

**Pneumothorax Following Superior Plating of Clavicle Fractures:  
Are the Concerns Warranted?**

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**Purpose:** The primary aim of this study was to determine the anatomic relationship between the clavicle and the apical lung segment. The secondary aim was to determine the incidence of pneumothorax (PTX) in patients who underwent clavicle open reduction and internal fixation diagnosed with postoperative chest radiographs in order to determine the usefulness of postoperative chest radiographs.

**Methods:** A consecutive series of 631 patients with a midshaft clavicle fracture who underwent superior plating at a single institution were identified. Of these patients, 42 patients had a CT scan of the chest. To evaluate the anatomic relationship between the clavicle and the lung, measurements were made using the sagittal cut of the CT scans. Three points on the uninjured clavicle were defined: 2.0 cm from the medial end of the clavicle, the midpoint of the clavicle, and 2.0 cm from the lateral end of the clavicle. At each point, the thickness of the clavicle and the distance from both the inferior cortex and the superior cortex of the clavicle to the apical lung segment were measured. All 631 patients in the cohort had a postoperative chest radiograph to evaluate implant placement, restoration of clavicular length, and presence of PTX.

**Results:** From the lateral end of the clavicle, the mean distance of the lung was  $61.2 \pm 14.7$  mm (39.3 to 95.8 mm) from the inferior cortex of the clavicle and  $73.1 \pm 14.9$  mm (54.0 to 107.0 mm) from the superior cortex of the clavicle. At the midpoint of the clavicle, the mean distance of the lung was  $32.3 \pm 7.2$  mm (19.5 to 45.3 mm) from the inferior cortex of the clavicle and  $45.2 \pm 8.0$  mm (32.6 to 60.8 mm) from the superior cortex of the clavicle. At the medial end of the clavicle, the mean distance of the lung was  $18.1 \pm 5.5$  mm (7.9 to 29.0 mm) from the inferior cortex of the clavicle and  $40.0 \pm 5.8$  mm (30.2 to 54.6 mm) from the superior cortex of the clavicle. Review of postoperative radiographs for all 631 patients revealed none (0%) with a postoperative iatrogenic PTX.

**Conclusion:** There was no incidence of iatrogenic PTX during the use of superior plating in our cohort. Postoperative chest radiographs following clavicle fracture repair to rule out PTX are unnecessary.