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# Traumatic pneumothorax in golden retriever dog: A case report

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**Abstract**
A male Golden Retriever dog aged 4 years weighing 30 kg was reported to the hospital with the history of car accident. The dog was having severe dyspnea and was in lateral recumbency. On physical examination there was no outward open injury on the body. Hyperechoic resonance was observed on thoracic percussion. Radiographic examination confirmed the case as a pneumothorax with elevated cardiac silhouette from sternal base. Thoracocentesis was carried out on emergency basis in initially at 8$^{th}$ and 11$^{th}$ intercostal space. Spontaneous recovery in respiratory pattern was observed post thoracocentesis. Reoccurrence of pneumothorax observed on 2$^{nd}$ day and from 3$^{rd}$ day onwards complete recovery in respiration without reoccurrence observed. Early recognition of the clinical signs of pneumothorax is important, especially in animals with tension pneumothorax, which can cause rapid deterioration and death. A thorough understanding of lifesaving procedures such as thoracocentesis is invaluable in routine veterinary practice.

**Keywords:** thoracocentesis, pneumothorax, dyspnea

## Introduction
Traumatic pneumothorax is the most common form of pneumothorax in dogs [1, 2, 3]. Traumatic pneumothorax can be open or closed [1]; however, it is usually closed [2]. Closed traumatic pneumothorax is often the result of blunt trauma (e.g., automobile accident). When the chest is compressed against a closed glottis, the bronchial tree or lung parenchyma can rupture with resultant air leakage into the pleural space [3, 4]. If a large airway is injured, pneumomediastinum may be present [5, 6]. Traumatic pneumothorax is most common in young, intact male dogs because they are more apt to wander and be hit by cars [8].
Patients with traumatic pneumothorax usually present with an obvious history of trauma, evidence of trauma, or a history consistent with trauma.
Treating pneumothorax involves removal of free air from thorax as well as treating the underlying cause of pneumothorax. This study reports clinical case of traumatic pneumothorax and its successful medical management without relapse.

## Case History and Observation
A male Golden retriever dog was presented to Dr. dog pet hospital, Hyderabad, as outpatient with severe respiratory distress and lateral recumbency. Anamnesis revealed car accident a day before presentation and was treated with pain medications and symptomatic treatment at local vet. On clinical examination the most significant observation was tachypnea with respiratory distress. There were no open wounds or lacerations observed on body of dog on physical examination. On auscultation and percussion there was a hyperechoic resonance. Radiographic examination revealed elevated heart silhouette from its base due to accumulation of air in thoracic cavity (fig.1).

## Treatment and discussion
The dog was stabilized with oxygen supplementation and emergency thoracocentesis was performed to evacuate intrathoracic air. Procedure was carried out by 22G scalp vein set needle attached to 3-way stopcock via closed circuit (Fig.3). Around 250 ml of air was evacuated through aspiration two times on 12h interval. Spontaneous improvement in respiratory signs was observed post thoracocentesis (fig.3).

Dog was treated with pain medications and hydrated with polyionic fluids like Dextrose Normal Saline and Ringers Lactate and were checked for other blunt trauma and spinal injury.

No obvious rib fracture or open thoracic injury with the history of car accident and radiographic findings confirmed the case as closed traumatic pneumothorax, which could be due to blunt trauma to lungs. Closed traumatic pneumothorax is often the result of blunt trauma (e.g., automobile accident). When the chest is compressed against a closed glottis, the bronchial tree or lung parenchyma can rupture with resultant air leakage into the pleural space [3, 4].

Traumatic pneumothorax with low volume leakage that is not causing significant hypoventilation can be treated conservatively. Effective thoracocentesis in an animal experiencing significant hypoventilation as a result of pneumothorax will usually result in almost immediate improvement in respiratory character and oxygen saturation[9]. Post-drainage radiographs are important both to assess efficacy of drainage and to act as a reference point against which future images can be compared to determine the rate or presence of ongoing leakage.

Assessment of pulmonary pathology is also carried out from these images, and it should be remembered that pulmonary contusions are not uncommon following blunt thoracic trauma[9]. Contusions can result in significant hypoventilation that does not require or respond to additional thoracocentesis. Radiographic evidence of pulmonary contusions can lag 24 hours or more behind the trauma episode and onset of compromise of gas exchange. Such findings of pulmonary contusions were not observed in above case which helped in rapid recovery. No reoccurance of pneumothorax was seen from 3rd day of post thoracocentesis. Thus this paper reports importance of early recognition of the clinical signs of pneumothorax is important, especially in animals with tension pneumothorax, which can cause rapid deterioration and death.

A thorough understanding of lifesaving procedures such as thoracocentesis valuable in routine veterinary practice.

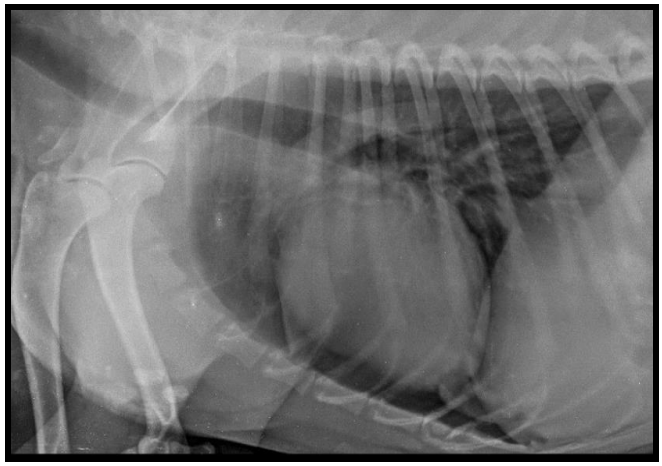

**Fig 1:** Radiograph showing pneumothorax

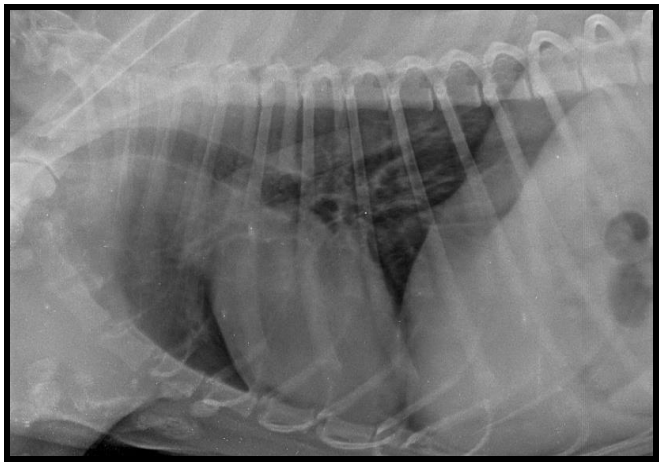

**Fig 2:** Radiograph Post thoracocentesis

**Fig 3:** Procedure of thoracocentesis

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