



Influences of Acinic Cell Carcinoma on Speech and Resonance: A Single Case Study

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Abstract

Acinic cell carcinoma refers to a malignant low-grade tumor of the salivary glands. Hyper nasality and misarticulation are the two major symptoms noted in individuals having a carcinoma of this type. The post evaluation was suggestive of improved speech intelligibility.

Keywords: *Acinic cell carcinoma, resonance, speech, soft palate.*

Introduction

The soft palate is one of the active articulators in the posterior portion of the oral cavity. It consists of muscle fibers enclosed in mucous membrane and plays a vital role in articulation, resonance and phonation along with the other structures in the oral cavity. It is responsible for the production of velar sounds, nasal sounds, oral sounds, and for swallowing because of its tensing and elevating movements. The approximation of the soft palate with the posterior and lateral pharyngeal walls accounts for its contribution in speech and swallowing activities.

Acinic cell carcinoma is named after the Acinar cells that resemble the grape like clusters of the secretory parenchymatous cells of the parotid, pancreas, bronchioles etc. It constitutes

approximately 17% of the primary salivary gland malignancies (Bircan, Kayaselcuk, Yavuz, & Tuncer, 2004). Around 81% to 98% of the malignancies are found to affect the parotid gland, 11% in the submandibular gland and 3% to 12% in the minor salivary glands most commonly in the palate (Vinod, George, Sunil, & James, 2011). According to literature, the best prognosis among all the salivary gland tumors is in acinic cell carcinoma. Removal of an acinic cell carcinoma of the soft palate causes various issues on speech functions. In a case discussed in the study of Deutsch and Millard (1977), speech was severely affected in the patient. Pharyngeal flap was used for nasal lining and for oral cover. Results have shown the improvement in the patient's speech.

Articulation of velar sounds will be primarily affected, weak productions of stop sounds is also observed, nasal air emissions during speech is another notable feature. This is due to poor velopharyngeal closure that may result in weak intra oral breath pressure causing poor speech intelligibility. Though this is a very rare low grade malignancy there is a need to highlight the speech characteristics associated with this condition in detail and to formulate an assessment and treatment protocol for the same. There is an increasing incidence of acinic cell carcinoma of the soft palate hence there is a necessity to highlight its speech characteristics and to formulate an appropriate assessment and intervention plan for the same.

Case Description

A 56year old female reported to the department of speech and hearing with a chief complaint of change in voice and unclear speech since three months. According to the patient, six months prior to our consultation, she had a swelling in the soft palate region and pain. She consulted a physician for the same and was referred to the oncology department. A biopsy of the soft palate was performed. Histo-pathological examination revealed an acinic cell carcinoma. MRI was done and the results revealed that the tumor was adjacent to uvula on the right side of the soft palate in 2.2x1.4x1.3 cm dimensions. The patient was staged as T₂N_xM₀ based on the TNM Classification as given by the American Joint Committee on Cancer. A diagnosis of acinic cell carcinoma of the soft palate was established. The patient was treated by wide surgical excision with clear margin and a buccal mucosa flap was utilized to reconstruct the soft palate.

In the speech and hearing department, a detailed case history was noted. The oral mechanism examination was carried out and Malayalam test of articulation (MAT) was administered. VAGHMI, voice and speech evaluation system was the instrument used to determine the acoustic voice characteristics and nasality parameters.

VRQL was administered to account for the effect of the condition on the patient's quality of life.

Discussion

The results of the single case study revealed Misarticulation (specifically distortions) of velar consonants, stop sounds, and cluster reductions (based on Malayalam Articulation Test). Hyper nasality was notable throughout the speech. The oral mechanism examination that was carried out revealed all the oral structures to be normal in structure and function except for the soft palate. Edema was present in the soft palate and movement was restricted. VAGHMI based results indicated the acoustic parameters of voice were mildly affected and also hyper-nasality in her speech was revealed by means of the nasalance evaluation carried out using the nasometry module of VAGHMI. The fundamental frequency (F0), Jitter, and Shimmer were 238Hz, 0.3, and 3.8 respectively.

Qualitative analysis of voice was done by using Dr. Speech instrument and the results revealed mild hoarseness with a predominantly breathy component which was considered to be due to the existing tissue edema. The patient was advised voice rest for a week along with vocal hygiene strategies to alleviate the existing edema.

The follow up assessment revealed a reduction in the swelling of the flap-reconstructed region. A repeat acoustical examination revealed a clinically normal voice, though the associated hyper nasality and misarticulation still prevailed. To tackle the issues of Misarticulation and hyper nasality, oromotor exercises were recommended to improve the mobility and reduce the tonicity of the reconstructed flap, while open mouth approach was utilized to deal with the distortion based errors in articulation. VRQL administered on the patient revealed moderately affected social component. A total number of four therapy sessions were taken to improve the articulation. The post evaluation was suggestive of improved speech intelligibility, VRQL data stated significant improvement in social component.

Conclusion

Acinic cell carcinomas are becoming relatively common occurrence and its influences on nasality, speech and voice characteristics though temporary in nature are noteworthy as a clinically disordered condition. In the event of the same, a standardized protocol ought to be developed to assess and diagnose such cases. The increasing incidence only adds to the necessity of development of a suitable measure. More studies need to be done in individuals diagnosed with this condition to account for all the possible symptoms that may be existent in these cases.

References

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