

# The Prevalence of Supernumerary Teeth in a Group of Patients in Western Romania

Bratu Dana Cristina<sup>1</sup>, Bratu E<sup>2</sup>, Păcurar Mariana<sup>3</sup>, Popa G<sup>1</sup>, Pop Silvia<sup>3</sup>

<sup>1</sup> Department of Paedodontics and Orthodontics, Faculty of Dentistry, "Victor Babes" University of Medicine and Pharmacy, Timișoara, Romania

<sup>2</sup> Department of Implant Supported Restorations, Faculty of Dentistry, "Victor Babes" University of Medicine and Pharmacy, Timișoara, Romania

<sup>3</sup> Department of Paedodontics and Orthodontics, Faculty of Dentistry, University of Medicine and Pharmacy, Tîrgu Mureș, Romania

**Objective:** The objective of this article is to study the types of supernumerary teeth and their prevalence in a group of patients in Western Romania.

**Material and methods:** The study group consisted of various patients, who attended the Department of Paedodontics and Orthodontics, Faculty of Dentistry, Timișoara, Romania. The number, location, classification, bilateral symmetry and impaction of supernumerary teeth were evaluated. Furthermore, we evaluated the development of these teeth and we also established the therapeutic decision for each clinical case. Final diagnosis was based upon clinical examination, occlusal radiographs, panoramic radiographs or cone beam CT.

**Results:** From a total of 700 examined patients, with mixed and permanent dentition aged between 6 and 13 years, 21 (3%) patients had supernumerary teeth. A total of 25 supernumerary teeth were recorded. The distribution of supernumerary teeth according to jaws showed a higher prevalence in the maxilla: 80% (n=20) were located in the upper jaw, while 20% (n=5) were found in the mandible. In the upper arch, the most frequent supernumerary teeth were the lateral incisors 45% (n=9), followed by the central incisors (mesiodentes) 35% (n=7). Smaller percentages were located in the premolar region 15% (n=3) and distomolar region 5% (n=1). The distribution of supernumerary teeth according to bilateral symmetry was 24% (n=6) bilaterally and 76% (n=19) unilaterally. Regarding their status, the majority of the supernumerary teeth, 96% (n=24) were erupted and only 4% (n=1) were impacted, being associated with the failure of eruption of the left central incisor. Tooth extraction was the treatment of choice in 100% of the cases. Most of the supernumerary teeth, 96% (n=24) were completely developed and only 4% (n=1) showed an incomplete root.

**Conclusions:** The prevalence of supernumerary teeth in this study was 3%. This result is comparable to similar studies in the literature, among Caucasians. Future research is required to evaluate a larger group of patients.

**Keywords:** supernumerary teeth, prevalence, hyperdontia, mesiodens, supplemental

## Introduction

Supernumerary teeth (or hyperdontia) denote teeth formed in excess: more than 20 deciduous teeth or more than 32 permanent teeth. They can also be defined as additional teeth to normal dentition [1,2,3]. They can be associated with a syndrome or they can be found in nonsyndromic patients [4,5]. Supernumerary teeth can be single or multiple, uni or bilateral, can occur in the maxilla, in the mandible or in both jaws and can be located in almost all regions of the dental arch [4,5]. However, most are found in the anterior maxilla, either as mesiodentes or supernumerary lateral incisors [5]. They may have various shapes – morphologically malformed or normal shaped, different sizes and they can erupt normally or remain impacted. Both cases can result in clinical problems. Most of the problems arise in connection with tooth eruption failure and development of the dentition [4]. The exact etiology of supernumerary teeth is still obscure, although many theories have been proposed. The dichotomy theory of tooth germs states that the tooth bud splits into two equal or different sized parts, resulting in two teeth of equal size or one normal and one dysmorphic tooth respectively [6,7]. Another widespread theory describes the hyperactivity of the lateral dental lamina, as a primary cause, in which the residual epithelium proliferates [1,2,8]. Heredity was believed to be an important etiological factor and a familial tendency has been noted [9,10]. Various authors have also advanced different classifications of supernumerary teeth, based on their location or their morphology. Multiple su-

pernumery teeth are commonly associated with variable syndromes [11]. Cases with one or two supernumerary teeth most commonly involve the anterior maxilla [7], followed by the mandibular region [7,12]. There is a slight difference in the relative frequency of other supernumerary teeth reported in literature. Shapira et al. [13] state the order of decreasing frequency as follows: upper central incisors, molars (especially upper molars), premolars, followed by lateral incisors and canines. Supernumerary teeth can be classified according to morphology and location [6,7,14] in: conical, tuberculate (with more than one cusps or tubercle), supplemental (duplicate teeth in the normal tooth series, found at the end of the tooth series) and odontoma. The most common supplemental tooth is the permanent maxillary lateral incisor, but supplemental premolars and molars also occur [8].

## Materials and method

The study group consisted of various patients, who attended the Department of Paedodontics and Orthodontics, Faculty of Dentistry, Timișoara, Romania. Reasons for attendance included caries, malocclusion, lack of eruption of permanent teeth and routine follow-ups. A total of 700 patients with mixed and permanent dentition (the age range in this study was between 6 and 13 years) were examined during 2007–2010, 21 cases presenting supernumerary teeth. Final diagnosis was based upon clinical examination, occlusal radiographs, panoramic radiographs or cone beam CT.



Fig. 1. Case 1: Panoramic radiograph (a), intraoral view of the supplemental lateral incisors (b, c)



Fig. 2. Case 2: Panoramic radiograph (a), intraoral view (b, c)



Fig. 3. Case 3: Extraoral view (a), panoramic radiograph (b), intraoral view (c)

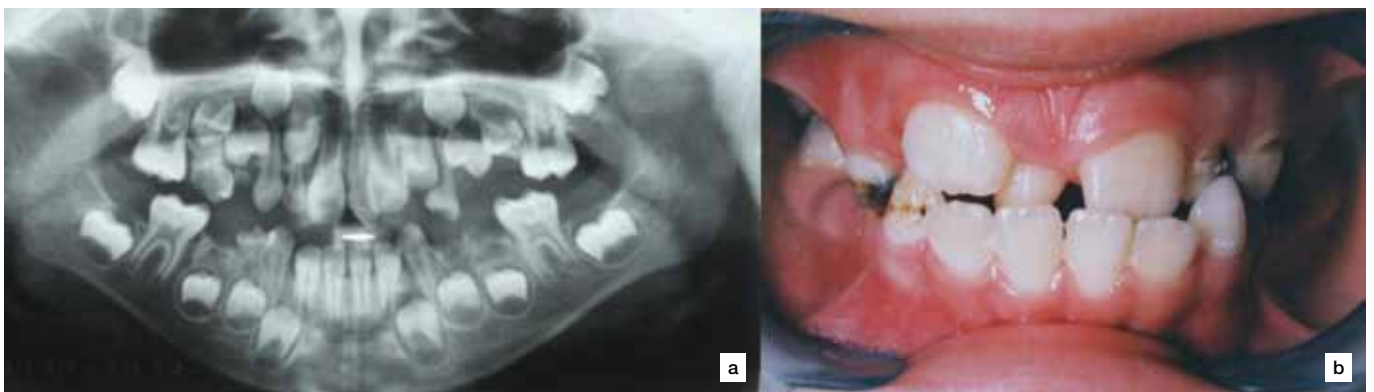


Fig. 4. Case 4: Panoramic radiograph (a), intraoral view (b)



Fig. 5. Case 5: Panoramic radiograph (a), extraoral and intraoral view (b, c)

The study focused on the following aspects:

- ▶ Prevalence of supernumerary teeth in the study group;
- ▶ Distribution of the samples according to jaws (location);
- ▶ Distribution of maxillary supernumerary teeth according to type;
- ▶ Distribution of mandibular supernumerary teeth according to type;
- ▶ Distribution of supernumerary teeth according to bilateral symmetry;
- ▶ Distribution of supernumerary teeth according to gender and age;
- ▶ Distribution of supernumerary teeth according to their status within the arch;
- ▶ Distribution of supernumerary teeth according to their development;
- ▶ Therapeutic decision for each clinical case.

In the following we will present 5 cases of supernumerary teeth.

**Case 1:** G.R., 10 year-old male – bilateral supplemental lateral incisors (Figure 1 a, b, c).

**Case 2:** P.J., 11 year-old female – supplemental left lateral incisor (Figure 2 a, b, c).

**Case 3:** M.A., 9 year-old male – two mesiodentes (Figure 3 a, b, c). Midline supernumerary teeth (one or two mesiodentes) were seen in 5 cases (3 cases with one mesiodens and 2 cases with two mesiodentes).

**Case 4:** R.E., 7 year-old female – one mesiodens (Figure 4 a, b).

**Case 5:** I.Y., 8 year-old female – failure of eruption of left central incisors, caused by an unerupted mesiodens (Figure 5 a, b, c).

## Results

From a total of 700 examined patients, with mixed and permanent dentition, aged between 6 and 13 years, 21 (3%) had supernumerary teeth. A total of 25 supernumerary teeth were observed and the distribution according to jaws showed a higher prevalence in the maxilla. 80% (n=20) were located in the upper maxilla, while 20% (n=5) were found in the mandible. In the upper arch, the most frequent supernumerary teeth were the lateral incisors 45% (n=9), followed by the central incisors (mesiodentes) 35% (n=7). Smaller percentages were located in the premolar region 15% (n=3) and distomolar region 5% (n=1). The distribution of supernumerary teeth according to bilateral symmetry was 24% (n=6) bilaterally and 76% (n=19) unilaterally. Regarding their status, the majority of the supernumerary teeth 96% (n=24) were erupted and only 4% (n=1) were impacted, being associated with the failure of eruption of the left central incisor. Tooth extraction was the treatment of choice in 100% of the cases. Most of the supernumerary teeth were completely developed 96% (n=24) and only 4% (n=1) showed an incomplete root.

## Discussion

In agreement with other studies [6,14,15,16,17], supernumerary teeth, more commonly occur in the premaxilla. With a prevalence of 3%, the results of this study are comparable with similar publications in literature. A supernumerary teeth prevalence of 1% to 3% is usually found among Caucasians, while in East Asian countries and in patients with cleft lip/jaw/palate or cleidocranial dysplasia, the prevalence is higher [7,9,11,14,18,19,20].

In terms of location, most supernumerary teeth occur in the maxillary anterior region [19]. The present study was in agreement with these reports, as 80% of the supernumerary teeth were found in the anterior maxilla. Lutten [15] reported the following order of frequency: upper lateral incisors (50%), mesiodentes (36%), upper central incisors (11%), followed by bicuspid (3%).

Tay et al. [18] observed that 16.8% of supernumerary teeth were normally orientated, 77.6% were inverted and 5.6% were transversely positioned in relation to the permanent teeth. The 95% (n=24) eruption rate was similar to the rate reported in other studies [7,21,22,23].

Unerupted supernumerary teeth, depending on the morphology, number and distribution can cause various alterations in the eruption and development of the permanent teeth they relate to [24]. In general, supernumerary teeth, particularly in the maxillary anterior region, may cause the following clinical problems [3,6,11,14,16,25,26]:

- ▶ failure of eruption: the presence of supernumerary teeth is the most common cause for the failure of eruption of maxillary incisors [11]. Delayed eruption of central incisors may result in the medial movement of lateral incisors, reduction in the dental arch space and diminished development of dentoalveolar height [11];
- ▶ crowding: erupted supplemental teeth most often cause crowding. A supplemental lateral incisor may increase the potential crowding and cause an esthetic problem in the upper anterior region [11];
- ▶ abnormal diastema or premature space closure;
- ▶ cystic formation;
- ▶ displacement or rotation: a supernumerary teeth may cause any degree of displacement of permanent tooth, from mild rotation to bodily displacement [11,21,27];
- ▶ dilacerations, delayed or abnormal root development of permanent teeth [23,28].

In other cases, supernumerary teeth are asymptomatic and are diagnosed during the radiological examinations [22,26].

The treatment for most supernumerary teeth is extraction, in order to avoid possible complications. Koch et al. [6] and Berrocal-Leco [29] do not recommend the extraction of impacted teeth in children under the age of 10, because in this particular age group such procedures often require general anesthesia. Kruger [30] considers that the extraction should be postponed until the apexes of the adjacent teeth are sealed. According to Donaldo [12] and

Berrocal-Leco [29] treatment should be started as soon as possible in order to avoid displacement and delayed eruption of permanent teeth. Whenever supernumerary teeth are diagnosed, single or multiple, a decision regarding the appropriate management should be made carefully. The clinical management of multiple supernumerary teeth poses a great challenge to the orthodontist. Therefore, it is important to initiate appropriate consultation and an interdisciplinary approach to treatment.

## Conclusions

The prevalence of supernumerary teeth in this study was 3%, comparable to similar publications in literature. A prevalence of 1% to 3% is usually found among Caucasians. In our study, supernumerary teeth, most commonly occurred in the premaxilla and their most common shape was supplemental, followed by the conical one. Most cases showed only one supernumerary tooth and multiple supernumerary teeth were rare in the anterior region. The great majority were erupted, similarly to the other reported eruption rates. All erupted teeth were normally orientated. Based on the clinical analysis of the eruptive related problems, we found associated with these teeth: abnormal diastema, crowding and failure of eruption of maxillary central incisors. Tooth extraction was the treatment of choice in all of the cases. Future research is required to evaluate a larger group of patients.

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