Van der Woude syndrome presenting as a single median lower lip pit with associated dental, orofacial and limb deformities: a rare case report

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Although it is a rare developmental malformation, van der Woude syndrome is the most common form of syndromic orofacial clefting, accounting for approximately 2% of all cleft cases. The lower lip pits with or without a cleft lip or palate is characteristic of the syndrome. Findings, such as hypodontia, limb deformities, popliteal webs, ankyloglossia, ankyloblepheron, and genitourinary and cardiovascular abnormalities, are rarely associated with the syndrome. This paper reports a rare case of van der Woude syndrome in a 10-year-old male patient with a single median lower lip pit and a repaired bilateral cleft lip and cleft palate that were associated with microstomia, hypodontia, and clubbing of the left foot with syndactyly of the second to fifth lesser toes of the same foot.

Key words: Van der Woude syndrome, Cleft lip, Cleft palate, Lip pits, Club foot

I. Introduction

Van der Woude syndrome (VWS) is a rare developmental disorder that is inherited as an autosomal dominant trait with a prevalence of 1 in 75,000 to 1 in 100,000 live births1. The cardinal features of the syndrome include lower lip pits with or without cleft lip or palate.

The most consistent feature is the occurrence of lip pits on the vermilion border of the lower lip, which are seen in nearly 90% of the cases2. Classically, patients present with two bilateral and symmetrical paramedian pits on either side of the midline of the lower lip1-4. However, they can also be unilateral, medial, or bilaterally asymmetrical2,4. A single pit usually represents an incomplete expression of the syndrome3. Rarely, VWS is associated with a number of other findings like hypodontia, ankyloglossia, limb deformities, ankyloblepheron, genitourinary, cardiovascular abnormalities, and popliteal webs2-5.

We report a case of VWS in a 10-year-old male with a history of bilateral cleft lip and cleft palate repair, who presented with a single median lower lip pit and associated microstomia, hypodontia, and clubbing of the left foot with syndactyly of the second to fifth lesser toes of the same foot. We could not find any documented cases of median lower lip pits with associated dental, orofacial, and limb deformities, thus adding to the rarity of this case.

The written informed consent was obtained from the patient’s guardian.

II. Case Report

A 10-year-old male patient presented to our unit for treatment of a deformity that had been present on the lower lip since birth. (Fig. 1. A) The patient had undergone surgical repair of a bilateral cleft lip and palate at four months and 10 months of life, respectively. The medical and birth histories of the patient were non-contributory. The family history revealed that the patient’s brother also had VWS with two bilaterally symmetrical lower lip pits with a cleft lip. On extraoral examination, the patient was found to have a concave
On orthopantamogram, the tooth germs of the maxillary right central incisor, the right and left lateral incisors, and the mandibular left second premolar were found to be absent. (Fig. 3. C)

Following informed written consent, the patient was scheduled for surgical excision of the lip pit under general anesthesia. A vertical wedge excision was carried out for cosmetic reasons. (Fig. 4) Postoperatively, the patient had a cosmetically acceptable scar that was shadowed in the mentolabial sulcus. Both the patient and his parents were highly satisfied with the final surgical outcome. (Fig. 5)

III. Discussion

VWS is a rare developmental disorder, yet it is the most common form of orofacial cleft syndrome, accounting for nearly 2% of all cleft lip and palate cases. Previous at-
Van der Woude syndrome with a single median lower lip pit and associated anomalies

Attempts at identifying the genes responsible for VWS have not been successful; therefore, no single gene has been implicated as the cause of this condition. In most cases, localization to chromosome 1q32-q41 has been reported; however, localization to chromosome 1p34 has also been seen.\(^1\)\(^2\)\(^7\)

VWS is an autosomal dominant condition with variable expressivity and penetrance as high as 89% to 99%.\(^2\) Carriers of the dominant mutation of VWS therefore present as either pits without clefts (44%), pits with clefts (26%), only clefts (10%), or neither clefts nor pits (20%).\(^5\)

Lip pits are the most consistent feature of the syndrome and in some cases can be the only manifestation of the syndrome. Approximately 90% of VWS patients display lower lip pits, and in about 64% of cases, lip pits are the only visible defects.\(^5\) The most accepted theory of lip pit development in VWS involves notching of the lip at the early stage of labial development with fixation of the tissue at the base of the notch.\(^5\) The other most accepted theory is the persistence of embryonic lateral sulci in the lip following failed fusion, ultimately giving rise to the typical pits seen in VWS.\(^5\)

The surface opening is usually circular, but transverse slits have also been reported. They usually communicate with the underlying minor salivary glands by forming canals that penetrate the orbicularis oris muscle at a variable distance of 1 to 25 mm.\(^1\)\(^4\)\(^5\) Although the pits are mostly asymptomatic, intermittent to continuous drainage of watery or salivary secretions can sometimes be observed, creating a source of embarrassment for the patient and an unappealing cosmetic
Anomalies of the genitourinary system, including hypoplastic labia and uteri in females and cryptorchidism and bifid scrotum in males, are common findings. Syngnathia and ankyloblepharon filiforme are other craniofacial manifestations of PPS. Gorlin et al. suggested that the pathognomonic sign for PPS is a triangular overgrowth of the skin over the nail of the first toe.

The high penetrance of VWS necessitates genetic counselling for family members after careful family history is obtained. Genetic testing typically reveals mutations in the interferon regulatory factor 6 gene, which is considered diagnostic of VWS or PPS and assists in counselling of families with clefts. In the present case, a positive family history was present. Variants of lower lip pits and clefts, such as submucosal cleft palate, alveolar cleft, or bifid uvula, might be not be apparent to family members, and in such cases, evaluation by photographs or physical examination should be performed.

The management of VWS is aimed at surgical and esthetic repair of clefts and lip pits. A number of techniques have been described in the literature for excising lip pits. They range from simple excision, vertical wedge resection, split lip advancement, and resection with AlloDerm graft implantation to the recently introduced inverted T lip reduction. All techniques have their inherent advantages and disadvantages, and no single technique can be consistently applied for excision of all lip pits. The nature of the deformity dictates the choice of one technique over the others. Complete removal of the tract is warranted to prevent the development of mucoceles that would require further surgical intervention. We selected a vertical wedge resection that helped maintain the regularity of the white roll. The overall outcome was cos-
In conclusion, we reported a case of VWS presenting with a single median lower lip pit with bilateral cleft lip and palate associated with hypodontia, microstomia, and clubbing of the left foot with syndactyly of the second to fifth lesser toes. Lip pits are the most defined feature of the syndrome, and they occur in almost 90% of cases. Furthermore, in patients with lip pits, thorough history and physical examination are instrumental in diagnosing additional anomalies and distinguishing VWS from PPS. Because VWS has high penetrance, genetic counselling is necessary to identify other family members with the syndrome.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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