INTRODUCTION

• Vocal fold scar causes dysphonia due to fibrotic changes of the vocal fold mucosa, that disrupt the mucosal wave and interfere with glottic closure [1,2]
• Current treatments have shown modest results, with no generally accepted, universal standard treatment of vocal fold scar
• 5-FU is a well-known anti-metabolite used in systemic chemotherapy
• 5-FU is a pyrimidine analog that inhibits thymidylate synthase, causing the inhibition of fibroblasts by inducing apoptosis and inhibiting type I collagen production
• Intralesional injection of 5-FU in combination with steroids has been successful in treating hypertrophic scars and keloids on the body [3]. Its use in the larynx has not been reported.
• We present a case series of novel submucosal laryngeal injection of 5-FU in combination with triamcinolone for vocal fold scar
• Patients were injected with a mixture of 4.5 mL of 40 mg/mL of 5-FU and 0.5 mL of 50 mg/mL of triamcinolone submucosally into the vocal fold scar

CASE #1

• 34 F music therapist with hoarseness and loss of range for two years
• Outside ORL diagnosed “fibrosed tissue” of vocal folds; underwent 6 months of voice therapy with no improvement
• VHI (10/31/15): 27
• 12/7/15: MDL, VF injection of 5-FU/triamcinolone
• Reported substantial voice improvement, with improved vocal fold pliability and decreased stiffness on videostroboscopy
• Two further 5-FU/triamcinolone injections in 2/2016 and 5/2016
• VHI (5/25/17): 17
• Type 1 thyroplasty in 8/2017 to address glottic insufficiency and vibratory function was optimized

CASE #2

• 59 F voice teacher and performer with hoarseness and vocal fatigue with prolonged use of her voice
• Previously underwent excision of VF masses in 2001 and CO2 laser excision of VF mass in 2014
• VHI (10/26/15): 21
• 6/20/16, 7/6/17: MDL, 5-FU/triamcinolone injections
• VHI (4/11/17): 16
• Reported more clarity to her voice with improvements in her upper range post-op w/ less effort to sing
• Mucosal wave improved on stroboscopy
• VHI (6/6/2018): 5

CASE #3

• 17 F high school theater performer with hoarseness
• VHI (3/7/17): 18
• 4/10/17: MDL, excision of bilateral VF masses with mini micro flap, dexamethasone injection
• 10/19/17, 1/22/18: MDL, bilateral 5-FU/triamcinolone injection
• Also underwent KTP vaporization of left VF varicosities in 1/2018 at the time of injection
• VHI (3/15/18): 14
• After 5-FU, had increased pliability of her vocal folds and reported being satisfied with her voice post-op

DISCUSSION

• Retrospective review: patients with 5-FU/steroid injection had a 92% average reduction in lesion size (keloid) compared with 73% in the group treated with steroids alone [4]
• 5-FU thought to have a lower side effect profile without the hypopigmentation and telangiectasias seen with steroid use [5]
• Our cases apply these concepts to the treatment of scar in the airway
• In the current literature, 5-FU has only been studied in the airway for its use in laryngotracheal stenosis in rabbits and rats [6,7]
• In our study, in patients with vocal fold scar, post-operatively, patients experienced: Improved voice quality and satisfaction with voice Increased pliability and decreased stiffness on rigid videostroboscopy Improved VHI scores
• Our experience with 14 additional patients yielded similar results
• No randomized trial with 5-FU/triamcinolone versus steroid alone versus no treatment has been performed, yet.

CONCLUSION

• Submucosal laryngeal injection of 5-FU/triamcinolone can be used to treat vocal fold scar
• Patients showed improved voice quality, increased satisfaction with voice, increased pliability and decreased stiffness on rigid videostroboscopy, as well as decreased VHI scores post-operatively
• Our case series suggests a need for a prospective, controlled study to assess the safety and efficacy of 5-FU for the treatment of vocal fold scar.

REFERENCES