

Taylor Baldwin  
CAT Block 3  
September 2014

Citation: Voisin, F., et al. Ambulatory Management of Large Spontaneous Pneumothorax With Pigtail Catheters. *Annals of Emergency Medicine*. 2014;64:222-228.

Clinical Question: To assess the possibility of ambulatory management of large spontaneous pneumothoraces with pigtail catheters to determine if this is a safe and efficient method compared to traditional chest tubes and admission.

Introduction: Spontaneous pneumothoraces are a relatively common occurrence in the ED, however there is no clear consensus on appropriate management of these patients. Currently the American College of Chest Physicians recommends small bore catheters while multiple societies in Europe recommending needle aspiration as the initial step. Pigtail catheters represent a minimally invasive management method that could potentially represent a clinical course that is both cost and time effective for the patient. Several recent small studies have shown that patients have been safely treated as outpatients using this method. The aim of this study is to assess the success rate of such treatment.

Methods: This study was conducted in a French hospital from 2007-2011 in which all patients with a large spontaneous (iatrogenic and traumatic pneumothoraces were excluded) pneumothorax (defined as greater than 2-3cm, decision made by treating physician) were treated with a pigtail catheter. An 8.5 French catheter was placed in the 2<sup>nd</sup> or third intercostal space in the midclavicular line. No repeat CXR was obtained and patients were discharged home after an observation period of two hours. All catheters placed by a pulmonologist. All patients were reassessed every two days in an outpatient clinic and the catheter was removed with complete or near complete resolution of the pneumothorax. Success was defined as resolution of the pneumothorax at 4 days or fewer. If the pneumothorax persisted for 6 or more days the patient was sent for surgery.

Results: A total of 132 patients with large spontaneous pneumothoraces were included in the study. Of these patients 11 were hospitalized on presentation due to various reasons and the remaining 121 were managed as outpatients. Of the 121, 103 were managed exclusively as outpatients. Following the algorithm, 18 patients were admitted at day 4 for suction on the catheter due to persistence of the pneumothoraces. Of those, 10 were eventually referred for surgery. Mean duration of pigtail catheter was 3.4 days. The only complications mentioned are 2 kinked catheters at outpatient office visits. Recurrence rate for pneumothoraces in this study was 26% (study does not mention rate of recurrence for traditional management). Study estimates an approximate 3,000 dollar reduction in cost (~\$1,000 vs >\$4,000).

Discussion: I think that this method does present a potentially plausible option for treating patients with spontaneous pneumothoraces, however I have a few concerns about this process. Firstly, I do not agree with discharge without a confirmatory x-ray for placement of the catheter. The procedure may be less invasive than a traditional chest tube, but it is still an invasive procedure with some very serious potential complications. This study also implies a large amount of cooperation with the pulmonary specialty; or at the very least a significant amount of training in this procedure by the ED physician. If this is to take hold, I think that some further studies are indicated. As it currently stands I have no issue with the pigtail catheter, it is the discharge home that would give me pause as I would consider these patients a very high risk discharge.

---