

# Late Developing Supernumerary Teeth in the Mandible

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**Abstract.** *This paper presents two cases in which supplemental premolars were an incidental finding. Although anomalies of tooth number and form are quite common, both cases demonstrate late forming supernumeraries with one case illustrating their development in a more unusual site.*

*It is not routine practice to screen for late development of teeth during orthodontic treatment. Therefore the possibility of their interference with occlusal development or orthodontic mechanics such as space closure, should always be kept in mind.*

**Index words:** Case Reports, Orthodontic Treatment, Radiography, Supernumeraries.

Refereed Paper

## Introduction

Although anomalies of tooth number and form are quite common, two cases are presented which demonstrate late forming supernumeraries with one case illustrating their development in an unusual site.

Supernumerary teeth are defined as an excess in the number of teeth when compared to the normal dental formula (Primosch, 1981). They are more prevalent in the permanent dentition with reports of between 1 and 3 per cent of the general population affected (McKibben and Brearley, 1971; Brook, 1974), whilst in the primary dentition they are found in approximately 0.8% of the population (Brook, 1974). Certain conditions predispose to supernumerary teeth, for example cleidocranial dysplasia and Gardner's syndrome (Fader *et al.*, 1962; Jensen and Kreiborg, 1990), whilst Milhon and Stafne (1941) reported that up to 28 per cent of cleft lip and palate patients had supernumerary teeth.

There are no satisfactory explanations for the mode of inheritance of supernumerary teeth but occasionally a positive family history exists. Brook (1984), for example, found the prevalence of supernumerary teeth in relatives of affected subjects to be much greater than that of the general population and there are a number of cases to support this theory (McKibben and Brearley, 1971; Mason and Rule, 1995). A sex-linked mode of inheritance has also been suggested as supernumerary teeth are twice as common in males as females in the permanent dentition (Brunning *et al.*, 1957). However, it is generally agreed that although a genetic component may exist, environmental factors cannot be discounted (Brook, 1984).

A number of different types of supernumerary tooth exist which are classified according to their morphological features (DiBiase, 1969; Foster and Taylor, 1969). Rudimentary supernumeraries are described as being either conical or tuberculate in shape, the conical form being

the most common. Supplemental supernumeraries resemble the normal series, but are usually smaller, and are found either in the primary dentition (Brook, 1974) or the premolar region in the permanent dentition (Stafne, 1932).

Supernumerary teeth can occur in the maxilla, mandible or both, either singly or multiply. The majority however are found in the maxilla (90-98 per cent), with 90 per cent of these being located in the premaxilla region (Stafne, 1932; Winter and Brook, 1986). The next most common site is the maxillary molar region where the supernumerary teeth are either conical or of the small supplemental type, and are usually located distal to the third molar (Stafne, 1932). Additional premolars have been reported bilaterally in the premolar region in both the maxilla and mandible (Stafne, 1932; Nazif *et al.*, 1983; Kantor *et al.*, 1988).

Several theories have been suggested as to how supernumeraries arise. Originally, it was suggested that they developed as a result of atavism (Oehlers, 1952), but this theory has been discounted. Subsequently, it was proposed that 'extra' teeth formed as a result of a splitting of the tooth bud, known as dichotomy (Gardiner, 1961), whilst a third theory proposed that they formed as a result of hyperactivity of either the dental lamina or remnants of the dental lamina (Weber, 1964; Di Biase, 1969).

The majority of supernumerary teeth in the permanent dentition commence their development later than that regarded as normal for the teeth in that particular area. Evidence for this is based on the incomplete root formation of the supernumerary tooth compared with the complete root formation for teeth of the normal series (Stafne, 1932). However, it is difficult to determine exactly when a supernumerary tooth starts to form due to their lingual position, making detection on routine radiographs difficult (Bowden, 1971).

There have been a number of reports of late-forming supplemental teeth, especially in the premolar region

(Oehlers, 1952; Morgan *et al.*, 1970; Bowden, 1971; Breckon and Jones, 1991) and it has been suggested that they may form part of a post-permanent dentition developing from extensions of the dental lamina (Oehlers, 1952; Poyton *et al.*, 1960; Price and Hoggins, 1969). Foster and Taylor (1969) suggested that tuberculate supernumerary teeth may also represent part of the post-permanent dentition because of their palatal relationship to the upper incisors and much later root development.

Two further cases of supernumerary teeth forming at a later stage are described below.

### Case I

R.G. presented as an 11-year-old Indian male in the mixed dentition with a Class II division I incisor relationship on a Class II skeletal base. The upper incisors were markedly proclined, whilst the lower labial segment was upright and crowded. The overjet was 14 mm, and the overbite was increased and complete to the palatal mucosa. The molar relationship was a full unit Class II bilaterally. The patient's medical history was clear and there was no family history of supernumerary teeth.

Radiographic examination at 11 years revealed the presence of all developing permanent teeth and also marked posterior crowding (Fig. 1a). Treatment, initially, involved the use of a functional appliance to address the antero-posterior skeletal discrepancy. This was followed by the removal of all first premolars, and the use of fixed appliances and headgear to detail the occlusion. Treatment progressed well, with excellent co-operation throughout. During the fixed appliance phase of treatment it was noted

that the lower right second molar was delayed in eruption when compared to its antimere. An orthopantomogram taken at this stage (age 14 years) revealed the presence of bilateral supernumerary teeth (premolar in nature) in the mandibular first and second molar region (Fig. 1b).

It was not possible to palpate the supernumerary teeth, but further radiographic examination confirmed the lingual position of both supernumeraries (Fig. 1c). A decision was made to surgically remove the supernumerary tooth associated with the unerupted lower right second molar, but to monitor that in the lower left molar region.

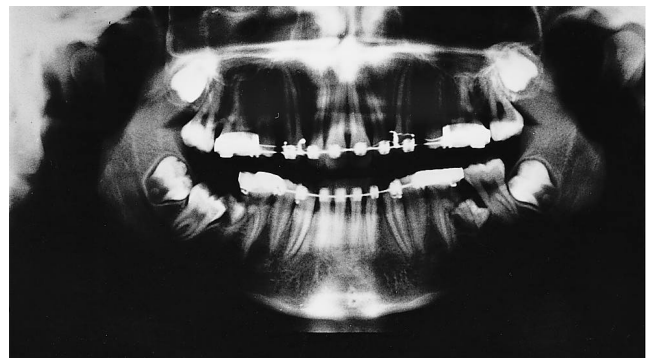
### Case II

N.H., a 9-year-old Chinese female, presented initially in the mixed dentition with a Class III incisor relationship on a mild Class III skeletal base. There was mild upper and lower arch crowding. The molar relationship was Class I bilaterally. The patient's medical history was clear and there was no family history of supernumerary teeth. At this stage it was decided to review the patient after a year. Unfortunately, the patient failed to attend, but represented aged 12 years. Treatment was carried out on a non-extraction approach with upper fixed appliances to address the mild degree of crowding and was uneventful.

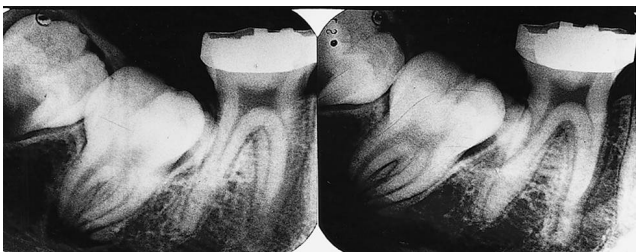
Radiographic examination at 9 years showed the presence of all permanent teeth except the upper third molars, with no other significant findings (Fig. 2a). Prior to active orthodontic treatment, further radiographic examination showed the presence of a supernumerary tooth developing between the roots of the lower left first and



(a)



(b)



(c) Left



(c) Right

FIG. 1 (a) Case I. Orthopantomogram showing no supernumeraries present (age 11 years). (b) Case I. Orthopantomogram taken during treatment revealing bilateral supernumerary teeth in the mandibular region (age 14 years). (c) Case I. Periapical radiographs of the lower left and right molar region confirm the lingual position of the supernumerary teeth.

second premolars. There was also a well circumscribed radiolucent area between the lower left second premolar and first molar as well as evidence of a rudimentary upper right third molar (Fig. 2b).

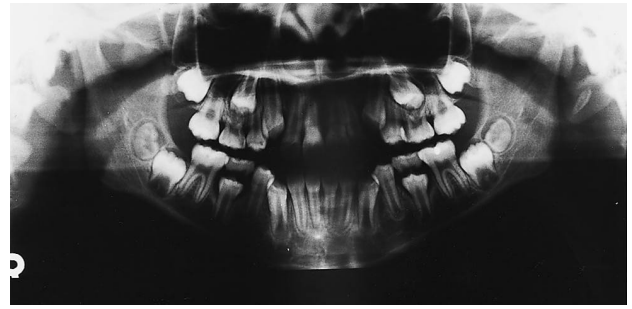
At the end of treatment (aged 14 years), the orthopantomogram showed another supernumerary tooth between the lower left second premolar and first molar which would suggest that the radiolucent area seen previously was, in fact, a supernumerary tooth germ. A similar radiolucent area was noted between the lower right canine and first premolar (Fig. 2c). Both supernumeraries appeared to resemble premolar teeth. As the occlusion was not disrupted and there were no signs of pathology it was decided to continue to monitor the patient.

## Discussion

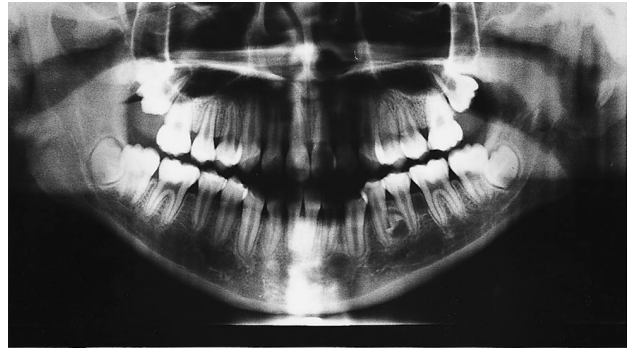
Cases of late developing supernumerary teeth have been reported in the literature (Bowden, 1971; Kantor *et al.*, 1988; Breckon and Jones, 1991; Rubenstein *et al.*, 1991). Stafne (1932), with a sample of 48,550 subjects found that supplemental premolars were found in approximately 10 per cent of cases with 79 per cent of these in the mandibular region. Scott and Symons (1967) state that calcification of the permanent premolar teeth commences between the age of 1.5 and 2.5 years, although there may be no radiological evidence of this until 3 or 4 years. Reports have demonstrated that supernumerary premolar teeth develop approximately 7–11 years after normal development (Kantor *et al.*, 1988; Rubenstein *et al.*, 1991) and it would appear that both cases in this report may be similar examples, with case 2 showing evidence that a further supernumerary tooth may be developing in the lower right premolar region.

However, in the first case the site of development of the supernumerary teeth is more unusual. Cases of bilateral supernumerary teeth in the upper molar region have been reported (Lowry and MacCallum, 1965; Fuller, 1966) with Bolk (1914) referring to these teeth, usually conical in nature, as paramolars. However, in a review of the literature, only one case describes supernumeraries in the mandibular molar region. This case was a 12-year-old West Indian boy who demonstrated a total of six supernumerary teeth. An additional tooth was found between each of the first and second molars in both the maxilla and the mandible. The other two teeth were located in the mandibular premolar region, one on each side (Selwyn-Barnett, 1974). However, Stafne (1932) in his large sample, reported no supernumeraries in the lower molar region between the first and second molars.

When supernumerary teeth are discovered a decision needs to be made whether to remove or monitor them. If left, supernumerary teeth may erupt and disrupt the occlusion. If the teeth remain impacted, not only may they disrupt occlusal development as in case 1, but cystic lesions may develop around them or resorption of adjacent roots may occur (Jokela, 1976). Surgical removal of impacted teeth involves the risk of damage to adjacent structures and therefore a decision needs to be made with regard to the surgical risks and the benefit of removal. Bodin *et al.* (1978) reported that only 2 per cent of supernumeraries in the premolar region exhibited any pathological change and



(a)



(b)



(c)

FIG. 2 (a) Case II. Orthopantomogram showing no supernumeraries present (age 9 years). (b) Case II. Orthopantomogram showing a supernumerary tooth in the lower left first and second premolar region, a radiolucent area between the lower left second premolar and first molar, and a rudimentary upper right third molar (age 12 years). (c) Case II. Orthopantomogram showing the development of another supernumerary tooth in the mandible, and also a radiolucent area between the lower right canine and first premolar (age 14 years).

suggested that the teeth may be left rather than risk surgical damage.

In case 1, it was decided to remove the supernumerary in the lower left molar region, as this had led to the impaction of the lower second molar. On the right side, the occlusion had developed normally. In case 2, the supernumerary teeth had not disrupted the occlusion and as orthodontic treatment was limited to the upper arch, a decision was made to leave the supernumerary teeth and continue to monitor the patient with periodical radiographic examination.

Both these cases highlight the late development of supernumerary teeth in the premolar region at a time when orthodontic treatment may have already commenced. It is not routine practice to screen for the late development of teeth during orthodontic treatment, therefore the possibility of their interference with occlusal development or orthodontic mechanics such as space closure, should always be kept in mind.

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