

Palatal Myoclonus and Dysphagia: A Literature Review

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Abstract

Swallowing consists of an oral preparatory phase, a pharyngeal phase, and an esophageal phase. Safe and effective swallowing is necessary for adequate nutrition and hydration and contributes to overall health, social participation during mealtimes, and quality of life. During a swallow, the velum, or soft palate, elevates posteriorly; in conjunction with contraction of the lateral and posterior pharyngeal walls, this action closes the passageway between the nasopharynx and the oropharynx. Dysphagia, or difficulty swallowing, may occur due to structural or functional abnormalities. One such variant in oral and pharyngeal functioning is palatal myoclonus (PM), a rare movement disorder that occurs when there is oscillating movement of the soft palate caused by rhythmic contractions of the palatal muscles. Additional pharyngeal and laryngeal muscles are occasionally involved. PM in the symptomatic form may occur due to various etiologies, such as stroke or a lesion within the brainstem. PM may contribute to dysphagia due to a disruption of velopharyngeal elevation, resulting in reduced pharyngeal pressure for bolus transit and nasal regurgitation. A literature review was conducted to investigate the association between dysphagia and PM, as well as to conceptualize the characteristics of dysphagia that may occur with PM. Eighty-two articles were reviewed and twenty-one were included. Of these articles, only 14% (3/21) included >1 participant, indicating very limited sample sizes. Within the included studies, 92% of patients with PM (35/38) had co-occurring dysphagia. The features of dysphagia were different in each individual case, but consistent trends of aspiration and abnormalities with swallowing were noted. These results emphasize a need for awareness of this rare movement disorder as a possible exacerbating condition in patients with dysphagia.

Introduction

- Swallowing consists of a series of oral, pharyngeal, and esophageal steps to safely transport and prepare food for digestion.
- Elevation of the soft palate, or velum, generates pressures for bolus transit and seals off the nasal cavity during swallowing. The pharynx contracts to move the bolus towards the esophagus and the larynx moves up and forward to close the airway and open the entry to the esophagus during swallowing.
- Dysphagia can occur due to any problem which disturbs the structure or function of the anatomy involved in swallowing. Common causes of dysphagia include head and neck cancers, stroke, or cerebral palsy.
- Palatal myoclonus is a rare movement disorder in which the muscles of the palate, and occasionally the pharynx and larynx, spasm rapidly and repeatedly in an oscillating pattern.
- Palatal myoclonus has a potential to cause dysphagia due to its impact on the ability to successfully elevate the velum and its effect on bolus transit and prevention of nasal regurgitation during swallowing.

Research Questions

- What is palatal myoclonus, and how does it have the potential to affect the swallowing mechanism?
- How is swallowing function assessed in the presence of palatal myoclonus?
- In people with palatal myoclonus-associated dysphagia, what are the specific features of dysphagia (e.g., severity, physiology)?
- In the symptomatic form of palatal myoclonus, what etiologies most often cause palatal myoclonus and dysphagia?
- What treatment mechanisms are effective for palatal myoclonus, and how can they affect the risk and severity of dysphagia?

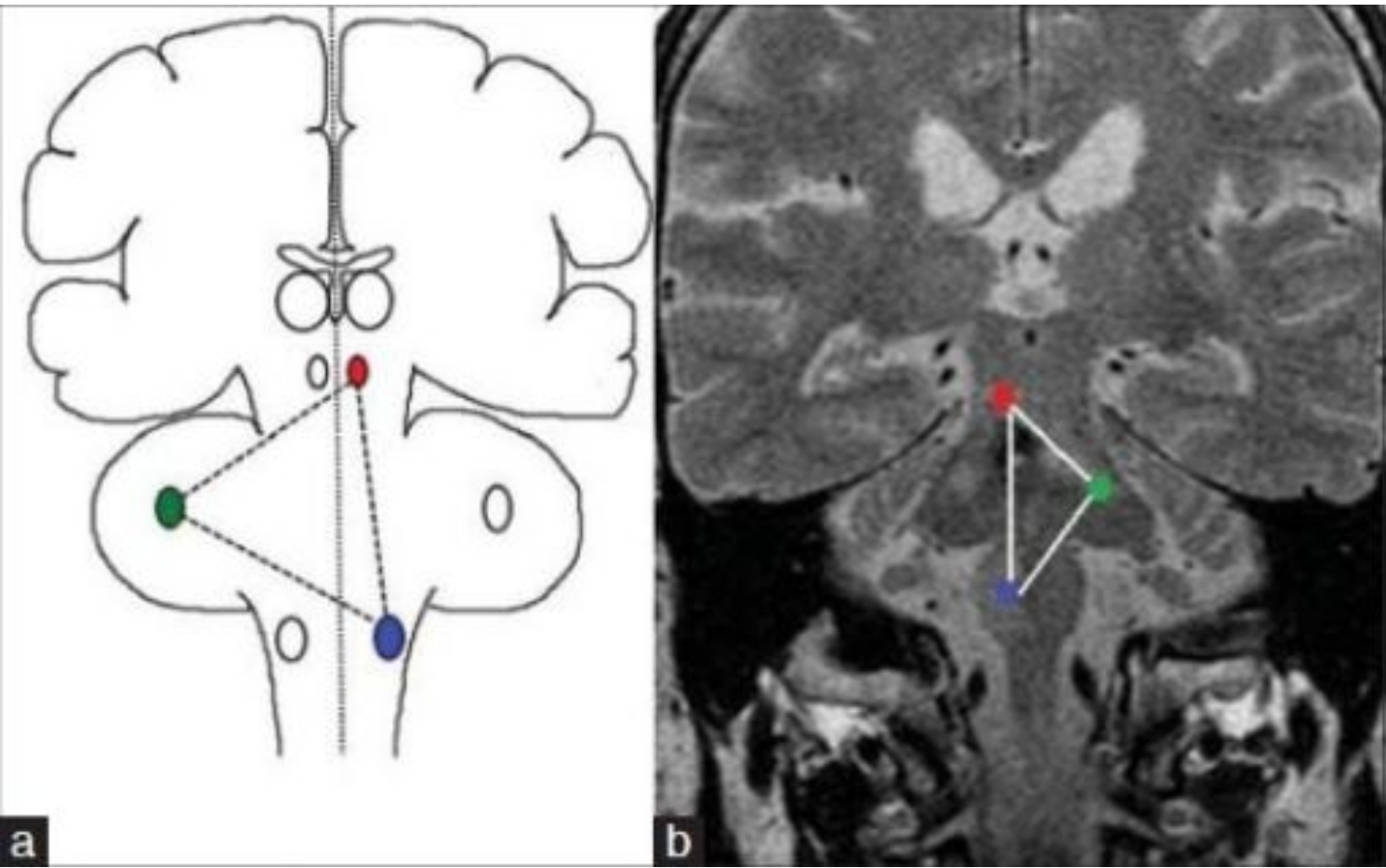


Image 1: This image showcases the Triangle of Guillain Mollaret in both sketch and MRI Imaging. The Inferior Olivary Nucleus is shown in blue, the Dentate nucleus in green, and the Red Nucleus in red.

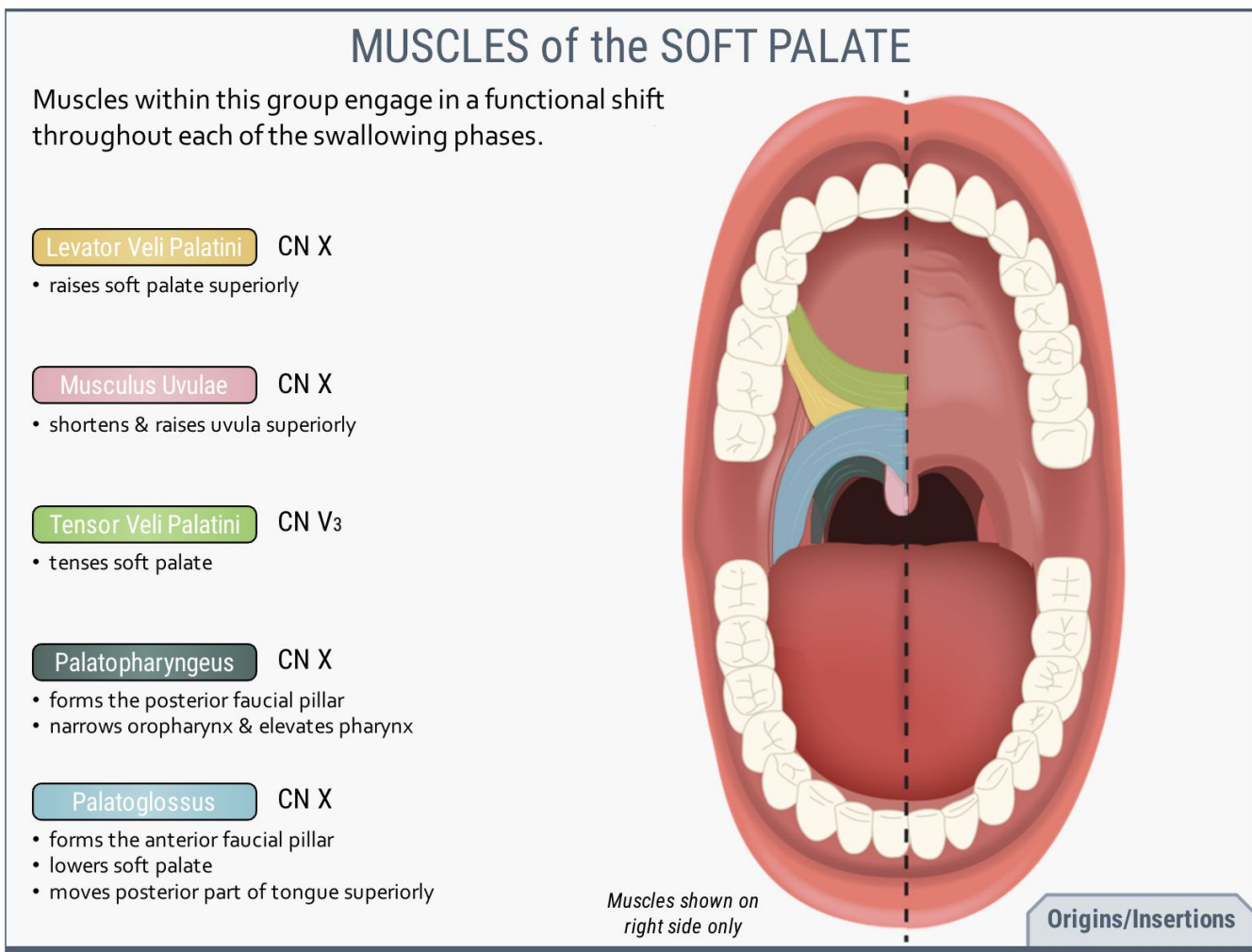
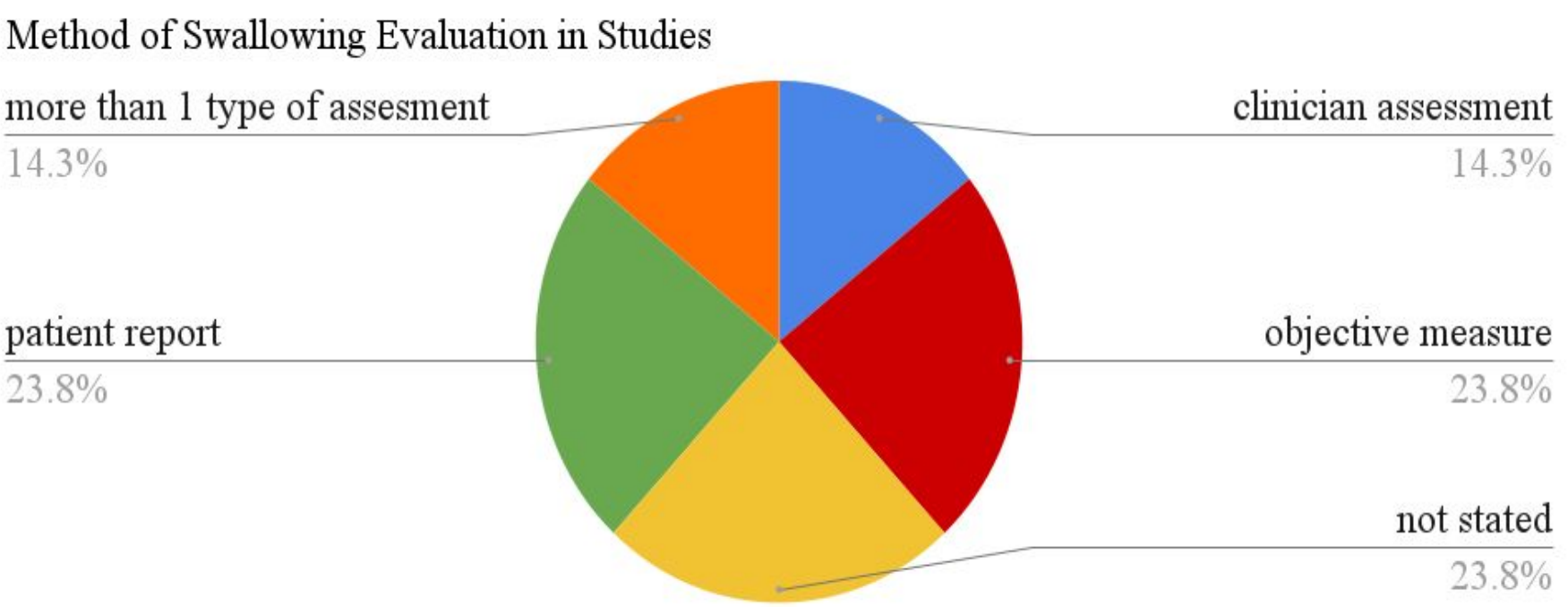


Image 2: This image shows the relevant muscular anatomy of the soft palate. The levator veli palatini (shown in yellow), is most often involved in symptomatic PM, although the tensor tympani may have isolated involvement in essential PM.

Method

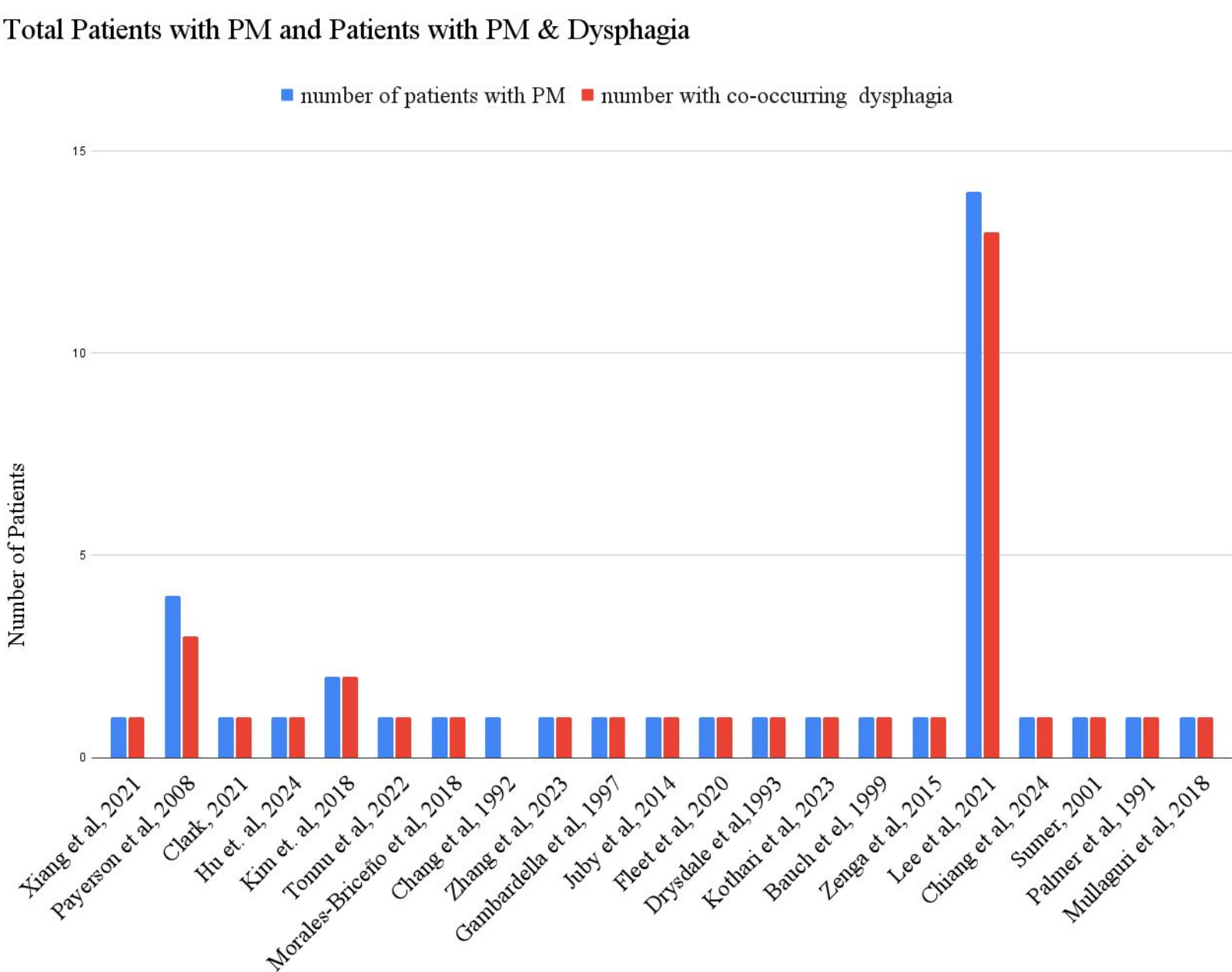
- A search was conducted on Web of Science and PubMed specific to swallowing and palatal myoclonus. Synonyms for palatal myoclonus (e.g., palatal tremor, palatal jerk) were included. Journals of the American Speech-Language- Hearing Association were also searched, yielding 82 articles after resolving duplicates.
- Articles were screened and included if they mentioned both palatal myoclonus and swallowing, provided original data, and were available in English. 21 articles were included.
- Study characteristics were extracted regarding typology of tremor, etiology, musculature involved, swallowing function, how swallowing was assessed, and what treatments were used.

Results & Discussion



- The majority of articles were single participant case reports.
- All included studies were the symptomatic form of PM.
- Objective assessment of swallowing in patients with PM was limited. Patient report was the most frequent method of identification, followed by objective measures and clinician judgment. In some instances, dysphagia was reported without evidence of how this was determined.
- Very few patients (n=4) had isolated palatal involvement.
- All patients with palatal, pharyngeal, and laryngeal involvement had co-occurring dysphagia.
- Dysphagia was present in 35/38 patients, even when etiologies of PM, such as Wernekinck Commissure Syndrome, were not associated with dysphagia.
- Dysphagia features broadly included difficulty with velar elevation, airway protection, and aspiration. Associated speech complaints, such as dysarthria, occurred in 11 patients .
- Treatments included pharmacologic interventions, treatment of primary pathology, and behavioral interventions. Few treatments were effective for treating both PM and dysphagia.

Results & Discussion (cont.)



Conclusions & Future Directions

- Limited generalizability due to case report evidence.
- Future work to examine swallowing in both the essential and symptomatic variants of PM.
- Impact of non-neurologic etiologies, e.g., nerve involvement in cancer.
- Need for standardized and objective assessment of swallowing in patients with PM.
- Despite rarity of PM, there is the potential for impact on swallowing. Screening and assessment of swallowing in this population is warranted.

References

