



## Pneumomediastinum due to blunt neck injury: a case report

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We report a 19-year-old male who was admitted after being hit by a motor vehicle and was complaining of neck pain and odynophagia. Physical examination of the patient at the time of admission to the emergency department revealed no pathological findings. After initial examination and patients evaluations, it was decided to under observe the patient. After the patients serial examinations we found subcutaneous emphysema around the neck. The chest X ray was performed and suspected for pneumomediastinum, then chest CT scanning was performed and the pneumomediastinum was confirmed.

### INTRODUCTION

Pneumomediastinum is defined as the presence of free air within mediastinal structures, and classified as spontaneous, traumatic and iatrogenic (1). Traumatic etiologies are varied and include chest blast injury, mechanical ventilation induced barotrauma, post cardio-pulmonary resuscitation and chest or neck blunt trauma (1). Blunt trauma is the most common mechanism of injury and may occur up to 10% of patients with blunt thoracic and cervical trauma. It is a condition with severe potential complications that may lead to high morbidity and mortality rates (2). Patients symptoms depended on the amount of gas which was extravasated and other associated injuries (3). Usually the patients have swelling and crepitation over the involved area, or complain of chest pain, dyspnea and odynophagia (3, 9). Both pneumomediastinum and subcutaneous emphysema may be diagnosis by simple chest X ray; but non-contrast CT scanning is more sensitive (3). Delayed in diagnosis of these patients may be attended with significant morbidity and mortality rate (4). Its outcomes vary widely from benign outcome to fetal (5). Management of this condition varies from close observation to surgical interventions depending on the severity of the injuries (5). Surgical interventions reserved for patients with a high probability of aerodigestive injuries (5).

### CLINICAL CASE

In this case report we represent a 19 year old male who was admitted to the emergency department after being hit by a motor vehicle and was complaining of neck pain and odynophagia. His vital sign on admission are: Blood Pressure: 105/70, Pulse Rate: 92/minute, Respiratory Rate: 20/minute and O<sub>2</sub> saturation in air room is 95%. Physical examination of the patient at the time of admission to the emergency department

revealed no pathological findings. After initial examination and patients evaluations, it was decided to under observe the patient. After the patients serial examinations we found subcutaneous emphysema around the neck. Due to this finding and patients initial chief complain, chest X ray was performed (Figure 1). The chest X ray was suspected for pneumomediastinum, then chest CT scanning was performed and the pneumomediastinum was confirmed.

The tracheobronchial tract and esophagus also evaluated for coincidence major trauma and there were no pathological findings. The patient admitted in surgical intensive care unit (SICU) and underwent conservative managements. After 3 days of closed observation and conservative management in SICU every things resolved and the patient discharged home with good condition.

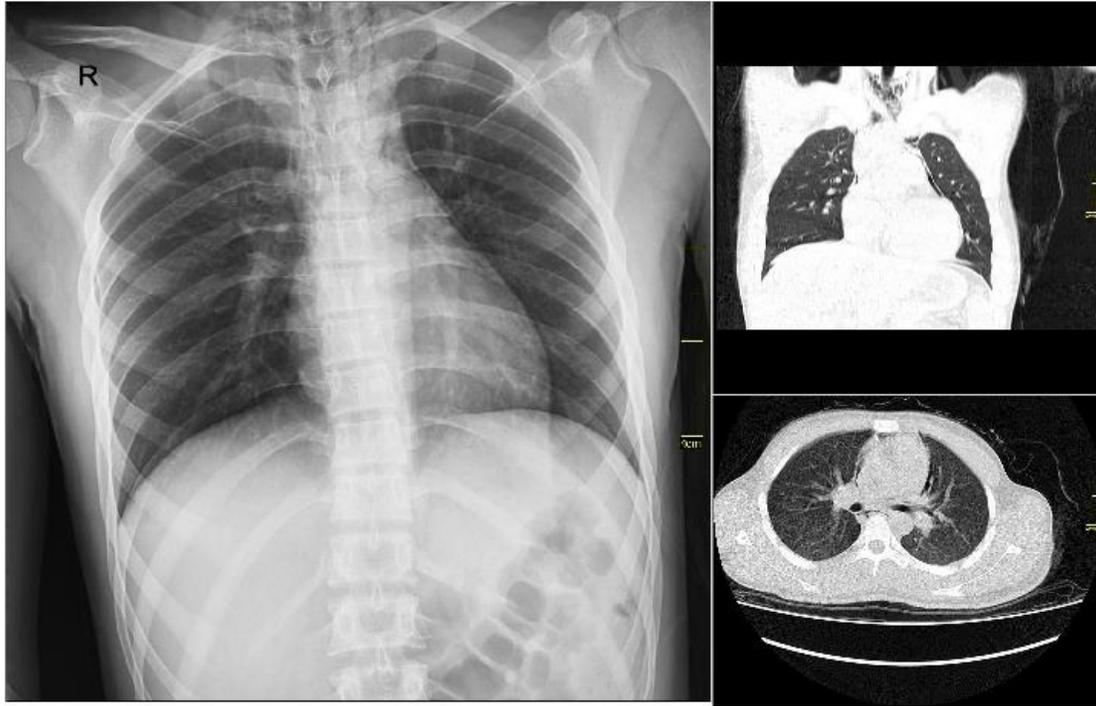
### DISCUSSION

We represent a case of pneumomediastinum after blunt neck trauma, which was not associated with obvious organ damage. As a result of Macklin effect, pneumomediastinum occurs when free air traveled along bronchovascular sheaths due to traumatic rupture of alveoli (3). Most common symptoms in these patients are chest pain; dyspnea and neck pain; less common symptoms are dysphagia, odynophagia and back pain (3). In this case we represented the patient was complaining of neck pain and odynophagia after blunt neck trauma, there was no complaints of chest pain or dyspnea.

Physical examination in up to 40% of such patients whose pneumomediastinum was not complicated, are normal. In some patients subcutaneous emphysema around the neck may be found (6). Diagnosis is radio graphically. The characteristics of pneumomediastinum on chest X ray is enhancement of mediastinal structures margin by free air and usually seems clearest above left side of the heart (7). But simple X ray is low sensitive for diagnosis, and CT scan being a more sensitive and specific modality for diagnosis of such abnormality (7). Our patient had delayed subcutaneous emphysema, especially around his neck and his

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Figures : left : CXR , Pneumomediastinum – right upper : coronal cut of chest CT scan , air in mediastinum – right lower : axial cut of chest CT scan , air in mediastinum

chest X ray has shown an enhancement above left side the heart. The CT scanning was also confirmed the diagnosis of the pneumomediastinum.

The presence of pneumomediastinum as a proxy for concurrent aerodigestive injuries is doubtful. Recently, studies reported concurrent aerodigestive injuries are rare (8). Management of patients who are young and healthy with free air in the mediastinum is conservative. Conservative treatments include oxygen administration, analgesic, bed rest and serial chest X ray to evaluating of free air resolution (9). We also ruled out major injuries to tracheobronchial tract system and esophagus, and no clear etiology has found. The patient admitted in surgical intensive care unit for conservative management, and discharged home after 3 days.

## CONCLUSION

Despite minimal findings in physical examinations, the diagnosis of pneumomediastinum should be considered in all patients who present to the emergency department with blunt trauma to the neck or chest.

## REFERENCES

1. Curfman K.R, Robitsek R.J, Sammett D, Schubl S.D. Blunt trauma resulting in pneumothorax with progression to pneumoperitoneum: a unique diagnosis with predicament in management. *Journal of Surgical Case Reports*, 2015; 12:1-4.
2. Di Saverio S, Filicori F, Kawamukai K, Baoron M, Tugnoli M. Combined pneumothorax and pneumoperitoneum following blunt trauma: an insidious diagnostic and therapeutic dilemma. *Postgrad Med J* 2011; 87:75–8.
3. Sores M, Heymann E, Exadactylos A. Diffuse Subcutaneous Emphysema and Pneumomediastinum Secondary to a Minor Blunt Chest Trauma. *Case Reports in Emergency Medicine*. 2017, Article ID 7589057, 4 pages.
4. Chouliaras K, Bench E, Talving P, Strumwasser A, Benjamin E, et al. Pneumomediastinum following blunt trauma: Worth an exhaustive workup. *J Trauma Acute Care Surg*.2015; 79(2):188-193.

5. Lee W, Chong V, Victorino G. Computed Tomographic Findings and Mortality in Patients with Pneumomediastinum from Blunt Trauma. *JAMA Surg*. 2015; 150(8):757-762.
6. Banki F, Estrera A.L, Harrison R.G, et al. Pneumomediastinum: etiology and a guide to diagnosis and treatment. *American Journal of Surgery*.2013; 206(6):1001-1006.
7. Dissanaik S, Shalhub S, Jurkovich GJ. The evaluation of pneumomediastinum in blunt trauma patients. *J Trauma*. 2008; 65:1340-1345.
8. Zaranky E, Counts S, Clemow C. Pneumomediastinum in a College-Aged Soccer Player: A Case Report. *American College of Sports Medicine*.2017; 16(2): 71-73.
9. Sahoo Arpita Krishna, Ray Sundar Chinmaya, Priyadarshini Raisa. Broken synthetic tracheostomy tubes presenting as a foreign body in airways – Rare Case Series & Review of the literature. *Medical Science*, 2017, 21(88), 287-293

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