

4. THORACIC INJURY

G. Air Travel after Traumatic Pneumothorax

OBJECTIVE: To define a standardized approach for permission to fly in patients with traumatic pneumothorax (PTX).

GUIDELINE:

The issues regarding air travel after traumatic PTX include the effect of changes in the barometric pressure associated with commercial flights traveling at altitudes ranging from 32,000 to 45,000 ft. on the expansion of even a very minimal residual PTX and on the occurrence of recurrent PTX from reopening of sealed lung leaks. Boyle's law states that the volume of a gas is inversely proportional to the pressure to which it is exposed. Thus, as barometric pressure falls in the aircraft cabin during the ascent, trapped air in any non-communicating body cavity (e.g., non-communicating PTX, lung bleb, lung bulla, and lung cyst) will expand. It is estimated that the volume of air in a non-communicating body cavity, such as a PTX, will increase by approximately 38 percent upon ascent from sea level to the maximum "cabin altitude" of 8,000 feet (2438 mt). Furthermore, should a PTX recur in flight, in the absence of trained personnel, and with the typical arterial oxygen saturation of the cabin pressurized typically at 8,000 ft. of 55 to 68 mmHg, the patient would be at risk of death unless the aircraft descended immediately to an altitude < 12,500 ft. For this reason, patients with traumatic PTX scheduled to fly must be instructed on the most recently accepted guidelines: Air Transport Committee Guidelines¹ and Level II evidence by Cheatham and Safcsak².

A patient is deemed safe for air travel 2 weeks after resolution of the PTX with confirmation of the resolution by a CXR immediately before air travel. One must individualize this guideline to individual patients taking into consideration the age of the patient, pre-existing pulmonary conditions, as well as cardiac co-morbidities.

References

1. Air Transport Medicine Committee, Aerospace Medical Association. Medical Guidelines for Air Travel. Av Space Environ Med Practice
2. Cheatham ML, Safcsak K. Air Travel Following Traumatic Pneumothorax: When Is It Safe? Am Surg 1999; 65:1160-1164.

Approved Date: 04/30/2013

Last Revised Date: 12/20/2023

To be Reviewed: 12/2026