

Review Article

Non-cleft causes of velopharyngeal dysfunction: Implications for treatment



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ABSTRACT

Although a history of cleft palate is the most common cause of velopharyngeal dysfunction (VPD), there are other disorders that can also cause hypernasality and/or nasal emission. These include other structural anomalies of the velopharyngeal valve (velopharyngeal insufficiency), neurophysiological disorders that result in inadequate velopharyngeal movement (velopharyngeal incompetence), and even faulty articulation placement in the pharynx (velopharyngeal mislearning). Unfortunately, individuals with non-cleft causes of hypernasality and/or nasal emission do not typically present at a cleft palate/craniofacial center where there are professionals who specialize in the evaluation and treatment of these disorders. As a result, they are often misdiagnosed and do not receive appropriate treatment.

In this review, we present various conditions that can cause hypernasality and/or nasal emission during speech. We discuss appropriate treatment based on the underlying cause of the condition. It is important that pediatric otolaryngologists are able to recognize these disorders so that affected patients are referred to specialists in velopharyngeal dysfunction for treatment.

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1. Introduction

In addition to cleft palate, there are other causes of velopharyngeal dysfunction. A differential diagnosis of the cause and contributing factors is essential in order to determine the appropriate mode of treatment and best treatment strategies. Some patients with hypernasality and/or nasal emission, even in the absence of cleft palate, can benefit from velopharyngeal surgery (e.g. pharyngeal flap, sphincter pharyngoplasty, or pharyngeal augmentation). On the other hand, some patients with the “cleft palate speech” characteristics require speech therapy only, or speech therapy in addition to surgery. Consequently, it is important that patients with non-cleft causes of velopharyngeal dysfunction be referred to a cleft palate or craniofacial team for management.

2. Types of velopharyngeal dysfunction

Velopharyngeal dysfunction (VPD) is a condition where the velopharyngeal valve does not function normally in order to close consistently and completely during the production of oral sounds [1–9]. VPD is used as a general term that includes all disorders (with various causes) that affect closure of the velopharyngeal valve. There are three basic categories of velopharyngeal function – velopharyngeal insufficiency, velopharyngeal incompetence, and velopharyngeal mislearning.

Velopharyngeal insufficiency (VPI) is often used to describe an anatomical or structural defect that prevents adequate velopharyngeal closure. Most commonly, the velum is too short to achieve closure against the pharyngeal wall (Fig. 1). Velopharyngeal insufficiency is the most common type of VPD. It includes a short or defective velum secondary to a history of cleft palate, even after the palatoplasty. On the other hand, *velopharyngeal incompetence* (VPI) typically refers to a neurophysiological-based disorder in which no movement or limited movement of the velopharyngeal structures causes incomplete velopharyngeal closure (Fig. 2). Both types of VPI (velopharyngeal insufficiency or incompetence) are medically based disorders. Therefore, they require physical management (surgery or a prosthetic device) for complete correction. The third type of VPD is *velopharyngeal mislearning*. This is a speech sound disorder characterized by pharyngeal placement of certain speech sounds that are normally produced in the oral cavity. With a pharyngeal placement, the velopharyngeal valve is open and air and sound are directed into the nasal cavity. This results in phoneme-specific nasal emission or phoneme-specific hypernasality during the production of these sounds. Because velopharyngeal mislearning is a speech sound (articulation) disorder, treatment requires speech therapy only.

Although some professionals use these terms interchangeably, specificity in terminology based on causality is important for a clinical reason. This is because different types of VPD require different treatment and result in a different prognosis [3,4,10,11]. The categories of velopharyngeal dysfunction and causes of each are summarized in Table 1.

3. Causes of velopharyngeal insufficiency

Velopharyngeal insufficiency is caused by an abnormality in the structure of the velopharyngeal valve. There are several causes that include congenital anomalies and acquired defects. The following are some of the causes of velopharyngeal insufficiency.

3.1. Submucous cleft palate

Although this article is about non-cleft causes of VPD, we would be remiss if we did not discuss submucous cleft. This is because, unlike an overt cleft palate, submucous cleft is usually not identified at birth unless there are significant feeding issues. Even if there are speech issues later on, the cause of the abnormal speech may be misdiagnosed and the defect may not be identified for years. Therefore, these patients are usually not seen by a cleft palate team. The following case report is unfortunately not uncommon.

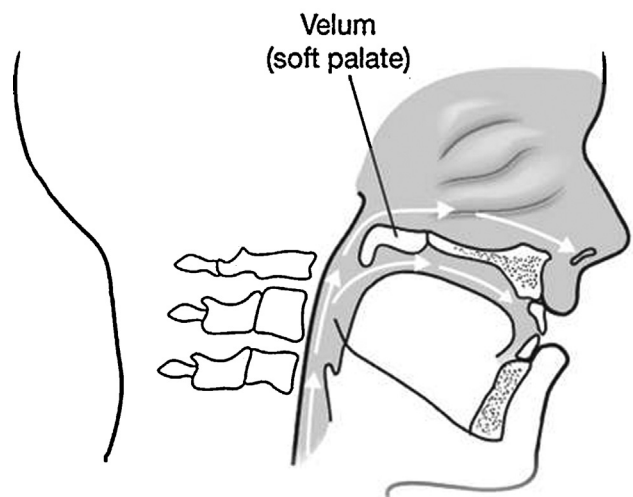


Fig. 1. Velopharyngeal insufficiency. The velum is too short to achieve velopharyngeal closure.
From Ref. [4].

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