Treatment of Skeletal open bite with Mini plates in adult: A Case Report

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INTRODUCTION

There is no doubt that one of the most difficult malocclusions to treat and maintain in orthodontics is Skeletal anterior open bite. Treatment of severe skeletal anterior open bite in adults consists mainly of surgical repositioning of the maxilla or the mandible. These procedures have acceptable treatment results and long-term stability.

Morphologic traits of Skeletal anterior open bite case usually include increased vertical dimensions due to the vertical overgrowth of the maxillary posterior dentoalveolar structures, which should be reduced to correct the skeletal open bite properly.

Clinicians have been working on alternative clinical procedures to correct this skeletal discrepancy. Early efforts for open-bite correction included the use of bite blocks in the late 1980s, fixed appliance and vertical elastic combinations in 1990s, and later head gear mechanics.

All of these proved to be effective in passive intrusion of the maxillary posterior segment. However, actual correction was achieved primarily through the extrusion of incisors or by preventing passive eruption of posterior teeth. This also required huge patient compliance. These untoward effects led clinicians to use osseointegrated implants or surgical miniplates and screws, which recently gained great interest as anchorage units for orthodontic purposes. These devices have been used for the intrusion of upper and lower molars and its success is not largely dependent on the cooperation of the patient. Recently there have been reports of the use of osteotomy miniplates in the maxilla and mandible to assist in orthodontic correction of open bite. The need to intrude individual supraerupted posterior teeth in adult patients is a good indication for using miniplate as skeletal anchorage at zygomatic buttress and buccal shelf region for anchorage purpose.

FIG 1: Pretreatment records

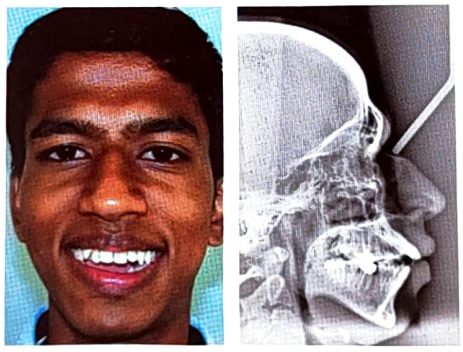


FIG 2: Treatment Progress

CASE PRESENTATION

A 20-year-old male of Assamese origin reported to Department of Orthodontics, Regional Dental College, Guwahati. (Fig 1) with complain of anterior crowding, open-bite and difficulty in chewing. Lateral cephalometric radiograph and other diagnostic record were taken.

Lateral cephalometric analysis indicated that the major skeletal and soft tissue problems were a large interlabial gap, vertical maxillary excess, with skeletal Class I relationship. Clinical examination revealed an anterior open-bite, upper and lower anterior crowding, and a narrow upper dental arch. In addition, the lower 3rd molars were impacted bilaterally.

TREATMENT OBJECTIVES AND GOALS

The treatment plan to achieve the treatment goals with the miniplates were as following.

1. Bonding and banding (upper and lower arch)
2. Leveling and alignment of both upper and lower arch by asymmetric extraction of first premolar.
3. Maxillary arch expansion
4. Implantation of mini- plates to zygomatic buttress and mandibular body.
5. Intrusion of molars with Miniplates.
6. Upper and lower canine retraction .
7. Coordination of upper and lower dental arches
8. Finishing and detailing
9. Debonding.
10. Retention (upper and lower Hawley retainer)

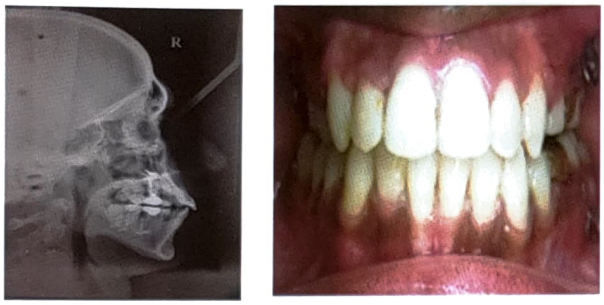
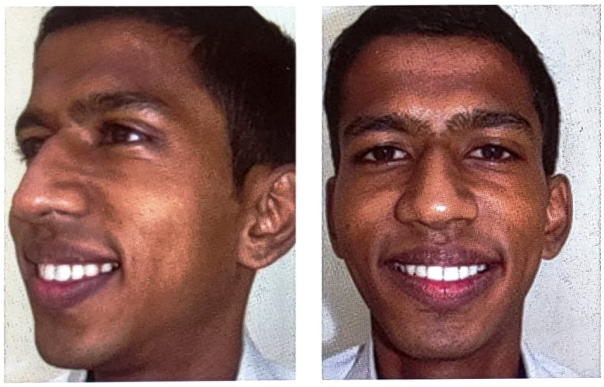


FIG 3: Post Treatment photo graph



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TREATMENT PROGRESS

Treatment progress is shown in (Fig 2). A 0.022-inch pre -adjusted appliance was placed on both upper and lower arch. Leveling and alignment of both upper and lower arch by asymmetric extraction of first premolar and expansion of the upper arch were initiated using archwires and a transpalatal arch.

Miniplate were placed surgically at both the zygomatic buttress and the apical region of the lower 1st and 2nd molars, bilaterally. After placing rigid archwires (0.018 inch _ 0.022 inch stainless steel), en mass intrusion of the molars was initiated with power chain (400 gm per segment) from the anchor plates.

The heavy palatal bars are essential to avoid buccal tipping of the posterior segment, which is otherwise inevitable because of the location of the force vector in relation to the center of resistance of this segment. Tipping of the buccal segment not only impairs posterior occlusion but also impedes successful elimination of the open bite.After leveling and aligning of the arches, the asymmetric archs and the open-bite were corrected with the Skeletal anchorage system **(Fig 3)**.

DISSCUSION & CONCLUSION

The use of miniplates for skeletal anchorage in orthodontics is recommended for the following reasons:

- Miniplates have a long history of use and biocompatibility in stabilizing facial fractures and osteotomy segments.
- Miniplates come in a variety of convenient shapes and sizes and are easily adaptable to most bony surfaces.
- Miniplates commonly used for a variety of anchorage purposes.
- It is minimally invasive and appropriate to an office setting.
- Miniplates, when used properly have little or no risk of causing damage to nerves or tooth roots.
- Miniplates obviates the need for significant patient compliance

The miniplate proved to be an effective skeletal anchorage device for intrusion in the case presented. There was little patient discomfort associated with the placement, maintenance, and removal of the plates.

CORRIGENDUM

In the article **"Evaluation of role of Xanthan based chlorhexidine gel (Chlosite) for enhanced therapeutic efficiency in chronic periodontitis- a pilot study"** was published in the journal JICD,Vol. 56, No.1&2, 2011 (Page 46-47). The name of the two co-authors, Dr. Surubhi Garg PG student who had done the study & Dr. (Brig) B.P. Khattak, VSM (the then head of the department of periodontics) were missed.

We regret the error and it should be considered that the article was jointly published by the authors Dr Nitin Tomar, Dr. Surubhi Garg and Dr. (Brig) B.P. Khattak