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Lower Incisor Extraction in Orthodontics

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ABSTRACT

Lower incisor extraction can be regarded as an excellent option in view of the orthodontic results obtained in terms of function, aesthetics and stability. The aim of this study was to gather information about the indications, contraindications, advantages, disadvantages and stability of the results achieved in treatments performed with lower incisor extraction. The literature suggests this method affords improved post-treatment stability compared with premolar extraction. As well as careful diagnosis guided by a diagnostic set-up, professional skills and clinical experience are essential in achieving a successful result with this treatment option.

Key words: Orthodontics, contraindications, results, skills.

INTRODUCTION

Extractions for orthodontic purposes were made as early as the eighteenth century by Hunter. But E H Angle condemned this practice in the belief, " better balance, more harmony and the best possible proportions of the mouth in its multiple relationships require the presence of all tooth and each tooth should occupy a normal position[3]."

This was disputed by Calvin Case, where he said that the basal bones could induced by mechanical means to grow beyond its size[3]. Therefore, extraction of permanent teeth should be considered in the treatment of certain malocclusions.

Eventually, tooth removal became a common practice in Orthodontics and the premolar were extracted commonly due to their proximity to the incisors with which we can obtain correction and retraction of these teeth. Thus extraction facilitated tooth movement as well as range of treatment options. But besides the usual radiographs, photographs and model it was essential for a diagnostic set-up.

Lower incisor extraction becomes an alternative treatment for malocclusions that do not fit the conventional forms of extraction since they are more stable in the long-term.

Indications

- Angle's Class I malocclusion with sever anterior tooth size discrepancy which is greater than 4.5mm.
- Dental Class I malocclusion with lower anterior crowding
- Dental Class I malocclusion with anterior crossbite due to crowding and protrusion of the lower incisors.
- Cleft lip and palate, where after surgery it was not possible to establish overbite and overjet.
- Malocclusions that tend towards Class III malocclusion.
- In cases where it is necessary to avoid the increasing intercanine width of certain

malocclusions.
- As a compromise solution in adult treatment or in relapse solutions.
- Malocclusions with malformed or periodontally compromised mandibular incisors, where maintenance would not provide any benefit in offering stability to the dentition.[14]

Contraindications
- Cases requiring extractions in both the arches with same overbite and horizontal growth pattern.
- Cases with crowding which requires less than 3mm of space.
- High frenal attachment of lower labial frenum.
- Cases where diagnostic set-up demonstrates that lower incisor extraction can result in excessive overbite.

Advantages
- Maintains / reduces intercanine width.
- Maintains the overall arch form.
- Less likely to relapse
- Quick retraction of anterior segments is possible.
- Reduced risk of anchorage loss.
- Reduces the need for elastic usage.
- Provides parallelism between loer anterior tooth roots and reduces root proximity.

Levin says that lower incisor extraction,
- Improvesfacial profile
- Establishes both esthetic and functionally effective overbite.
- Enables easy alignment of the lower anterior teeth.

Disadvantages
- There is a tendency for space to re-open in the extraction site.
- Lower midline deviation.
- Occlusion is not always a perfect class I
- There might be formation of a black triangle due to papillary defect between lower incisors.[13]
- Increased overbite and overjet.
- Partially inadequate occlusion.

Advantages of mandibular incisor extraction over premolar extraction
- It might reduce treatment time especially if crowding is limited to the anterior segment.
- Stable result is likely in the anterior region, because expansion was not necessary and intercanine width is minimally altered.
- Maintenance of facial profile, as only a little retraction is required compared with premolar extraction therapy.

The critical decision of which incisor to extract?????

It depends on several factors including[13]
- Periodontal conditions
- Canine guidance
- Location of any restorations, including endodontic treatment
- Presence of gingival recession
- The mesiodistal width of each incisor should be measured and the anticipated amount of tooth movement is determined with Bolton's analysis.
- Extraction of a lateral incisor is generally preferred because it is less visible from the front, but the incisor that is farthest outside the natural arch and closest to the crowding is usually the best candidate for extraction.

Stability of treatment results

One of the major challenge in orthodontic practice is the stability of the treatment results. Valinotti in 1994 [11] suggested that the extraction of lower incisor is less likely to exhibit crowding relapse after retention because the incisor is located closest to the area where the problem is located, requiring less movement and effort to be exerted.

Riedel *et al.*,[12] suggested that the extraction of a lower incisor can provide greater stability in the anterior area in the absence of permanent retention.

In the long - term , cases with extraction of lower incisors show less crowding relapse after retention than cases treated with premolar extraction by virtue of the following factors: original

position of the teeth is in large part preserved so that muscular pressures are less likely to introduce instability and minimal effort exerted on the adjacent anchorage during space closure , using most of such space to correct the anterior region.

CONCLUSION

It is noted that the main indication to extract a lower incisor is the presence of tooth size discrepancy equal to or greater than 4.5mm due to lower anterior excess or upper anterior deficiency. One should perform, a careful diagnosis using a diagnostic set-up to analyse treatment goals and occlusal outcome.

This treatment can cause following difficulties or limitation in orthodontic treatment: obtaining canine guidance, possibility of spaces reopening, esthetic loss of gingival papilla, impact on the midline, overjet and overbite.

Crowding relapse after retention appears to be lower than in cases subjected to pre-molar extraction. If properly indicated and carefully and appropriately conducted, lower incisor extraction can significantly contribute to the treatment of certain malocclusions and the excellence in orthodontic treatment results, resulted in maximum function, esthetics and stability.

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