chest cavity through the opening when the cat inhales.

A rare complication can occur in some cats where a one-way valve develops so when the cat inhales air is sucked in but is unable to exit when the cat exhales, this is known as *tension pneumothorax* and is life-threatening. It can occur with both traumatic and spontaneous pneumothorax.

Traumatic pneumothorax:

This is the most common cause of pneumothorax in cats, common causes include:

- Penetrating wounds from gunshots, bites, stab wounds which allow air from outside into the pleural cavity
- Fractured ribs can penetrate the lungs
- Trauma to the lungs which allows air to escape into the surrounding area such as a broken rib
- Trauma from a vehicle
- Fall from a height
- Lung infection

Spontaneous pneumothorax:

This type of pneumothorax develops without trauma and is always closed and can be classified as primary or secondary. Primary occurs when there is no obvious underlying cause.

- Pulmonary bleb rupture or bullae emphysema
- Cancer
- Heartworm
- Lungworm
- Lung flukes

- Pulmonary abscess
- Pneumonia
- Lung lesions due to cysts, abscess, parasites
- Grass awn migration
- Asthma
- Rupture of the bronchus, trachea, lung or esophagus

iatrogenic pneumothorax:

Medically induced pneumothorax occurs as a result of surgical procedures such as:

- Bronchoscopy
- Thoracocentesis
- Thoracostomy tube
- Intubation
- Lung surgery

Symptoms:

Difficulty breathing is the most common sign although the extent of symptoms may vary from subtle to severe depending on the severity of the disease. Generally traumatic pneumothorax will be obvious, however, this may not be the case with spontaneous pneumothorax, particularly if the leak is slow.

Symptoms may include:

- Cyanosis (blue-tinged gums)
- Dyspnea (difficulty breathing)
- Open-mouthed breathing/panting
- Tachypnea (rapid, shallow breathing)
- Restlessness
- When lying down your cat may lie flat (known as sternal recumbency)
- Anorexia (loss of appetite)

Diagnosis:

Your veterinarian will perform a complete physical examination of your cat and obtain a medical history from you. Listening to the chest may reveal abnormal, harsh or even decreased lung sounds.

- Routine tests such as complete blood count, biochemical profile, and urinalysis usually come back normal but can be of use in evaluating organ function of cats who have been involved in a trauma such as a road accident or fall.
- Thoracocentesis is a procedure which is both diagnostic and therapeutic. The veterinarian inserts a needle through the chest wall and into the pleural space and removes the air. This both shows that pneumothorax is present as well as providing relief from symptoms.

- Confirmation of pneumothorax is made via chest x-rays which can also provide additional information such as the extent of pneumothorax as well as possible causes.
- CT scan to look for the bullae, blebs and lung lesions as it is more sensitive than x-rays.
- Echocardiogram to look for heartworms in the heart.
- Blood tests to look for antigen or antibodies to heartworm or microfilaria.
- Fecal examination or tracheal aspiration to look for lungworm or lung fluke eggs or larvae.
- Check blood oxygen levels with a pulse oximeter.

Treatment:

The goal of treatment is to address the underlying cause and provide supportive care to relieve symptoms. Medical management may only be necessary in cases of a small and spontaneous pneumothorax. Small tears should heal on their own and over time, the air will reabsorb into the bloodstream.

- Thoracocentesis (see above in diagnosis) to remove trapped air for cases with larger volumes of trapped air.
- Tube thoracostomy (chest tube) where recurrent thoracocentesis has occurred. A thin tube is inserted into the pleural space to remove air, the tube remains in place so that air can be removed intermittently or continually via a suction unit.
- Surgery will be necessary to treat cats with penetrating wounds, grass awns or tumours.
- Surgery to treat blebs, bullae and lung abscess if medical management isn't successful.
- Analgesics to relieve pain.
- If blood oxygen levels are low, oxygen therapy may be necessary. This can also help to push the free air in the pleural cavity into the pleural blood vessels.

Other treatments depend on the underlying cause but may include the following: Bronchodilators to treat asthma, antibiotics for pneumonia or lung abscess, anti-parasitic medications for heartworm, lungworms or lung flukes.

Home care:

Administer medications (if prescribed) as directed by your veterinarian.

Confine the cat to a large cage or small room during recovery.

Careful monitoring of your cat is essential during this time. If you notice he is developing breathing difficulties again, he needs immediate veterinary attention.