USC Caruso Department of Otolaryngology Head and Neck Surgery

Bilateral Vocal Fold Motion Impairment Associated with DISH

Diego E. Razura, B.S., Elizabeth A. Shuman, M.D, Michael M. Johns III, M.D., Karla O'Dell, M.D
Caruso Department of Otolaryngology – Head and Neck Surgery, Keck School of Medicine of USC, Los Angeles, CA, USA

Introduction

Diffuse Idiopathic Skeletal Hyperostosis (DISH)

- Common condition in males > 65 years of age[1]
- Characterized by the calcification of the anterolateral vertebral ligaments[1]
- Rarely causes dysphonia due to laryngeal involvement

Bilateral Vocal Fold Motion Impairment (BVFMI)

- Can lead to airway obstruction and necessitation of an emergent tracheotomy
- Mechanism secondary to DISH thought to be due to muscle compression or recurrent laryngeal nerve impingement. Exact etiology is unknown.[2]

Significance

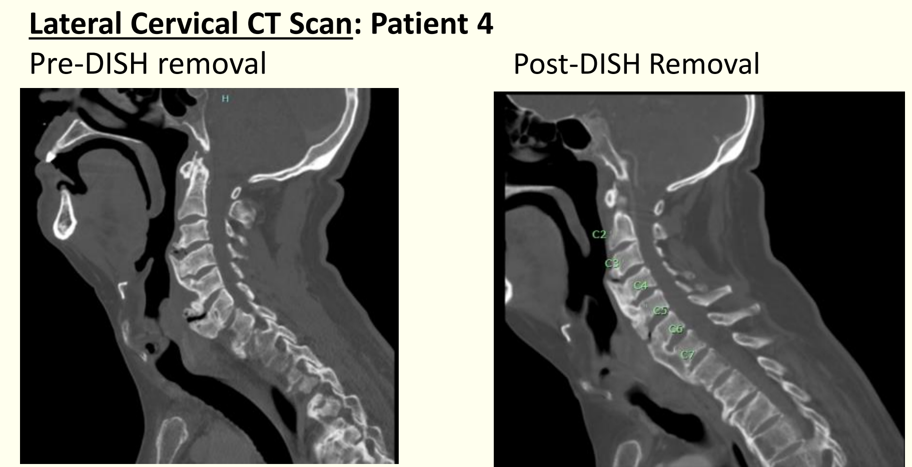
- Expected increase in DISH incidence due to relation with metabolic disorders and their rising prevalence in the USA[3]
- Limited reports on this presentation to provide insight

Purpose

Describe the clinical course, interventions, and outcomes achieved for each patient with bilateral vocal fold motion impairment secondary to diffuse idiopathic skeletal hyperostosis

Lateral Cervical CT Scan: Patient 4

Pre-DISH removal — Post-DISH Removal

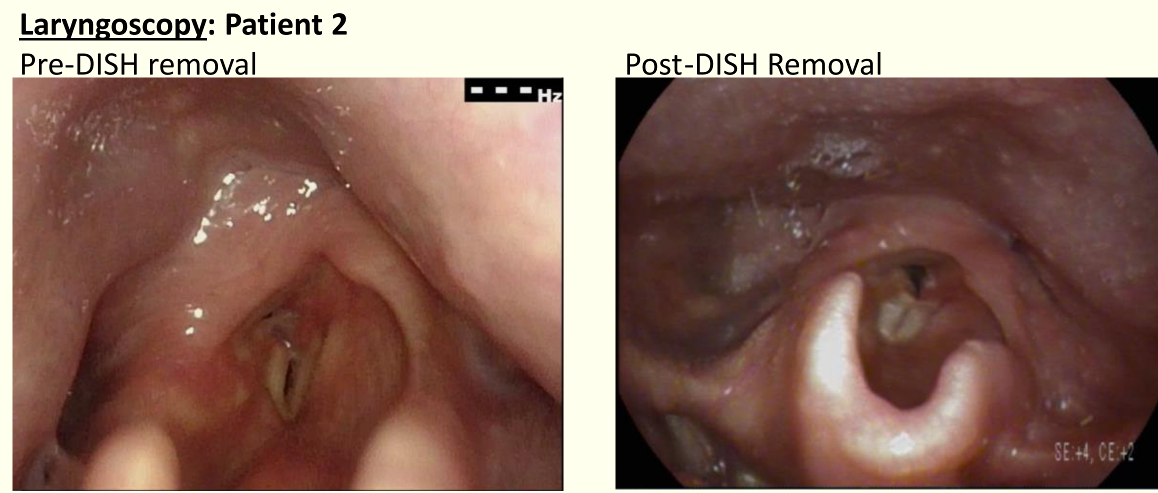


Methods

- Four patients were managed for symptomatic DISH associated BVFMI over the course of a year.
- Data analyzed included clinic notes, diagnostic studies, operative reports, flexible nasolaryngoscopy, and postoperative outcomes data
- Interventions ranged from conservative voice therapy to surgical treatment

Laryngoscopy: Patient 2

Pre-DISH removal — Post-DISH Removal



Clinical History of Patients with BVFMI and DISH

Patient no.	Age/Sex	Medical History	Symptoms (Initial Presentation)	VF Motion (Initial Presentation)	Osteophyte Location	Treatment	Outcome (Last Visit)
1	75/M	OSA	Oropharyngeal Dysphagia (solids & liquids), Dysphonia	RVF: immobile LVF: mobile w/ edema Bilateral: aperiodic vibratory pattern, paresis	C2-C6	Conservative	No breathing problems or eating problems, functional voice
2	82/M	HTN, Bladder Cancer	Dysphonia, Stridor, Dyspnea	RVF: restricted motion LVF: hypomobile	C4-C7	Surgery	No breathing problems or eating problems, improved voice with restricted RVF abduction
3	61/M	Colorectal Cancer, CVA, DM, Prostate Enlargement, Mechanical Ventilation, HTN, CKDIII	Dysphagia, Dyspnea, Cough	RVF: immobile LVF: immobile Bilateral: complete glottal closure	C4-C6	Conservative	No breathing problems or eating problems
4	56/M	Ankylosing Spondylitis, HTN, DM, HLD	Dysphagia (liquids > solids), Odynophagia, Dysphonia, Weight Loss	RVF: hypomobile LVF: immobile Bilateral: sufficient glottal closure	C4-T1	Surgery	Mild dysphagia and dysphonia, improved glottal opening

Discussion

BVFMI is considered a challenging problem laryngologists face. The association between DISH and BVFMI remains poorly understood. Comprehensive patient care requires a multidisciplinary effort among laryngologists, neurosurgeons, and speech language pathologists. The heterogenous presentation of DISH needs individual evaluation before considering surgical osteophyte removal.

Modified Barium Swallow: Patient 4

Conclusions

- BVFMI is rare manifestation of cervical spine DISH, thought due to neurologic and/or mechanical impingement of the larynx
- A multidisciplinary approach is crucial for comprehensive care
- Surgical intervention should be considered case by case for symptomatic relief and improvement in vocal fold mobility
- Further study is warranted to investigate the etiology and treatment outcomes in these cases

References

1. Holton KF, Denard PJ, Yoo JU, et al. Diffuse idiopathic skeletal hyperostosis and its relation to back pain among older men: the MrOS Study. Elsevier; 2011:131-138.

2. Akhtar S, O'flynn P, Kelly A, Valentine P. The management of dysphasia in skeletal hyperostosis. The Journal of Laryngology & Otology. 2000;114(2):154-157.

3. Harlianto NI, Westerink J, Foppen W, et al. Visceral adipose tissue and different measures of adiposity in different severities of diffuse idiopathic skeletal hyperostosis. Journal of Personalized Medicine. 2021;11(7):663.