

Vocal Fold Medialization in Dysphagia: Systematic Review

Marian W. Ghraib, MD¹, Alden F. Smith, BMus², Lyubov Tmanova, MS³, Nausheen Jamal, MD^{1,3}, Michael Orestes, MD⁴
 Department of Otolaryngology-Head & Neck Surgery, Lewis Katz School of Medicine at Temple University, Philadelphia, PA, U.S.A.¹ Lewis Katz School of Medicine at Temple University, Philadelphia, PA, U.S.A.² Department of Surgical Oncology, Fox Chase Cancer Center, Philadelphia, PA, U.S.A.³ Walter Reed National Military Medical Center, Bethesda, MD, U.S.A.⁴

Abstract

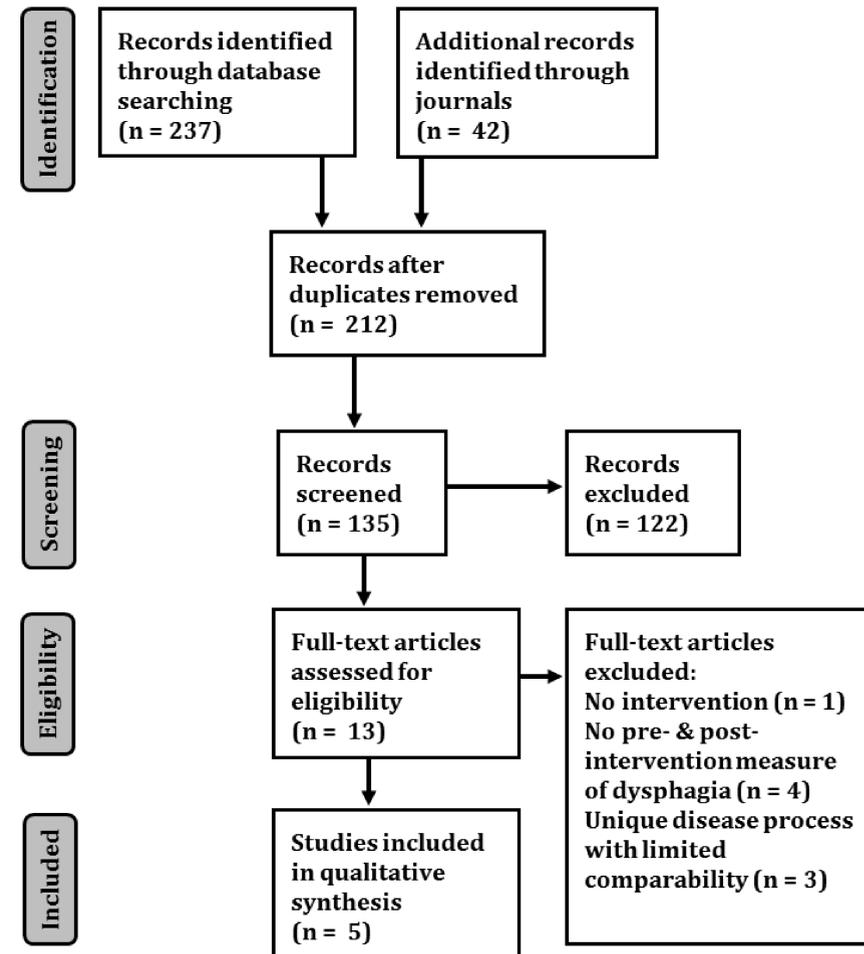
Objective: To systematically review the literature over a ten-year period on the efficacy of vocal fold medialization for the treatment of dysphagia in patients with glottic insufficiency due to vocal fold paralysis.

Methods: Electronic searches were conducted in OVID MEDLINE, EMBASE, and The Cochrane Library by using terms relating to vocal fold paralysis, medialization procedures, and dysphagia outcomes from 2007-2016. This was supplemented by hand searching relevant articles. Eligible articles were independently assessed for quality by four different authors from two different institutions.

Results: The database search revealed 135 non-duplicate articles. Five articles meeting eligibility criteria were included in this study. These articles evaluated the efficacy of vocal fold medialization for treatment of dysphagia in 183 patients with vocal-fold paralysis. Medialization in these patients was achieved by type I thyroplasty (58.5%), vocal fold injection augmentation (21.3%), or modified arytenoid adduction (20.2%). Outcome measures varied widely among studies, thereby limiting the comparability of data; however, all studies reported improvement in swallow function after medialization. Specifically, cumulative data demonstrate 16.2% improvement to normal quality of life after medialization. Furthermore, there was an 88.5% improvement in aspiration after medialization in patients overall.

Conclusions: There is evidence to suggest that vocal fold medialization may be an effective treatment for dysphagia in patients with vocal fold paralysis. Study design, interventional techniques, and outcome measures vary in the reported literature. The use of consistent, validated subjective and objective outcome measures would allow for more direct comparison of results.

Methods



First Author	Type of study (Level of Evidence)	Mean Quality Score	Medialization Intervention	Outcome measure	Length of follow-up
Cates	RCS (IV)	15	VFI (CaHA) 73%; Thyroplasty (Goretex) 27%	EAT-10	119 ± 65 days
Lam	RCS (IV)	14.5	Thyroplasty (silastic – 93%, Goretex – 7%)	Subjective evaluation of speech, choking during meals/aspiration	2 months (or death)
Shi	PCS (IV)	22.5	Modified AA	Subjective aspiration rating	3 months
Tateya	RCS (IV)	12.5	Thyroplasty (Goretex)	Subjective swallowing function score (Fujishima)	7 months
Willis	PCS (IV)	8.5	VFI (microionized dermis)	MBS or FEES scored by PENASP; EAT-10	3 months

Table 1. Study design & outcome measures used to evaluate dysphagia / swallowing function before & after vocal fold medialization.

First Author	Number of subjects	Age \bar{x} (range)	Gender M/F	Side of VFP (L/R)	Cancer-related paralysis - n (% of study)
Cates	44	NR	NR	NR	4 (9%)
Lam	87	62.6 (22-87)	69/18	65/22	63 (72%)
Shi	37	44.5 (15-78)	23/19	NR	37 (100%)
Tateya	8	68.5 (58-84)	5/3	7/1	5 (63%)
Willis	7	71 (64-85)	NR	NR	NR
Totals of reported data	183	61.7 (15–87)	97/40	72/23	109 (62%)

Table 2. Demographics

Results

First Author	Improvement in EAT-10 score % (n)
Cates (n=30)	20% (n=6)
Willis (n=7)	0% (n=0)
Total (n=37)	16.2% (n=6)

Table 3. Combined outcomes data from studies reporting change in EAT-10 scores after vocal fold medialization.

First Author	Improvement in aspiration symptoms % (n)
Lam (n=51)	88.2% (n=45)
Shi (n=37)	94.6% (n=35)
Tateya (n=8)	62.5% (n=5)
Total (n=96)	88.5% (n=85)

Table 4. Combined outcomes data from studies reporting change in aspiration symptoms after vocal fold medialization

Introduction

- Dysphagia affects ~4.0% of adults, and is common in patients with vocal fold (VF) paralysis.
- VF medialization has been shown to improve voice and breathing related quality-of-life (QOL) measures.
- However, there is little data related to dysphagia QOL measures after VF medialization.
- This is a systematic review of the effect of VF medialization on dysphagia secondary to VF paralysis.

Discussion

- VF medialization may be an effective in treating dysphagia in patients with VF paralysis.
- Limitations
 - Differences in patient population, medialization techniques, and outcome measures limit our ability to compare data.
 - Variation in medialization techniques & swallow outcome measures among studies.
- Despite variations, each study did show improvement in swallowing.

Conclusions

- Vocal fold medialization may be an effective treatment for dysphagia in VF paralysis.
- Both unvalidated subjective measures and validated objective (PENASP) and subjective (EAT-10) measures show improvement in patient swallowing outcomes after VF medialization.
- No evidence that one medialization technique is superior for treatment of dysphagia, however, there are no direct comparison studies.
- Comparison studies with validated outcome measures are necessary.