Use of Valved Dry Seal Chest Drain in Ambulatory Management of Persistent Air Leak

Sir,

Persistent air leak is defined as continued bubbling of air through an *in situ* chest drain beyond 48 h.[1] It usually results due to incomplete healing of either alveolopleural fistula (APF) or bronchopleural fistula.[2] Although the societal recommendation is referral for surgical intervention,[3] many times, due to resource limitation or financial constraints, it is not possible. I present a case of nonexpanding lung with persistent air leak successfully managed conservatively with manual air aspirations through valved dry seal chest drain.

A 35-year-old gentleman, farmer, and ex-smoker without any known previous comorbidities, had a history of sudden onset right-sided chest pain waking him up from sleep. There was no history of chest trauma, other respiratory or constitutional symptoms. On evaluation at a local hospital, he was diagnosed as having right-sided pneumothorax, and a 16 F chest tube was inserted. However, there was no lung expansion in addition to persistent air leak even on postoperative day (POD) 10. His subsequent computed tomography thorax (POD 11) revealed the presence of centrilobular and paraseptal emphysema involving right upper lobe with chest tube *in situ* (all holes within) and right-sided hydropneumothorax. He still had bubbling even on POD 20, while he was speaking indicating large air leak. X-ray chest (CXR) showed right-sided hydropenumothorax with possible lung herniation.

It was concluded that the chest tube was not draining air sufficiently quickly to match the filling. Hence, a 24 F chest tube was inserted in the intercostal space just below the previous one. After confirming that it was draining well, the old one was removed. Further, instead of water-seal chest drain, a mobile valved dry seal chest drain (XS-50, Sinapi) was applied to the newly inserted chest tube. Two and a half to three liters of air was drained every day with the use of a 20 cc syringe applied at the port. In addition, the bulb was compressed four times a day to create negative pressure manually. This was preferred since there are conflicting data on the use of continuous wall suction[4] as well as wet suction.[5] His pleural fluid was polymorphic, exudative, and it revealed heavy growth of *Pseudomonas aeruginosa*. As his CXR did not show signs of lung herniation, he was discharged with drain *in situ* and antibiotics on POD 2 with advice to follow-up after 10 days owing to travel restrictions. On POD 13 of insertion of the new chest tube and valved chest drain, his lower lung expanded almost completely with a small air pocket in the upper part. Finally, on POD 26, the tube was removed as there was no sign of air leak along with significant clinicoradiological resolution.

In conclusion, as shown in the case above, the mobile dry seal chest drain with manual valve and active aspiration of air can be considered as an option on a case-to-case basis of APF with nonexpanding lung and persistent air leak, particularly in resource-limited setting.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. MacDuff A, Arnold A, Harvey J, BTS Pleural Disease Guideline Group. Management of spontaneous pneumothorax: British Thoracic Society Pleural Disease Guideline 2010. Thorax 2010;65 Suppl 2:i18-31.
2. Chaturvedi A, Lee S, Klionsky N, Chaturvedi A. Demystifying

the persistent pneumothorax: Role of imaging. Insights Imaging 2016;7:411-29.
3. Baumann MH, Strange C, Heffner JE, Light R, Kirby TJ, Klein J, *et al*. Management of spontaneous pneumothorax: An American College of Chest Physicians Delphi consensus statement. Chest 2001;119:590-602.
4. Choi WI. Pneumothorax. Tuberc Respir Dis (Seoul) 2014;76:99-104.
5. Zisis C, Tsirgogianni K, Lazaridis G, Lampaki S, Baka S, Mpoukovinas I, *et al*. Chest drainage systems in use. Ann Transl Med 2015;3:43.

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