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
- ETCO₃ increases

II. Pneumothorax occurs - diagnosis

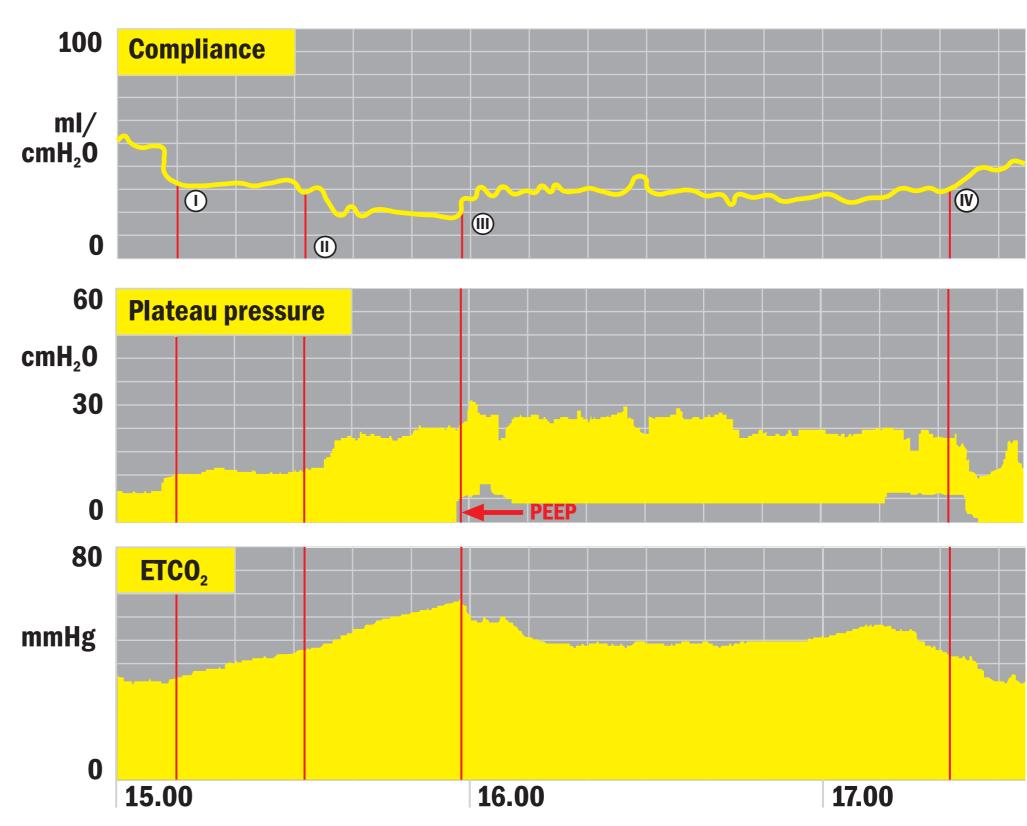
- Compliance decreases further
- Pplat increases further
- ETCO, increases further
- The occurrence of pneumothorax was confirmed through fluoroscopy

III. Treatment with PEEP - improvement

- Compliance improves
- Pplat decreases gradually
- ETCO, decreases

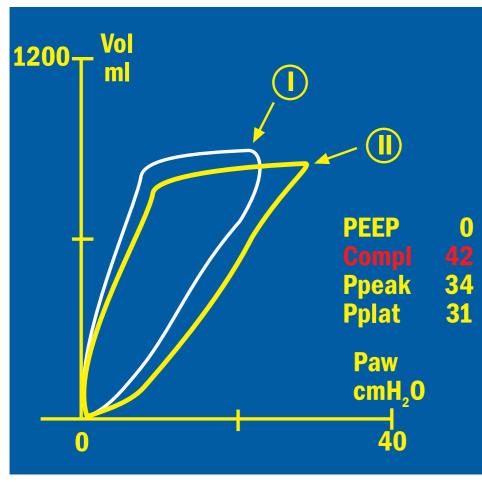
I = After CO₂ insufflation

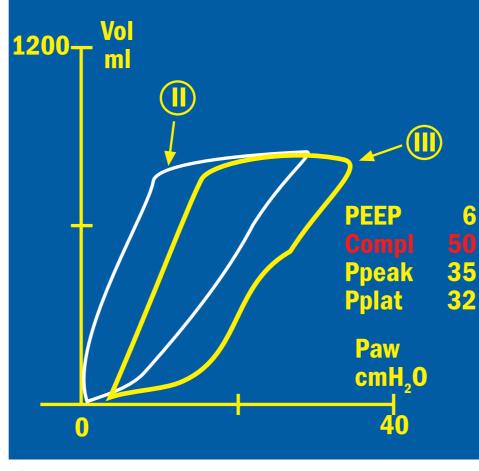
IV. Deflation of the abdomen



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





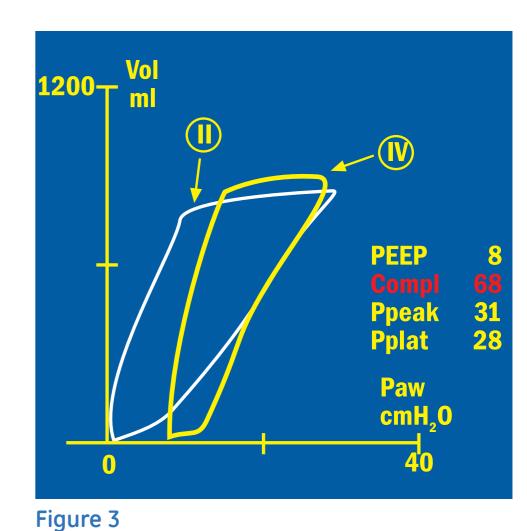


Figure 1 Figure 2

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).



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DOC1027688 9/11