Interceptive treatment for supplemental mandibular incisors: case reports

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ABSTRACT Most supernumerary teeth in permanent dentition are found in the anterior maxilla. Supernumerary teeth are only occasionally seen in the mandibular incisor regions. This report describes the interceptive management of two such cases, each with a supplemental mandibular incisor in the permanent dentition. Early diagnosis of supplemental incisors allows early intervention, a more favorable prognosis, and minimal complications.

Key words: Dentition, mixed; Incisor; Mandible; Tooth, supernumerary

Introduction

Supernumerary teeth may be defined as teeth formed in a number in excess of that found in the normal series 1. Classification of supernumerary teeth may be on the basis of position or morphology 2. Positional variations include anterior, para-premolars, para-molars, and disto-molars. Variations in morphology consist of supplemental and rudimentary types.

The prevalence of supernumerary teeth in the permanent dentition has been found to be 1.9% in Swedish children 3 and 2.1% in British children 4. Its prevalence in Hong Kong Chinese ranges between 2.2% 5 and 2.7% 6. Boys are more frequently affected than girls and about 90% of supernumerary teeth are found in the anterior maxilla 6. Supernumerary teeth in the anterior mandible are uncommon. Davis 6 examined 1093 12-year-old Hong Kong Chinese children and found not a single case with a supernumerary mandibular incisor. This article describes the interceptive management of two such cases, each with a supplemental mandibular incisor in the permanent dentition.

Case reports

Case 1

A Chinese girl was 8 years old when first seen by the author. There was no previous dental history, and her family and medical histories were unremarkable. On examination, she presented a mixed dentition with all primary canines and molars retained. Anterior crowding was seen in both arches and five permanent mandibular incisors had erupted (Figure 1a). Her overjet was increased (3 mm) and overbite was reduced (1/5 lower crown height). Molar relations were half unit class II. The lower center line was shifted to the left by 2 mm. The mesio-distal widths of the mandibular incisors were measured. The second one on the right was distinctly smaller than its counterpart on the opposite side (Table), and was differentiated as a supplemental incisor (Figure 1b). An orthopantomogram was taken and revealed no other developmental anomalies (Figure 1c). The following treatment options for managing the supplemental incisor were discussed with the parents: (1) keep all the mandibular incisors; (2) extract the mandibular right lateral incisor; or (3) extract the supplemental incisor. The parents preferred the third option and understood that orthodontic treatment would still be needed in the future to correct the Class II malocclusion. Nevertheless, they declined referral to a specialist orthodontist at this stage because they wished to see the esthetic result after the extraction first. The supplemental tooth was extracted under local anesthesia (Figure 1d). The wound healed uneventfully and the extraction space was closed completely at the 6 months post-extraction review (Figure 1e). The patient is now having her occlusal development reviewed annually and

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Supplemental mandibular incisor

timely referral for specialist orthodontic treatment of her Class II malocclusion is planned.

Case 2

A 10-year-old Chinese boy was first seen by the author during a routine dental check. His family, dental, and medical histories were unremarkable. On examination, he presented in mixed dentition with all permanent incisors, first molars, and maxillary right and mandibular left first premolars erupted. There were three permanent mandibular incisors on the left side with associated crowding (Figure 2a). His overjet was 5 mm and overbite was half lower crown height. His molar relations were class I. The crown widths of the mandibular incisors were measured and the second one on the left was differentiated as a supplemental incisor (Table). An orthopantomogram confirmed the presence of one supplemental mandibular incisor (Figure 2b). Treatment options for the management of the supplemental incisor were explained and the parents preferred to have the supplemental incisor extracted in order to maintain tooth size and shape symmetry. They understood that specialist orthodontic treatment would be needed in the future to correct the Class II malocclusion as well as the mandibular crowding. The supplemental tooth was extracted under local anesthesia, and the patient was asked to return for review in 3 months' time to monitor his occlusal development.

Discussion

Several theories have been put forward to explain the etiology of supernumerary teeth. The dichotomy theory proposes that supernumerary teeth are created by splits in tooth buds. A complete, equal split of the bud would result in two supplemental forms, whereas an unequal split would result in one normal tooth and one supernumerary tooth. Another more widely accepted theory suggests that supernumerary teeth result from independent, locally conditioned hyperactivity of the dental lamina. The supplemental form would come from the

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Figure 1 (a) Frontal view showing presence of five mandibular incisors; (b) lower study model showing the supplemental incisor (arrow); and (c) an orthopantomogram showing the presence of all permanent successors and a supplemental mandibular incisor of the patient in case 1, taken at 8 years of age. (d) Extracted supplemental incisor showing normal crown and root morphology and (e) frontal view taken 6 months after extraction of the supplemental incisor showing reasonable alignment.

Figure 2 (a) Frontal view showing presence of a supplemental mandibular incisor (arrow) and (b) an orthopantomogram showing presence of all permanent successors and a supplemental mandibular incisor of the patient in Case 2 at 10 years of age.
lingual extension of an accessory tooth bud, whereas the rudimentary form would be derived from the proliferation of the epithelial remnant of the dental lamina. A higher incidence of supernumerary teeth in first-degree relatives of affected individuals than in the general population suggests a significant genetic component in the etiology. More recently, genetic factors leading to the formation of multiple supernumerary teeth have also been identified.

Supernumerary teeth in permanent mandibular incisor regions are often supplemental in shape. Conical supernumerary teeth are reportedly very rare. Most problems associated with supernumerary teeth are caused by their ability to interfere with the normal eruption and position of adjacent teeth. As seen in the cases in this and other published reports, supplemental mandibular incisors often erupt into the dental arch causing crowding and displacement of the adjacent teeth. The treatment options for these cases are:

1. Keep all the mandibular incisors and review eruption of the other permanent successors. This option is conservative but moderate-to-severe mandibular crowding can be anticipated. The eruption of the adjacent permanent canine will be displaced or even retarded.
2. Keep the supplemental incisor and extract the adjacent mandibular lateral incisor. This option provides room for the adjacent canine to erupt, and does not carry a risk of incomplete space closure after extraction of the supplemental incisor but the remaining incisors will show left-right asymmetry in size and shape.
3. Extract the supplemental incisor and monitor occlusal development. This option maintains the symmetry of the mandibular arch but orthodontic alignment may be needed if space closure is incomplete.

As the parents intended to let their children have future orthodontic treatment of the malocclusion, option 3 was considered the most suitable treatment in both these cases. An opinion from a specialist orthodontist, if available, is helpful for treatment planning in such cases. In both cases, however, the parents preferred to take a ‘wait and see’ approach before making a final decision about orthodontic treatment, so the orthodontist was not involved in the treatment planning.

In summary, supernumerary teeth in the permanent mandibular incisor regions are uncommon in children. Supplemental mandibular incisors often erupt into the dental arch and may be missed during routine check-ups. Dentists who treat children should be aware of this condition when unusual crowding and displacement are seen in the mandibular incisor region. Early diagnosis of supplemental incisors may allow early intervention, a more favorable prognosis, and minimal complications. Its importance cannot be over-emphasized.

References