Case Report

# Does midline coincidence of upper and lower teeth affect smile aesthetics?

**Atul Jajoo**

*Orthodontist, Private Practice, 403, Princes Business Skypark, Opposite Orbit Mall, A B Road, Indore, Madhya Pradesh, India*

**Abstract**

The extraction of single mandibular incisor has always led to debate regarding midline and smile esthetics. The current case report describes the effect of mesiodens in worsening the Class II Division 1 malocclusion and its correction by extraction of mesiodens, upper first premolars, and single mandibular incisor. Satisfactory functional and esthetic results were achieved with well-settled Class II molar, Class I canine relationship, ideal overjet, and overbite. Two years postretention records show stable results.

**Key words:** Class II molar finish, lower incisor extraction, maxillary first premolar extraction, mesiodens

## INTRODUCTION

Treatment of Class II Division 1 malocclusion with upper first premolar and single lower incisor is not done commonly due to its effect on midline; interdental papillae and stability in lower incisor segment. Cases with lower incisor extraction have been successfully documented by Kokich and Shapiro[1] in his article with a careful selection of malocclusion. Brandt and Safirstein[2] have stated various advantages and disadvantages of lower incisor extraction. Canut[3] has talked about lower incisor extraction, its indications, and long-term clinical effects.

If case selection is done properly good esthetic and functional results can be achieved with unusual extractions. The case presented here explains the outcome of lower incisor extraction along with upper first premolar extraction in a Class II Division 1 malocclusion case worsened by the presence of mesiodens.

| Access this article online | |
|---|---|
| Quick Response Code: | Website: www.apospublications.com |
| | DOI: 10.4103/2321-1407.183149 |

**Address for Correspondence:**
Dr. Atul Jajoo, 403, Princes Business Skypark, Opposite Orbit Mall, A B Road, Indore - 452 001, Madhya Pradesh, India.
E-mail: drjajooatul@gmail.com

## CASE REPORT

A 16-year-old male presented with a Class II Division 1 incisor, Class II canine, and Angles Class II molar relationship on a skeletal Class I jaw bases with decreased vertical proportions and horizontal growth pattern. This was further complicated by the presence of mesiodens leading to palatal displacement of upper left central and lateral incisors. Maxillary left central incisor is rotated by 90° and lateral is in cross bite. Right, half of the upper arch has increased overjet (10 mm) and left half has deep bite leading to traumatic bite with the lower incisor. Lower arch has deep curve of spee with mild labial segment crowding. Maxillary right first premolar is in scissor bite. The lower lip is retrusive with deep mentolabial sulcus. Boltons analysis shows a mandibular anterior excess by 1.75 mm and arch length deficiency of 5.5 mm [Figures 1 and 2].

### Treatment objectives

- Correction of crowding increased overjet and deep bite
- Correction of cross bite



**How to cite this article:** Jajoo A. Does midline coincidence of upper and lower teeth affect smile aesthetics?. APOS Trends Orthod 2016;6:171-4.

- Achieve Class II molar, Class I canine, and incisor relationship
- Leveling of curve of spee
- Obtain good alignment and interarch relationship.

## Treatment options

- Extraction of mesiodens, upper first premolars, and lower second premolars to establish Class I molar and canine relationship
- Extraction of mesiodens, upper first premolar, and single lower incisor to finish in Class II molar and Class I canine relationship
- Extraction of mesiodens, upper first premolar, and interproximal stripping in the lower anterior segment
- Nonextraction with just removal of mesiodens. Level and align the arches. Patient being a horizontal grower with deep bite, little dished-in appearance, and chances of the mandible being locked goes against extraction.

The first option was not selected for the reason that space requirement was minimal and limited to lower anterior segment only. The closure of extraction space in lower arch is more difficult and time-consuming in horizontal grower and deep bite patients. The third option was not opted as interproximal stripping would not have provided the required space plus the long-term disadvantages of stripping. Due to the space requirement for the correction of proclination, overjet, and crowding extraction in upper arch was needed.

## Treatment progress

The second treatment option was selected for the patient. After the extraction of upper first premolars and mesiodens, nance holding arch with mild anterior bite plane was given. Bonding was done in the upper arch with 018 × 025 Alexander prescription (American Orthodontics) with 0.014 NiTi wire. Upper left lateral incisor bonding was deferred until the alignment of upper anteriors. Anchorage was reinforced in upper arch mainly for retraction of upper left canine so as to create space for bringing the lateral incisor in the arch and molar relationship on the left side was Class II, so anchorage loss was not desirable.

Good alignment achieved with derotation and buccal movement of upper left central incisor and mild retraction of right incisors. Lower arch bonding was done after clearance for bracket positioning was achieved. Individual canine retraction was done on 0.016 stainless steel (SS) wire (A. J. Wilcock) given with curve of spee. Complete canine retraction done on the left side, sufficient to bring the blocked lateral incisor forward. On the right side canine was just retracted to bring it into Class I canine relationship, rest of space was covered by protraction of

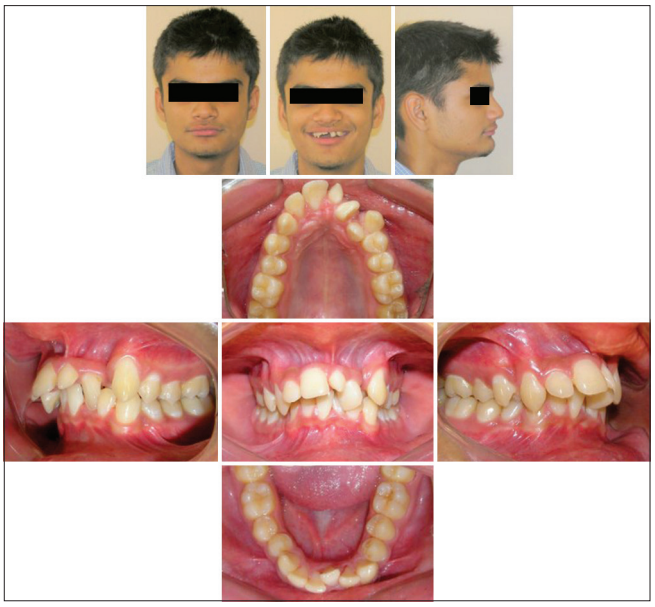

**Figure 1:** Pretreatment photographs

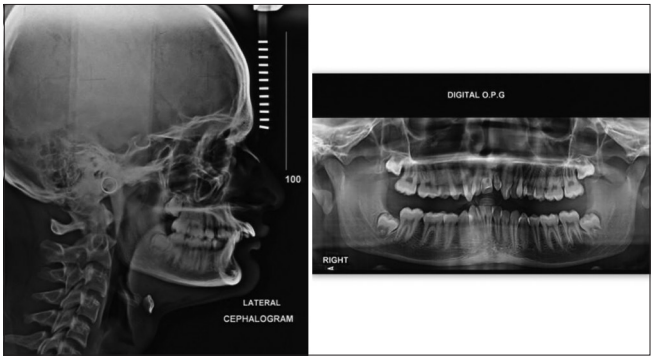


**Figure 2:** Pretreatment X-rays

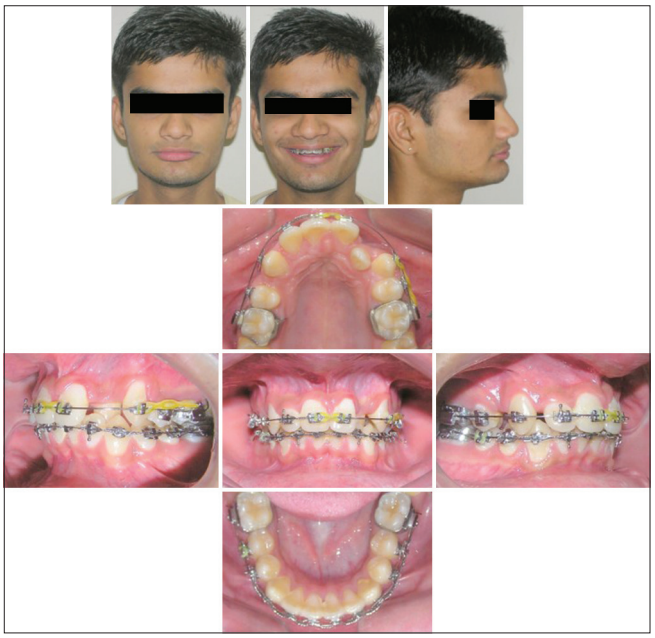

**Figure 3:** Mid-treatment photographs

posteriors. Good alignment achieved in upper and lower arch [Figure 3]. After extraction of right lower central incisor space closure was done in upper and lower arches. Finishing was done on 17 × 25 SS wire.

After settling of occlusion, lingual bonded retainers were given, and debonding was done. Posttreatment records were taken [Figures 4 and 5].

### Treatment results

Desirable treatment outcome was achieved in 29 months with original aims accomplished and patients presenting complaints addressed. The patient was notably pleased with the treatment outcome. Good occlusal and esthetic results have been achieved. Ideal overjet and overbite with Class I canine and Class II molar relationship achieved. Midline was compromised due to extraction of lower incisor but results obtained are esthetically pleasing with minimal display of lower incisors while smiling. Good root parallelism is seen in posttreatment OPG with no root resorption. Cephalometric superimposition [Figure 6] shows significant improvement in severity of malocclusion. Comparison of pre- and post-treatment cephalometric values is shown in Table 1.

Two years postretention photographs [Figure 7] shows stable and well-maintained results with no or minimal relapse.

**Figure 4:** Posttreatment photographs

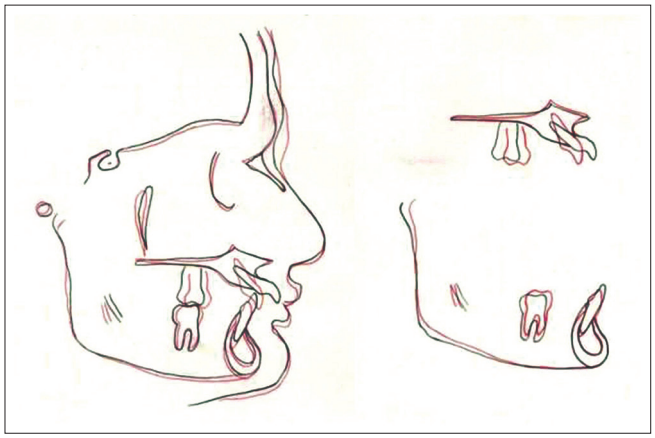

**Figure 6:** Superimposition

## DISCUSSION

The single mandibular incisor extraction is done in cases specifically indicated. It has both advantages and disadvantages as mentioned by Brandt and Safirstein.[2] Urib *et al.*[4] in their study have mentioned that incidence of open gingival embrasure is 68%. 52% of those patients have moderately noticeable to very noticeable gingival embrasure after extraction of a mandibular central or lateral incisor. According to Tarnow *et al.*[5] if the distance from crestal bone to the interproximal contact is more than 5 mm, an

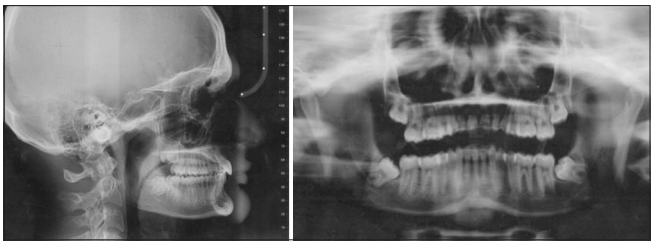

**Figure 5:** Posttreatment X-rays

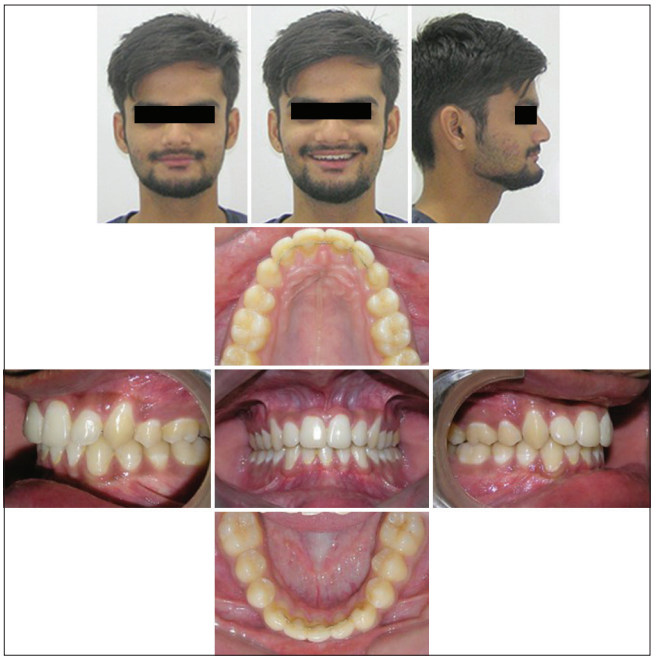

**Figure 7:** Two years postretention photographs

**Table 1: The cephalometric parameters pre- and post-treatment values**

| Parameter | Pretreatment | Posttreatment |
|---|---|---|
| SNA (°) | 82.5 | 82 |
| SNB (°) | 80.5 | 80.5 |
| ANB (°) | 02 | 1.5 |
| Wits appraisal (mm) | +3 | +2 |
| Upper incisor to NA (mm/degree) | 10 mm/55 | 3 mm/31 |
| Lower incisor to NB (mm/degree) | 02 mm/18 | 0 mm/15 |
| Upper incisor to SN plane (°) | 138 | 113 |
| Lower incisor to mandibular plane angle (°) | 102 | 98 |
| Inter-incisal angle (°) | 104 | 133 |
| Lower incisor to APo line (mm) | 0 | −3 |
| Over bite (mm) | 3.5 | 3 |
| Overjet (mm) | 10 | 3 |
| Maxillary-mandibular planes angle (°) | 12 | 11.5 |
| SN plane-mandibular plane (°) | 13 | 13 |
| Upper anterior face height (mm) | 48 | 45 |
| Lower anterior face height (mm) | 50 | 49 |
| Face height ratio (%) | 51.02 | 52.12 |
| Jarabak ratio (%) | 80.80 | 80.85 |
| Maxillary length (mm) | 90 | 82 |
| Mandibular length-effective (McNamara) (mm) | 110 | 102 |
| Lower lip to Ricketts E-Plane (mm) | −5 | −5 |
| Nasolabial angle (°) | 71 | 89 |

open gingival embrasure is a common finding. Faerovig and Zachrisson[6] reported no cases of black triangle formation after incisor extraction attributing success to careful selection of cases.

Class II Division 1 cases are generally treated with all premolar extractions or with only upper premolar extraction and in some cases combined along with single lower incisor extraction or interproximal stripping. In this case, we have obtained good results with upper premolars and single lower incisor extraction. The smile esthetics of the patient is excellent without coinciding midlines, attributing the results to proper case selection. The results have been maintained as shown in 2 years postretention records.

### Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Kokich VG, Shapiro PA. Lower incisor extraction in orthodontic treatment. Four clinical reports. Angle Orthod 1984;54:139-53.
2. Brandt S, Safirstein GR. Different extractions for different malocclusions. Am J Orthod 1975;68:15-41.
3. Canut JA. Mandibular incisor extraction: Indications and long-term evaluation. Eur J Orthod 1996;18:485-9.
4. Uribe F, Holliday B, Nanda R. Incidence of open gingival embrasures after mandibular incisor extractions: A clinical photographic evaluation. Am J Orthod Dentofacial Orthop 2011;139:49-54.
5. Tarnow DP, Magner AW, Fletcher P. The effect of the distance from the contact point to the crest of bone on the presence or absence of the interproximal dental papilla. J Periodontol 1992;63:995-6.
6. Faerovig E, Zachrisson BU. Effects of mandibular incisor extraction on anterior occlusion in adults with class III malocclusion and reduced overbite. Am J Orthod Dentofacial Orthop 1999;115:113-24.