



Image Challenge

Spinal Injury Following Motor Vehicle Accident

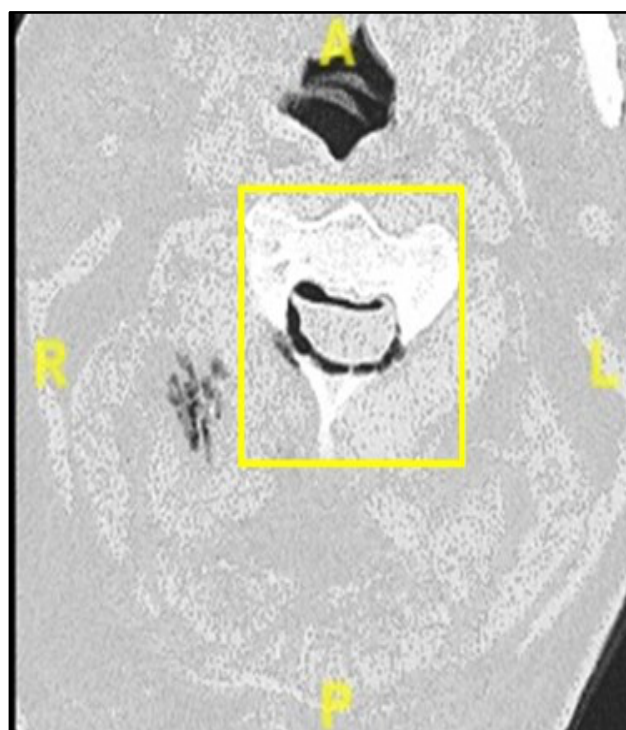
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Case

The patient is a 62-year-old male who presented to the emergency department (Level 2) status-post motor vehicle collision (MVC) as a restrained driver. Per the patient's report, his vehicle was at a standstill on the interstate highway when he was rear-ended by a semi-trailer truck traveling at 60 miles per hour.

History of Present Illness

Upon arrival, the patient was alert and oriented to time, place, and situation. On physical examination, he had multiple lacerations of the scalp, lower lip, and tongue. He had chest wall tenderness and crepitus bilaterally upon palpation. Computed tomography (CT) of the cervical spine without contrast was performed as part of his trauma evaluation.



Challenge

Identify the pathology demonstrated within the yellow box of the longitudinal CT shown above.

Differential Diagnoses

- Paraspinal hematoma
- Pneumorrhachis
- Spinal epidural abscess
- Spontaneous spinal epidural hematoma

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Answer

Pneumorrhachis

Discussion

The image above demonstrates pneumorrhachis, or air within the cervical spinal canal, suggested by the hypodense region surrounding the spinal cord (See yellow asterisks). Specifically, this patient had gas within the cervical and thoracic spinal canal, most significantly within the C2-C6 spinal epidural spaces. Of note, there is gas within the paraspinal musculature seen on the right of the CT (See red circle).

Pneumorrhachis is a rare phenomenon commonly caused by gas entering the spinal canal secondary to pneumomediastinum, pneumothoraces, or subcutaneous emphysema. It can also result from penetrating spinal injuries, traumatic brain injuries, or infection.^{1,2} In most cases, this condition is managed conservatively by treating the underlying pathology. Pneumorrhachis rarely results in spinal cord compression symptoms, which can be managed through surgical decompression surgery.³

In this case, the patient had bilateral pneumothoraces, bilateral rib fractures, traumatic subcutaneous emphysema, and vertebral fractures of the cervical and thoracic spinal regions. Fortunately, the patient did not develop complications via the pneumorrhachis, and his condition was managed with thoracostomy tube placement and posterior fusion of T2-T7 with allograft bone.

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**References**

1. Laaribi I, El Mouhib A, Oulalit MA, El Rhalet A, Bkiyar H, Housni B. Pneumorrhachis and pneumocephalus: Case report of a rare blunt chest trauma complication. *Ann Med Surg (Lond)*. 2022;74:103349. doi:10.1016/j.amsu.2022.103349
2. Alampoondi Venkataramanan SV, George L, Sahu KK. Spontaneous Pneumorrhachis - A Case-Based Review. *J Asthma Allergy*. 2021;14:1539-1554. doi:10.2147/JAA.S325293
3. Chaichana KL, Pradilla G, Witham TF, Gokaslan ZL, Bydon A. The clinical significance of pneumorrhachis: a case report and review of the literature. *J Trauma*. 2010;68(3):736-744. doi:10.1097/TA.0b013e3181c46dd3