10.5005/jp-journals-10024-1189

CASE REPORT

Therapeutic Extraction of Lower Incisor for Orthodontic Treatment

Dandu Sitarama Raju, AS Veereshi, D Lakshmayya Naidu, BHV Ramakrishnan Raju, Manish Goel, Amit Maheshwari

ABSTRACT

Lower incisor extraction in orthodontic treatment was very rare modality of orthodontic treatment because there are few patients who meet the standards for such treatment. Proper diagnosis and treatment planning should be done to achieve good occlusion and facial esthetics. Criteria for lower incisor extraction included degree of crowding, tooth size discrepancy, pathologic condition, vertical overbite, sagittal incisal relationship, skeletal growth pattern and age of the patient. This article comprises of a case of class I malocclusion treated with lower incisor extraction, with comprehensive analysis, diagnosis and treatment planning, treatment results were satisfactory.

Clinical significance: Mandibular incisor extraction can be an effective treatment option in borderline cases with mild crowding in lower arch. Minimal alteration of mandibular arch form is key factor for success and stable results.

Keywords: Lower incisor extraction, Orthodontic treatment, Crowding, Tooth size discrepancy.

How to cite this article: Raju DS, Veereshi AS, Naidu DL, Raju BHVR, Goel M, Maheshwari A. Therapeutic Extraction of Lower Incisor for Orthodontic Treatment. J Contemp Dent Pract 2012;13(4):574-577.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

Therapeutic extraction has been one of the major controversies in orthodontics.[1] No other topic has created as much controversy in orthodontics as extraction. Extraction is done to create space for one or more of the following reasons[2,3] *viz* to relieve the crowding, reduce proclination of anterior teeth, reduce the anterior overjet and overbite, Level the curve of spee, correct the gross midline shift, correct the molar relation. The teeth most commonly extracted for orthodontic treatment (therapeutic extraction) are either first premolar or second premolar. In case of borderline space discrepancy, extraction of premolar might create more than required amount of space. In such cases of borderline space discrepancy in mandibular arch, a better alternative is to follow an atypical therapeutic extraction *viz* extracting one or two mandibular incisors. Therapeutic extraction of one or two mandibular incisor is indicated in following conditions: Diagnostic characteristics are usually required for single lower incisor extractions:[4,5]

- Class I molar relationship
- Moderately crowded lower incisors
- Mild or no crowding in the upper arch
- Acceptable soft-tissue profile
- Minimal to moderate overbite and overjet
- Minimal growth potential
- A tooth-size discrepancy, such as missing lateral incisors or peg laterals that can be used to resolve the inevitable tooth-size discrepancy without interproximal stripping.[6,7] In any such case, a full diagnostic setup should be made to ensure that the occlusal results will be acceptable. One prerequisite for therapeutic extraction of mandibular incisor is that the lower anterior tooth material should be more in proportion to maxillary anterior tooth material *viz* Bolton's tooth ratio.

Advantages of Extraction of Lower Incisor

- Extracting one incisor rather than 4 premolars, less teeth are sacrificed.[8,9]
- Shorter treatment time with fixed appliances. The tooth movement needed is, therefore, minimal.
- Lower incisor extraction is a compromise solution for adults who need a relatively fast outcome.
- No negative consequences on soft-tissue profile.

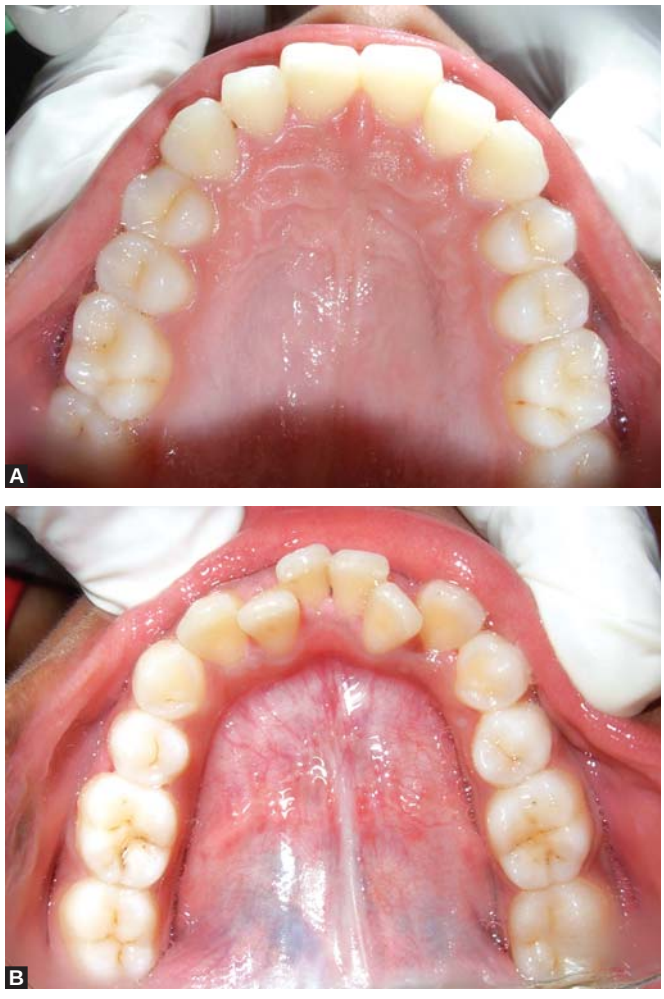
Disadvantages of Extraction of Lower Incisor

- Acceptable esthetic result but the occlusion is not always a perfect class one.[10,11]
- Lower midline deviation.

- Formation of a black triangle due to papillary defect between lower incisors.

This case report describes case of class I malocclusion treated with lower incisor extraction. A 14-year-old girl, reported with a complaint of irregular front teeth. On examination, she had a class I skeletal relation. Intraoral examination revealed a mild irregularity in maxillary anterior region and a moderate crowding in the mandibular anterior region and she had good class I posterior occlusion on both the sides (Figs 1 and 2). It was decided to treat her with extraction of one lower incisor *viz* mandibular left lateral incisor. After the extraction, readjusted edgewise appliance was bonded. Initial leveling and aligning was done with round nickel-titanium archwires. The space to align the mandibular right lateral incisor was created by using open coil spring between mandibular right canine and mandibular right central incisor, which also helped in closing the extraction space (Fig. 3). Then, the mandibular right lateral incisor was aligned. After the leveling and aligning, full size rectangular stainless steel wires were placed for two visits, and then fixed appliance was debonded.

After completion of treatment [Posttreatment photographs (Figs 4 and 5)] good class I molar and canine relationship was maintained and the mandibular spaces were completely closed. The good overjet and overbite were achieved both arches showed good alignment, with the upper midline centered on the middle of the lower incisors.



Figs 2A and B: Pretreatment occlusal photographs

DISCUSSION

The critical decision of which incisor to extract depends on several considerations, mainly 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 front two but the incisor that is farthest outside the natural arch and closest to the crowding is usually the best candidate for extraction.[12]

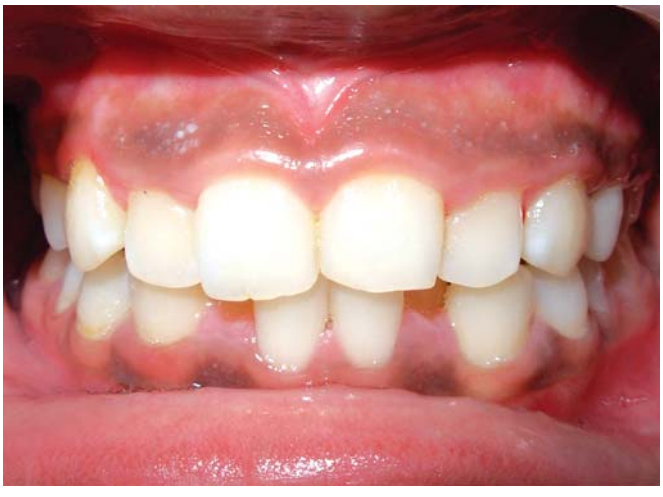


Fig. 1: Pretreatment intraoral photograph

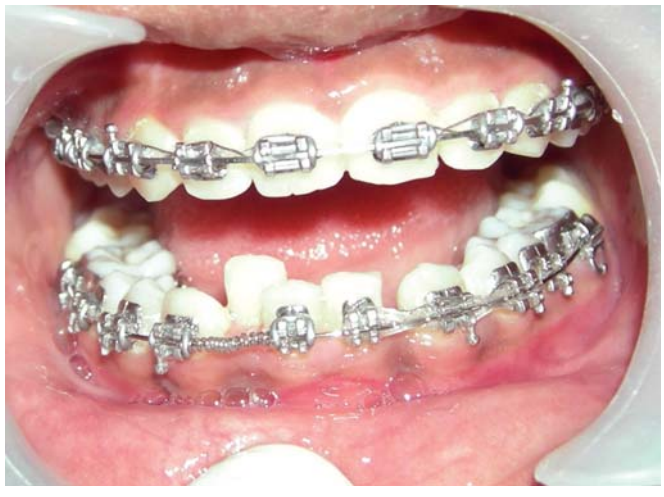


Fig. 3: During treatment

It is especially suitable for patients with class I and mild class III malocclusions with mild openbite tendencies. Mandibular incisor extraction may also be considered when the patient has congenitally missing maxillary lateral incisors and significant mandibular anterior crowding.[13] Mandibular incisor extraction is generally contraindicated in a class II patient, because it would result in a significant increase in overjet.[14]

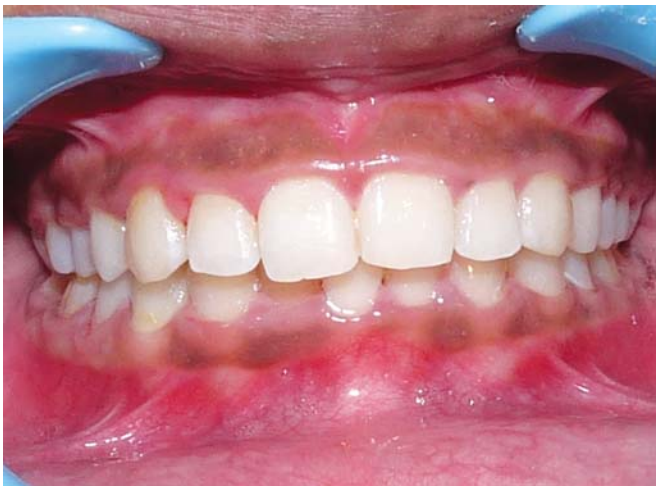
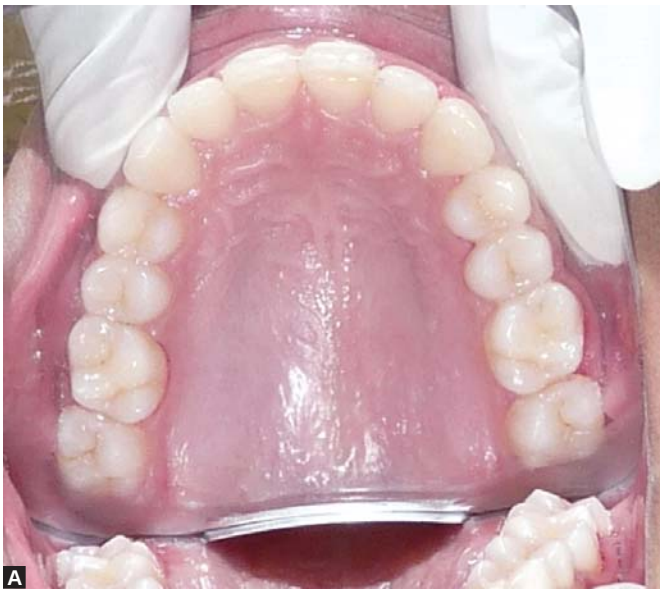
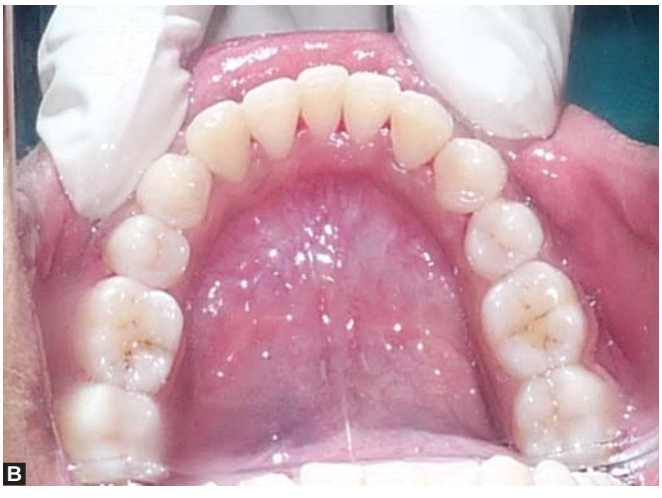


Fig. 4: Post-treatment intraoral photograph





Figs 5A and B: Post-treatment occlusal photographs

Group of authors conducted retrospective study to evaluate the treatment outcome of lower incisor extraction and to compare it with premolar extraction and non-extraction treatment, results showed that orthodontic treatment without extraction has a better treatment outcome than the four-first premolar extraction and single lower incisor extraction protocols in class I cases with moderate-to-severe mandibular anterior crowding.[15]

CONCLUSION

Mandibular incisor extraction can be an effective treatment option in borderline 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. Minimal alteration of mandibular arch form is key factor for success and stable results.

REFERENCES

1. John C Bennet, Richard P. First bicuspids in orthodontic management of the dentition with the preadjusted appliance. Isis Medical Media Ltd, Oxford, UK 1997, p. 195.
2. Brant S, Richard G. Different extractions for different malocclusion. Am J Orthod 1975;68(1):15-41.
3. Canut JA. Mandibular incisor extraction: Indications and long-term evaluation. Eur J Orthod 1996;18:485-89.
4. Raungpaka S, Nisalak P. Lower incisor extraction in orthodontic treatment. J Dent Assoc Thai 1989 Jan-Feb;39(1):17-26.
5. Witzig JW, Spahl TJ. The clinical management of basic maxillofacial orthopedic appliances. PSG Publishing Co Inc 1987; p. 156.
6. Bahreman AA. Lower incisor extraction in orthodontic treatment. J Orthod 1977 Nov;72(5):560-67.
7. Prakash A, Tandur AP, Dungarwal NR. Mandibular incisor extraction – case report. Virtual Journal of Orthodontics 2011 Sep 9(2).
8. Kokich VG, Shapiro PA. Lower incisor extraction in orthodontic treatment: Four clinical reports. Angle Orthod 1984;54:139-53.
9. Riedel RA, Little RM, Bui TD. Mandibular incisor extraction postretention evaluation of stability and relapse. Angle Orthod 1992;62:103-16.
10. Sheridan JJ, Hastings J. Air-rotor stripping and lower incisor extraction treatment. J Clin Orthod 1992;26:18-22.
11. Faerovig E, Zachrisson BU. Effects of mandibular incisor extraction on anterior occlusion in adults with class III malocclusion and reduced overbite. Am J Orthod Dentofac Orthop 1999;115:113-24.
12. Miller RJ, Duong TT, Derakhshan M. Lower incisor extraction treatment with the Invisalign system. J Clin Orthod 2002;36: 95-102.
13. Owen AH. Single lower incisor extractions. J Clin Orthod 1993; 27:153-60.

14. Nanda, Uribe. Considerations in mandibular incisor extraction cases. J Clin Orthod 2009;43:45-51.
15. Ileri Z, Basciftci FA, Malkoc S. Comparison of the outcomes of the lower incisor extraction, premolar extraction and non-extraction treatments. Eur J Orthod 2011 July 10 (Epub ahead of print).

ABOUT THE AUTHORS

Dandu Sitarama Raju

Principal, Professor and Head, Department of Orthodontics and Dentofacial Orthopedics, Sree Sai Dental College and Research Institute, Srikakulam, Andhra Pradesh, India

AS Veereshi (Corresponding Author)

Reader, Department of Orthodontics, Rungta College of Dental Sciences and Research, Bhilai, Chhattisgarh, India, e-mail: viiresh75@gmail.com

D Lakshmayya Naidu

Professor and Head, Department of Orthodontics, KLR Lenora Institute of Dental Sciences, Rajahmundry, Andhra Pradesh, India

BHV Ramakrishnan Raju

Associate Professor, Department of Oral and Maxillofacial Surgery Vishnu Dental College, Bhimavaram, Andhra Pradesh, India

Manish Goel

Professor, Department of Pedodontics, Maitri College of Dentistry and Research Centre, Angora, Durg, Chhattisgarh, India

Amit Maheshwari

Professor, Department of Orthodontics, ACPM Dental College and Hospital, Dhule, Maharashtra, India