First report of endoscopic Spray Cryotherapy (SCT) use in the treatment of severe vocal fold leukoplakia

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Background

Vocal fold leukoplakia is a common syndrome that results in deficits in phonation and breathing that negatively impacts an individual's quality of life and has the potential for malignant transformation if left untreated. Current treatments are often not effective and painful. Spray Cryotherapy (SCT) uses a medical device that delivers liquid nitrogen to the surface tissue through a flexible 7 Fr catheter (trūFreeze®, STERIS, U.S.A.). While this device has been used to treat benign and malignant disease in the airways and subglottis since 2012 (Browning et. al. J Thorac Dis 2013), use for vocal fold disease has been very limited. Recent research suggests that cryotherapy has antifibrotic and regenerative effects on human vocal fold fibroblasts (Gong et. al. Laryngoscope. 2018).

Case Report

72 y/o male with history of sinonasal Wegener's granulomatosis (GPA) on chronic immunosuppression and progressive vocal fold hyperkeratosis and leukoplakia since 2006 requiring repeat laser ablation (KTP and CO2). Patient experienced prolonged post procedural pain with minimal improvement in symptoms. Using suspension laryngoscopy and delivered through a bronchoscope with a 2.8 mm working channel, SCT was used to treat the areas of widespread hyperkeratosis on the patient's bilateral vocal folds with 3 cycles of 10 seconds freeze per cycle. To better target the smaller areas of the vocal folds, the low flow (versus normal flow) setting was primarily used to achieve a smaller spray diameter on the target tissue resulting in good coverage of the target tissue. The patient reported improved phonation and no post procedural pain as compared with prior ablations. Repeat laryngoscopy at 3 months showed reduced hyperkeratosis, subjectively improved symptoms, and significant improvement in mucosal wave bilaterally on videostroboscopy.

Discussion

This case report illustrates potential benefits of Spray Cryotherapy on this benign vocal fold disease that includes decreased post operative pain and possibly improved healing profile versus standard thermal therapies.

References

Browning R, Parrish S, Sarkar S, Turner JF Jr. First report of a novel liquid nitrogen adjustable flow spray cryotherapy (SCT) device in the bronchoscopic treatment of disease of the central tracheo-bronchial airways. J Thorac Dis. 2013 Jun;5(3):E103-6. doi: 10.3978/j.issn.2072-1439.2013.05.26. PMID: 23825781; PMCID: PMC3698256.

Gong, T., Zhang, C., Kang, J., Lamb, J. J., & Jiang, J. J. (2018). Cryotherapy has antifibrotic and regenerative effects on human vocal fold fibroblasts. *The Laryngoscope*, *129*(4). https://doi.org/10.1002/lary.27499

Disclosure/Disclaimer

The views expressed in this presentation are those of the author and do not reflect the official policy/opinion of the Defense Health Agency, Department of Defense, or U.S. Government.

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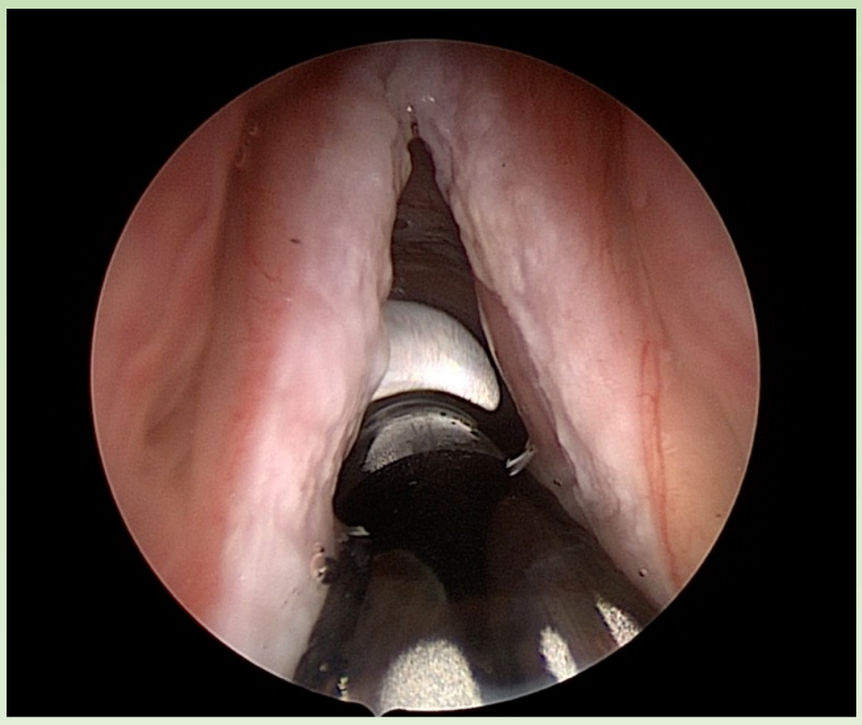

Figure 1: Focal fold leukoplakia prior to Spray Cryotherapy.

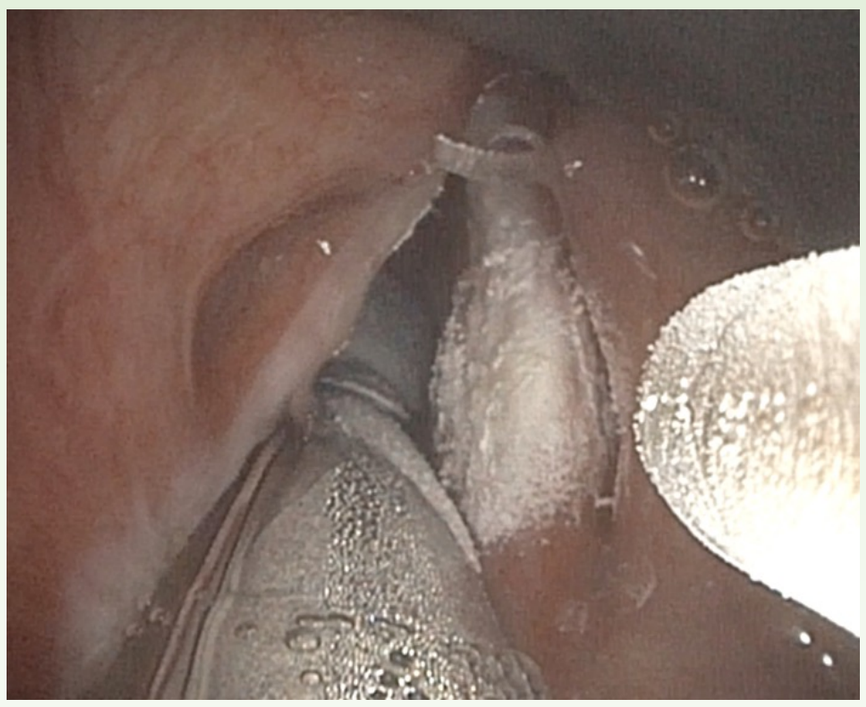

Figure 2: Spray Cryotherapy to the vocal fold leukoplakia.

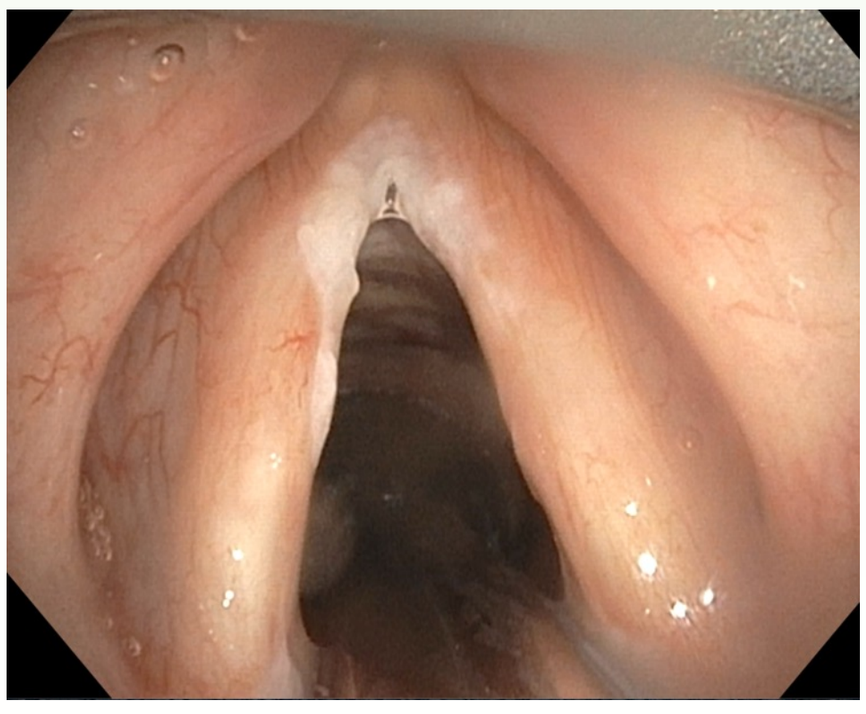

Figure 3: Post Spray Cryotherapy to the vocal fold leukoplakia follow up imaging.