Supraglottic Stenosis Caused By Tuberculosis: A Case Report

Marc Rubinstein, MD; Jonathan W. Boyd, MD; Edward C. Wu, BA, BS; Esther L. Fine MD; Brian J.F. Wong, MD, PhD; Roger L. Crumley, MD, MBA
Department of Otolaryngology - Head and Neck Surgery, University of California, Irvine

OBJECTIVES:
The purpose of this study is to present a case of recurrent supraglottic stenosis caused by laryngeal tuberculosis, which was treated with resultant complications, requiring serial laryngeal stent placements and laryngoplasties.

METHODS:
This report represents a retrospective case of supraglottic tuberculosis causing subsequent laryngeal stenosis. The study was conducted at a university-affiliated medical center.

An 18 year old female with a known history of tuberculosis, presented with hearing loss, hoarseness and stridor, with airway obstruction. Awake tracheostomy was performed followed by surgical endoscopy, which identified severe scarring and supraglottic stenosis (Figure 1). Supraglottoplasty using CO₂ laser (Figure 2) was subsequently performed to remove obstructive tissue. The patient symptoms returned, however, after five months, including hoarseness and exertional dyspnea. The patient therefore underwent repeat direct laryngoscopy and repeat CO₂ laser excision and serial dilation, as well as laryngeal stent placement (Figure 3). Six weeks later the laryngeal stent was removed and mitomycin-c was placed topically applied to denuded regions in the supraglottis. Six months later, significant restenosis occurred (Figure 4). The patient required two subsequent revision laryngoplasty procedures with therapeutic vocal fold injections and application of topical mitomycin-c along with stent replacement. The patient was followed serially.

RESULTS:
After several months, the stent was removed and the patient was successfully decannulated. One year after removal, the patient was able to phonate and was examined in the clinic with a fiberoptic flexible laryngoscope. This examination demonstrated an adequate airway with mobile vocal folds and an appreciably patent glottic aperture. Minimal non-obstructive webbing of the supraglottic region was seen as well (Figure 5).

DISCUSSION:
Tuberculosis in the larynx is seldom reported. It has been found to be more common in males (> 2:1) and middle-aged adults and can present with a negative chest x-ray, though it most commonly manifests as hoarseness. It is believe to be a result of either hematogenous or lymphatic spread of the bacterium, as well as via airborne contact. Oftentimes, tracheostomy is necessary to relieve severe laryngeal stenosis, which causes airway obstruction and stridor.

Endoscopic carbon dioxide laser irradiation of scar tissue and insertion of a laryngeal stent are well-established treatment modalities for supraglottic stenosis. When the latter is used with local application of mitomycin-C, success rates can reach 75%, and on average, increase the symptom-free interval by more than a factor of four.

CONCLUSION:
Although tuberculosis in the larynx is considered to be a relatively rare condition, recent evidence suggests that its incidence is increasing due to its novel clinical manifestations. This case demonstrates the pitfalls of utilizing a single aggressive surgical modality for laryngeal tuberculosis and the potential for multiple invasive interventions that may be required to treat this form of laryngeal stenosis. Serial evaluation and close follow up are essential in the management of this condition, due to its recurrent nature and the tenuous anatomy its affects.

REFERENCES:
8. Perespetty J and Shapshay SM. Endoscopic treatment of laryngeal and tracheal stenosis has mitomycin-C improved the outcome?