

Management of Class I Bimaxillary Protrusion with K-Sir Retraction Loop- Case Study

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Abstract

In the field of orthodontics, patients report with primary esthetic concern in their mind, but the treatment methodologies are planned according to the functional efficiency and structural balance. In this article case study of class I bimaxillary protrusion malocclusion with excessive incisal show has been managed successfully with all 4 first premolar extractions and the retraction was carried out with KSIR LOOP in upper arch while friction mechanics is carried out in lower arch.

Keywords: K-SIR loop, Sliding mechanics

Introduction

Class I malocclusion is the most common malocclusion encountered in orthodontic practice, class I bimaxillary protrusion can be dental or skeletal in nature, management of each malocclusion is unique and the biomechanical planning will lead to obtaining optimal treatment results in optimal treatment time¹.

Case Study

17-year-old female patient reported to the private practice with chief complaint of proclined upper front teeth. Her medical and dental history were not relevant; family history reveals mom has similar facial malocclusion. No other natal/post-natal histories of patient are contributory. On extraoral examination, she had mesocephalic head, mesoprosopic facial type, convex facial profile, posterior

divergence, potentially competent lips, excessive incisal show, acute naso labial angle, shallow mentolabial sulcus, average clinical FMA.

On intraoral examination, she had class I canine and molar relationship, spacing between upper incisors, crowding in lower incisors, with overjet of 5mm and overbite of 3mm.

On model analysis, arch perimeter analysis showed 3mm excess space in upper arch and 5mm arch length deficiency in lower arch. Bolton’s discrepancy indicates lower anterior tooth material excess in mandibular arch, while overall tooth material excess in lower arch. Ponts analysis showed arch expansion was not possible, Little’s crowding index showed moderate crowding, Ashley Howe’s analysis indicates for extraction therapy

Table 1: Cephalometric values

	Pre op values	Post op values
SNA	83	83
SNB	80	80
ANB	3	3
SN_GoGn	30	30
I – NA(°)	40	39
I – NA(mm)	7mm	4mm
T – NB(°)	38	30
T – NB(mm)	6mm	3mm
I – SN	115	104
PFH/AFH	62	62
Nasolabial angle	90	102
IMPA	110	102

Inference

Orthognathic maxilla, orthognathic mandible, average growth pattern, proclined & forwardly placed upper and lower incisors

Treatment goals

- To level and align the teeth
- To achieve ideal overjet and overbite
- To maintain class I canine and molar relationship on left side
- To maintain class I canine and molar relationship on right side
- To overcome soft tissue imbalance and achieve functional balance
- To maintain treatment results achieved

Treatment plan

- Extraction of the all first premolar.
- Alignment and leveling of the arches.
- Closing the extraction space using K-SIR loop² in upper arch and sliding mechanics in lower arch
- Final consolidation of the space and
- Settling of the occlusion.

After extraction of all first premolar, patient underwent fixed orthodontic therapy with 0.022 x 0.028" MBT prescription pre-adjusted edgewise appliance. Initially 0.016"NiTi is placed for 12 weeks after 1st and 2nd molar banding and inserting transpalatal arch extending between molars in upper arch, lingual holding arch in lower arch, followed by 0.016 x 0.022" NiTi for 6 weeks, followed by 0.017 x 0.025" NiTi for 6 weeks, which is followed by 0.017 x 0.025" TMA wire in upper arch with K-SIR loop in upper arch 0.019 x 0.025" NiTi for 8 weeks in lower arch, followed by 0.019 x 0.025" SS in lower arch, followed by activation using active tie back placement between canine and molar in lower arch, in upper arch for every 6 weeks amount of activation is checked. Complete

space occurred in 9 months, followed by finishing and detailing for 3months.

Discussion

Proper treatment planning will lead to achieve optimum treatment result, dental bimaxillary protrusion is always indicated for all first premolar extraction, anchorage planning is key determining factor to choose the mechanics to achieve optimal result.

In this case group A anchorage is preferable and so posterior anchorage enhanced with auxillaries, total anchorage with TAD as an option given to patient, since the patient insisted on non-invasive treatment, that has been excluded from treatment plan.

Alternative mechanisms have been sorted out like burstone's three-piece intrusion arch and TAD for intrusion and retraction of upper incisors but simultaneous intrusion and retraction would be better choice for reducing the treatment timing and non-invasive method consideration. Which lead to selection of KSIR loop.

Conclusion

Orthodontic treatment is a constantly changing field since the technique evolved, every day new invention has been bought out, clinician's judgement of what would be best at this point of time with optimal thinking will definitely lead to achieve optimal results. In this article one such is described. Clinician's select own loops according to his own comfort.

References

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2. Kalra V. 1998. Simultaneous intrusion and retraction of the anterior teeth. J Clin Orthod. 32:535-540

Legends Figure

Fig. 1: Pre Op Extraoral Photographs



Fig. 2: Intraoral Photographs



Fig. 3: Intraoral Photograph Occlusal



Fig. 4: Retraction Using K-Sir Loop In Upper Arch Sliding Mechanics In Lower Arch

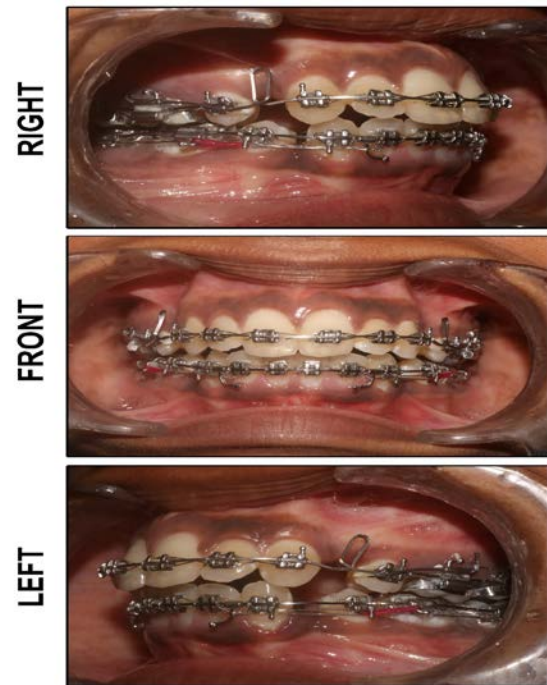


Fig. 5: Retraction Occlusal

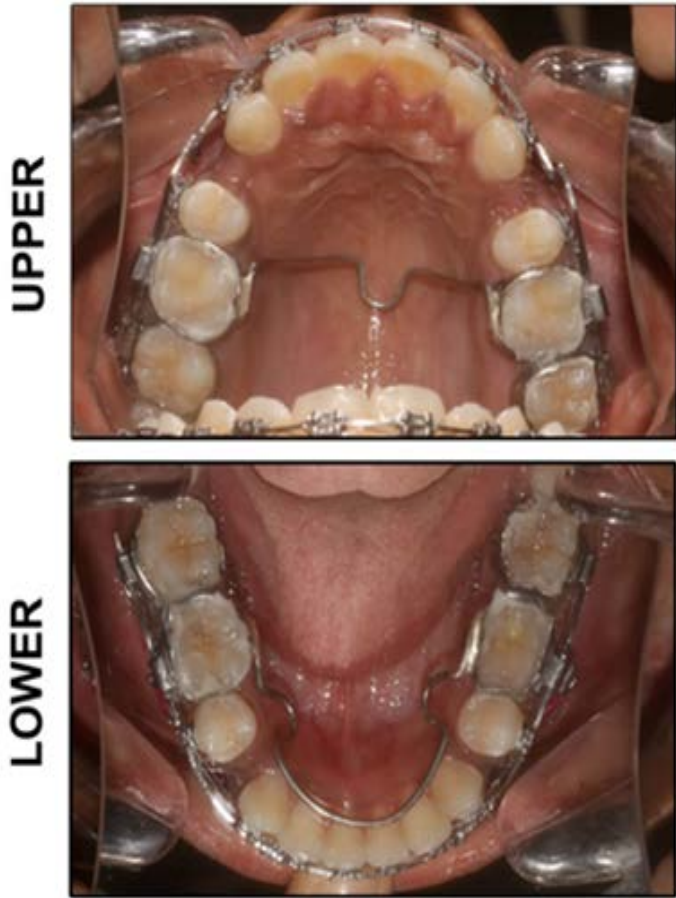


Fig. 7: Post Op Intraoral Photograph

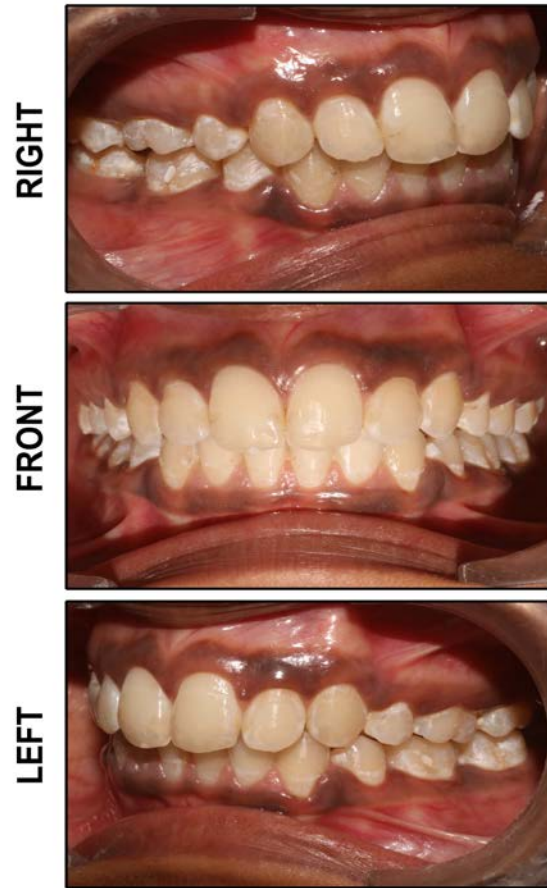


Fig. 6: Post Op Extraoral Photograph

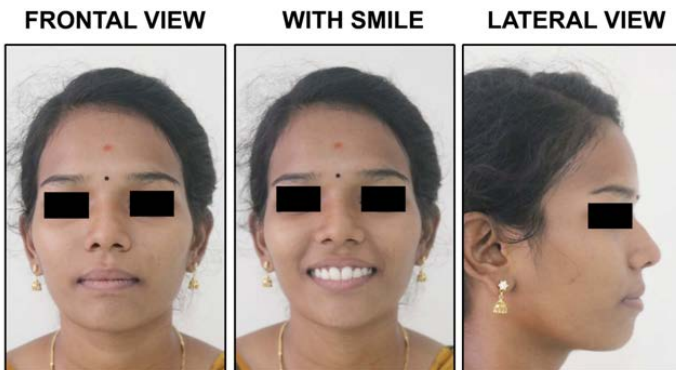


Fig. 8: Post Op Intraoral Occlusal

