# Traumatic pneumatocele. A case report

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**Background**
Post-traumatic pneumatocele is a rare entity, presenting a case report will help better understanding of these types of injuries. Patients can be asymptomatic or have respiratory distress, hemoptysis, etc. Diagnosis is based on the history of blunt thoracic trauma, CT scans that suggest pneumatocele, and blood tests that rule out infectious processes. It is generally a self-limiting benign condition for up to a period of 6 months, in case of complications they may require surgery. Follow-up of discharged patients is necessary to identify complications because it can be life threatening.

**Keywords.** Traumatic pneumatocele.

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Thoracic trauma is a common motive of admission to the emergency room. Blunt trauma causes lesions such as pneumothorax, pulmonary parenchymal laceration, hematomas and pneumatoceles.

Traumatic pulmonary cystic lesions are unusual. We will be reporting the case of a young female patient who suffered a three-meter height fall.

## Case Report

A 22-year-old female with a history of substance abuse is admitted due a three-meter height fall. Patient presented loss of conscience for 10 minutes and was found without respiratory compromise, hemodynamically stable and neurologically intact. On physical examination, both forearms presented fractures. A chest X-ray showed multiple clustered circular cavities, as well as consolidation areas in the lower left lobe. Chest computed tomography (CT) scan showed ground-glass opacities, evidence of pneumatocele in posterior and lateral segments of the lower left lobe. Simple head CT scan with evidence of subarachnoid hemorrhage without the need for surgical management.

Blood work results showed: hemoglobin 12.10, leukocytes 23.90, neutrophils 21.30, lymphocytes 1, monocytes 1.560, and normal coagulation times and platelets. No signs of an infectious process. During her management, a fluid plan was initiated along with acetaminophen, tramadol, ondansetron, ceftriaxone, and buprenorphine. After consultation with the Pneumology Department, the patient carried out conservative management until remission, without complications.

The most appropriate term is Traumatic Pulmonary Pseudocyst (TPP), which should be differentiated from other cystic diseases that could be similar. This kind of pseudocyst is very rare as it develops in <3% of patients with pulmonary lesions[1], however it's been noticed that kids and males under the age of 30 are the most vulnerable, mainly for their involvement in vehicular accidents.

Clinical manifestations can range from asymptomatic to acute respiratory distress, thoracic pain, hemoptysis, coughing and respiratory difficulty. About 50% of TPP can be seen in image testing within the first few hours, but sometimes it may take up to 48 hours later[4]; patients can present mild fever and leukocytosis due to absorption of injured lung tissue[5]. They are usually located at the lung bases[6].

Differential diagnosis includes a wide range of cystic diseases, such as abscesses, mycosis, tuberculosis, malignant diseases, or a post-pneumonia pneumatocele, this being the most common etiology[7]. To develop an accurate diagnosis, it is essential to have blunt chest trauma history. A misdiagnosis of TPP can lead to the use of invasive methods which could worsen the prognosis. It is also important to mention that the use of empirical antibiotics is not recommended due to the increase of bacterial resistance. Therefore, the most accepted TPP treatment is the one proposed by Melloni et al in 2003[8] (Fig. 3), this usually being conservative and symptomatic, with follow-up image testing to

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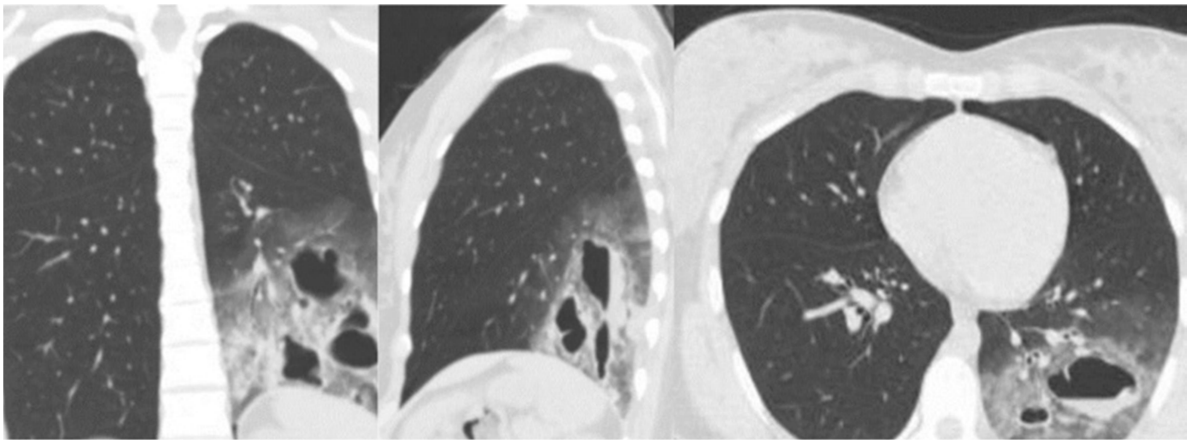

**Figure 1.** Chest CT showing multiple smooth-walled cavities with air-fluid level in the lateral/posterior area of the left lower lobe surrounded by ground glass.

determine if the lesion decreased in size. Depending on the improvement shown it may take up to 6 months to complete the treatment; if there is no decrease in size, lung resection may be necessary.

## Discussion

Our patient sustained a high-impact trauma. The patient didn't present coughing, fever,

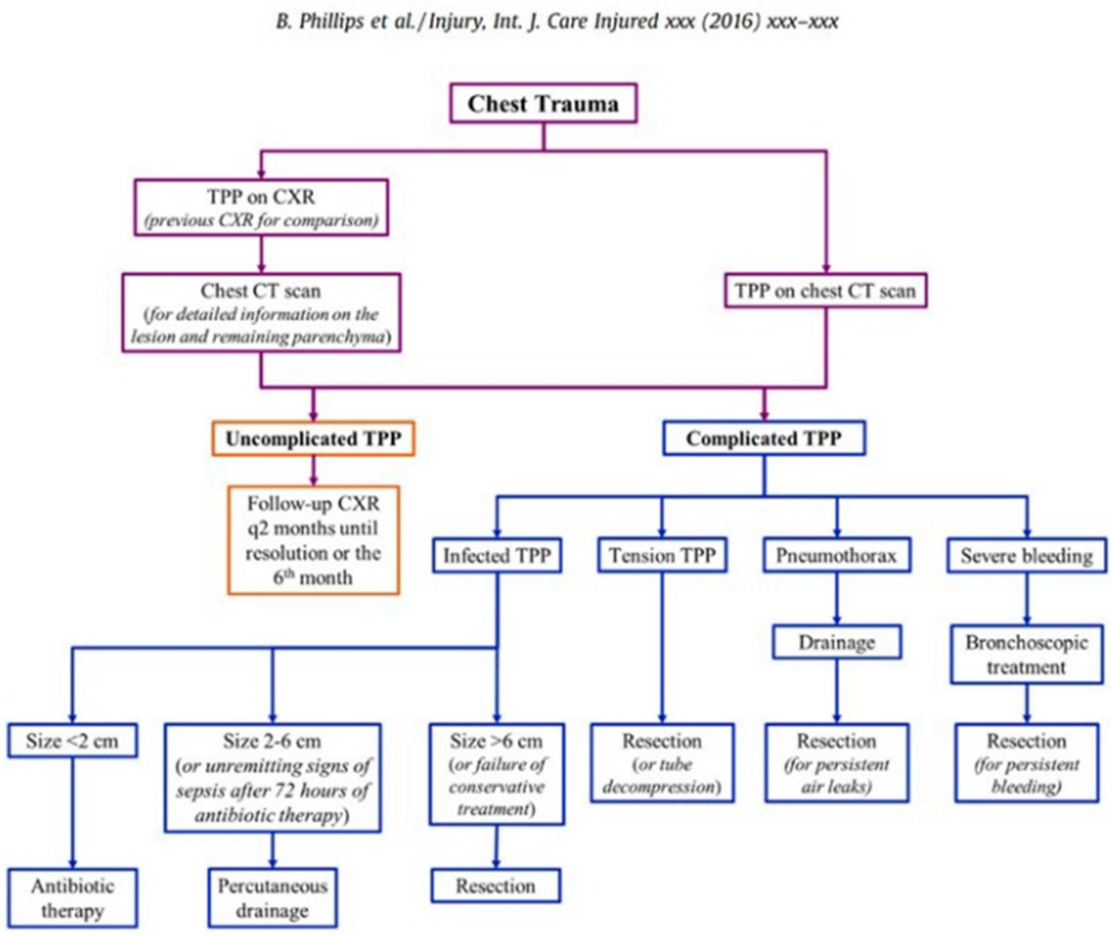


**Figure 2.** Chest CT showing multiple smooth-walled cavities with air-fluid level in the lateral/posterior area of the left lower lobe surrounded by ground glass.


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expectoration, and an infectious process was discarded. The CT-scan visualizes cavitary lesions with hydro-aerial levels peripherally adjacent to the trauma. Blood work showed leukocytosis with an elevated neutrophil count.

With a record of blunt trauma, suggestive images of pulmonary contusion with cyst formation, no respiratory history and young age, TPP diagnosis was confirmed, since no complications were shown, the treatment should be conservative with follow-up appointments until it's resolved or 6 months after the trauma.

## Conclusion

Traumatic pulmonary pseudocysts are uncommon entities, not usually identified immediately through image testing. They are generally self-limited and benign, but similar radiological cystic diseases should be discarded through laboratory studies and a complete clinical history. Follow-up appointments of discharged patients is fundamental as complications could be life-threatening.

## Conflicts of interest

The authors declare no conflict of interest.

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## References

1. De Dios JA, Paoletti L, Bandyopadhyay T. A 27-year-old man with pleuritic chest pain and hemoptysis after a rugby game. Chest. 2009 Oct;136(4):1165-1167. doi: 10.1378/chest.09-0598. PMID: 19809060.
2. Sorsdahl oa, Powell Jw. cavitary pulmonary lesions following nonpenetrating chest Trauma in children. Am J Roentgenol Radium Ther Nucl Med. 1965 Sep;95:118-24. doi: 10.2214/ajr.95.1.118. PMID: 14344349.
3. Fagkrezos D, Giannila M, Maniatis P, Papailiou J, Triantopoulou C. Post-traumatic pulmonary pseudocyst with hemopneumothorax following blunt chest trauma: a case report. J Med Case Rep. 2012 Oct 19;6:356. doi: 10.1186/1752-1947-6-356. PMID: 23083130; PMCID: PMC3485102.
4. Stathopoulos G, Chrysikopoulou E, Kalogeromitros A, Papakonstantinou K, Poulakis N, Polyzogopoulos D, Karabinis A. Bilateral traumatic pulmonary pseudocysts: case report and literature review. J Trauma. 2002 Nov;53(5):993-6. doi: 10.1097/00005373-200211000-00031. PMID: 12435957.
5. Ganske JG, Dennis DL, Vanderveer JB Jr. Traumatic lung cyst: case report and literature review. J Trauma. 1981 Jun;21(6):493-6. PMID: 7230308.
6. Santos GH, Mahendra T. Traumatic pulmonary pseudocysts. Ann Thorac Surg. 1979 Apr;27(4):359-62. doi: 10.1016/s0003-4975(10)63316-4. PMID: 454006.
7. Gulbahar G. Diagnosing traumatic pulmonary pseudocyst. South Med J. 2009 Sep;102(9):881-2. doi: 10.1097/SMJ.0b013e3181b187d3. PMID: 19668030.
8. Phillips B, Shaw J, Turco L, McDonald D, Carey J, Balters M, Wagner M, Bertellotti R, Cornell DL, Agrawal DK, Asensio JA. Traumatic pulmonary pseudocyst: An underreported entity. Injury. 2017 Feb;48(2):214-220. doi: 10.1016/j.injury.2016.12.006. Epub 2016 Dec 12. PMID: 27986273.

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