

Spontaneous Pneumothorax

Surgery Service



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Locations

Auburn Hills

3412 E. Walton Blvd.
(West of Squirrel Rd.)
(248) 371-3713

Grand Rapids

1425 Michigan St. NE
(East of Fuller Rd.)
(616) 284-5300

MVS Southfield

29080 Inkster Rd.
(North of 12 Mile Rd.)
(248) 354-6660

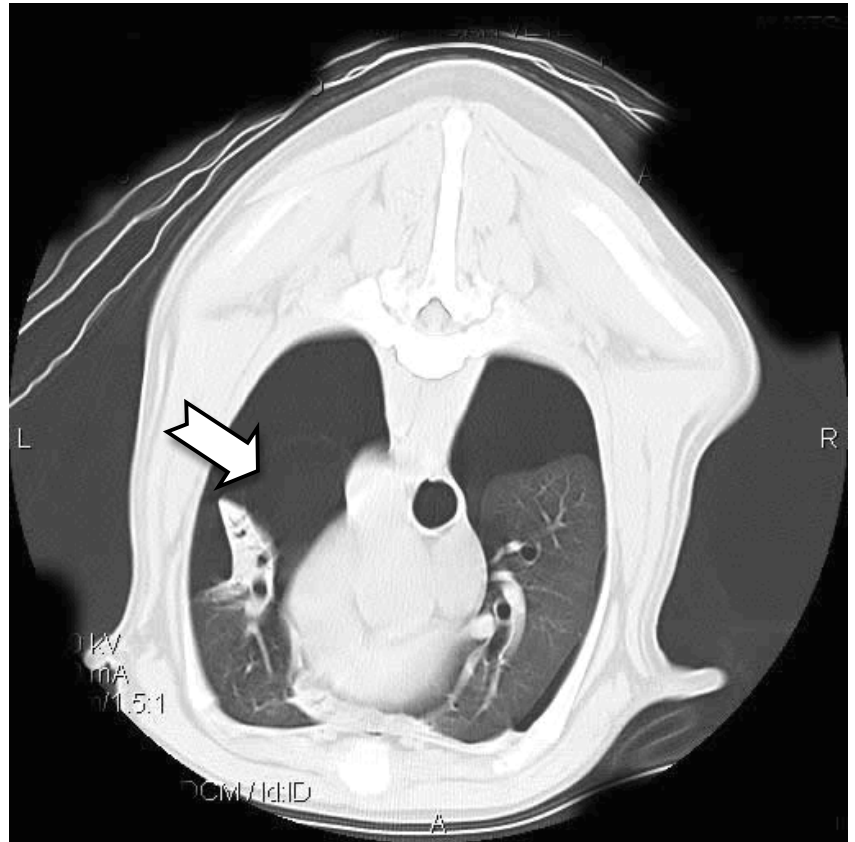
Anatomy

Dogs have two lungs. Each lung is further divided into sections called lobes. Each lung lobe has microscopic sacs called alveoli that are connected to microscopic tubes called bronchioli. These are connected to larger and larger tubes called bronchi. The lungs are covered by a membrane called the pleura. The lungs are located within the chest cavity. The space between the lungs and chest wall is called the pleural space and normally only contains a small amount of liquid which lubricates the lungs.

Pneumothorax

Pneumothorax can be caused by a number of causes, however, the end result is collapse of the lungs and air within the pleural space. Two main types of pneumothorax include traumatic and spontaneous. Traumatic is due to an injury or surgery that punctures the lungs, esophagus or chest cavity and results in leaking of air into the pleural space.

Spontaneous pneumothorax is typically caused by a disease of the lungs. The most common cause is a pulmonary bulla, which is an air blister that develops on the surface of the lung. This subsequently ruptures and leaks air into the pleural space. Other causes of spontaneous pneumothorax may include a foreign object within the lung, lung abscess, migrating parasites, and lung tumors.



Signs and diagnosis

The most common sign of pneumothorax is increased respiratory rate. As the lungs progressively collapse, marked breathing difficulty may be noted along with a grey to blue color of the gums and tongue. Weakness may also be noted and is caused by a lack of oxygen. Other nonspecific signs may include coughing, vomiting, lethargy, and lack of appetite. Your veterinarian may detect decreased lung sounds with the aid of a stethoscope.

The diagnosis of pneumothorax is based on chest x-rays that demonstrate air within the pleural space and collapse of the lungs. In the absence of any traumatic event, a presumptive

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diagnosis of spontaneous pneumothorax is made. A CT scan is useful to further define the underlying cause of the pneumothorax. Tests done prior to surgery may include a complete blood count, blood chemistry profile, and urinalysis to check internal organ health.

The day of surgery

Our anesthesia and surgical team will prescribe a pain management program, both during and after surgery that will keep your companion comfortable. This will include a combination of general anesthesia, injectable analgesics, epidural analgesia, oral analgesics and anti-inflammatory medication.

Treatments

Conservative treatment for spontaneous pneumothorax, commonly fails and therefore is not usually recommended. If the pneumothorax is severe, the air may be aspirated from the pleural space with the use of a needle or in some cases with a chest tube. Surgery commonly requires exposure of both sides of the chest via an incision made through the breast bone. The offending lung lobe is identified and surgically removed. A chest tube is routinely placed in the patient and will be removed once fluid production within the chest is minimal. In some cases oxygen therapy may be needed until the patient's respiratory function has stabilized.

Aftercare and results

After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. It's also extremely important to limit your dog's activity and exercise level for four weeks after surgery. The incision should be checked daily for signs of infection. Two weeks after surgery, the surgeon will monitor the healing process.

Short-term complications following surgery are uncommon and may include temporary bleeding at the surgical site and infection. Long-term complications may be related to the underlying disease and may include recurrence of the pulmonary bulla on another lung lobe. If cancer was present, the tumor may have spread to another part of the body and cause secondary complications or death in some cases.

One study that included 12 dogs that developed spontaneous pneumothorax from pulmonary bullae or blebs had a successful outcome and none of the patients had recurrence of the pneumothorax over a median period of 19 months.

Another study included 64 cases with spontaneous pneumothorax. Causes of pneumothorax (determined by surgery) from most frequent to least frequent included bullous emphysema, cancer and migrating plant foreign bodies. Of all cases, 28 were treated with surgery and 36 were treated conservatively (chest tap, chest tube, +/- cage rest). Of the surgical group 89% had failed conservative efforts. Mortality rate with surgery was 12%. Of those treated medically alone (and did not go to surgery in the acute phase), 50% had recurrent pneumothorax. Mortality rate with medical treatment alone was 53%.

References

1. Lipscomb VJ, Hardie RJ, Dubielzig RR. Spontaneous pneumothorax caused by pulmonary blebs and bullae in 12 dogs. *J Am Anim Hosp Assoc* 2003;39:435–445.
2. Puerto DA, Brockman DJ, Lindquist C, Drobatz K. Surgical and nonsurgical management of and selected



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risk factors for spontaneous pneumothorax in dogs: 64 cases (1986-1999). J Am Vet Med Assoc 2002; 220:1670-1674.

Assessment and recommendations

Patient: _____

Date: _____

Treatment

- Surgery is recommended by a surgeon at Michigan Veterinary Specialists
- Surgery is not recommended
- Please make an appointment for a consultation with one of our oncologists

The following has been prescribed

- No medications or special diet are necessary at this time
- Prescription diet: _____
- Antibiotic: _____
- Other medication: _____

Exercise

- Unlimited
- Confine your pet to the house other than very short leash walks necessary for bowel movements and urination
- Restrict exercise to leash walks 10 minutes twice daily

Preparation for surgery

- Start fasting your companion at midnight before the day of surgery; water should not be withheld
- Give Pepcid AC 10 mg tablets: _____ tablets with water (use a syringe if needed) at 6 AM on the day of surgery
- Other medications: _____

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