

Thoracoplasty and tuberculosis

Samuel Copeland MD

CASE

This patient presented to the emergency center with two days of fever, dyspnea, and productive cough. His chest radiographs and computed tomography scans showed significant abnormalities in the right thorax (Figures 1 and 2). He recalled having some type of surgery in Mexico as a child for tuberculosis. Since this surgery, he has lived a productive life and denied chronic respiratory limitations. He denied recurrent tuberculosis. The patient was admitted to the hospital; he decompensated and required intubation with mechanical ventilation. Bronchoscopy was performed to evaluate his right lung. The RUL

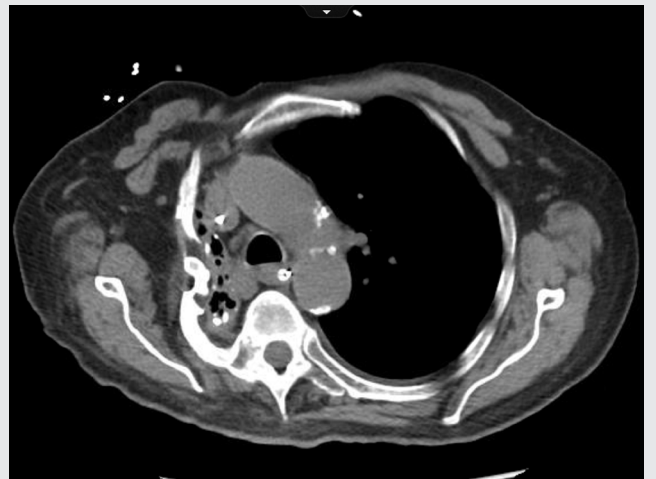
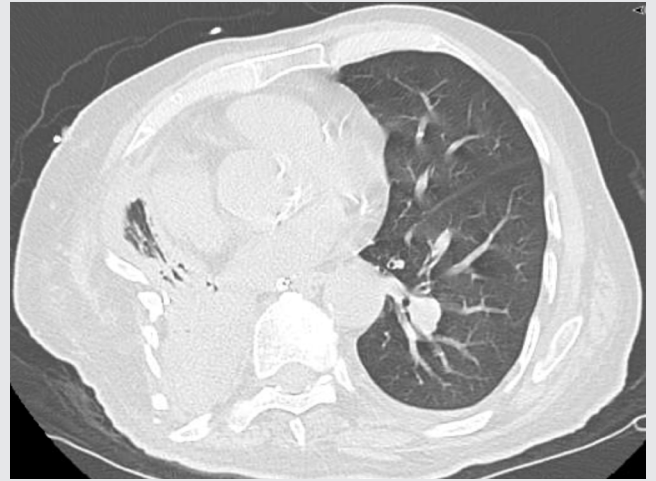


Figure 1. Posterior-anterior chest radiograph shows severe deformity of the right chest wall with what appears to be destruction or removal of multiple superior rib segments with subsequent collapse of the chest wall and distortion of the lung parenchyma.

Figure 2. Representative CT images in both mediastinal and lung windows show flattening, thinning, and inward bending of right ribs from prior thoracoplasty resulting in deformity of the right rib cage. There is also consolidation, volume loss, and calcification of the right lung.

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orifice was noted, but the bronchoscope was unable to be passed into it. The RML bronchus was open but severely constricted. The bronchoscope was unable to be passed into this bronchus as well. The RLL

anatomy was distorted and almost unrecognizable. A BAL specimen was taken from the RLL. His bacterial cultures were negative; the PCR for Influenza A/H3 was positive. The patient was started on oseltamivir, improved over the next three days, and was successfully extubated.

DISCUSSION

The realization that pneumothorax improved the clinical outcomes in patients with tuberculosis dates back to a report in 1696.¹ Collapse therapy slowly evolved into the “classic” staged posterolateral thoracoplasty, a procedure that is largely attributed to John Alexander, who wrote the definitive text titled “The Collapse Therapy of Pulmonary Tuberculosis” in 1937.² The technique generally involves resection of the 2nd–6th ribs, though this leads to late orthopedic and cosmetic changes, followed by closure in anatomic layers. Insertion of various materials between the ribs and collapsed chest wall to act as a plombe has been abandoned as it resulted in a high rate of complications.³ Thoracoplasty was commonly performed before the advent of medical chemotherapy in the treatment of pulmonary tuberculosis. The therapeutic goal is to reduce regions with high V/Q ratios in the upper lung and inhibit the growth of the aerobic tuberculous bacillus. The major complications were noted to be “discomfort for at least a fortnight, retained sputum resulting in toxemia, increased tissue destruction, fresh dissemination, and specific bronchial pneumonia.”⁴ Despite these limitations, surgery was very effective, and 83.5% of 2000 patients returned to work in a United Kingdom study.² Surgery remained commonplace until the late 1950s when

effective anti-tuberculosis chemotherapy became available.¹

Despite the clinical success rates with modern anti-tuberculosis regimens, surgery still has a role in some patients. Surgery is largely an adjuvant to medical chemotherapy; some surgical considerations include positive sputum cultures despite four to six months of supervised therapy, two or more relapses, and multi-drug resistant organisms.¹ Thoracoplasty is still a useful procedure when the lung is unlikely to expand because of extensive disease or multiple bronchopleural fistulas.¹

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REFERENCES

1. Dewan RK, Moodley L. Resurgence of therapeutically destitute tuberculosis: amalgamation of old and newer techniques. *J Thorac Dis* 2014; 6, 196-201.
2. Strieder JW, Laforet EG, Lynch JP. The surgery of pulmonary tuberculosis. *N Engl J Med* 1967; 276, 960-965.
3. Sugarbaker DJ. Adult chest surgery. New York: McGraw-Hill Companies, 2009.
4. Maurer G. The combined thoracoplasty. *Dis Chest* 1948; 14, 415-424.