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Mandibular Incisor Extraction – Case Report

Abstract:

The extraction of the lower incisors constitutes a therapeutic alternative in treating certain anomalies. It is not a standard approach to symmetrically treating most malocclusions, but in certain clinical situations the therapeutic aims must be adjusted to individual patient needs, even when this means that achieved final occlusion is not ideal. The deliberate extraction of a lower incisor in certain cases allows the orthodontist to improve occlusion and dental aesthetics. One way of preventing relapse is to extract an incisor with extreme malpositioning, which moreover limits the sometimes unnecessary movement of many teeth; correction thus becomes more circumscribed to a specific dentition zone. This article highlights the importance, indication, advantages and disadvantages of incisor extraction.

Keywords: Crowding, Mandibular incisor extraction, Bolton discrepancy

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Introduction

Tooth-size-arch-length discrepancy, or arch crowding, has traditionally been managed by means of first or second premolar extractions; first or second molar extraction is a less common approach. Incisor extraction is another alternative in the mandibular arch.

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Specific criteria for mandibular incisor extraction^{1, 2} include:

- Permanent dentition
- Minimal growth potential
- A Class I molar relationship
- A harmonious soft-tissue profile
- Minimal-to-moderate overbite
- Little or no crowding in the maxillary arch
- An existing Bolton discrepancy
- A tooth-size-arch-length discrepancy of more than 5mm in the anterior region. A diagnostic setup is strongly recommended with this treatment approach.^{3, 4}

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Advantages of mandibular incisor extraction over premolar extractions:

- It may reduce treatment time, especially if crowding is limited to the anterior segment.³
- Stable result is likely in the anterior region, because expansion is not necessary and intercanine width is minimally altered.⁵
- Because little retraction is required compared with premolar extraction therapy, the anteroposterior position of the mandibular incisors is not changed, allowing maintenance of a harmonious profile.²

Disadvantages of Mandibular incisor extraction:

- If no Bolton discrepancy exists, closure of the incisor space will result in increased overjet.
- If the overjet is adequate after the incisor is removed, the result will be a Class III occlusal relationship.
- A midline discrepancy is inevitable, and the extraction site may reopen over the long term.^{4,5}
- The inter-proximal papillae may be sacrificed, which may lead to the development of open gingival embrasures or “black triangles”.^{7,8}

The critical decision of which incisor to extract???

It depends on several considerations, including:

- Periodontal conditions
- The presence of gingival recession
- The location of any restorations, including endodontic treatment.

- In addition, the mesiodistal width of each incisor should be measured and the anticipated amount of tooth movement determined with the Bolton analysis, keeping in mind that in the mandible, the central incisors tend to be smaller than the lateral ones.
- Extraction of a lateral incisor is generally preferred because it is less visible from the front², but the incisor that is farthest outside the natural arch and closest to the crowding is usually the best candidate for extraction.
- It is especially suitable for patients with Class I and mild Class III malocclusions with mild open-bite tendencies.^{38, 45}
- Mandibular incisor extraction may also be considered when the patient has congenitally missing maxillary lateral incisors and significant mandibular anterior crowding.^{9,10}
- Mandibular incisor extraction is generally contraindicated in a Class II patient, because it would result in a significant increase in overjet.¹¹

Case –Report

Diagnosis

A 19-year-old female presented with a chief concern of upper and “lower incisor crowding”. Clinical examination revealed competent lips, a straight profile. On smiling, she displayed 100% of her incisors. The molar and canine relationships were Class I. Model analysis revealed crowding of 5 mm in the upper arch and 7 mm in the lower arch. The patient had a 30% overbite and 3mm overjet, with the lower midline shifted 3mm to the right. Good oral hygiene was evident,

although slight gingival recession was found in the areas of the lower right cuspids.

(Fig: 1)

Treatment Objectives

- Relieving of upper and lower anterior crowding
- Good and stable dentoalveolar changes
- Maintenance of class I canine and molar relation
- To achieve ideal overjet /overbite
- Maintenance of good profile

Treatment plan

Lower incisor extraction was planned because of good profile, minimal space requirement. Blocked out lower incisor extraction will help in correction in lower arch. Upper space requirement was minimal and slight proclination and arch development was sufficient in achieving good result.

Treatment Progress

The patient was referred to have the lower lateral incisor (32) extracted. Initial alignment and leveling was done with 0.016" NiTi followed by 0.018" stainless steel. Inversion of upper right side lateral incisor bracket was done to achieve good torque correction. After alignment, leveling was done with 0.019"×0.025" NiTi. After initial alignment & leveling, 0.019"×0.025" stainless steel was placed in the upper and lower arch for torque expression and closure of spaces (Fig: 2). Settling of occlusion was done with 0.016" stainless steel wire and elastic (Fig: 3).

Treatment Results

Post-treatment facial photographs showed little change in facial profile. The Class I molar and canine relationship was maintained, and the mandibular spaces were completely closed. Good cusp to fossa occlusion achieved both palatally and buccally. The good overjet and overbite were achieved despite the extraction of a lower incisor. Both arches showed good alignment, with the upper midline centered on the middle of the lower incisors (Fig: 4).

Conclusion

Mandibular incisor extraction can be an effective treatment option in border line cases with mild crowding in lower arch. In patients with moderate crowding and without excessive mandibular tooth mass, interproximal reduction may be a better alternative. Formation of open gingival embrasures or black triangles is a common side effect of mandibular incisor extraction. Minimal alteration of mandibular arch form is key for success and stable results.

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Fig 1: Pre-treatment extraoral and intraoral photographs



Fig 2: With 0.019X0.025 Stainless steel arch wire

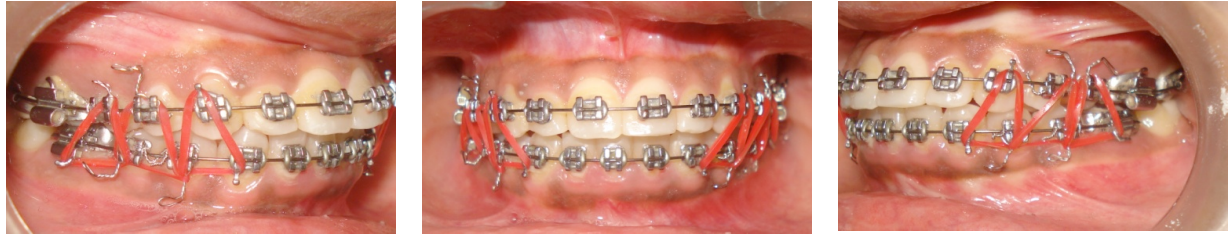


Fig 3: Settling with 0.016 Stainless steel arch wire



Fig 4: Post-treatment extraoral and intraoral photographs