

A case of bilateral supplemental maxillary central incisors

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Summary. A case of bilateral supplemental maxillary central incisors is presented. Treatment comprised of extraction of one supplemental and two lateral incisors, preservation of one supplemental incisor, finishing with a 'Cyclops' arrangement of the teeth. The handling of supernumerary teeth in general is discussed.

Introduction

The prevalence of hyperodontia given in various reports ranges from 0.25% to 2.7% [1–8].

The commonest site for hyperodontia is the premaxilla, with Bodin *et al.* quoting a prevalence of 1.57% [4], while Hurlen and Humerfelt quote 1.43% [5].

Males are affected more frequently than females in a ratio of 2 : 1 [3,9,10]. Kurosu *et al.* found the ratio to be 3 : 1 [2] and Davis gives a figure of 6.5 : 1 [8]. However, Backman and Wahlin found a 3 : 1 ratio in favour of females [6].

Multiple impacted supernumerary teeth are a feature of certain syndromes, such as Gardner's syndrome, cleidocranial dysostosis and Nance–Horan syndrome. Supernumerary teeth are also a common feature in cleft cases. The severity of the cleft is usually inversely proportional to the number and the normalcy of shape of supernumerary teeth. In more severe clefts, the rudiments of odontogenic lateral incisor tissue on either side of the unfused processes may not survive, leading to complete loss of the incisor.

Aetiology

The aetiology of hyperodontia is unclear. The main theories are:

1 Atavism, i.e. a reversion to a more primitive type of dentition;

2 Continued proliferation of remnants of the dental lamina, producing a 'third dentition';

3 Dichotomy of the tooth germ, producing two or more separate units. According to the dichotomy theory, the tooth bud splits into two equal or differently sized parts, resulting in two teeth of equal size or one normal and one abnormal tooth, respectively. The phenomenon of gemination, which may be assumed to be a similar, incomplete process, lends support to this idea [11]. The dichotomy theory seems to be the most acceptable.

Characteristics of supernumerary teeth

Supernumerary teeth are classified according to their shape and size. If they are of abnormal shape or size they may be termed 'supernumerary teeth'. The latter are subclassified as conical, tuberculate or molariform. Those of orthodox shape and size, resembling a member of the normal dentition are termed 'supplemental teeth'.

In general, maxillary supernumerary teeth are of abnormal shape. Bodin *et al.* [10] found 90% of maxillary supernumerary teeth to be deformed. The commonest type of maxillary supplemental tooth is the supplemental lateral incisor [12]. Bilateral cases are rare, making up 8% of the total. In a search of the literature, only four reports of bilateral maxillary central incisor duplication were found [13–16].

The present report records a further case of bilateral supplemental central incisors.

Case report

A 13-year-old boy attended the clinic complaining of unsightly front teeth. He presented with a Class

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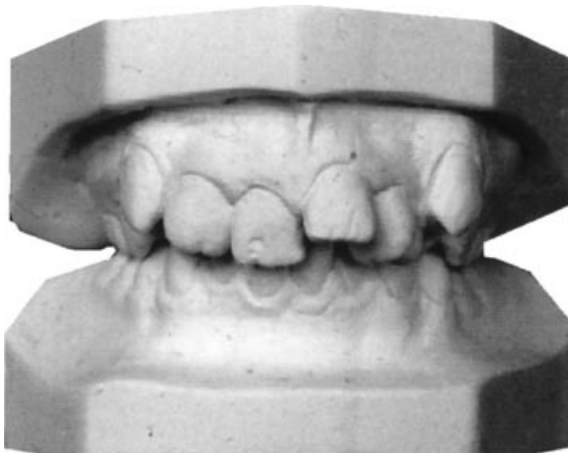


Fig. 1. Anterior view, pre-treatment.

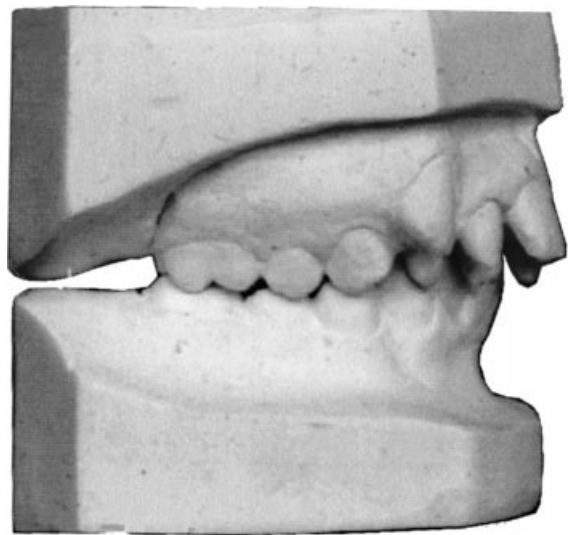


Fig. 3. Right buccal view, pre-treatment.



Fig. 2. Occlusal view, pre-treatment.

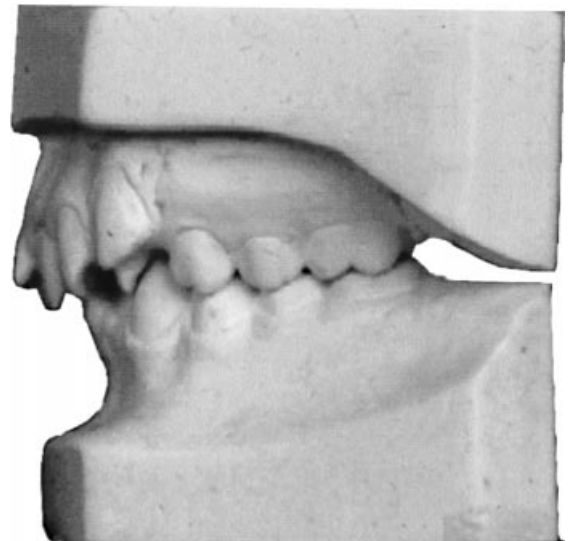


Fig. 4. Left buccal view, pre-treatment.

II/i incisor relation on a Class I base with an average FMA. The lower arch was mildly crowded and the upper arch severely crowded with four central incisors. The central incisors were all similar in size, however, the distal teeth were slightly larger, more rounded and more shovel-shaped, with an incisal notch. The lateral incisors were diminutive and displaced palatal to the distal central incisors. The canines were vertical. The overjet was 12 mm. The overbite was increased and complete to tooth and palatal mucosa. The centrelines were coincident in the midline and the buccal segment occlusion was Class II. There was a mesiobuccal rotation on 24 (Figs 1–4).

Ideally the patient required fixed appliance therapy with extraction of the supplemental incisors, however, there was no-one on the island available to carry out this type of treatment at the time.

Study models were taken and a consensus opinion obtained from three orthodontic consultants at Guy's Hospital, London as to the feasibility of 'driftodontics'.

It was decided to accept the lower arch and extract 12, 21^S, 22 in order to improve the appearance as much as possible. A reasonable result was obtained, with considerable spontaneous alignment of the remaining incisors over the following 2 years. Mild residual rotations persisted, as did a 1-mm space at the extraction site of the upper left distal central incisor (Figs 5–8).

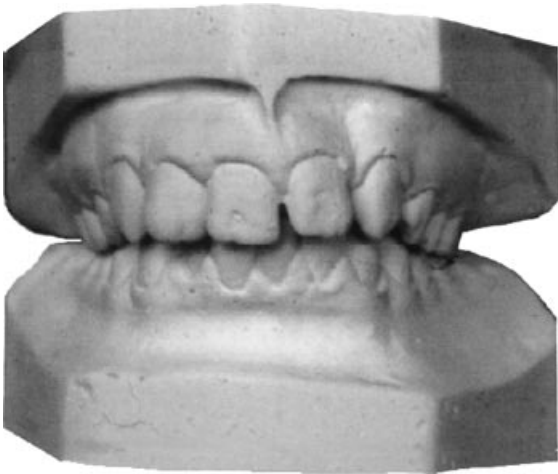


Fig. 5. Anterior view, prior to fixed appliance treatment.

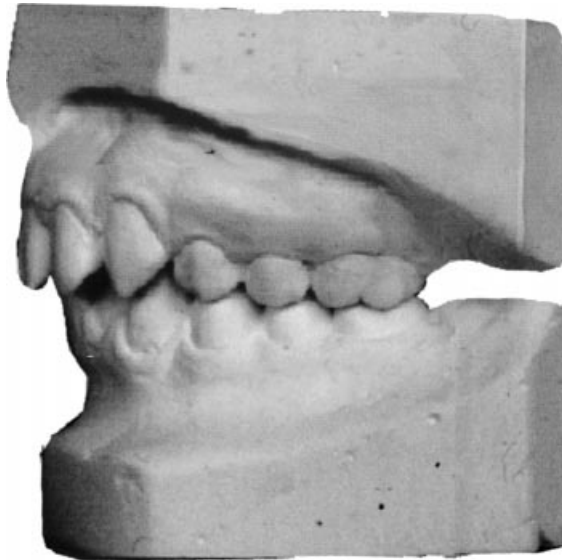


Fig. 8. Left buccal view, prior to fixed appliance treatment.

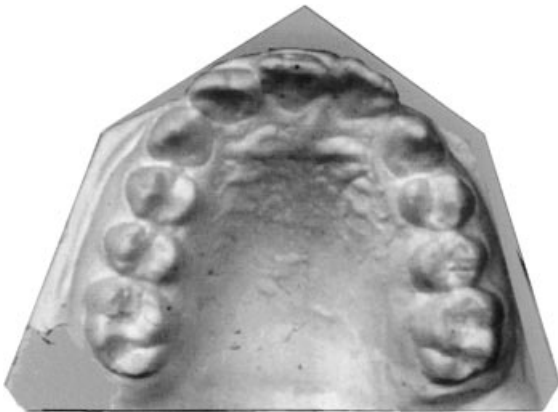


Fig. 6. Occlusal view, prior to fixed appliance treatment.



Fig. 9. Clinical photograph of incisor arrangement 9 years after treatment.

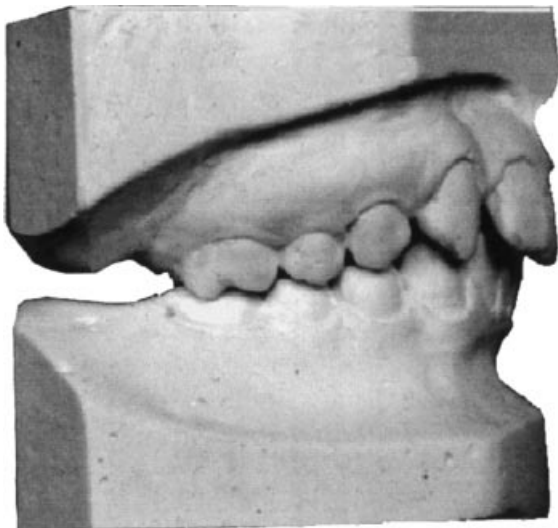


Fig. 7. Right buccal view, prior to fixed appliance treatment.

A few years later, the patient presented again enquiring whether any further improvement was possible. An upper fixed appliance was used to align the remaining three central incisors in a Cyclops arrangement (Fig. 9).

The result was to the patient's satisfaction and he has continued to attend the general dental side of the practice, albeit on a casual basis (Fig. 10).

Discussion

Supplemental central incisors are rare, bilateral cases even rarer, only four cases having been reported in the literature to date [13–16]. There is a possibility of large supplemental lateral incisors being misreported as central incisors, however, this

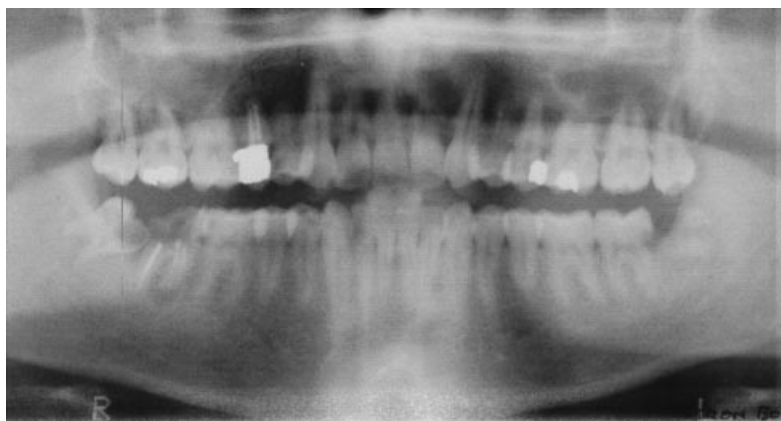


Fig. 10. DPT taken 9 years post-treatment.

report leaves no doubt as to which tooth has been duplicated.

It is interesting to note that the lateral incisors were diminutive. Johnson [12] reports that in cases of supplemental laterals, the distal lateral was more oval shaped than the mesial, possibly a form of 'caninization'. The distal central incisors were much rounder than the mesial, and also exhibited an incisal notch.

The aetiology is very likely to be dichotomy of the tooth germ. Melnik [17] reports a case of gemination of one central and a supplemental central on the other side. It is possible that gemination in these cases was complete on both sides.

Bohn [18] postulated that supplemental lateral incisors are a microform of cleft. This theory is supported by Johnson [12].

Trotman and McNamara [16] reported a case of bilateral central incisors in a cleft case, however there was no mention of orofacial clefting in the cases reported by Rock [14] or Steelman [15]. There was no family history of clefting in this case. It is unlikely that orofacial clefting plays a significant role in the aetiology of supplemental central incisors.

In line with the trend found in most studies of hyperodontia, the subject was male.

The majority of supplemental teeth remain unerupted [5,10].

Unerupted supplemental teeth have been associated with several pathological conditions, such as widened follicular space, dentigerous cyst formation, dental pulp necrosis, pulp canal obliteration, root resorption, and ankylosis. Disturbance of eruption, diastema formation and rotations of permanent teeth are common complications. Hurlen and Humerfelt [5] found that nearly 60% of subjects

examined had radiographic or clinical signs of interference with the normal dentition or of associated complications.

There is no formal treatment protocol for this condition [19], however, most authorities recommend extraction. Indeed this is the approach presented in undergraduate and postgraduate textbooks [20,21].

Bodin *et al.* [10] point to the high frequency of widened follicles with potential for cystic change and Hurlen and Humerfelt [5] recommend radiographic follow-up of supernumeraries left *in situ*. This is often the treatment of choice for those supernumeraries which do not exhibit any pathology and whose extraction may pose a surgical risk.

Most erupted supernumerary teeth are of abnormal size and shape and so are extracted on aesthetic grounds. Holtzman [22], however, presents a case where an erupted conical supernumerary tooth is preserved.

Supplemental teeth may be preserved if the situation warrants. Melnik [17] reported the movement of a supplemental incisor across the midline to replace an extracted megadont tooth.

In this particular case, a supplemental tooth was also preserved, though circumstances dictated that the treatment carried out was not ideal. Had the supplemental centrals been extracted and fixed appliances used to align the teeth in the first instance, a far better result would have been obtained.

Résumé. Un cas bilatéral d'incisives centrales maxillaires supplémentaires est présenté. Le traitement a consisté en l'extraction de l'une des deux incisives supplémentaires et de deux incisives latérales, la préservation de l'une des incisives supplémentaires, une finition avec un arrangement de type «cyclope» des dents. La prise en charge en général des incisives supplémentaires est discutée.

Zusammenfassung. Ein Fall von beidseitig überzähligen mittleren Oberkiefer-Schneidezähnen wird vorgestellt.

Die Behandlung bestand aus Extraktion eines und dem Erhalt des zweiten der beiden überzähligen Zähne, mit dem Ergebnis einer 'zyklopischen' Anordnung der Zähne. Der Umgang mit überzähligen Zähnen wird diskutiert.

Resumen. Se presenta un caso de incisivos centrales superiores supernumerarios bilaterales. El tratamiento comprendía la exodoncia de un supernumerario y dos incisivos laterales, la preservación de un incisivo supernumerario, finalizando con un arreglo 'cíclope' de los dientes. Se discute, en general, el tratamiento de los dientes supernumerarios.

References

- 1 Shah RM, Boyd MA, Vakil TF. Studies of permanent tooth anomalies in 7,886 Canadian individuals. II: congenitally missing, supernumerary and peg teeth. *Dental Journal* 1978; **44** (6): 265–8, 276.
- 2 Kurosu K, Watanabe H, Tsuchiya T, Kawai Y. Study on supernumerary teeth in the maxillary anterior area in children. 1. Clinical analysis. *Aichi Gakuin Journal of Dental Science* 1989; **2**: 47–56.
- 3 Bergstrom K. An orthopantomographic study of hypodontia, supernumeraries and other anomalies in school children between the ages of 8–9 years. An epidemiological study. *Swedish Dental Journal* 1977; **1** (4): 145–157.
- 4 Bodin I, Julin P, Thomsson M, Hyperodontia. I. Frequency and distribution of supernumerary teeth among 21 609 patients. *Dentomaxillofacial Radiology* 1978; **7** (1): 15–17.
- 5 Hurlen B, Humerfelt D. Characteristics of premaxillary hyperodontia. A radiographic study. *Acta Odontologica Scandinavica* 1985; **43** (2): 75–81.
- 6 Backman B, Wahlin YB. Variations in number and morphology of permanent teeth in 7-year-old Swedish children *International Journal of Paediatric Dentistry* 2001; **11** (1): 11–17.
- 7 Buenviaje TM, Rapp R. Dental anomalies in children: a clinical and radiographic survey. *ASDC Journal of Dentistry for Children* 1984; **51** (1): 42–46.
- 8 Davis PJ. Hypodontia and hyperodontia of permanent teeth in Hong Kong schoolchildren. *Community Dentistry and Oral Epidemiology* 1987; **15** (4): 218–220.
- 9 Egermark-Eriksson I, Lind V. Congenital numerical variation in the permanent dentition. D. Sex distribution of hypodontia and hyperodontia. *Odontologiskrevy* 1971; **22** (3): 309–315.
- 10 Bodin I, Julin P, Thomsson M, Hyperodontia. III. Supernumerary anterior teeth. *Dentomaxillofacial Radiology* 1981; **10** (1): 35–42.
- 11 Stellzig A, Basdra EK, Komposch G. Mesiodentes: incidence, morphology, etiology. *Journal of Orofacial Orthopaedics* 1997; **58** (3): 144–153.
- 12 Johnson DB. Supernumerary lateral incisor teeth. *British Journal of Orthodontics* 1973; **1**: 149–157.
- 13 Stafne EC. Supernumerary upper central incisors. *Dental Cosmos* 1931; **73**: 976–980.
- 14 Rock WP. A case of bilateral supplemental central incisors. *International Journal of Paediatric Dentistry* 1991; **1**: 155–158.
- 15 Steelman R, Wilson C, Nelson S. Maxillary incisor duplication. *Oral Surgery, Oral Medicine, Oral Pathology* 1991; **71** (4): 523.
- 16 Trotman CA, McNamara T. Four maxillary incisors: a case report. *Special Care in Dentistry* 1994; **14** (3): 112–115.
- 17 Melnik AK. Orthodontic movement of a supplemental maxillary incisor through the midpalatal suture area. *American Journal of Orthodontics and Dentofacial Orthopaedics* 1993; **104** (1): 85–90.
- 18 Bohn A. Dental anomalies in harelip and cleft palate. *Acta Odontologica Scandinavica* 1963; **21** (Suppl. 93): 68.
- 19 Patchett CL, Crawford PJ, Cameron AC, Stephens CD. The management of supernumerary teeth in childhood – a retrospective study of practice in Bristol Dental Hospital, England and Westmead Dental Hospital, Sydney. *Australian International Journal of Paediatric Dentistry* 2001; **11** (4): 259–265.
- 20 Houston WJB, Tulley WJ. A textbook of orthodontics. Bristol: Wright, 1986: 124–131.
- 21 Mills JRE. *Principles and Practice of Orthodontics*, 2nd edn. Edinburgh: Churchill Livingstone, 1987: 210–215.
- 22 Holtzman L. Conservative treatment of supernumerary maxillary incisor with dens invaginatus. *Journal of Endodontics* 1998; **24** (5): 378–380.