

Late Diagnosis in The Case of Multiple Mesiodens. Patient's Satisfaction after Combined Orthodontic-Surgical Treatment

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1. Abstract

1.1. Aim

This report emphasizes the necessity of preventing complications arising from late diagnosis and the social isolation of individuals who have been denied or delayed treatment due to the severity of their clinical condition. It also highlights the importance of adopting an ethical and empathetic approach when professional expertise alone is insufficient to address the case. This empathetic stance involves understanding the patient's clinical problem and referring them to a more experienced dentist. Such a decision requires the courage to acknowledge one's limitations in resolving the clinical problem.

1.2. Materials and Methods

A clinical case is presented involving the combined orthodontic-surgical treatment of two mesiodens. One of them is impacted and positioned at a 45-degree angle from its normal orientation. The other is present in the oral cavity, larger in size, shaped as premolar, and located in the typical mesiodens place, between teeth 11 and 21. An interesting fact of this case is that, despite the presence of a supernumerary tooth in the maxilla, a false Class III malocclusion was diagnosed, attributed to the dental-alveolar discrepancies. The position of tooth 21, located above the mesiodens is high in the vestibulum oris, resulting in a narrowing of the maxilla. The incisal edge of tooth 21 is at the level of the cervical margin of tooth 11. Data from anamnesis was established that the patient is

a 23-year-old female with Type II Diabetes Mellitus, which can affect blood coagulation during and after surgical procedures.

1.3. Results

Both mesiodens were extracted and orthodontic treatment was performed. The treatment carried out is with a fixed technique. Correct relationships between the two dental rows were achieved, the spaces after the extracted teeth were closed and long-term retention was ensured. The most significant result was the impact on the psycho-emotional state of the girl and the return of her confidence.

1.4. Conclusion

Even if delayed, orthodontic treatment can significantly improve the psycho-emotional state of the patient, restore his self-esteem and improve the patient's life and social realization. The doctor can implement his ethical approach by redirecting the patient to another colleague in the absence of sufficient competence.

2. Literature Review

Supernumerary is defined as a tooth in excess compared to the normal number of the teeth for the respective dentition (primary or permanent). Classification of the supernumerary teeth can be due to their morphology, position and number. As it concerns the shape of the crown, they can be absolutely relevant to the other teeth, which they duplicate or they can be with specific shape. Most common observed is the peg-shaped (conical) supernumerary tooth, representative and most frequent is mesiodens [1-20]. Mosby's

Medical Dictionary definition for mesiodens is: “a supernumerary erupted or unerupted tooth that develops between two maxillary central incisors” [2,10].

Anterior maxillary impacted supernumerary tooth (AMIST), located in the maxillary central incisor region, is any tooth or odontogenic structure formed from the tooth germ more than the usual number [13].

- Mesiodens is typically located in the midline of the premaxilla, which embryogenesis differs from the other facial bones. Therefore, it is possible to have deviations in the premaxillary region, which are not common for the other parts of the maxilla and the mandible, too.

- The prevalence of supernumerary teeth - 0.5% - 3.8% in the permanent dentition [1,2,8,18].

- More often observed in male gender than female approximately twice as much.

Supernumerary teeth, often referred to as hyperdontia, are a common dental anomaly characterized by the presence of extra teeth that can lead to various complications. They can cause a range of issues, including failure of eruption, displacement of adjacent teeth, dental crowding, pathological complications, aesthetic concerns, and challenges with social realization [3,5]. Supernumerary teeth can block or alter the eruption path of permanent teeth, leading to impaction. These teeth can cause adjacent teeth to deviate from their normal eruption trajectory. It's well known that an extra tooth in the dental arch reduces available space, exacerbating crowding. Supernumerary teeth may be associated with cyst formation (e.g., dentigerous cysts) or resorption of adjacent roots. Additional teeth in the anterior segment may affect appearance, speech, and confidence, particularly in children [4]. These issues often necessitate orthodontic or surgical intervention. The presence of a supernumerary tooth can restrict normal craniofacial development. This is particularly relevant when teeth interfere with the growth of maxilla or mandible. Literature suggests displacement often results in diastemas, rotations, or malocclusion [2,6-8,12,13,16].

When located in the frontal segment, a supernumerary tooth can lead to underdevelopment in the three planes of this area:

1. **Sagittal Plane:**

- o Divides the face into left and right halves.
- o Used to assess anterior-posterior relationships, such as Class I, II, or III occlusion.

2. **Frontal Plane:**

- o Divides the face into front and back parts.
- o Used to analyze asymmetry or lateral deviations.

3. **Horizontal Plane:**

- o Divides the face into upper and lower parts.
- o Helps evaluate vertical proportions, such as deep bite

(overbite) or open bite.

These planes are essential for diagnosis and treatment in orthodontics.

A brandnew study assists clinicians in making decisions by automatically classifying supernumerary teeth on panoramic radiographs taken during the eruption period of maxillary anterior teeth, thereby reducing complications that can arise from failure to detect mesiodens early [12,18,21]. Recent literature continues to explore the complexities of mesiodens, particularly focusing on their etiology, clinical manifestations, and management strategies. The authors emphasize the importance of early detection and intervention to prevent further dental complications [11].

2.2. Management of Mesiodens

1. **Diagnosis:**

- o Common diagnostic tools include panoramic radiographs and cone-beam computed tomography (CBCT).
- o Clinical examination often reveals delayed eruption, diastema, or malalignment.

2. **Intervention Timing:**

- o Early intervention is crucial to prevent complications.
- o Surgical removal is typically recommended for unerupted or impacted mesiodens [6].

3. **Orthodontic Considerations:**

- o Following removal, orthodontic treatment may be required to address spacing, alignment, or occlusion issues caused by the mesiodens.

Some authors determined also the optimum time for removal of unerupted anterior supernumerary teeth [13,15]. The others point on the relationship between vertical or horizontal position of AMIST and age at the time of surgery [9,16,17].

2.3. Case Report

From the data presented in the literature, it is evident that the report following presents a neglected, untreated case of a patient who falls outside the generally accepted age decisions [14]. Chief complaint: Impaired dentofacial esthetics that can lead to psychosocial problems and impaired function. The patient is 23-year-old female with Diabetes Mellitus Type II. The malocclusion is classified as Angle Class III in the addition with two supernumerary teeth – both on maxillary jaw. The one is impacted, with canine form and the other mesiodens take place of the first central incisor with tuberculate form. The patient has been diagnosed to date by another dentist but the proper treatment was not provided. No family anamnesis is reported. The initial records are presented at Figure1: The initiative to start treatment was taken by the patient, not as a reference from a colleague. The patient's main complaint remains aesthetics. She reports that rarely smiled knowing how embarrassing her smile was. The midline is

seen to be occupied by 21 and a premolar-shaped mesiodens on clinical examination. The occlusion and position of the anterior teeth are also impaired, secondary to the space deficit created by the malposition of 21 and the mesiodens. Some of the problems associated with supernumerary teeth are well visible at Figure 2:

Both jaws show rotated and irregularly inclined teeth, which have an unfavorable position not only in the maxilla or mandible, but they also affect the occlusion as a whole. Right and left intraorally show the midline discrepancy and the displaced lines at the canines and molars with a tendency towards a Class III Angle (Figure 3). The orthopantomography showed two non-ankylosed mesiodens and the infra-position of 21 in the frontal segment. No other pathologies were found. The radiographic diagnosis, assisted by cephalometry, allowed for precise and atraumatic surgical intervention, followed by self-absorbable sutures. Extraction of both mesiodens was performed with infiltration and blockade of the nasopalatine nerve with 4% articaine (Septanest, Septodont, USA). This was achieved with Gelaspon and cotton gauze compression, and the bleeding time was monitored in relation to the patient's general condition.

Braces and bite plane were adjusted. A sequential change of the archwires from 0.012 to 0.018 was performed. Instructions for wearing intermaxillary elastics were given after 8 months of the initiation of the treatment (Figure 4): The lower wisdom teeth were extracted and endodontic treatment was performed on three teeth as indicated.

The patient's visits were regular, even though she traveled a long distance. The doctors at the clinic had no problems with her motivation, oral hygiene, or additional recommendations such as wearing intraoral elastics, for example. When the author of the article asked the patient for additional photos her comment for the status was: "Especially for a woman, it is not just about the health of our teeth, it is also about our self-esteem, appreciation and self-confidence that improve!", (Figure 5). The result is stable five years after the completion of the treatment. The patient still wears the retainers. For the upper jaw the retainer is removable, for – the lower is fixed from 33 to 43. Only regular prophylactic examinations twice per year are provided now.



Figure 1: An adult case. Permanent dentition. Mesio-facial. Straight profile. Smiling in a very rare circumstances.



Figure 2: The presence of supernumerary tooth in the frontal segment leads to under development in the three planes of this area. Supernumerary teeth can cause a range of issues, including failure of eruption, displacement of adjacent teeth, crowding, pathological complications and aesthetics concerns.



Figure 3: Right and left lateral view.



Figure 4: Orthopantomography and Cephalometry were performed.



Figure 5: The result is still stable two years after the completion of the treatment. The more effective the treatment is, the happier is the doctor.

3. Discussion

Mesiodens are often diagnosed by chance or during a preventive examination. When the AMIST(s) are different in shape and size, the patient may be able to detect themselves. Double mesiodens remain an unusual finding, and their delayed or non-treatment is often due to lack of awareness, incompetence or negligence. The of removal of double mesiodens is combined ortho-surgical treatment. The subsequent orthodontic treatment aims to correct the discrepancies, dento-maxillary deviations and to meet the aesthetic requirements for properly arranged teeth and a beautiful smile. Disturbed occlusal relationships in children are a serious problem. When it concerns an adult individual, the dentist must

deal with the psycho-emotional state accumulated over the years, especially if the patient shares that she has rarely smiled over the years. The perceived unkindness and stigmatization in society often make the process of regaining self-esteem particularly difficult. The challenges are many, but when there are positive outcomes, the satisfaction of both parties – patient and a doctor, is very high. The adult patient is usually more motivated and easier to manage.

4. Conclusion

It turns out, that despite the differences in the shape of the other teeth, the mesiodens is not as recognizable by dental practitioners. This is one of the reasons for the delay in a decision on the treatment, which has predominantly social consequences for the

patient. Extraction of mesiodentes and the following surgical-orthodontic treatment improves the facial aesthetics and prevents the patient's social isolation especially to this young lady.

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