

## Continuous Diaphragm Sign

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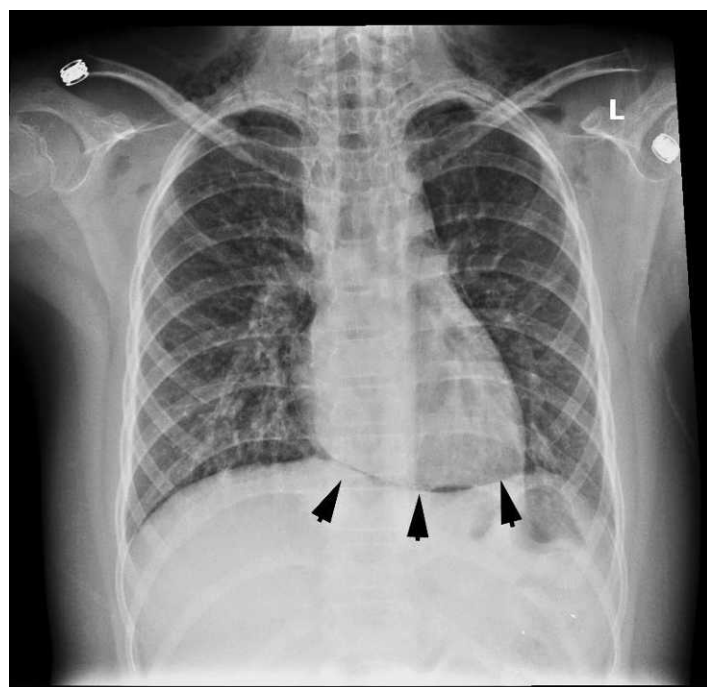
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An 11-year-old female presented to the emergency department with fever of 1 day's duration and sore throat. Her family described a 3-week history of cough with fever, trouble breathing, and wheezing. Her medical history included panhypopituitarism and asthma, and she was receiving steroid replacement therapy. She had recently undergone a dental extraction. Examination showed a temperature of 39.5°C, a 3/6 systolic murmur, bibasilar rales, and palpable cervical subcutaneous emphysema. On chest radiograph, the diaphragm appeared continuous and was not obscured by the inferior heart border (Figure 1). A computed tomography scan demonstrated the same finding (Figure 2).

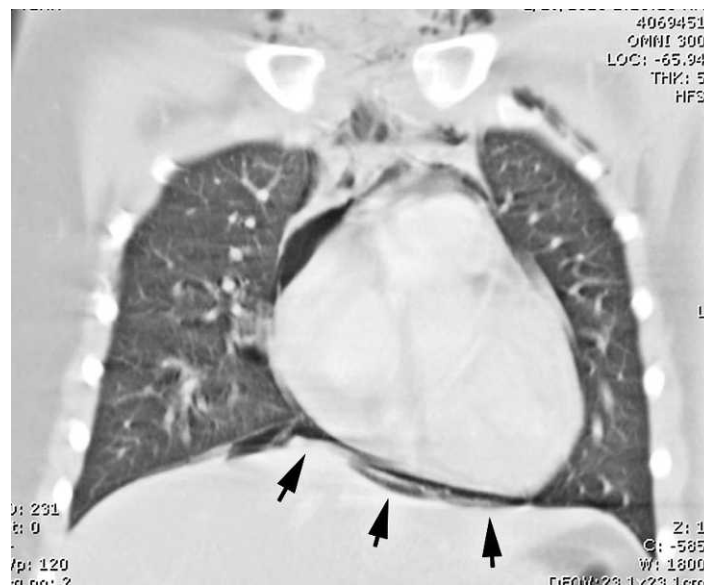
The images depict a “continuous diaphragm sign,” an



**Figure 1.** Frontal chest radiograph. The diaphragm is not obscured by the inferior heart border (black arrows).

infrequent indicator of pneumomediastinum.<sup>1</sup> It is seen on a frontal radiograph when gas in the mediastinum separates the heart and the superior surface of the diaphragm, and it can be seen on either upright or supine views.<sup>1,2</sup> A continuous diaphragm may also be seen with pneumopericardium, although it is much less common.<sup>3,4</sup> Distinguishing the 2 conditions radiographically can be challenging, but pneumopericardium typically appears as an isolated broad band around the heart rather than the multiple thin lucent streaks extending into neck seen with pneumomediastinum.<sup>3</sup>

Pneumomediastinum occurs after alveolar rupture as gas travels along the bronchovascular interstitial sheaths into the mediastinum.<sup>3,5</sup> Nontraumatic causes include invasive procedures and mechanical ventilation, airway obstruction, barotrauma, and pulmonary or pericardial infections, and it has also been described after dental extractions.<sup>3–6</sup> Spontaneous pneumomediastinum is



**Figure 2.** Coronal reconstruction of chest computed tomography scan demonstrates a clear space between the heart and diaphragm (black arrows).

rare and usually benign, and tends to occur in males and younger patients.<sup>7,8</sup> Common symptoms of pneumomediastinum are chest pain and dyspnea, and signs are subcutaneous emphysema, wheezing, and Hammon sign.<sup>3,7,8</sup> Differential diagnoses include pneumothorax and esophageal rupture, and complications include hypotension from impaired venous return, tension pneumothorax, and cardiac tamponade.<sup>3,4,7</sup>

Most cases follow a benign course and require no therapy, although in 1 series prophylactic antibiotics were given and all cases resolved without complication.<sup>8</sup>

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