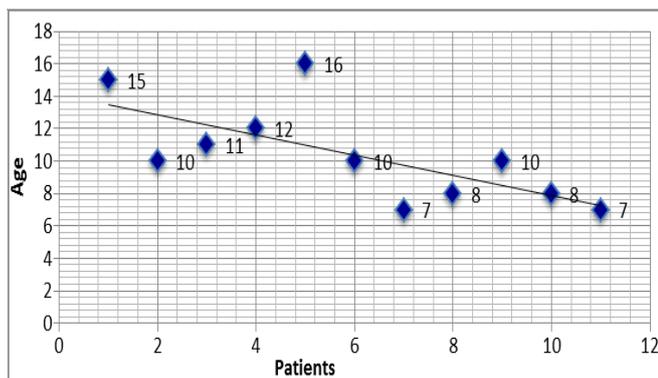




5. Results

We analyzed 1480 orthodontic treated cases, from them 27 (1.82%) were diagnosed with supernumerary teeth, 11 of them have mesiodens. Patients diagnosed with mesiodens are 40.74% of all the patients with supernumerary teeth. The prevalence of patients with mesiodens from all of the studied patients is 0.74%. The average patient age we found out the problem – mesiodens is 10.36 years, displayed from the age distribution of patients with this problem from 7 to 16 years old. Graph 1.



Graph 1: Distribution of the patients with mesiodens by age

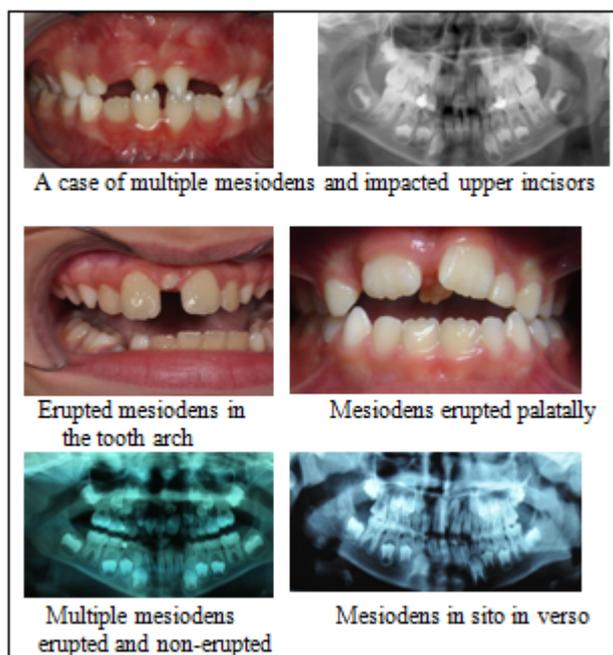
There is a statistical reliable relation between the gender and the prevalence of mesiodens. The relation is characterized by the higher level of supernumerary teeth - mesiodens among the male gender 10 (90.90%) compared to 1 patient from female gender (9.10%).

Only one patient is diagnosed with two erupted mesiodens, one patient with one erupted mesiodens and one impacted. The other cases were with single manifestation of mesiodens. (Graph.2) The ratio between single and multiple manifestation of the problem is 9/2 (81.8%/18.2%).

One of the cases was with palatal impacted mesiodens; behind the central incisors in position is *sito in verso*. Some of the patients with non-erupted mesiodens seek orthodontic treatment, because of: open-bite or overdeveloped frontal segment of the maxilla, which leads to II class malocclusion, diastema and crowding of the upper frontal teeth. Patients with erupted mesiodens seek orthodontic treatment because of: poor aesthetic, impaction of the permanent incisors or abnormal speech and other orthodontic abnormalities.

Table 1: The relation between Supernumerary teeth

| Related orthodontic abnormalities | Number of patients with mesiodens | Mesiodens              |                      |         |             |
|-----------------------------------|-----------------------------------|------------------------|----------------------|---------|-------------|
|                                   |                                   | Multiple manifestation | Single manifestation | Erupted | Non-erupted |
| Hypodontia 11                     | 1                                 |                        | 1                    | 1       |             |
| Hyperdontia 12                    | 1                                 | 2 mesiodens            |                      | 1       | 1           |
| Impacted central incisor          | 2                                 |                        | 1                    | 1       | 1           |
| Diastema                          | 3                                 |                        | 1                    | 1       | 2           |
| Open-bite                         | 2                                 |                        | 1                    | 1       | 1           |
| II class malocclusion             | 3                                 |                        | 1                    |         | 3           |



Graph 2: A selection of clinical cases included in the survey and treated by us

From the distribution of the problems in Tabl.1 it becomes clear that there is significant relation between the problem mesiodens and malocclusions. The presence of a supernumerary tooth in the frontal segment leads to overdevelopment or under development in the three planes of this area. When the mesiodens is impacted, the surrounding bone overdevelops in sagittal and vertical direction and this change in the premaxilla is prerequisite to increased overjet and II class malocclusion. When the mesiodens erupts palatally, it irritates the tongue with its conical shape, which changes the position of the tongue during speech and swallowing. These new position is prerequisite for an open-bite and speech abnormalities.

There is a significant number of patients with diastema combined with mesiodens. The supernumerary tooth leads to overdevelopment of the tooth arch and leads to diastema, in which it is most often located. Mesiodens as a type of a hyperdontia is inextricably linked with the other types of supernumerary teeth, especially in the frontal segment and problems like hypodontia. This relation is determined by the genetic predisposition and the etiology of these phenomenons.

The treatment plan includes extraction of the supernumerary tooth-mesiodens, but the patients with related orthodontic abnormalities due to the presence of the tooth it is necessary to obtain a full orthodontic treatment for alignment of the teeth in the arch and normalizing the occlusion. Two of the cases are treated only with extraction of the mesiodens and monitoring of the development of the dentition until the eruption of all the permanent teeth. In the other 9 cases the mesiodens was extracted and subsequent orthodontic treatment was done. In the cases related with complicated impaction of the permanent incisors, extraction of the mesiodens was done, subsequent by a healing period and guided orthodontic traction of the impacted incisors.

## 6. Discussion

The cases diagnosed with mesiodens from all of the patients with supernumerary teeth are 40.74%, which is very close to the results that Montenegro[11] - 46.9%, V. Arikani[1] - 36.9% and M.Celikoglu[3] - 31.3% found out. In all of the literature surveys there is a higher level of number of the abnormalities related with the male gender rather than the female.

Patients with already erupted mesiodens are diagnosed in an earlier age compared to those with impacted mesiodens, which are diagnosed in later age combined with other orthodontic abnormalities.

The etiology of mesiodens and supernumerary teeth are not uniquely defined, as are most of the dental phenomena. Two are the main characteristics for this manifestation: genetics and influence of the surrounding factors during the development of the tooth germs. The genetic factor of development of a supernumerary tooth is displayed with the fact that is more often observed in male gender rather than the females –approximately twice as much.

Popular assumption is that supernumerary teeth are atavistic mark, reminding of the phylogenetic development of the human kind when the previous humanoid species had three teeth from a tooth group. Another theory to be mentioned is that the hyperactive dental lamina splits more and that leads to developing of an additional tooth germ from divided epithelial rests, from the main tooth germ [13].

## 7. Conclusion

The problem mesiodens is rarely observed, but leads to severe orthodontic deviations, which require long orthodontic treatment. When we diagnosed it in a later age the problems are more complicated. Mesiodens changes the development of the upper frontal segment and leads to poor aesthetics.

## 8. Future Scope

Knowing the clinical manifestation of that problem we can expect it when we observe: delayed eruption or impaction of the maxillary incisors, diastema with significant dimensions, severe crowding in the upper frontal segment and hyperodontia in another area. We recommend prophylactic

check-up for children in the early mixed dentition to be done mandatory with X-ray by the general practitioner.

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## Author Profile



**Dr. Greta Yordanova** has completed a master's degree in dentistry in 1991. She has post-graduated in Orthodontics and developed dissertation entitled "Clinical results in treatments with Pendulum" and obtained PhD degree. Since 1995 she is Assistant Professor at the Department of Orthodontics at the Medical University of Sofia. Her research interests are in the area of Non-extraction treatment and problems of ectopic and impacted teeth and working with 3D technology.



**Miroslava Mileti Dinkova**, DMD, PhD entered the field of dentistry in 1978 and specialized in Orthodontics, Pediatric Dentistry, Health Management and General Dentistry in 1987, 1993 and 2005, respectively at Faculty of Dental Medicine, Medical University of Sofia, Bulgaria. In 2014 she received her

PhD degree in Orthodontics. Since 1992 she is Assistant Professor at the Department of Orthodontics - Medical University of Sofia, Bulgaria. Her main interests are in adult orthodontics, interdisciplinary treatment approaches, lingual orthodontics and digital technologies in orthodontics. Dr. Dinkova is a member of WFO, EOS, SIDO, BaSS, BOS and President of BSCLO.