

# What Is Your Diagnosis?

In cooperation with

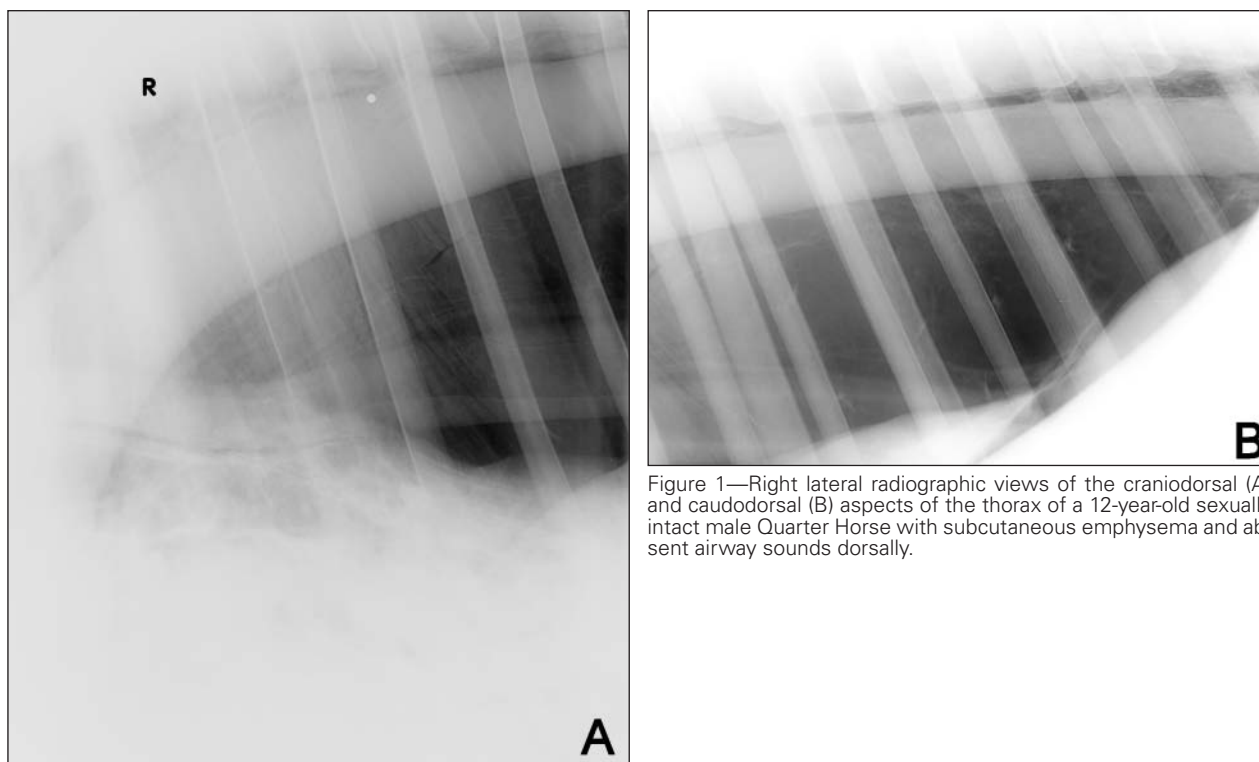


Figure 1—Right lateral radiographic views of the craniodorsal (A) and caudodorsal (B) aspects of the thorax of a 12-year-old sexually intact male Quarter Horse with subcutaneous emphysema and absent airway sounds dorsally.

## **History**

A 12-year-old sexually intact male Quarter Horse was examined for diffuse subcutaneous emphysema and reluctance to walk. Physical examination revealed a 25-cm-long laceration of the left axillary region that had been present for several days. The patient was severely dyspneic with a respiratory rate of 80 breaths/min and tachycardic with a heart rate of 120 beats/min. Mucous membranes were cyanotic with a capillary refill time of 3 seconds. The rectal temperature was within reference limits. Auscultation of the thorax was compromised as a result of the subcutaneous emphysema, but normal airway sounds were absent in the dorsal aspect of the lung fields. Radiographs of the thorax were obtained (Figure 1).

**Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →**

This report was submitted by Cathleen A. Mochal, DVM; Erin L. Brinkman, DVM; Robert L. Linford, DVM, PhD, DACVS; Michael K. Brashier, DVM, MS, DACVS; and Ann M. Rashmir-Raven, DVM, MS, DACVS; from the Department of Clinical Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS 39762. Address correspondence to Dr. Mochal.

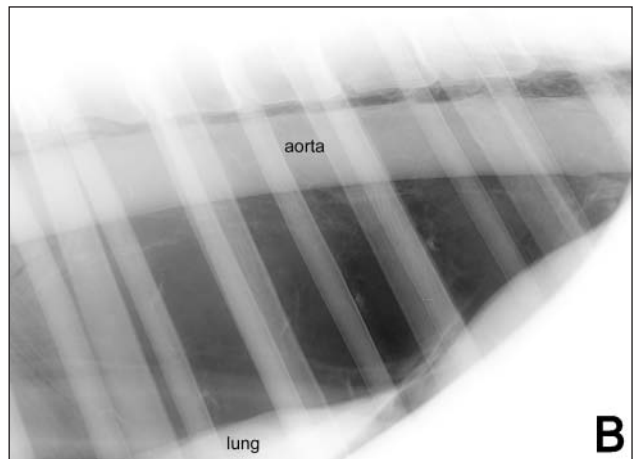
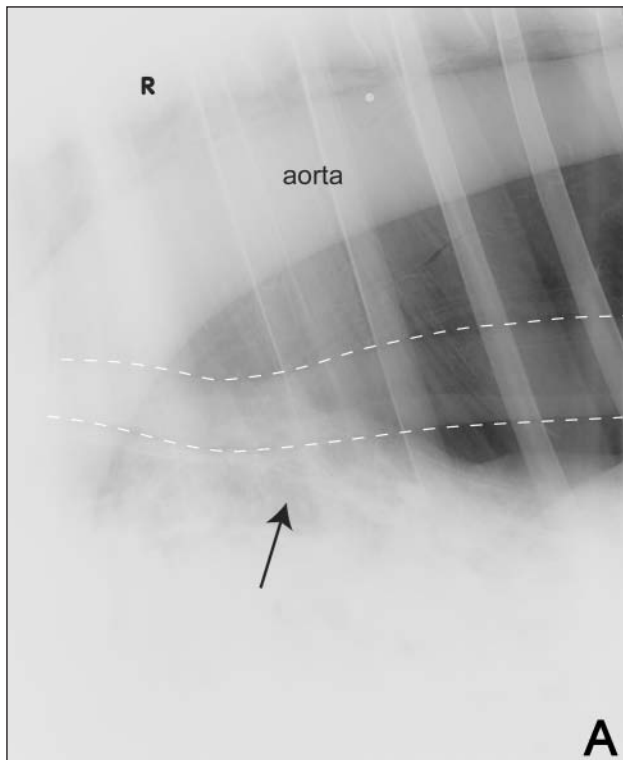


Figure 2—Same radiographic images as in Figure 1. The esophagus is clearly demarcated (outlined by dashed lines) dorsal to the tracheal bifurcation (arrow). Notice the radiopacity of the caudal lung lobe and its retraction from the dorsal aspect of the thorax. The margins of the aorta are sharper than normal. No normal (ie, bronchi and lobar vessels) pulmonary structures are seen.

### Radiographic Findings and Interpretation

No normal pulmonary structures (ie, bronchi and lobar vessels) are seen in the caudal aspect of the thorax. Radiopacity of the caudal lung lobe with marked retraction of its margins from the dorsal aspect of the thoracic wall is evident (Figure 2). Margins of the aorta are sharper than normal. Many streaks of soft tissue opacities are superimposed over the thorax. Clear demarcation of the esophagus as it passes through the middle mediastinum to the caudal mediastinum and tracheal bifurcation are evident. Radiographic findings are consistent with severe pneumothorax and pneumomediastinum. Overlying streaks of soft tissue opacities are likely secondary to overlying subcutaneous emphysema.

### Comments

Radiography is the method of choice for the diagnosis of pneumothorax and pneumomediastinum. Ultrasonography may be useful for the diagnosis of small-volume pneumothorax, but radiography is more reliable in most instances. In this particular horse, reverberation artifact produced by the marked subcutaneous emphysema and air in the deeper tissues precluded ultrasonographic visualization of the thoracic cavity.

Immediately following diagnosis of pneumothorax and pneumomediastinum, the 12th intercostal space on the left side was clipped and sterilely prepared and a chest tube was placed. The tube was connected to active suction, and air was removed until dyspnea improved and the heart rate decreased to 60 beats/min. The axillary wound was packed with nitrofurazone ointment and plastic sheeting, and the horse was confined to a stall to restrict movement and decrease the ability of

the wound to entrap air and drive it into the deeper tissues. The pneumothorax resolved over the next 48 hours, and the tube was removed. The horse was discharged in 5 days; subcutaneous emphysema resolved 3 weeks later.

Pneumothorax is a rare condition in horses. It most often results from direct penetration of the thoracic cavity by a foreign object.<sup>1-5</sup> Pneumothorax has also been reported to occur as the result of pleuropneumonia, thoracic surgery, thoracocentesis, pneumomediastinum, recurrent airway obstruction, and occasionally as a complication of axillary wounds.<sup>1-5</sup> Pneumothorax develops from the influx of air into the pleural cavity, which diminishes lung expansion and compromises ventilation. Clinical signs associated with pneumothorax include dyspnea, cyanosis, restlessness, expansion of the thorax, and tympany. Left untreated, horses can succumb to respiratory distress, hypoxemia, and cardiovascular compromise.

Pneumomediastinum and bilateral pneumothorax are previously reported complications of axillary wounds in horses that occur when the wound configuration forces air into the subcutaneous tissues that then migrates through the mediastinum into the pleural cavity.<sup>4</sup> In regions where the mediastinum contains no organs, it is relatively thin and may be fenestrated as a result of an underdeveloped lamina propria that separates the 2 pleural layers.<sup>6</sup>

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