

Patient Spirometry

Diagnosis and treatment of pneumothorax during laparoscopy

Case Report

22 year-old woman, 58 kg, 170 cm

Laparoscopic fundoplication performed in 10° head-up position. Intra-abdominal pressure 14 mmHg.

Case Evolution

I. Intra-abdominal CO₂ insufflation

- Compliance decreases
- Pplat increases
- ETCO₂ increases

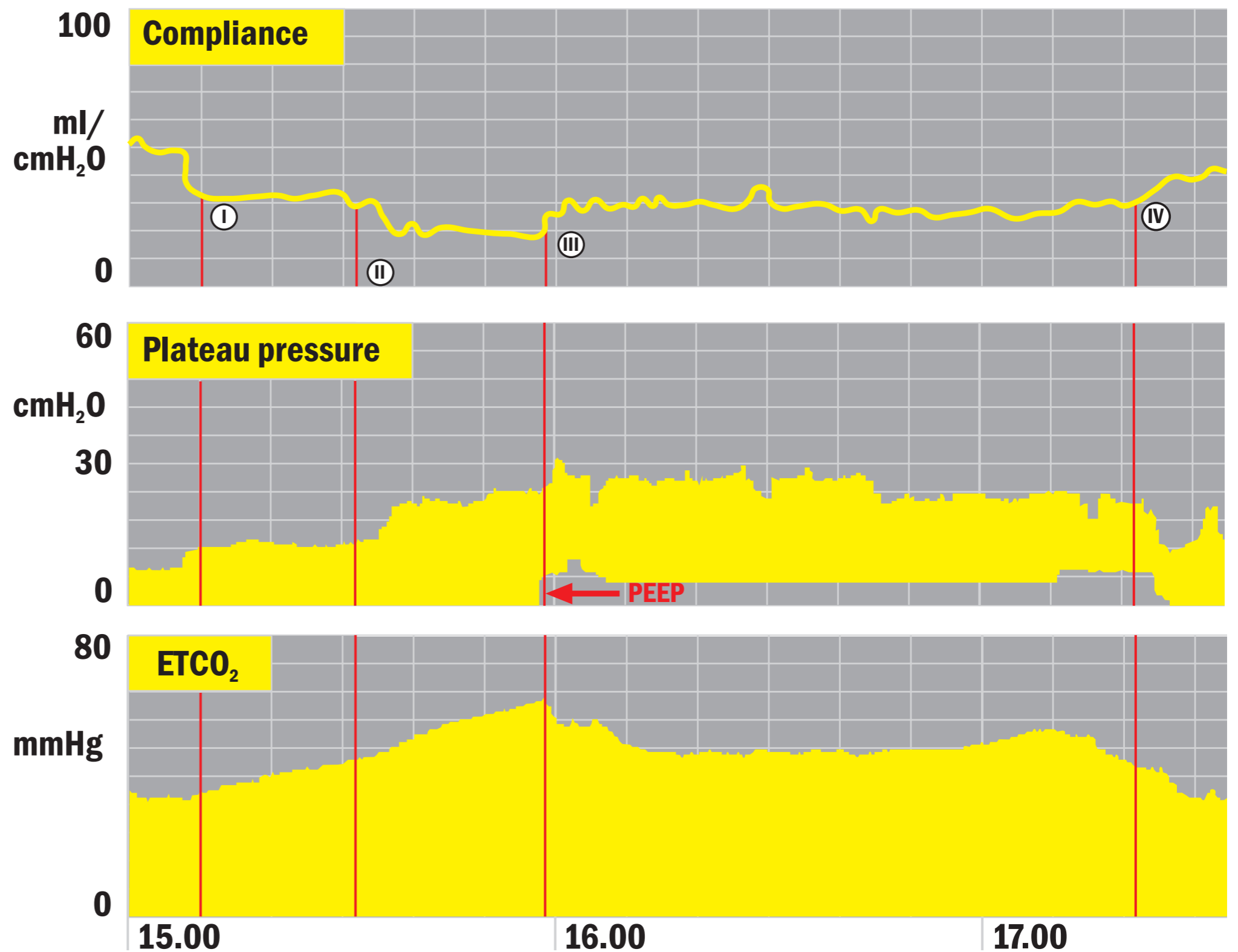
II. Pneumothorax occurs - diagnosis

- Compliance decreases further
- Pplat increases further
- ETCO₂ increases further
- The occurrence of pneumothorax was confirmed through fluoroscopy

III. Treatment with PEEP - improvement

- Compliance improves
- Pplat decreases gradually
- ETCO₂ decreases

IV. Deflation of the abdomen



Combined Patient Spirometry and gas monitoring enables early diagnosis of pneumothorax by simultaneously monitoring ETCO₂, dynamic compliance and airway pressures.

Graphic evidence of efficacy of PEEP treatment

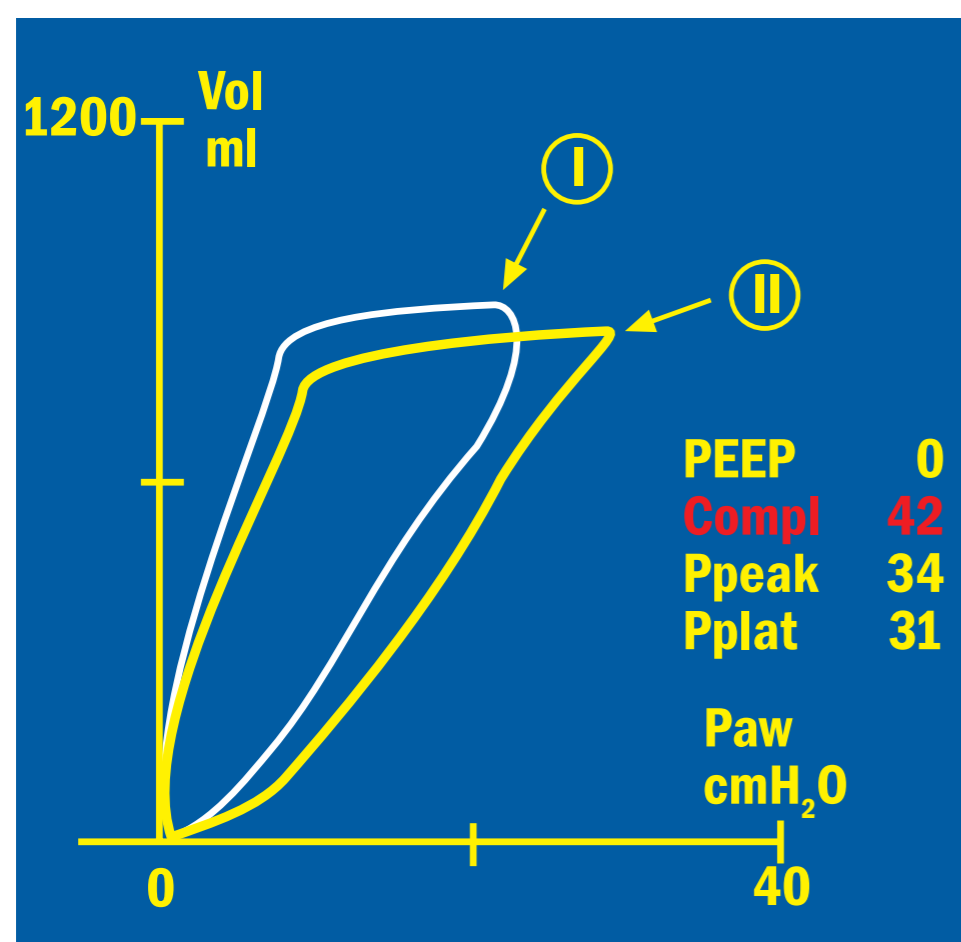


Figure 1

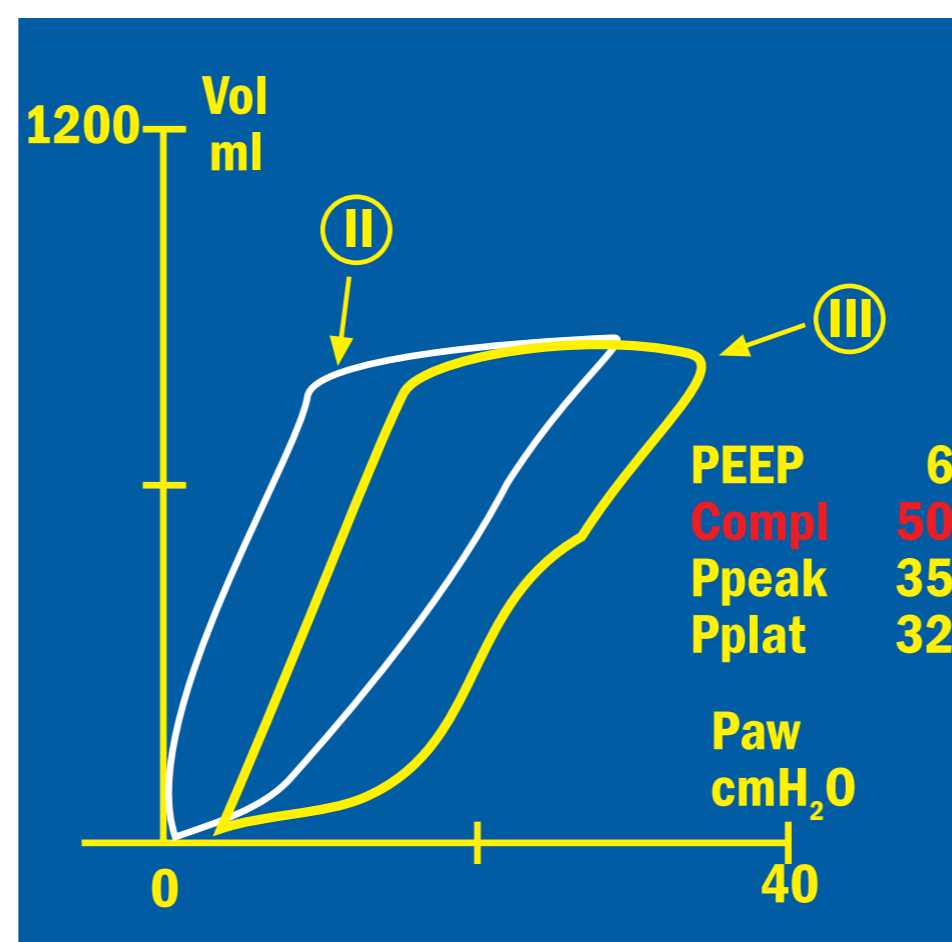


Figure 2

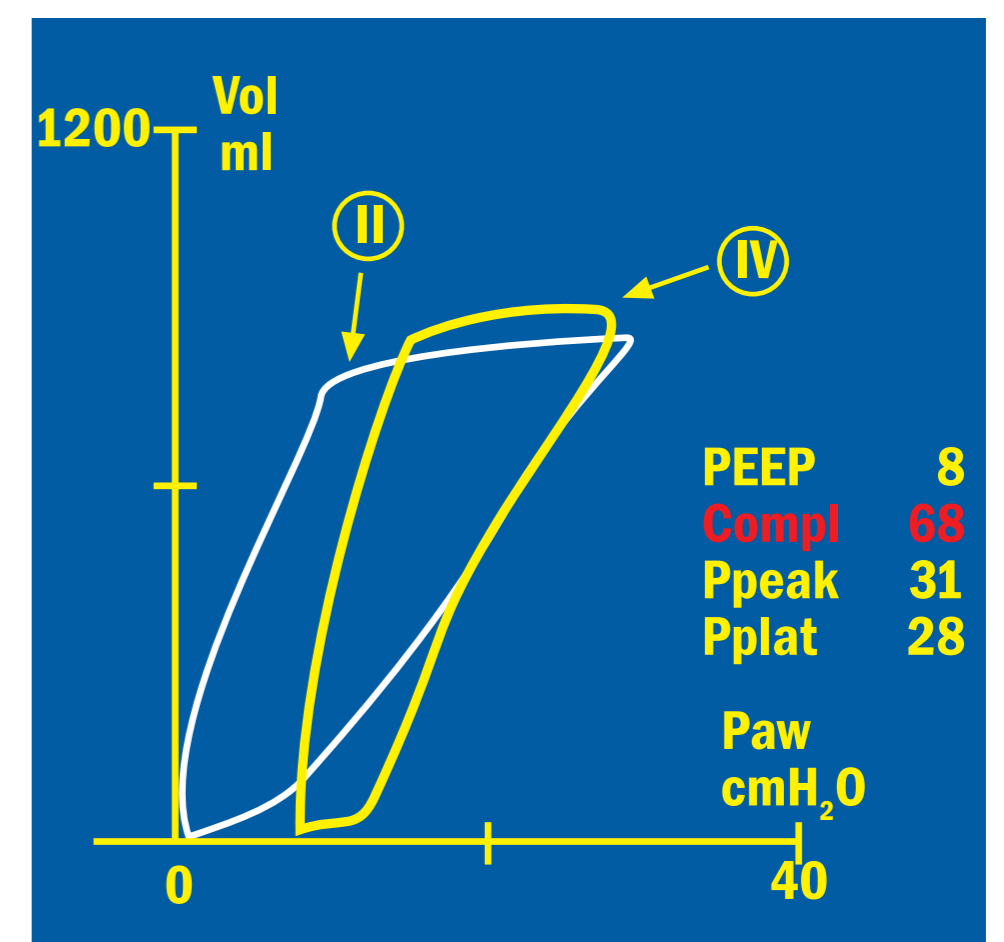


Figure 3

I = After CO₂ insufflation II = After pneumothorax has developed III = PEEP 6 cmH₂O – compliance improves IV = PEEP 8 cmH₂O – compliance improves further

Ref: Joris JL, Chiche J-D, Lamy ML: Pneumothorax During Laparoscopic Fundoplication: Diagnosis and Treatment with Positive End-Expiratory Pressure, *Anesth Analg*; 81:993-1000, (1995).