A classification of numeric dental anomalies was published by Tomes [1873], who defined the following.
- Supplemental: tooth characterised by the same form and function of adjacent teeth with no anatomical differences.
- Supernumerary: tooth characterised by an atypical anatomic form; often these teeth are smaller than normal.

Bush classification [1897] analysed the different morphology of supernumerary teeth:
- Conic: tooth of a small volume and conic form, its root is short and palatine.
- Tuberculate: tooth with several cusps. Its root is short and hooked.
- Infundibuliform: tooth with a funnel form. Its root is short and conic.

A study showed that supernumerary teeth are characterised by regular form and structure. Only conic teeth are affected by different mineral concentrations with irregular dentine [Pezzoli et al., 1969].

different authors classified supernumerary teeth
according to their position and location. Mesiodens can be defined a tooth located between central upper incisors; paramolar a tooth placed in molar region; distomolar a tooth that lies distal to the third molar [Bolk, 1914; Sfasciotti et al., 1991].

Supernumerary position was investigated by Capozzi [1987] and De Michelis [1992] in two different scientific works, showing that tooth position can be normal, inverse, transverse or ectopic.

A statistic analysis of the supernumerary teeth orientation was made by Tay et al. [1984], concluding that 16.8% of the analysed sample were in the correct position, 77.6% were inverted, and 5.6% were in transverse position.

The pathogenesis of this anomaly is still debated. Familiarity is considered the main factor, while phylogenetic theories have only historical value. Levine, Di Biase, Mckibben, Sykaras, Primosch and Liu studied in their works the high activity of the primitive dental lamina as a possible cause of dental numeric anomaly [Levine, 1961; Di Biase, 1969; Mckibben et al., 1971; Sykaras, 1975; Primosch, 1981; Liu, 1995].

Cleidocranial disostosis is a genetic syndrome characterised by numeric dental anomalies.

For this reason genetic factors are highly associated with the real genesis of the disease. Orlando, Capozzi, and Cassetta underlined that numeric dental anomalies can be present also in other genetic syndromes like ectodermic displasy, Crouzon’s disease and orofacial syndromes (Sture–Weber, Anderson, Gardner, Down) [Orlando et al., 1966; Capozzi et al., 1987; Cassetta et al., 1994].

The frequency of this disease was analysed by Orlando, Mckibben, Primosch, Goaz, Capozzi, Nik-Hussein and Roberts. Those epidemiological reports show that there is high frequency of supernumerary teeth in permanent dentition (3.8%). Frequency in primary dentition is lower (1.8%) [Orlando et al., 1966; Mckibben et al., 1971; Primosch, 1981; Goaz et al., 1986; Capozzi et al., 1987; Nik-Hussein et al., 1996; Roberts et al., 2005].

In 2005, Bryan et al published an investigation on delayed eruption of permanent due to the presence of supernumerary teeth in relation to: root maturity, degree of vertical impaction, and degree of angle of impaction [Bryan et al., 2005].

Feng et al. [2007] in their work about oligodontia and tooth agenesis classified numeric dental anomalies into syndromic and non syndromic, and they concluded that aetiological factors can be associated with genetic mutation.

On the other side, Pardo et al. published [2006] an important genetic study of a Chilean family with three different anomalies. They concluded that genetic mutations cannot be always associated with dental numeric anomalies.

The development of supernumerary teeth in the mandible in cases with a history of supernumeraries in the pre-maxillary region was analysed by Hall in 2006. This work presented four cases in which delayed formation and late eruption of supernumerary teeth in the mandible occurred in patients with a history of supernumerary formation in the pre-maxillary region [Hall et al., 2006].

Chen et al. [2006] published a case report, showing a supernumerary tooth associated with a genetic syndrome, and a literature review highlighting the importance of diagnostic features and treatment options.

Bayram et al. published [2006] an investigation on bilaterally impacted maxillary central incisors with surgical exposure and orthodontic treatment. This case report underlines that the origin of impacted upper incisors can be associated with local causes, supernumerary teeth or odontoma. The surgical exposure and orthodontic traction of bilaterally impacted incisors after removal of impacted supernumerary teeth is presented in this report.

In the literature the frequency of supernumerary and supplemental teeth is reported to be higher in males than females, the proportion in the permanent dentition is 2:1. However in the primary dentition the ratio is 1:1 [Pezzoli et al., 1969; Brook, 1974; Ravne, 1971; Goaz et al., 1986; Hogstrum et al., 1987; Berrone et al., 1989; Goia et al., 1989; Mitchell, 1989; Cassetta et al., 1994].

Supernumerary primary teeth are found in the incisors area of both jaws. Orlando, Capozzi and Cassetta pointed out the central position of the mesiodens in permanent dentition. Mesiodens is usually located in the premaxilla (64.3%). Other positions can be represented by the third upper molar zone (29.6%), third lower molar area (7.0%), premolar area (7.0%) and lower incisors area (4.2%) [Orlando et al., 1966; Capozzi et al., 1987; Cassetta et al., 1994].

Complications of numeric dental anomalies were analysed by Orlando, Primosch, Capozzi and Cassetta, who concluded that malocclusion is the most frequent complication; it may also be associated with maxillary cysts and neuralgic manifestations [Orlando et al., 1966; Primosch, 1981; Capozzi et al., 1987; Cassetta et al., 1994].

The diagnosis of numeric dental anomaly is
generally easy, and it can be made during a clinical examination or radiographic analysis. Supernumerary and supplemental teeth diagnosis was investigated by Olivera and Cozza [Cozza, 2001; Olivera, 2002].

This case report shows the rare presence of supplemental and supernumerary teeth. The early non invasive treatment can be considered the best treatment option.

Case report

A 10 year old male child was observed at the Department of Dentistry of Messina University.

The case history was negative for systemic and local genetic diseases. Clinical examination showed a normal mixed dentition, and the patient was found caries free.

Intra-oral examination showed two normal-form supplemental lateral permanent incisors and clinical evidence of malocclusion (Fig. 1).

Radiographic analysis showed physiologic mixed dentition and confirmed the presence of two normal-form supplemental lateral permanent incisors, and also an unerupted mesiodens between the upper central incisors (Fig. 2, 3). For this reason an orthodontic check-up was performed. Treatment planning was divided into a first surgical phase and a subsequent interceptive orthodontic therapy. Correction of malocclusion aiming to obtain a 1 molar Class was considered an important parameter to obtain the physiologic upper canine eruption. Surgical extractions of the supplemental teeth and positioning of a space maintainer were made to allow eruption of the permanent canines. Then the inverted mesiodens was also extracted (Fig. 4, 5).

After some months, the canines erupted and a good dental alignment in the front upper jaw was obtained.

Discussion

Case report showed a rare clinical condition: the concomitant presence of supplemental and supernumerary teeth.

Robertson et al. reported in 1984 a case of two supplemental lateral incisors in the upper jaw and described the therapy underlining the prognosis.

Aim of the therapy was surgical extraction of supernumerary teeth to obtain the physiologic eruption of permanent teeth [Foley et al., 2004].

Surgical therapy is often associated with tooth germ extraction as Sfasciotti et al. showed in 1987 [Sfasciotti et al., 1987].

Orthodontic treatment is important to solve malocclusions and maintain the space for permanent
teeth eruptions. Orthodontic treatment was analysed by Orlando, Capozzi, De Michelis, Burrone, Cassetta and Cozza. All authors describe the interceptive treatment to solve these pathologies [Orlando et al., 1966; Capozzi et al., 1987; De Michelis et al., 1992; Burrone et al., 1989; Cassetta et al., 1994; Cozza et al., 2001].

**Conclusion**

Based on the data from the literature and our clinical experience, the following can be concluded.

- Dynamic eruptive alterations, influenced by numeric dental anomalies, can be treated by multidisciplinary planning and early diagnosis [Cozza et al., 2006];
- Interceptive orthodontic treatment must be considered important to avoid invasive and traumatic surgical operations.
- Radiographic analyses, such as O.P.T. and CT, help early diagnosis and treatment planning.
- Numeric dental anomalies can be detected by early diagnosis based on clinical and radiological examinations and plan an adequate therapy.

In cases of supernumerary teeth the surgical orthodontic treatment can be considered the best therapeutic option for promoting physiologic tooth eruption.

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