

TREATMENT OF A PATIENT WITH SEVERE CROWDING AND DEEPBITE BY LOWER ANTERIOR INTRUSION ARCH AND FIXED ORTHODONTIC THERAPY- A CASE REPORT

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ABSTRACT

Crowding is one of the most common problems in orthodontics. The problem worsens if it associated with deep bite. Several treatment modalities are available for deep bite correction. Intrusion arch is one of them. A 16 years male patient reported to the Dept of Orthodontics with chief complaints of irregular teeth. On examination it was found that the patient had crowding associated with deep bite. The case has been treated with intrusion arch and fixed mechanotherapy after extraction of all first premolars. It took almost 18 months to complete the case. After treatment deep bite and crowding was corrected. Smile was improved.

KEY WORDS

Crowding, deepbite, intrusion arch, class I malocclusion

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INTRODUCTION

Crowding with deep bite is one of the most common problems in patients seeking orthodontic treatment. The prevalence of deep bite is 21-26 % in normal population and 75% in orthodontic patients.¹ In crowded teeth it is very difficult to maintain oral hygiene that may led to poor periodontal status. It worsens, if it associated with deep bite. Deep bite can be corrected by extrusion of posteriors or intrusion of anterior teeth.^{2,3} It is better to intrude the anterior teeth after growth completion or at end of growth. Several treatment modalities are available for intrusion in orthodontics like implants, intrusion arches, reverse curve of Spee etc. A proper diagnosis, meticulous treatment plan and proper appliance design is necessary for proper treatment.⁴ Intrusion arches are widely used as it gives light continuous force and it has better control than others. But proper construction is necessary for proper action. It is generally fabricated by using Titanium Molybdenum Alloy (TMA) or A.J. Wilcock Archwires (AJW) or even stainless steel archwire. Titanium Molybdenum Alloy (TMA) or A.J. Wilcock Archwires (AJW) is preferable as these are more flexible and give more controlled force.

CASE REPORT

A 16 year male patient reported to the Dept of Orthodontics with chief complaints of irregular teeth.

On extra oral examination it was found that the patient had convex profile, leptoprosopic face and incompetent lips (Figure 1).

On intra oral examination it was found that he had class I molar on both sides, crowded upper and lower anteriors, crossbite 21 and 22 and deep bite (5mm). He had poor periodontal health due to deposition of calculus as a result of crowding. Canines were high labially placed (Figure 2). OPG and lateral cephalogram was taken for proper diagnosis and treatment plan (Figure 3 & 4).

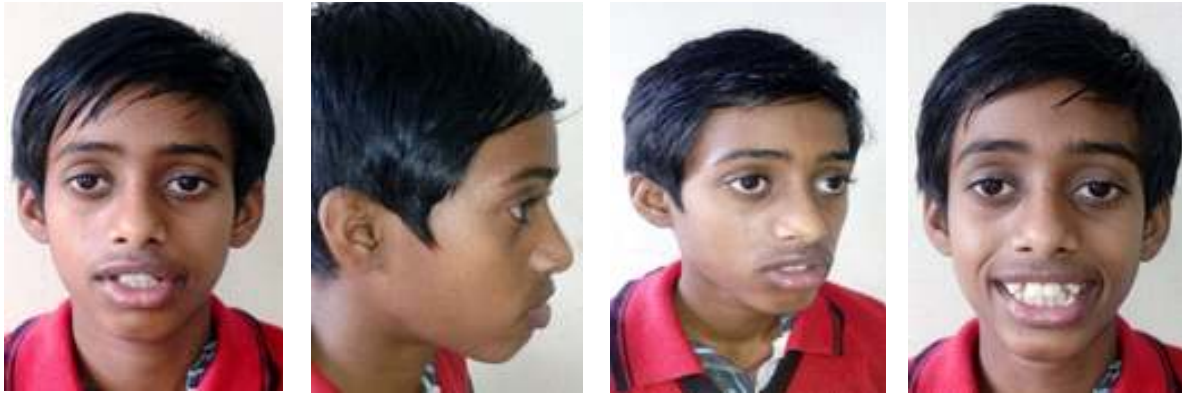


Figure 1: Pre treatment extra oral photographs



Figure 2 :Pre treatment Intra oral photographs



Figure 3: Pre treatment OPG



Figure 4 :Pre treatment Lateral Cephalogram



Figure 5: Intrusion arch

TREATMENT PLAN

Intrusion arch in lower arch was planned as patient did not want to go for any invasive procedure like implants, extraction of all first premolars followed by fixed mechanotherapy.

acrylic bite block to keep the bite open. Bonding was done in McLaughlin, Bennett, and Trevisi appliance system (MBT) philosophy in 0.022" X 0.028" slot except 12, 22. Initial levelling and alignment was done in NiTi archwire. Lower intrusion arch was given to intrude the lower anteriors and to flatten the curve of Spee. It was fabricated using 0.018" AJW archwire (Figure 5).

TREATMENT PROGRESS

Treatment has been started by giving lower

After going to Stainless steel archwire open coil spring was placed between centrals and canines. After

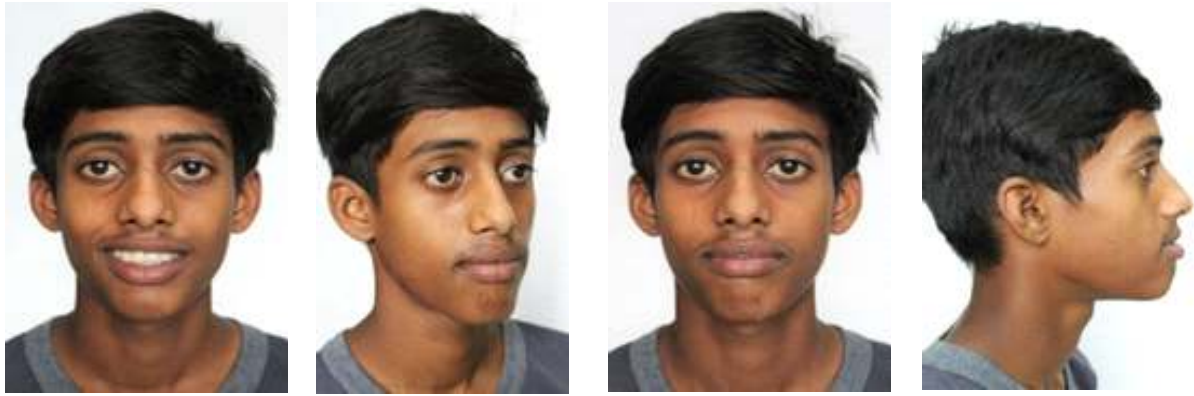


Figure 6 : Post treatment extra oral photographs



Figure 7: Post treatment intra oral photographs



Figure 8 : Post treatment OPG



Figure 8 : Post treatment OPG

creating sufficient space, laterals was bonded. After proper levelling and alignment retraction started in upper and lower to close any residual extraction space in 0.019"X 0.025" SS archwire. The bite block was removed. Occlusal settling was done. After debonding, fixed retainer was placed in both upper and lower arches.

molar and canine relationship. Deepbite was corrected (2mm). Periodontal conditions got better. Profile was improved (Figure 6,7). On OPG it was found that root parallelism was achieved (Figure 8). Lateral cephalogram was taken for comparison of cephalometric values (Figure 9).

RESULTS

Crowding was relieved maintaining the class I

DISCUSSION

Intrusion arch is one of the cheapest and easiest orthodontic appliances. It causes true intrusion of the

Table 1 and 2 showed pre and post treatment cephalometric comparison.

Parameter	Mean	Pre treatment	Post Treatment
Upper CI to SN	102°	110°	110°
Upper CI to A-Pog	+5 to -1 mm(2.7 mm)	+5 mm	+5mm
Interincisal angle	130°-150°(134°)	126°	128°
Upper CI to NA (linear)	04mm	6mm	6mm
Upper CI to NA (angular)	22°	27°	28°
Upper incisor Protrusion	4-6 mm	7mm	7mm

Table 1: Cephalometric comparison in maxilla

Parameter	Mean	Pre treatment	Post Treatment
Lower CI to NB (linear)	04 mm	5 mm	4mm
Lower CI to NB (angular)	25°	28°	26°
IMPA (Tweed)	76°-99° (90° norm)	93°	90°
Lower incisors Protrusion	1-3 mm	4mm	3mm

Table 2 : Cephalometric comparison in mandible

incisors. In this present case it was made with AJW archwire which gave a continuous light force which was desirable for any kind of tooth movements.^{6,7,8} The torque control is also better when intrusion arch is used compared to other technique. Control of force is also necessary for intrusion. It needs 10-20 gm of force for intrusion.⁶ If more force is applied it may cause apical root resorption. AJW does this work very effectively.

In this case 3 mm intrusion was achieved. Gummy smile was also corrected. Periodontal status was significantly improved as crowding was relieved as it was very difficult to maintain oral hygiene in a crowded teeth. Class I canine relation was established. Occlusion was settled to give long term stability.

From cephalometric comparison it was found that upper incisor angulations were maintain throughout the treatment. Lower incisor proclination was reduced. Over all proclination was reduced as suggested by inter incisal angle which was changed from 126 deg to 128 deg (Table 2).

CONCLUSION

Proper diagnosis and treatment plan is very important in orthodontics. Orthodontic treatment not only corrects malocclusion but also improves over all oral health. Proper appliance selection is also very necessary to give long term stable result and harmony with the other facial structures. Intrusion arches are very effective in correcting deepbite. It is non

invasive and causes less adverse effect to the teeth. Besides all of this patient compliance is utmost necessary to finish the case in proper time and get the most aesthetic and stable result.

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