An observational study of the frequency of supernumerary teeth in a population of 2000 patients

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ABSTRACT

Objectives.- An evaluation is made of the epidemiological characteristics of supernumerary teeth, with an analysis of the associated clinical-eruptive complications.

Study design.- A longitudinal observational study was made of 2000 patients, with the documentation of demographic data, the presence of supernumerary teeth, their location, mechanical accidents and the presence of associated pathology.

Results.- The presence of supernumerary teeth was recorded in 1.05% of the study subjects (mean age 20.2 years), with a greater frequency in males. The most frequent location was in the upper maxilla (79.2%), fundamentally in the retromolar zone and at premaxillary level. The presence of mechanical accidents was the most frequent complication (54%) – the displacement of adjacent teeth being the most common finding – along with the presence of follicular cysts.

Conclusions.- The prevalence of supernumerary teeth in our series was 1.05%, the most frequent location being at upper distomolar level. Mechanical accidents were the most frequent complication.

Key words: *Supernumerary teeth, mesiodens, upper distomolar.*

RESUMEN

Objetivos.- Los objetivos de nuestro estudio fueron la valoración de las características epidemiológicas de los dientes supernumerarios y análisis de las complicaciones clínicas-eruptivas asociadas a los mismos.

Diseño del estudio.- Estudio observacional longitudinal en el que participó una muestra de 2000 pacientes, a los que se les realizó una ficha donde se registraron los datos de filiación, presencia de dientes supernumerarios, localización, accidentes mecánicos y presencia de patología asociada.

Resultados.- La presencia de dientes supernumerarios supuso el 1,05% de la población estudiada, con una media de edad de 20,2 años y mayor frecuencia de aparición en hombres. La localización más habitual fue la maxilar en un 79,2%, principalmente en la zona retromolar y a nivel de la premaxila. La presencia de accidentes mecánicos fue la complicación más frecuente en un 54%, siendo el desplazamiento de dientes adyacentes el más habitual, junto a la presencia de quistes foliculares.

Conclusiones.- Los dientes supernumerarios presentaron una frecuencia de aparición del 1,05%, localizándose más frecuentemente a nivel distomolar superior y los accidentes mecánicos fueron la complicación más habitual.

Palabras clave: *Dientes supernumerarios; mesiodens; distomolar superior.*

INTRODUCTION

A supernumerary tooth (or hyperodontia) is defined as an increase in the number of teeth in a given individual, i.e., more than 20 deciduous or temporal teeth, and over 32 teeth in the case of the permanent dentition (1,2).

The incidence of supernumerary teeth varies between 0.45-3%, depending on the literature source, and is more common in females than in males (proportion 2:1)(3,4). While such teeth may be found in any region of the dental arch, they are more commonly located on the maxillary midline, where they are referred to as mesiodens, representing 80% of all supernumerary teeth (5,6). This location is followed in decreasing order of frequency by four molars or upper distomolars, upper paramolars and – proportionately far behind – by lower premolars, upper lateral incisors, lower fourth molars and lower central incisors. Upper premolars are exceptional, as are upper and lower canines and lower lateral incisors (7).

Regarding the etiology of supernumerary teeth, most authors point to phylogenetic factors, specifically hyperactivity within the dental lamina, causing the appearance of additional dental buds (8,9).

Clinically, supernumerary teeth are able to cause different local disorders, including retention of the primary tooth, delayed eruption of the permanent tooth, ectopic eruptions, tooth displacements, follicular cysts and other alterations, requiring surgical or orthodontic intervention (10,11).

The extraction of these teeth is a general rule for avoiding complications (7). Nevertheless, some authors such as Koch et al. (12) do not recommend extractions of impacted teeth in children under 10 years of age, since in this particular age group such procedures often require general anesthesia. Kruger (13) considers that the extraction of supernumerary teeth should be postponed until the apexes of the adjacent teeth have sealed. According to Donado (14), treatment should be provided as soon as possible in order to avoid displacement and delayed eruption of permanent teeth.

The present study examines the epidemiological characteristics of supernumerary teeth, with an analysis of the associated clinical-eruptive complications.

PATIENTS AND METHOD

A longitudinal, prospective observational study was made of 2000 patients seen in the context of the Master of Oral Surgery (Madrid Complutense University, Madrid, Spain). For each patient with supernumerary teeth we recorded the demographic variables (including age and sex), and following clinical-radiographic exploration (orthopantomography and intraoral X-rays) we documented the location of the tooth (upper maxilla or mandible) and its position within the arch.

The pathology associated to the supernumerary teeth was also recorded, considering mechanical accidents (displacement, impossibility of eruption and lysis of the adjacent tooth) and tumor lesions (presence of follicular cysts).

The data obtained were subjected to statistical analysis, with the creation of frequency tables for each study variable.

RESULTS

Of the 2000 patients included in the study, 21 were seen to present supernumerary teeth, representing 1.05% of the global sample.

A total of 24 supernumerary teeth were observed, of which 79.2% (n=19) were located in the upper maxilla, while 20.8% (n=5) were found in the mandible. In the upper arch the most common location was at distomolar level (38%; n=8), followed by the anterior zone (mesiodens)(28.6%). A lesser percentage were located in the region of the premolars (9.6%) and canines (4.8%). In the mandible, the most frequent location was at premolar (14.2%) and distomolar level (4.8%)(Figures 1 and 2).

Regarding their status within the arch, the great majority (95.8%; n=23) were impacted, and only 4.2% (n=1) had erupted.

The mean age of the patients with supernumerary teeth was 20.2 years (range 7-34 years). The teeth most commonly manifested in the third decade of life (47.6%), followed by the first decade (28.5%)(Figure 3).

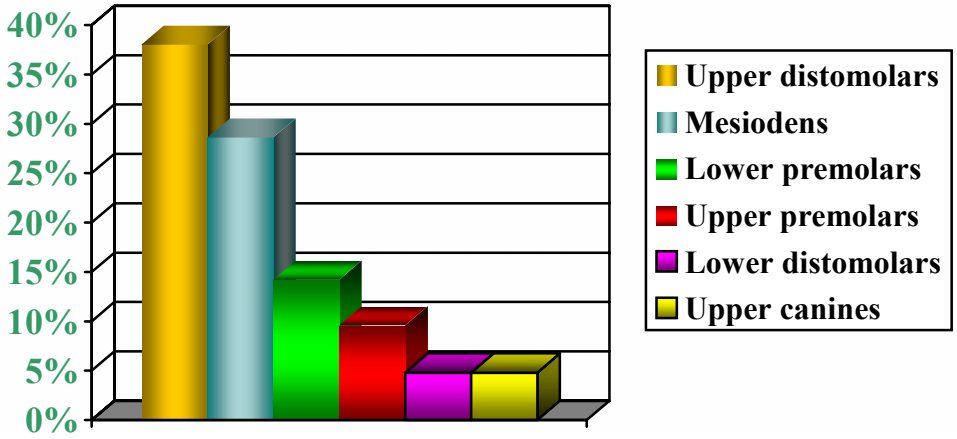

Fig. 1. Distribution of supernumerary teeth according to location.

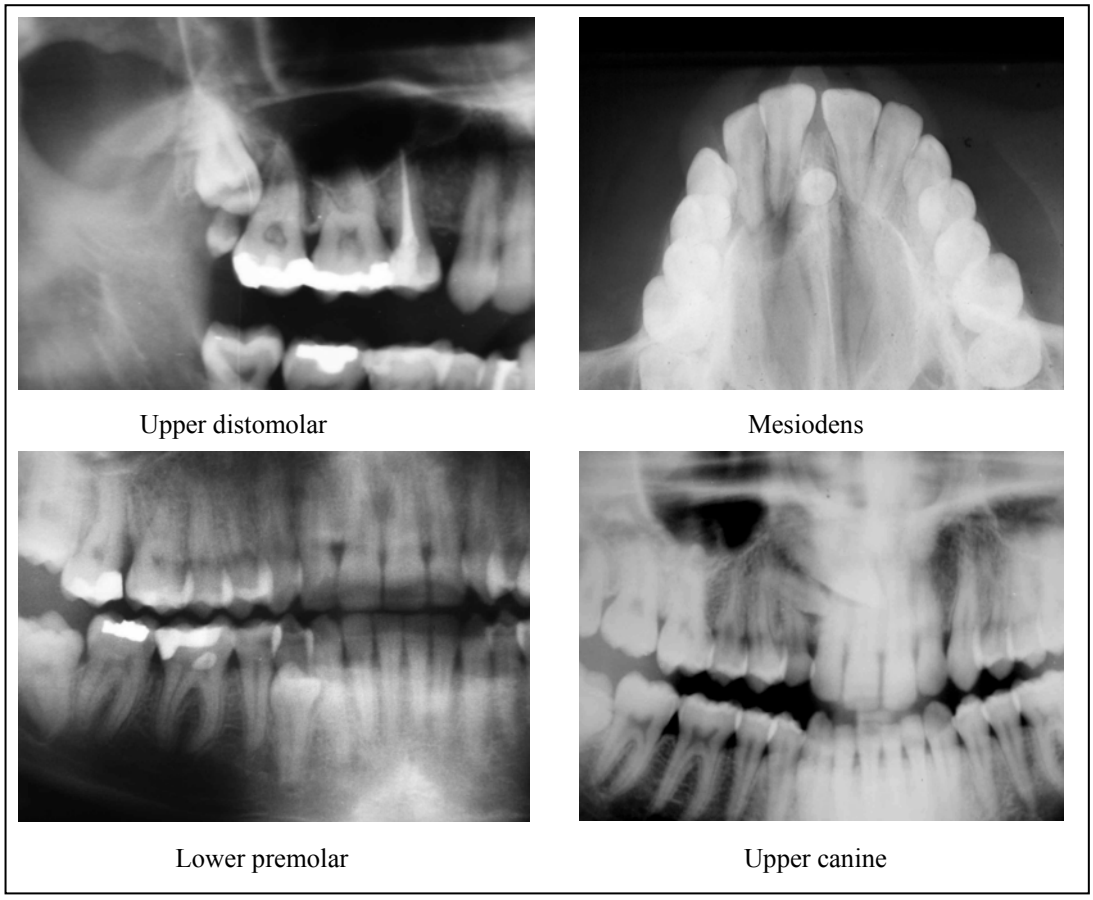

Fig. 2. X-ray images showing different supernumerary teeth locations.

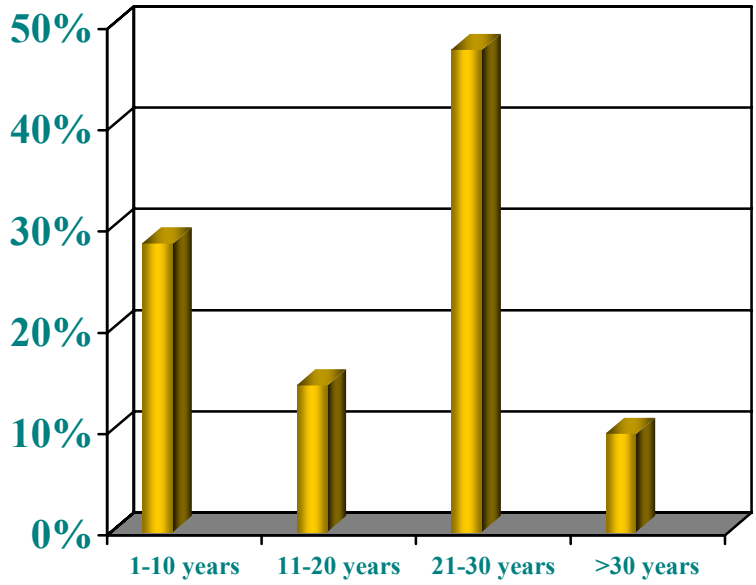

Fig. 3. Distribution of supernumerary teeth according to patient age.

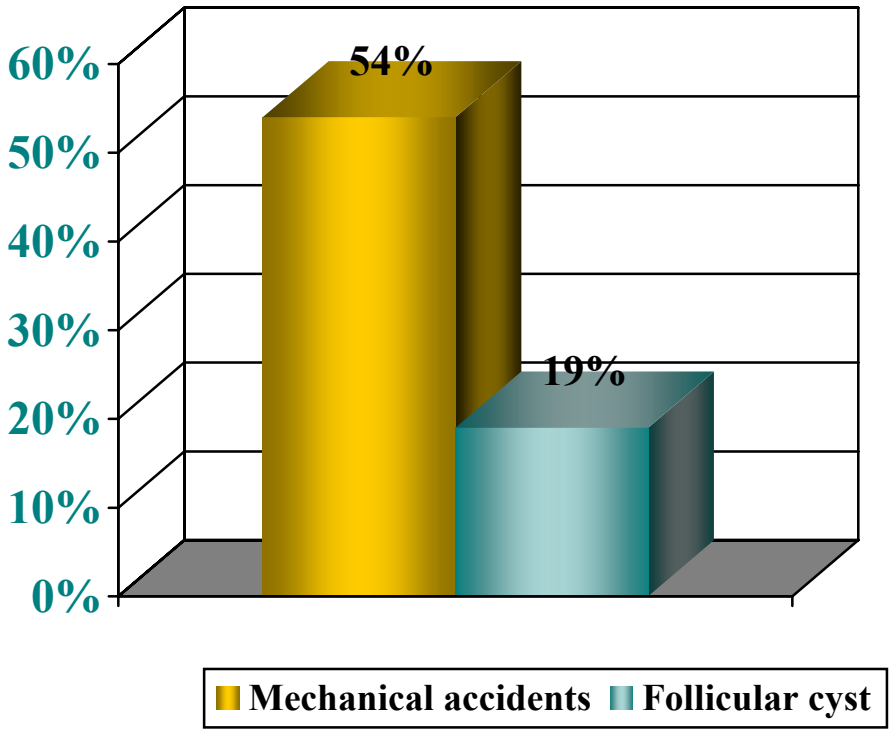

Fig. 4. Clinical-eruptive complications associated to the presence of supernumerary teeth.

Supernumerary teeth were more common in males (71.4% versus 28.6% in females).

The second objective of our study was the analysis of the clinical-eruptive complications associated to these teeth. In this context, we found mechanical accidents to be the most frequent problems (54%), particularly the displacement of adjacent teeth (39%; n=9), followed by reabsorption of the adjacent tooth in 12.5%, and the prevention of eruption in 4.1% (Figure 4).

The mesiodens were the teeth most inclined to present such mechanical accidents (54.5%), followed by the premolars (27.3%) and – to a lesser extent – the canines and distomolar teeth.

Lastly, 19% of the sample (n=4) presented an associated follicular cyst; of these, 50% were circumscribed to premolar locations.

DISCUSSION

Supernumerary teeth are infrequent developmental alterations that may manifest in any zone of the dental arches and involve any tooth; they may be associated to syndromes or can be found in non-syndromic populations (15).

In the present study, an evaluation was made of the epidemiological characteristics of supernumerary teeth, with an analysis of the associated clinical-eruptive complications, in a general population.

Based on the epidemiological results obtained, the incidence of supernumerary teeth in our series of 2000 patients was 1.05%. According to the consulted literature sources, the frequency of supernumerary teeth varies according to the population studied between 0.1-3.8% (16-18), and may reach 28% in patients with cleft palate and harelip (19).

The mean patient age in our series was 20.2 years, i.e., presentation corresponded to the third decade of life – in coincidence with the findings of other authors who report this decade to be the most common period of supernumerary tooth presentation. This observation may be due to the fact that a large percentage of such teeth tend to be a casual finding in the course of molar extractions conducted in patients in this particular age range. According to Salcido-Garcia et al. (15), the appearance of supernumerary teeth is more frequent in the first three decades of life than in older age groups. This coincides with our own findings. In studies involving pediatric populations (2,20,21), frequencies exceeding our own are observed, with figures of between 1.28% and 2.4%, and fundamentally located in the premaxilla (20.22) – in most cases corresponding to mesiodens. However, in studies of adult populations the frequencies are lower (between 0.4% and 1%), with an increased location in the maxilla, though in posterior sectors of the arch (23-26).

In our study the results were very similar to those described

above, the principal location being the premaxillary zone (mesiodens) in children, and distomolar in adults.

Supernumerary premolars ranked third in order of frequency in our series, likewise in coincidence with most authors consulted (2,27,28). However, we recorded no premolars, considered to rank third and fourth in order of frequency by authors such as Donado (14), Gay-Escoda (7) and Peñarrocha et al. (2).

Regarding gender distribution, we coincide with most authors that males are more commonly affected than females (4,15,29,30). However, other investigators such as Dominguez et al. (1) have observed no difference between sexes.

As to the mechanical accidents caused by supernumerary teeth, our results are very similar to those published by Pilo et al. (20) and Burguess et al. (23). However, most authors consider the most common mechanical accident to be delayed eruption of the adjacent teeth (7,31), while in our study displacement of the adjacent tooth was more frequent, followed by reabsorption and, finally, delayed or impossible eruption of the adjacent tooth.

Lastly, regarding the presence of follicular cysts, our observed incidence was 19%, i.e., slightly higher than the values reported by authors such as Ries-Centeno 14.66% (32) and Stafne 6% (33).

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