Sir,

Pleural manometry is the technique to measure the pleural pressure either with water manometer or with digital manometer. Under normal conditions, there is a thin film of pleural fluid in the pleural space. The fluid is secreted from the parietal pleura as it is supplied by systemic vessels and is a high-pressure system and absorbed from visceral pleura supplied by pulmonary vessels, which operate at lower pressures. It is also absorbed from lymphatics of visceral and parietal pleurae, covering the diaphragms and mediastinal region. Total pleural fluid volume is 0.26 ± 0.1/ml/kg with cell counts of 1500–2000/ml, macrophages of 75%, and lymphocytes of 23%, approximately 2% are mesothelial, neutrophils, and eosinophils.

Pleural pressures are negative throughout the respiratory cycle as it is a must to keep the lungs expanded and to keep them abutted against the chest wall. Normal end-expiratory pressure in pleural space is −5 cm of H₂O and end-inspiratory pressure is −10 cm of H₂O, attaining a pressure of −15 cm on deep inspiratory maneuver. Direct measurement of pleural pressure is a challenge as catheter will get distorted in pleural space and will not reflect the true pleural pressure.[1] However, in pleural effusion, catheter does not get distorted, and we can smoothly measure the pleural pressures.

Pleural manometry is not a new technique and pleural pressures are being measured for decades, but unfortunately, it failed to get its due place in routine practice. This may be because there are no special trainings in pleural diseases or there are no fellowship programs.

Whether or not it should be practiced in every case can be debated, but it can prove to be extremely helpful in selected cases to prevent the development of excessively negative pleural pressures. The development of negative pleural pressure is known to cause re-expansion pulmonary edema. Pleural manometry is very helpful in the diagnosis of unexpanded lungs (both trapped and untrapped). It also helps in the prediction of pleurodesis success.[2]

Pleural manometry [Figure 1] is a technique, where the pleural pressure is measured by connecting thoracocentesis needle on one side to the transducer and the bedside monitor using two three-way adaptors, the pleural pressure is measured intermittently after removal of an average of 250 ml of fluid. The values are recorded, graph prepared, and interpretation done. It helps in prognosticating whether the lung will expand or not and effectiveness of pleurodesis.

To make things simple, now digital manometers are available to measure the pleural pressures directly [Figure 2] during thoracocentesis. It is wonderful that single use disposable device works on battery and its life is 4 h.

Hence, normally, pleural pressure is slightly positive and as fluid is withdrawn, it comes down which suggests that lung is expanding and returning to its normal position [Figure 3, top tracing]. In entrapped lung, the
In trapped lung, the curve is monophasic where the initial pleural pressure is already negative and falls quickly right from the beginning [Figure 3, bottom tracing], which suggests unexpanded lung and indicates that pleurodesis is likely to fail in this situation, as the basic principle of pleurodesis is that both visceral and parietal pleurae have to oppose each other to obtain a successful pleurodesis. Overall, it is a prudent practice to stop pleural aspiration when a pleural pressure of $-20$ cm H$_2$O is achieved,\textsuperscript{[5]} so as to avoid re-expansion pulmonary edema and other serious complications. It has been observed that pleural pressure of $-40$ cm H$_2$O or more is associated with a high risk of development of re-expansion pulmonary edema.\textsuperscript{[4]}

In today’s scenario, pleural manometry is relevant in selected cases:

1. To avoid re-expansion pulmonary edema by removing the fluid not more than 1.5 L and to stop pleural aspiration when pleural pressure has dropped to $-20$ cm H$_2$O
2. Before thoracoscopy of the patient, to decide whether pleurodesis at the end of procedure should be done or not. When you know beforehand lung will not expand, one can avoid pleurodesis

Further studies are called for to study the scope of pleural manometry

To conclude, pleural manometry is safe, reproducible, and readily available. We strongly recommend that it should be practiced in selected cases.

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Conflicts of interest
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