

Evidence Discussion (CH 19.2)

Pneumomediastinum; Subcutaneous Emphysema

The diagnosis of Pneumomediastinum (PM) is usually established by a clinical exam and CR. The CR should include a lateral view.(1,2) CR is the most common diagnostic imaging study.(3,4,5,6) The reported sensitivity of CR ranges from 60-90%.(3,7,8,9,10) CT is more sensitive than CR, especially in cases of small amounts of air in the mediastinum.(1,2,8)

There is no evidence defining when CT should be used to evaluate pneumomediastinum (PM).CT should be done if the suspicion for PM remains high despite a normal CR or if there is concern for secondary PM due to a specific pathologic event.(1,3)

CT can be beneficial in detecting injury to the tracheobronchial system, pneumothorax, pneumopericardium or esophageal perforation.(10) Despite the usually benign and self-limiting course of spontaneous PM, additional imaging is often undertaken to rule out esophageal perforation or other underlying disorder. A retrospective review of adolescents and young adults with spontaneous PM demonstrated that no clear criteria were used for obtaining a CT and that the CT's did not impact clinical decisions.(11) The authors concluded that advanced imaging is over-utilized in patients with suspected spontaneous PM without clinical evidence of necessity.

1. Takada K, Matsumoto S, Hiramatsu T, et al. Spontaneous pneumomediastinum: an algorithm for diagnosis and management. *Ther Adv Respir Dis* (2009) 3(6) 301-307.
2. Dirweesh A, Alvarez D, Khan M, Christmas D. Spontaneous pneumomediastinum in a healthy young female: A case report and literature review. *Respir Med Case Rep*. 2017 Feb 6;20: 129-132.
3. Magouliotis DE, Sgantzos I, Salemis NS, et al. Pneumomediastinum: Experience with 87 Patients. *Acta Medica Academica* 2023;52(2): 88-94.
4. Morgan CT, Maloney JD, Decamp MM, McCarthy DP. A narrative review of primary spontaneous pneumomediastinum: a poorly understood and resource-intensive problem. *J Thorac Dis* 2021;13 (6): 3721-3730.
5. Okada M, Adachi H, Shibuya Y, et al. Diagnosis and treatment of patients with spontaneous pneumomediastinum. *Respir Investig*. 2014 Jan;52(1):36-40.
6. Alemu BN, Yeheyis ET, Tiruneh AG. Spontaneous primary pneumomediastinum: is it always benign? *J Med Case Reports*. (2021) 15: 157.
7. Caceres M, Ali SZ, Braud R, et al. Spontaneous pneumomediastinum: a comparative study and review of the literature. *Ann Thorac Surg*. 2008 Sep;86(3):962-6.
8. Kaneki T, Kubo K, Kawashima A, et al. Spontaneous pneumomediastinum in 33 patients: yield of chest computed tomography for the diagnosis of the mild type. *Respiration*. 2000;67(4): 408-11.
9. Iyer VN, Joshi AYT, Ryu JH. Spontaneous pneumomediastinum: analysis of 62 consecutive adult patients. *Mayo Clin Proc*. 2009 May;84(5):417-21.
10. Susai CJ, Banks KC, Alcasid NJ, Velott JB. A clinical review of spontaneous pneumomediastinum. *Mediastinum* 2024;8:4.

11. Wald L, Yergin C. Petroze R, et al. The unnecessary workups and admission of adolescents and young adults with spontaneous pneumomediastinum. Sci Rep. 2024 Feb 24;14(1):4501.