



TREATMENT OF CLASS II MALOCCLUSION OF A GROWING INDIVIDUAL WITH FIXED ORTHODONTIC THERAPY- A CASE REPORT

Orthodontics

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ABSTRACT

This is a case report of 14-year-old female who turned up at clinic with the chief complaint of forwardly placed anterior teeth. She had class II dental malocclusion with increased overjet and overbite. She had left lower canine impacted. So, we decided to treat the case with fixed mechanotherapy. After 24 months of treatment, we achieved the desired results.

KEYWORDS

Overjet, impacted, class II malocclusion, protrusion.

INTRODUCTION

When a patient reports to clinic with some problem we first of all gather the chief complaint. Then patient is examined thoroughly for any other problems and a treatment plan is discussed. Patients with any type of malocclusion need a proper evaluation of growth pattern and it plays a decider which mechanics and treatment modality to be used for correction. In this case patient being a class II case and horizontal grower justified the use of intermaxillary elastics for correction of overjet and molar relation.

DIAGNOSIS

A 14-year-old female patient reported to clinic with chief complaint of forwardly placed anteriors and lower left canine not coming in arch (fig 1 INTRAORAL). We assessed the case that patient has normal skeletal bases with dental class II malocclusion. Patient had convex profile (fig 2 EXTRAORAL) with incompetent lips due to increased overjet and had a deep overbite. Patient had impacted lower left canine. Cephalometric analysis depicted normal jaw bases. Growth pattern was horizontal (fig 3,4 OPG, CEP). We decided to extract upper first premolars and lower second premolars to treat the case. Due to increased protrusion we decided to extract upper first premolars and for the correction of molar relation we decided to extract lower second premolars.



Fig 1- Intraoral Pretreatment Photographs



Fig 2 Extraoral Pretreatment Photographs



Fig 3 Pretreatment OPG



Fig 4 Pretreatment Cephalogram

Treatment Plan

In this case objectives were to level and align the upper and lower arches with correction of protrusion and molar relation and bringing lower left canine out and in arch. As this is a maximum anchorage case in upper arch and a moderate anchorage required in lower arch, we decided to put upper transpalatal arch without the expansion loop in palatal section for maximum stability and lower lingual arch. With all the factors taking into consideration we did this case which resulted in pleasant esthetics, profile and good occlusion.

Treatment Progress

All first molars were banded and 022 preadjusted MBT prescription bonded. Extractions were done as decided. Upper and lower 016 NiTi were ligated. As lower left canine was not in arch and exposed, we put up a button on incisor edge of canine and tied a ligature wire with it and ligated it with NiTi wire which is ligated in the arch. We created some space distal to lower left canine for its eruption with open coil spring. Then we ligated 018 HANT in lower arch. After alignment we put on with RCS wires for bite correction.

Once levelling and alignment achieved, we started with lower molar mesialization and canine retraction on 019x025 SS wires. We used segmented arch system for retraction of canines followed by retraction of four incisors to conserve the anchorage. We started sliding mechanics with class II elastics for retraction. Once canine is retracted, we put crimpable hooks over wire for retraction of anteriors. After completion of retraction, we ligated finishing wires for some time.

DISCUSSION

Treatment modalities for this patient can be functional appliance, molar correction with headgear, extraction of premolars and retraction of anteriors. Functional appliance treatment was not opted as the skeletal bases were normal as well there was impacted canine on lower left side. Headgear option was discussed with patient but she was not ready to wear. While examining the cephalogram we came to conclusion that mandible is normal and it is a more of dental malocclusion. Finally, we decided to go for extraction of upper first premolars and retract anteriors for correction of protrusion and lower second premolars for achieving class I molar relation. Lower second premolar extractions were done instead of lower first premolars as there was less of crowding in anterior region. So, we decided to use extracted space with relieving of crowding and molar mesialization. Upper first premolar extraction space can be used for overjet correction. So, with fixed appliance therapy we could achieve all goals simultaneously without extending the treatment time.

For impacted canine one can choose surgical removal of canine and creating space and putting implant later². But patient age did not support that. Autotransplantation followed by endodontic treatment. Rate of survival depends on length of root formed during autotransplantation³. The last treatment option was exposing the canine and bringing it into the arch. So, with patient consent it was decided to surgically expose and put a button and ligature and start moving to its normal place⁴. Very light forces were applied to minimize the periodontal breakdown. It was seen that canines that erupt through the mucosa often have insufficient attached gingiva with poor esthetic and periodontal result⁶.

As the case is of maximum anchorage in upper arch, Microscrews are very popular for anchorage purpose⁷. We discussed with patient about microscrews but she was not very comfortable with them. So, we put the TPA with no expansion loop in palatal section for maximum stability and bonded the second molars also. In the lower arch we placed lingual arch till anterior crowding was relieved. After that lingual arch was removed for molar mesialisation. We used segmental arch system for upper retraction to conserve anchorage⁸. Patient is in growing stage and a horizontal grower so we used class II elastics with lighter forces as we had to correct molar relation. class II elastics are contraindicated in non-growing patients who cannot tolerate some downward and backward rotation of mandible⁹. Patient was horizontal grower and slightest of molar extrusion occurs could be compensated¹⁰. The patient and parents were satisfied with the results and the chosen treatment modality. One can criticize the Protrusion of mandible incisors at the end of treatment but facial harmony, lip relationship and the fullness of lips were acceptable.

The long-term stability is expected good as distocclusion was corrected with good intercuspation. Growth pattern was favourable

during treatment time and with treatment modality. The bonded retainers from premolar to premolar in maxilla and mandible prevented relapse of space opening and incisor irregularity.

RESULTS

Levelling and alignment were achieved, impacted canine came into the arch. correction of overjet and overbite were achieved with molar correction (fig 5 INTRAORAL). Treatment resulted in class I molar relation with pleasing profile and competent lips (fig 6 EXTRAORAL).



Fig 5- Intraoral Posttreatment Photographs



Fig 6 Extraoral Posttreatment Photographs



Fig 7 Posttreatment OPG

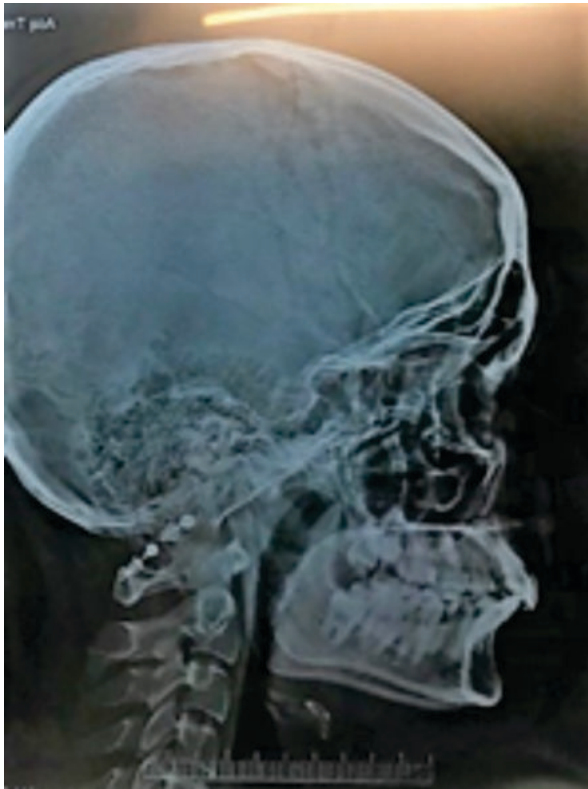


Fig 8 Posttreatment CEP

CONCLUSION

Before starting any case, we need to study about growth and growth pattern of patient. Exposing canine and bringing them in arch is a viable option. This approach helps in deciding which mechanics to take on and how long. So, for a successful treatment, patient cooperation and clinician approach matter.

Conflict of Interest – None

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