

Effects on Lower Third Molars after Extraction of Second Molars

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The prevailing form of treatment in cases of Class II malocclusion with crowding has to date been extraction of premolars. In the lower jaw in particular, closure of extraction spaces has been achieved by exploiting the natural tendency toward mesial drift of the teeth in the lateral segments.

In some cases, however, this results in a tipping of those teeth immediately adjacent to the extraction space with the result that a poor approximal contact relationship occurs. In these cases extraction of second molars sometimes provides a better alternative since the already mesial-tipped first molar is given a better chance to upright itself during treatment. A basic requirement regarding the extraction of second molars is that third molars are present and can act as substitutes.

Extraction of second molars in the upper jaw has been studied by several authors.

Agreement seems to exist in interpretation of the side effects of extraction of upper second molars. The extraction space can be closed partly by a spontaneous mesial drift of the third molar and partly by a slight distal driving of the first molar.

Opinions would, however, appear to differ somewhat regarding similar measures in the lower jaw. Waldron et al. stated that extraction of the second molar in the lower jaw should be avoided.⁷

Smith reported varying results following extraction of second molars in the lower jaw. His material consisted of patients between 9-19 years of age. In only 17 of the 34 cases studied did the third molar take an acceptable position in contact with the first molar and its

antagonist in the upper jaw. The report lacked information regarding indications for treatment and the types of malocclusions included in the study.⁶ Chipman was of the opinion that extraction of the second molar in the lower jaw was indicated in certain cases but not as a routine procedure.² Breakspear attempted to elucidate the indications for extraction of the second molar in the lower jaw.¹

Cryer reported good positions of the lower third molar in many cases. Only about half of the material could be fully assessed.³ McBride et al. found on lateral skull films after extraction of the second molars a more favorable path of eruption of the third molars. About a third of them showed an increasing mesial tipping.⁴ Wilson reported over 320 cases having been treated by extraction of second molars in the lower jaw. In these cases 178 third molars (55%) had erupted and, of these, 155 (87%) were in good, very good or excellent positions. The assessments were done clinically and on lateral oblique radiographs which were not standardized.⁸

It would appear that the literature available on the side effects of extraction of the lower second molar on the lower third molar is somewhat inadequate and diffuse. The aim of the present investigation was to try to throw further light on whether the position and status of the lower third molar without orthodontic help was satisfactory following orthodontic extraction of the lower second molar.

MATERIAL

The material consisted of 78 cases treated within the county of Örebro in-

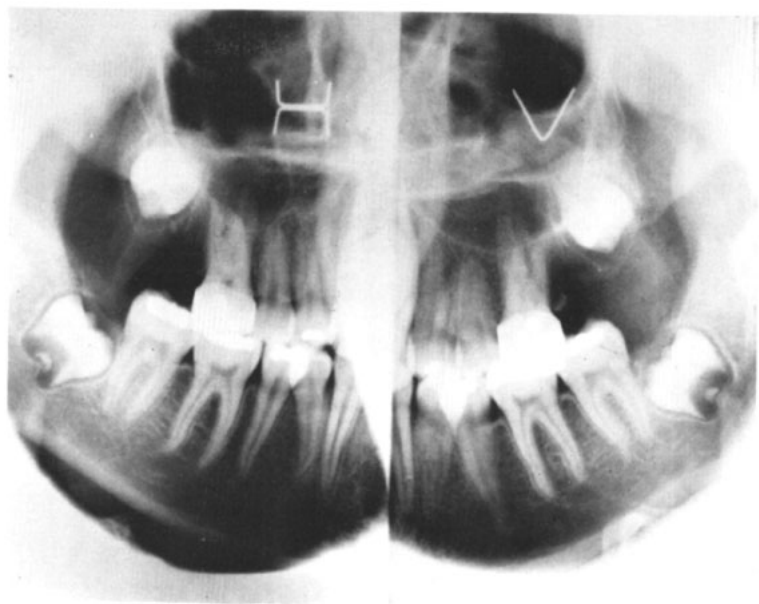


Fig. 1 The initial stage of root formation of the lower third molar before extraction of the second molar.

cluding 44 males and 34 females between the ages of 10-15 years.

All cases were treated following a diagnosis of Class II malocclusion with crowding in the lower jaw. The material included all cases from an earlier investigation.⁵ With one exception all cases could be recalled for reexamination. One orthodontist carried out all treatment. This consisted of, in addition to extraction of lower second molars, distal driving of lower first molars. The latter was carried out in a variety of ways. Third molars were not treated in any of the cases.

The timing of treatment differed from patient to patient taking into consideration the most appropriate stage in development for correction of crowding in the region of the lower second premolars. As a rule, extraction of the lower second molars was carried out in conjunction with the initiation of root development of the lower third molars (Fig. 1). Other criteria were satisfactory crown development and minimal

inclination of the third molar tooth germ in relation to the occlusal plane. Furthermore, indication for the compensatory extraction of the same tooth in the upper jaw was a prerequisite.

METHOD

Various methods and techniques were used in the orthodontic treatment. In 21 cases treatment was carried out by the extraction of second molars alone without added assistance from orthodontic appliances. In these cases the first molars were distally driven by the erupting second premolars. In nine cases activators equipped with springs transmitted a distal effect to the lower first molars. The remaining 48 cases were treated with fixed appliances applying a distal force to the lower first molars.

Analysis of the status and axial inclination of the third molar was done using study models and extraoral lateral oblique X-rays. In taking the aforementioned X-rays no standard adjust-

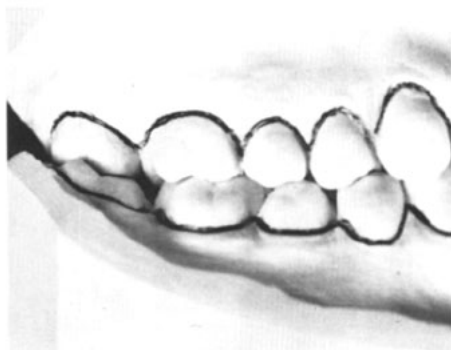


Fig. 2 Example of a case assessed as "adequate" status.

ment was used. An assessment of the third molar status as seen on the study models was carried out considering occlusion, sagittal and transverse inclination, degree of rotation, and approximal contact. The assessment was done with the help of a five grade scale: poor

status, inadequate, adequate (Fig. 2), good, and very good status.

In assessing the inclination of the third molar from the lateral oblique X-rays the following scale of tipping was used: none, slight, moderate (Fig. 3), and severe. The above analysis of the lower third molar was carried out by another orthodontist. Twenty cases were analysed on two different occasions with a 10 month interval between the analyses. The results of the double determination show good agreement.

RESULTS AND DISCUSSION

From Figure 4 it can be seen that 91 of the 118 teeth examined (77%) had, after treatment, a status which could be described as "good" or "very good." Only four teeth could be described as having an "inadequate" or "poor" status.

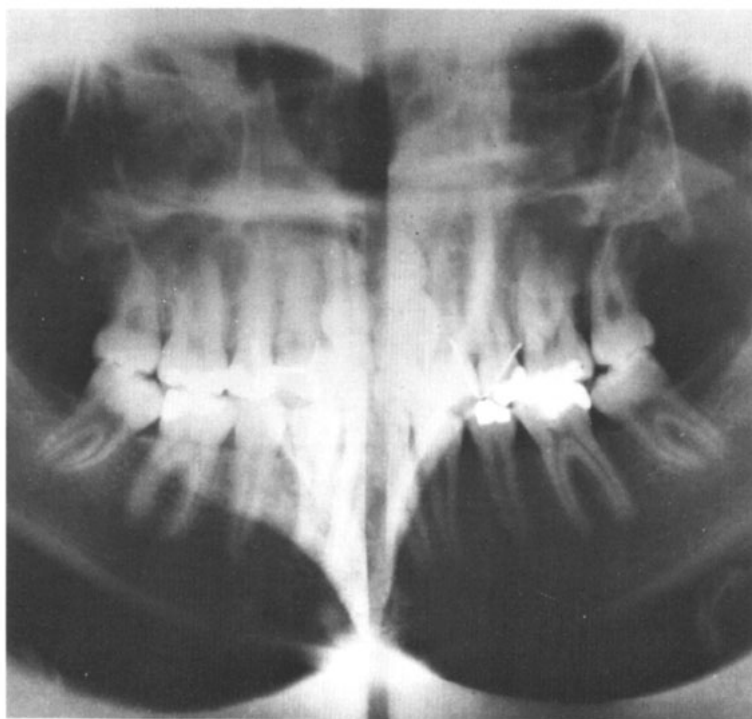


Fig. 3 Lateral X-ray of the third molar from a case assessed as "moderate tipping."

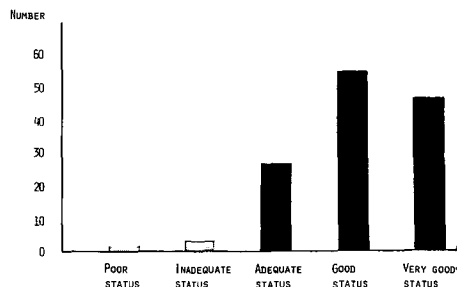


Fig. 4 The amount of third molars with varying status.

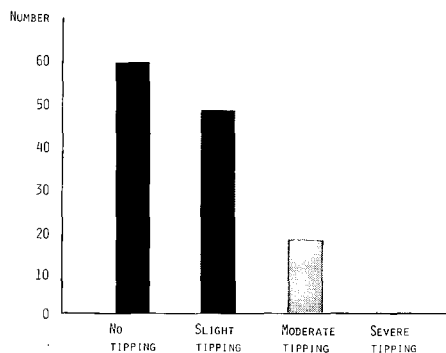


Fig. 5 The amount of third molars with varying axial inclination.

The axial inclinations of the third molars are shown in Figure 5. It is noticed that 103 (84%) of the 122 examined teeth were assessed as showing "no" or only "slight" mesial tipping. In only two cases could the third molar be described as having a "severe" mesial inclination. The results indicate that in the majority of cases both the status and the axial inclination of the third molars were such that these teeth could function as adequate substitutes for the extracted second molars. These findings correspond very well to the results reported by Wilson.⁸

The misgivings which some orthodontists have regarding the side effects of extraction of second molar on the lower third molar in Class II malocclusions with crowding appear to be exaggerated.

SUMMARY

The material consisted of 78 cases, 44 males and 34 females of the ages of 10-15 years.

The orthodontic treatment followed the diagnosis of Class II malocclusion with crowding in the lower jaw. In addition to extraction of lower second molar the treatment consisted of distal driving of lower first molars in different ways.

The treated cases were assessed by use of study models and lateral oblique X-rays.

No third molars were treated in any cases.

The results showed that in the majority of cases the third molars were adequate substitutes for the extracted second molars.

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