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Effect of Injection Laryngoplasty on laryngeal dysfunction patients with ongoing cancer treatment

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Background/Objective

Vocal fold paralysis may occur during cancer diagnosis and treatment. It can be caused by nerve compression of cancers, or direct nerve injuries during tumor resections. Insufficient glottal closure may lead to swallowing dysfunction such as aspiration. The aim of this study is to investigate the effect of injection laryngoplasty for dysphagia in laryngeal dysfunction patients with ongoing cancer treatment.

Methods

A prospective study was conducted on the patients who 1) had been referred to the Department of Rehabilitation Medicine and Otorhinolaryngology of OOO Hospital for laryngeal dysfunction during cancer diagnosis and treatment, 2) had a unilateral vocal fold paralysis confirmed by laryngoscopy, and 3) aged 18 years old or older. Patients with cancer invasion into vocal folds were excluded. Videofluoroscopic Swallowing Study (VFSS) was conducted and analyzed by using the Clinical Dysphagia Scale (CDS), Video-fluoroscopic Dysphagia Scale (VDS) and Penetration Aspiration Scale (PAS). The patients underwent injection laryngoplasty using Radiesse™ (calcium hydroxyapatite). Three weeks after the injection, the patients were evaluated with a postoperative VFSS. Wilcoxon signed rank test was used to compare the variables between before and after injection laryngoplasty.

Results

A total of 15 patients were enrolled in this study. Table 1 shows the baseline characteristics of the participants. Lung cancer was the most common primary lesions and left vocal fold paralysis was more common than right paralysis. Table 2 shows the comparison of swallowing dysfunction before and after injection laryngoplasty. There was no statistical difference between before and after the injection.

Conclusion

Injection laryngoplasty may not be as effective as thought for improving swallowing dysfunction in these patients. However, in this study, swallowing dysfunction of the participants was mild before injection laryngoplasty. There is a possibility that this limitation masked the effect of injection laryngoplasty on dysphagia. Therefore, further studies which include patients with more severe swallowing dysfunction are needed to verify the effect of injection laryngoplasty.

Table 1. Clinical characteristics of the participants (n=15)

Characteristics	Value
Age (in years)	67.0 ± 9.63
Sex	
Male	10 (66.7%)
Female	5 (33.3%)
Primary lesion	
Lung cancer	10 (66.7%)
Breast cancer	2 (13.3%)
Colon cancer	1 (6.7%)
Bladder cancer	1 (6.7%)
DLBCL	1 (6.7%)
Vocal fold paralysis location	
Left	11 (73.3%)
Right	4 (26.7%)
CDS	12.1 ± 11.0
VDS	16.9 ± 17.2
PAS	3.2 ± 3.14
ASHA-NOMS	6.5 ± 0.83

Variables are presented as a number (%) or a mean ± standard deviation.

DLBCL, Diffuse Large B-Cell Lymphoma; VDS, Videofluoroscopic Dysphagia Scale; CDS, Clinical Dysphagia Scale; PAS, Penetration Aspiration Scale; FOIS, Functional Oral Intake Scale; ASHA-NOMS, American Speech-Language-Hearing Association National Outcome Measurement System Swallowing Scale.

Table 2. Comparison of swallowing dysfunction before and after injection laryngoplasty

	Before Injection (n=15)	After Injection (n=15)	p-value
CDS	12.1 ± 11.0	10.9 ± 15.6	0.504
VDS	16.9 ± 17.2	16.4 ± 16.2	0.807
PAS	3.2 ± 3.14	3.1 ± 2.75	0.887
ASHA-NOMS	6.5 ± 0.83	6.3 ± 0.62	0.317

Variables are presented as mean ± standard deviation.

VDS, Videofluoroscopic Dysphagia Scale; CDS, Clinical Dysphagia Scale; PAS, Penetration Aspiration Scale; FOIS, Functional Oral Intake Scale; ASHA-NOMS, American Speech-Language-Hearing Association National Outcome Measurement System Swallowing Scale.