

Supernumerary pre-molar teeth in the mandible

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Introduction

Supernumerary pre-molar teeth may be defined as extra teeth occurring within the dental arch. The prevalence of supernumerary teeth in the permanent dentition varies from 0.45%¹ to 4.5%.² In Ireland the levels vary between 2.2%³ and 3.7%.⁴ However, the prevalence of supernumerary teeth occurring in the mandibular premolar region is quite low. Prevalence rates vary from 0.14%-0.9% (Piattelli & Piattelli,⁶ Saini et al⁷). In a recent study of supernumerary teeth among Irish schoolchildren⁵ only 7% of all supernumerary teeth occurred in the mandibular pre-molar/canine region.

Individual case reports have been described by Piattelli & Piattelli,⁶ Saini et al,⁷ Lesan and Wandenya,⁸ Gibson,⁹ Cochrane et al,¹⁰ Scanlon and Hodges,¹¹ and Arigbede.¹² This paper examines the records of 10 patients who attended the Regional Orthodontic Unit for the Public Health Orthodontic Services in the counties of Cork and Kerry.

Material and methods

The orthodontic records of all patients from the discharge files combined with the records of ongoing patients attending the Public Health Orthodontic Service for the counties of Cork and Kerry were examined. A total of 7,959 records were examined. The OPG radiographs for each patient were examined. The radiographs were examined by one person using an illuminated viewer, which was table mounted. Radiographs were viewed in a darkened room only if the quality of the radiographs required such a change. All radiographs were examined in a fixed sequence beginning at the right maxillary third molar and moving to the left maxillary third molar. The mandible was examined in the same manner.

The information obtained was as follows:

1. The name, gender and date of birth of each patient.

2. The date of the first radiograph taken that identified the presence of the supernumerary teeth.
3. The position and number of the supernumerary teeth.
4. The eruption status and state of development of the supernumerary teeth.
5. The effect of the supernumerary teeth on the dentition.
6. The treatment provided.

Results

The ten cases described were the only cases found among the 7,959 cases examined. This indicates a prevalence rate of 0.12%.

Table 1 indicates the distribution and frequency of the supernumerary mandibular premolar teeth in the cases identified in this study. In all, 10 patients were identified as presenting with supernumerary mandibular premolar teeth. Seven of the patients were female and three were male. The age of the patients varied from 10 to 18 years of age. This was the age when each patient was identified on radiograph as presenting with a supernumerary mandibular premolar tooth. The position of the supernumerary teeth is variable from the position in **Figure 1**, where the teeth are in the 4.4 and 3.4 region to **Figure 2**, where both supernumerary teeth are in the 4.5 region. Bilateral supernumerary teeth were found in six of the cases and in one case (**Figure 2**) two supernumerary teeth were found on one side.

Table 2 outlines the eruption status and the state of development of the supernumerary teeth. It was not unexpected to find that all of the supernumerary teeth were unerupted and were therefore discovered on radiographic examination. However, the state of development of the teeth varied from case to case. With an age range of 10 to 18 years of age, it is always likely that there will be a variation in the stage of development. Only two cases were observed where the crown and

Dr Ian O'Dowling BDS FDS FFD DORTH
Dr Ian O'Dowling passed away suddenly in
October 2009. The *Journal of the Irish
Dental Association* would like to extend
sincere condolences to his family, friends
and colleagues at this time.

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FIGURE 1: Case No. 1 from Table 1.



FIGURE 2: Case No. 8 from Table 1a.

Table 1: Distribution and frequency of the supernumerary mandibular premolar teeth.

Case No.	Male/female	Age	Site	Number
1	Male	13	4/4	2
2	Female	16	4/	1
3	Female	15	54/45	2
4	Female	15	/56	1
5	Female	17	54/	1
6	Female	14	54/45	2
7	Female	10	43/34	2
8	Male	18	5/	2
9	Female	14	54/45	2
10	Male	15	43/45	2

the root development were complete (Case No. 2, Case No. 4). Case No. 2 presented at 16 years and Case no. 4 presented at 15 years. In three other cases the crowns of the supernumerary teeth were completed (Cases 1, 5 and 8). The ages of these patients were 13, 17 and 18. With the exception of Case No. 1, the other two cases were at the older age range whereas those remaining five cases with the incomplete crowns were in the 10- 15-year age range. From this table we can determine that supernumerary mandibular premolar teeth are late in their development and the older the patient is at presentation the more likely the tooth is to have completed its crown development or crown root development.

Table 3 outlines the effect of the supernumerary tooth on the developing dentition and the subsequent treatment. In seven cases the supernumerary teeth had no effect on the development or the eruption of the permanent dentition. In Case 1 (Figure 1) the supernumerary teeth obstructed the eruption of the 4.4 and 3.4 and were subsequently extracted along with other premolar teeth as part of a comprehensive orthodontic treatment plan. In Case 4 (Figure 3) the supernumerary tooth and the 4.5 were both impacted. Both teeth caused root resorption of the 4.6. The 4.6 was extracted, the 4.5 erupted and the lower left supernumerary tooth was subsequently extracted. In Case 7, the supernumerary teeth were obstructing the 4.3 and 3.3, and these teeth were subsequently displaced. Therefore,

Table 2: The eruption status and stage of development of the supernumerary teeth.

Case No.	Eruption status	Stage of development
1	Unerupted	Crown complete
2	Unerupted	Crown/root complete
3	Unerupted	Crowns incomplete
4	Unerupted	Crown/root complete
5	Unerupted	Crown complete
6	Unerupted	Crowns incomplete
7	Unerupted	Crowns incomplete
8	Unerupted	Crowns complete
9	Unerupted	Crowns incomplete
10	Unerupted	Crowns incomplete

the supernumerary teeth and the 4.3 and 3.3 were subsequently extracted as part of a comprehensive orthodontic treatment plan. In four cases where the teeth had no effect on the developing dentition the supernumerary teeth, along with other premolar teeth, were extracted as part of an orthodontic treatment plan. However, in Case 5, the teeth were left *in situ* and orthodontic treatment continued, and in Case 8 and Case 9 the patients refused extraction of the teeth and refused orthodontic treatment.

Discussion

In the cases presented in this paper the presence of the supernumerary tooth was an incidental finding on radiograph, as all of the supernumerary teeth were unerupted. This is in keeping with other studies where case reports have been presented. In general supernumerary premolars are thought to occur three times more commonly among males than females;¹³ however, in this study the reverse is true with a female/male ratio of 2:1.

The age at identification of the supernumerary is quite high and this would be indicative of the late development of these supernumerary teeth. Previous case reports show a large age variation depending on when these teeth are identified on radiograph. In the ten cases described, aside from three patients, all of the other patient records were

Table 3: The effect of the supernumerary teeth on the developing dentition and their treatment.

Case No.	Effect on dentition	Treatment
1	Obstructing 4/4 eruption	Extraction of 5\$/4
2	No effect	Extraction of 4\$/erupted
3	No effect	Extraction of 4\$/4\$
4	Impaction /5, root resorption /6	Extraction /6\$
5	No effect	Left in situ
6	No effect	Extraction of \$/\$
7	Obstructing 3/3	Extraction of \$3/3\$
8	No effect	Refused treatment
9	No effect	Refused treatment
10	No effect	Extraction of \$4/4\$



FIGURE 3: Case No. 4 from Table 1.

found in the discharge files within the unit from a time when the age profile at commencement of treatment was a lot older than it is now. Case No. 1 was identified at age 13, and the crowns of the teeth were complete, but Case No. 3 was identified at 15 when the crowns were incomplete, so there is a variation in the stage of development from case to case.

The stage of development of the supernumerary teeth is in keeping with the late development of these teeth, so in general the earlier the tooth is identified the less well developed the tooth presents. Also the older that the patient presents then the more likely that there is full development of the crown or even the crown and the root of the supernumerary tooth. The effect on the dentition is such that the supernumerary tooth may prevent or delay the eruption of permanent teeth; this can be seen in Case 1 where the supernumerary teeth obstruct the eruption of the 4.4 and 3.4. Removal of the supernumerary teeth allowed eruption of the underlying premolar teeth. In other cases the supernumerary tooth had no effect. The most interesting is the fourth, where root resorption of the first permanent molar was caused both by the 4.5 and by the supernumerary tooth. Extraction of the first molar allowed eruption of the 4.5; however, the unerupted supernumerary tooth continued its horizontal movement. It can be seen from Case 4 (Figure 3) that cystic lesions can develop around the crowns of the unerupted teeth, whether this is the supernumerary or the permanent tooth. Previous case reports even from the UK outline cases from a non-Caucasian population. However, in this case presentation, with the exception of Case 1 all patients were Caucasian.

Supernumerary teeth are often identified with certain syndromes such as Gardner's syndrome. However, none of the patients in this study presented with any syndrome.

The aetiology of supernumerary teeth is complex; cases of familial supernumerary teeth¹³ have been described. However, it is generally agreed that, although a genetic component may exist, environmental factors cannot be discounted.¹⁴ In the cases presented here, there is no familial history of supernumerary teeth.

Conclusion

Supernumerary premolar teeth in the mandible are rare. They are

generally an incidental finding on radiograph. Usually the teeth are unerupted and may have no effect on the developing dentition. However, in some cases they may lead to impaction, cyst development and root resorption of the adjacent permanent teeth.

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