

Double mesiodens – case report and literature review

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ABSTRACT

Supernumerary teeth located between the maxillary incisors, known as mesiodentes, are the most common variant of hyperdontia. They occur relatively frequently, affecting between 0.15–1.9% of the population. In rare cases, they appear in greater

numbers. This article presents a case of double mesiodens in a 7-year-old boy and the surgical removal procedure. The description is supplemented with a literature review of similar published cases from Polish and English-language literature over the past 10 years.

Keywords: tooth; dentition; dentistry; oral medicine.

INTRODUCTION

Hyperdontia affects 0.15–3.9% of the population. Most commonly, a single supernumerary tooth is present (80% of cases), while 2 are less common, and 3 or more are very rare. Approximately 50% of supernumerary teeth are mesiodentes, affecting 0.15–1.9% of the general population. They are more common in boys than in girls (2 : 1). Mesiodentes are typically located in the anterior part of the hard palate, between the central incisors. Only about 25% of mesiodentes erupt [1, 2, 3].

A mesiodens is usually conical in shape, less frequently tuberculate, and occasionally resembles a normal incisor (supplemental). Multiple mesiodentes are referred to as mesiodentes. Clinical signs suggestive of supernumerary teeth include abnormal positioning of the permanent upper central incisors, the presence of a diastema, and delayed eruption of the upper central incisors [4, 5]. In some cases (10.2%), they can also cause root resorption of adjacent teeth [2]. Due to the complications associated with supernumerary teeth, surgical extraction of the mesiodens is usually recommended.

This article presents a case of double mesiodens in a 7-year-old boy and the surgical removal procedure, supplemented with a literature review of similar published cases from Polish and English-language literature over the past 10 years.

CASE REPORT

In November 2023, a 7-year-old boy presented to the Oral Surgery Department with the chief complaint of rotated upper medial incisors. The patient was in good general health, without chronic diseases or allergies, and had no association with any syndrome. The patient's family had a history of malocclusion on both the mother's and father's sides. It is necessary to check the family history for supernumerary teeth.

On intraoral examination (Fig. 1), the boy was found to have mixed dentition, with tooth 11 erupting in distorotation and tooth 21 also in the process of eruption, mesially rotated. A partially erupted mesiodens was located palatally to tooth 11. Adjacent to the additional tooth, a palpable circular excoriation on the mucosa, 4 mm in diameter, was found.



FIGURE 1. Intraoral photography of the patient

A pantomogram (Fig. 2) of the patient showed a regular mixed dentition corresponding appropriately with age, except for an increased number of permanent teeth. Two mesiodentes were observed superimposing the central incisors.

A high-resolution cone-beam computed tomography (CBCT) scan (Carestream CS 9600) with a 5 × 5 cm imaging area was ordered to rule out the presence of any additional abnormalities and to assess the location and relationships of the mesiodentes to the adjacent teeth and structures. The CBCT imaging (Fig. 3, 4, and 5) visualized 2 supernumerary teeth located palatally. Both were conical in shape, vertically oriented, and significantly smaller than the adjacent teeth.

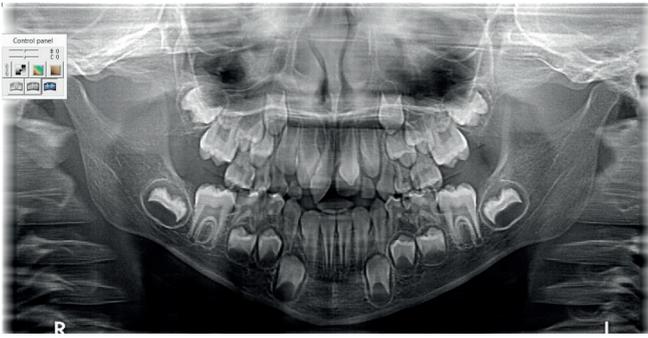


FIGURE 2. Pantomogram of the patient showing regular mixed dentition with 2 mesiodentes superimposing the central incisors



FIGURE 3. Cone-beam computed tomography 3D reconstruction



FIGURE 4. Cone-beam computed tomography scan, horizontal plane

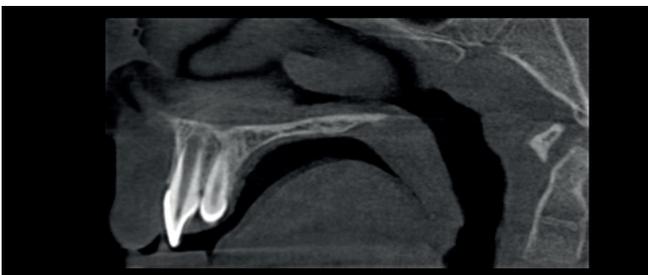


FIGURE 5. Cone-beam computed tomography scan, sagittal plane

It was decided to extract both supernumerary teeth under local anesthesia. After obtaining parental consent for the procedure, the surgical site was infiltrated with 1.8 mL of 4% articaine (Dentocaine) solution, and the 2 mesiodentes were removed (Fig. 6). The wound was treated with a collagen sponge and a compression dressing.

The procedure was completed without complications. During the follow-up visit 7 days after the procedure, normal healing of the post-extraction wound was observed. The patient was referred to an orthodontist for further treatment.

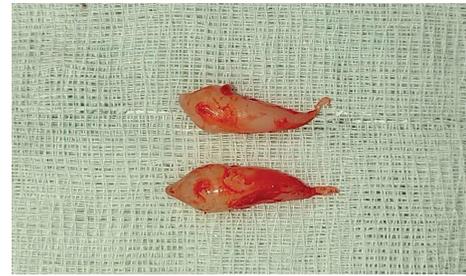


FIGURE 6. Extracted mesiodentes

DISCUSSION

The causes of mesiodens development are not fully understood. In the past, theories suggested that mesiodens was an atavism (a theory now rejected by embryologists) or resulted from the division of the anterior tooth bud. The most widely supported theory states that mesiodens appears due to excessive activity of the dental lamina, leading to the formation of a new tooth bud [1]. Recent studies have identified specific genetic mutations that may contribute to mesiodens formation [6, 7, 8]. Mesiodens can occur as an isolated anomaly or have a genetic etiology and run in families. Additionally, mesiodens may be associated with genetic syndromes such as clavicular dysplasia, cleft lip and palate, Gardner syndrome, and oral-facial-digital syndromes (OFDS) [4].

Patients with hyperdontia typically seek treatment due to malocclusion, abnormal tooth shape or size, or delayed tooth eruption. In the study by Lee et al., midline diastema was the most commonly noted complication, followed by delayed eruption and rotation of an adjacent tooth [9]. Root resorption, loss of vitality of an adjacent tooth, and cyst formation occurred less frequently. Since permanent incisors tend to erupt along the path of least resistance, the rate of complications increased when mesiodens was located either close to the eruption path or on the labial side of the adjacent permanent maxillary central incisors. The rate of eruption disturbances and displacement of the maxillary central incisors was lowest in inverted mesiodens, which could be explained by their movement in the opposite direction, thus having minimal impact on adjacent teeth [5].

Barham et al. analyzed CBCT images to determine the position of mesiodens relative to adjacent anatomical structures. According to their study, mesiodens was most commonly located adjacent to the nasopalatine canal (41%), relatively often near the floor of the nasal cavity (14.3%), less frequently in contact with the vestibular lamina of the maxillary alveolar process (4.2%), and very rarely (<1%) adjacent to the maxillary sinus. Cyst formation was reported in 4.2% of mesiodens cases [4]. Other authors have reported both lower and higher frequencies of cyst formation associated with mesiodens [1, 9].

In the same study, Barham et al. classified all 568 analyzed mesiodens based on their maturity status (eruption stage and

root development) into 3 categories of risk for complications due to extraction: high risk, where the mesiodens is in direct contact with a vital structure; medium risk, where the mesiodens is close enough to potentially injure the adjacent tooth during extraction; and low risk, where the mesiodens is far enough from any vital structures or is fully mature and unlikely to be affected by external forces. Only 11 mesiodentes (1.9%) were classified as high risk. Of these, 8 were extracted, and none resulted in postoperative complications [4].

Shih et al. suggest that early diagnosis and removal of unerupted mesiodens before the age of 5 may significantly reduce complications and limit the need for orthodontic treatment in the future. The use of computed tomography (CT) scanning and general anesthesia can help prevent potential damage

to adjacent structures and improve child cooperation. However, if the mesiodens is in close proximity to permanent incisors, a delay in surgical removal is recommended to avoid disrupting or halting the future development of the affected roots [10].

To summarize other practitioners' experiences with rare cases of twin mesiodens, we analyzed case reports from the past 10 years. The literature search was conducted via PubMed and Google Scholar using the keyword "double mesiodens" with a publication date filter between January 2013 and December 2023. This search yielded 6 results in PubMed and 850 in Google Scholar. Works in languages other than English and Polish, cases involving a different number of supernumerary teeth, and studies that did not specify the patient's gender were excluded, leaving 19 publications (Tab. 1).

TABLE 1. A review reporting the presence of mesiodentes with respect to their shape, eruption status and familial history of the patient [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29]

Researchers (year)	Number of cases	Age/sex	Shape (number)	Erupted (both/one/none)	Familial history of mesiodens (yes/no)
Vecchione Gurgel et al. (2013) [11]	2	9/M	conical (2)	none	yes
		9/M	conical (2)	none	yes
Krishnappa et al. (2014) [18]	1	16/F	conical (2)	none	no
Asha et al. (2015) [12]	1	10/M	conical (2)	both	no
Elhag and Abdulghani (2015) [13]	1	9/M	conical (2)	both	no
Singaraju et al. (2015) [14]	1	23/M	conical (2)	both	no info
Hundal et al. (2016) [16]	1	10/F	conical (1)	both	no
			molariform (1)		
Bagińska et al. (2017) [15]	1	14/F	multilobated (2)	both	no info
Sujlana et al. (2017) [19]	2	8/M	conical (2)	one	no
		12/M	conical (2)	both	no
Krishnamurthy et al. (2017) [20]	1	15/M	conical (2)	both	no
Salgado and Mesquita (2017) [21]	1	10/M	conical (1)	none	no info
			multilobated (1)		
Sogi et al. (2018) [22]	1	10/M	conical (2)	both	no
Rana and Ohri (2018) [23]	3	10/M	conical (2)	both	no
		9/M	conical (2)	both	no
		7/M	conical (1)	one	no
			molar-like (1)	both	no
Kabbur et al. (2018) [17]	1	20/F	conical (2)	both	no
Solhjo and Razmjouei (2019) [25]	1	8/M	conical (2)	one	no
Abdullah et al. (2020) [24]	1	13/M	conical (2)	both	no
Parampill et al. (2020) [27]	1	8.5/M	conical (2)	both	no
Bruzda-Zwiech et al. (2020) [26]	1	3.5/F	conical (2)	one	yes
Jagiełto et al. (2022) [28]	1	7/F	conical (2)	one	yes
Rajaram Mohan et al. (2022) [29]	1	21/M	conical (2)	none	no info

M – male; F – female

The vast majority of patients were male (74%) and aged 10 or younger (70%). Of the 46 mesiodentes described, 41 (89%) were conical in shape, 3 were multilobated, and 2 were described as molar-like. In all reported cases, the supernumerary teeth were extracted without mention of postoperative complications.

CONCLUSIONS

This case report demonstrates a rare occurrence of mesiodens in a unique multiple presentation, while still partially aligning with the most common epidemiological characteristics of hyperdontia. The patient's gender, age, the shape of the supernumerary teeth, and their location were typical. The presence of multiple supernumerary teeth highlights the importance of radiographic imaging in diagnosing mesiodens. In every case of hyperdontia, CBCT should be performed to assess the number, placement, and relationship of the supernumerary teeth to adjacent structures. In the majority of cases, extraction is the preferred treatment method, and when performed at an early age, it reduces the risk of future complications while rarely leading to postoperative issues.

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