

# 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 CO<sub>2</sub> insufflation

- Compliance decreases
- Pplat increases
- ETCO<sub>2</sub> increases

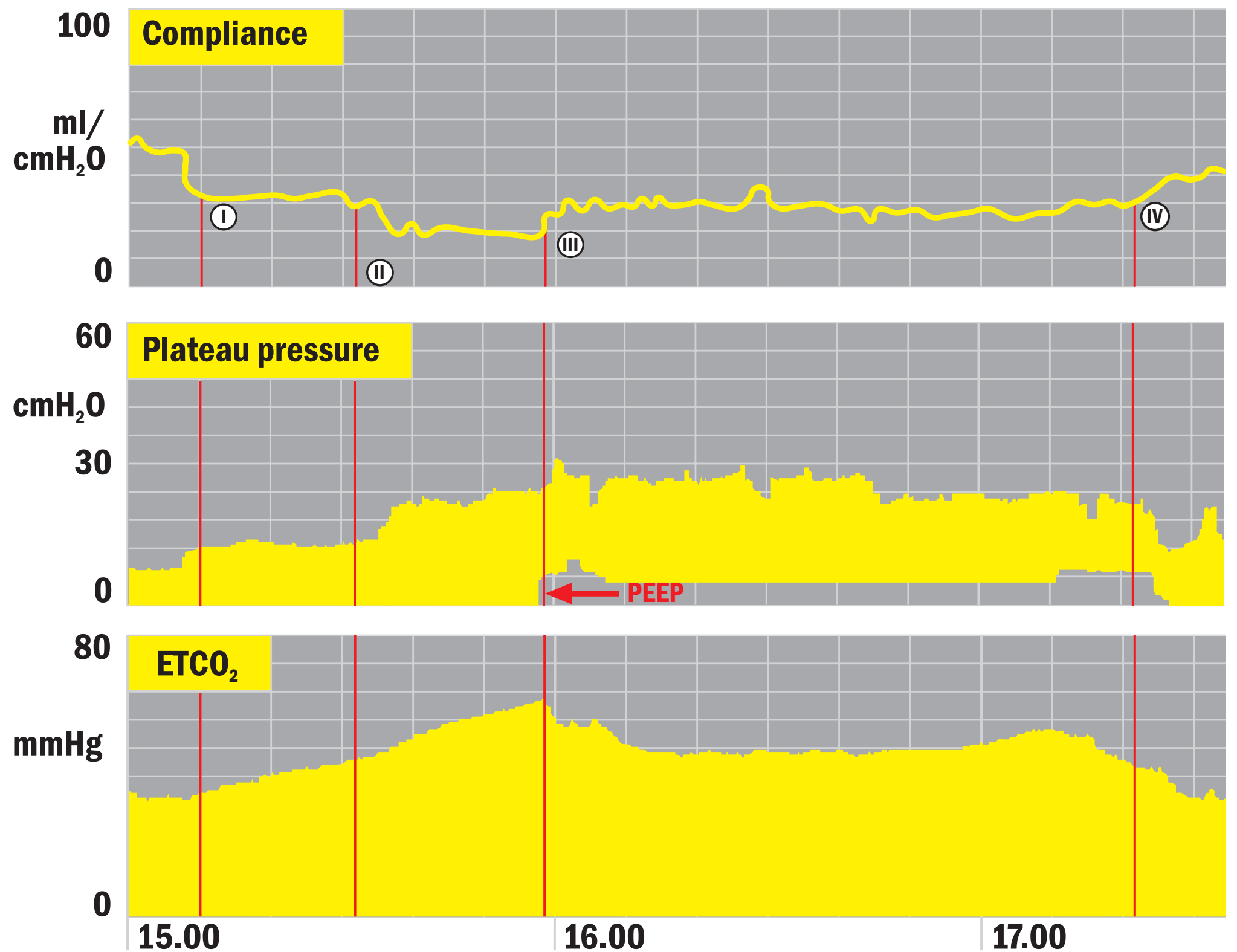
#### II. Pneumothorax occurs - diagnosis

- Compliance decreases further
- Pplat increases further
- ETCO<sub>2</sub> increases further
- The occurrence of pneumothorax was confirmed through fluoroscopy

#### III. Treatment with PEEP - improvement

- Compliance improves
- Pplat decreases gradually
- ETCO<sub>2</sub> decreases

#### IV. Deflation of the abdomen



Combined Patient Spirometry and gas monitoring enables early diagnosis of pneumothorax by simultaneously monitoring ETCO<sub>2</sub>, dynamic compliance and airway pressures.

### Graphic evidence of efficacy of PEEP treatment

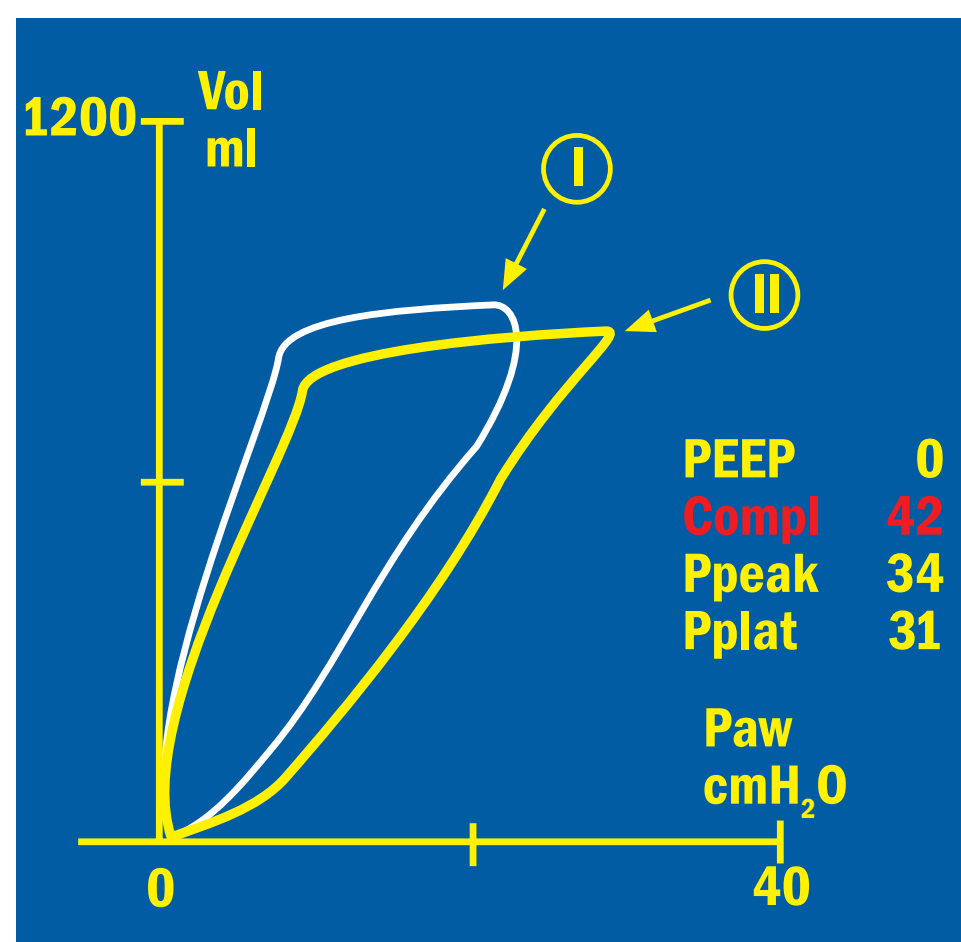


Figure 1

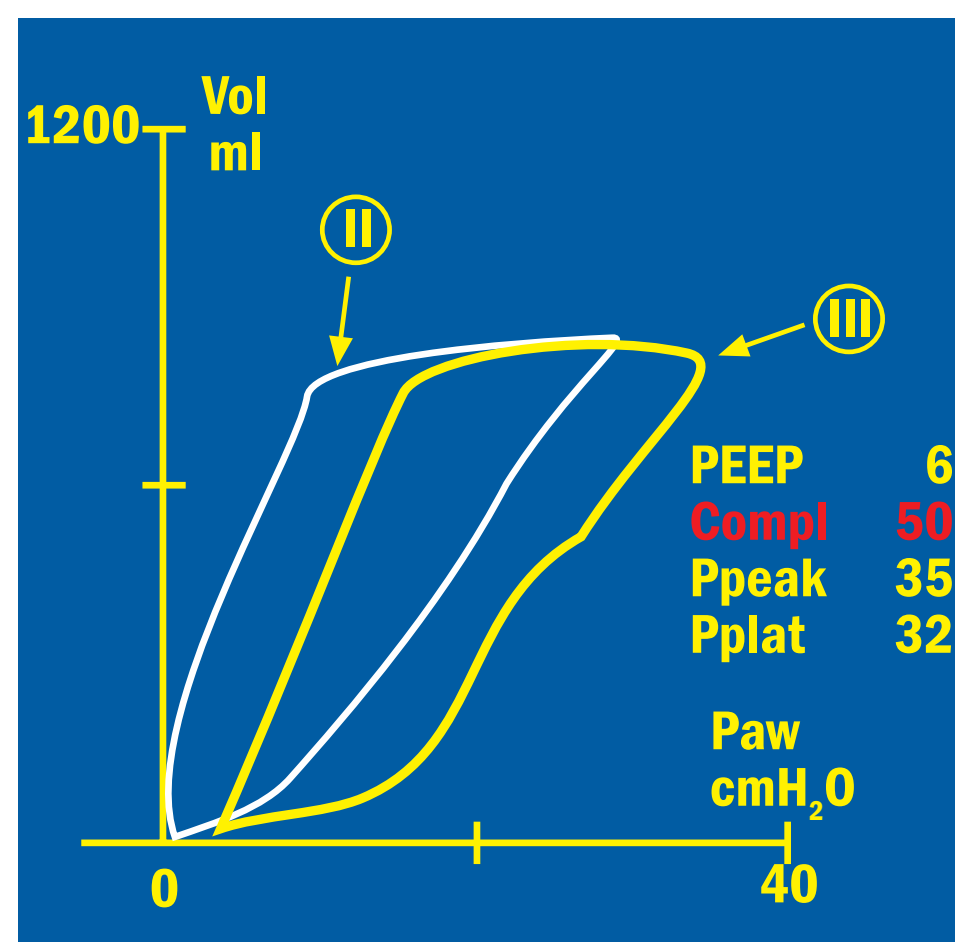


Figure 2

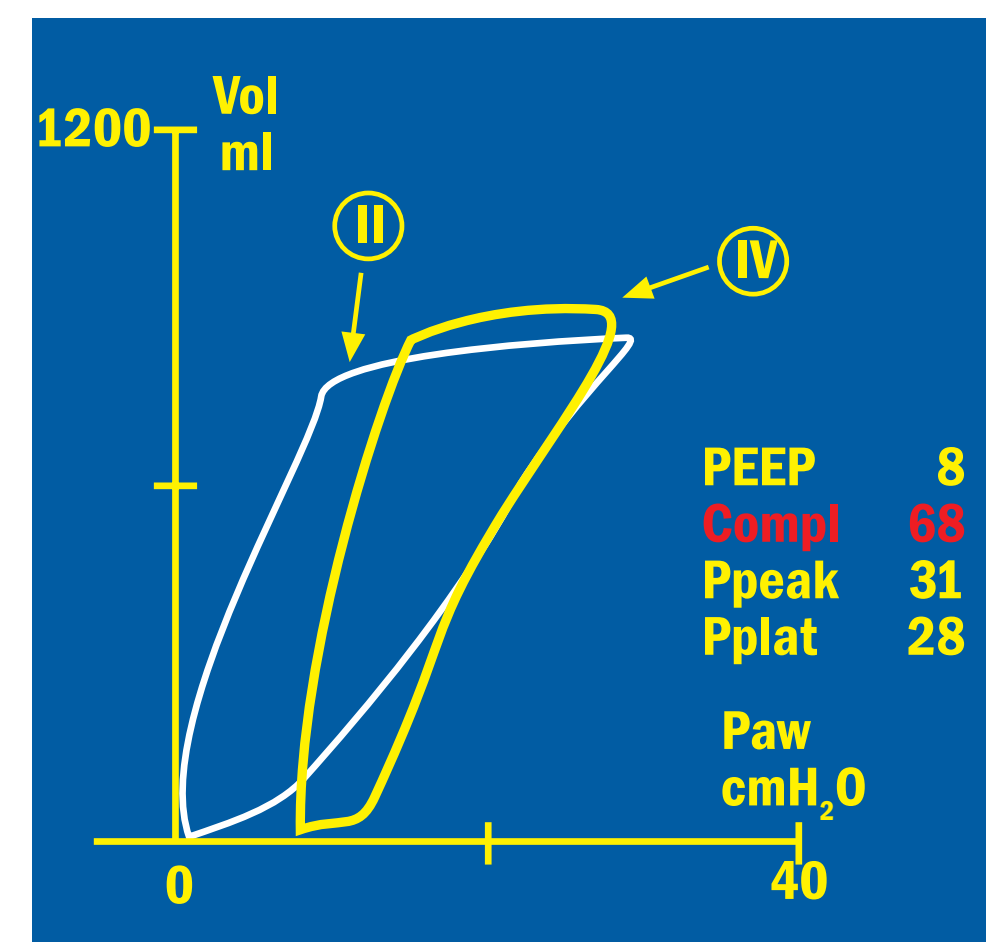


Figure 3

I = After CO<sub>2</sub> insufflation    II = After pneumothorax has developed    III = PEEP 6 cmH<sub>2</sub>O – compliance improves    IV = PEEP 8 cmH<sub>2</sub>O – 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).