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CASE REPORT

MICRO-IMPLANT SUPPORTED UNILATERAL MOLAR DISTALIZATION – A CASE REPORT

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ABSTRACT

By the use of micro-implants, molar distalization has become easier. The adverse effect of molar distalization on anterior teeth can be avoided by the use of micro-implants. A 15 years old female patient reported with chief complaint of space in upper front teeth region and abnormal positioning of a tooth. On examination it was found that 13 is buccaly impacted and 11 is high labially placed and dilacerated. The 11 was brought into the arch after creating sufficient space. The 16 was distalized using micro-implants. The 14 and 15 was distalized and space is created for 13. After that surgical exposure was done for 13 and it was brought into the arch. After treatment class-I molar and canine relation was established on both side.

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INTRODUCTION

Non extraction treatment is always preferable to the patient. Treatment of class-II malocclusion in non extraction protocol was always a challenge to the orthodontists. In non extraction protocol molar distalization is one of the best techniques in Orthodontics. Several procedures are there for molar distalization like pendulum appliance, pendex , distal jet, magnets etc (Hilgers, 1992; Joseph, 2000; Gianelly, 1988 and Carano, 1996). But most of them cause proclination of anteriors. Unilateral molar distalization was also a problem in traditional distalizing appliances. In modern era micro implants have attained popularity due to low cost, minimal invasiveness (Park, 2001). There is no anchorage loss as mini implant acts as an absolute anchorage (Park, 1999). So implant supported molar distalization is a good alternative to traditional molar distalization appliances. Unilateral distalization can also be done effectively by use of mini implants.

Case report

A 15 years old female patient reported with chief complain of gap in the upper front teeth region and abnormal positioning of a tooth. On extra-oral examination she had leptoprosopic and convex face. Lips were incompetent with inter-labial gap of 7 mm. Upper lip was short as upper lip length is 14 mm (Fig-1). On intra oral examination it was found that molar relation was class-II on right side and class-I on left side. 11 was high labially placed and impacted 13 which was palpable labially. The left canine was in class-I relation. The 35 was lingually rolled. There was overjet of 4mm and overbite of 6mm (Fig-2).

RADIOLOGIC FINDINGS

Orthopantomogram showed the 13 is impacted. There was dilaceration of the 11 (Fig-3). Lateral cephalogram showed 11 is proclined (Fig-4).

Problem lists

- Class –II molar relation on right side.
- Impacted 13
- Abnormal position of 11.
- Lingually rolled 35

Treatment alternatives

- Extraction of 14 and bringing down the canine
- Extraction of the canine and align the rest of the tooth
- Distalization of molars and dis-impaction of canine.

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Figure 1. Pre-treatment extra-oral photograph

Figure 2. Pre-treatment intra-oral photograph

Figure 3. Pre treatment Orthopantomogram

As the patient did not want any extraction, molar distalization has been chosen and allowed all the teeth to get aligned.

Treatment progress

Treatment was started in fixed mechanotherapy in MBT prescription (0.022”X0.028” slot) starting from 0.014” round NiTi followed by 0.016” NiTi ,0.017”X0.025” ss in Upper and lower arch. After that the 11 was surgically exposed and a bracket was bonded. A 0.012” round NiTi was placed on 11 as piggy back followed by 0.014” NiTi. Open coil spring was placed between 36 and 34. Then piggy back was given with 0.012” round NiTi on 35. After that 11 and 35 was ligated with main archwire.

Figure 4. Pre Treatment Lateral Cephalogram

Figure 5. Distalizing elements

Figure 6. Close view of distalizing elements

Then 0.019X0.025" ss wire were placed in upper and lower arch. Then a mini screw (1.5 mm diameter, 8mm length) is placed between 16 and 15 as there was no sufficient space between 14 and 15. A 0.020" round ss wire is passed in the hole of the implant. A open coil spring is placed around the wire .A composite was placed distal to the wire so that the coil spring did not slip below. The opposite side is passed through the accessory tube of the molar band of 16 (Fig-5 and6) After 3 month there was 5 mm space between 16 and 15 with slight rotation of 16 (Fig-7 and 8) which was corrected by giving a distal toe-out bend in the archwire. Then the implant was removed and a Nance button was placed for anchorage and retention. The 14 and 15 were distalized by E-chain and space was created for 13. Then surgical exposure was done of 13 and a 0.012" NiTi was ligated a week after as piggyback. After successful disimpaction of canine it was ligated with main archwire (Fig-9). Then reverse curve of spee was given in lower arch and accentuated curve of spee was given in upper arch to correct deep bite in 0.017"X0.025" SS archwire. Then 0.014" ss were placed in both arches as finishing archwire and occlusal setting was done. After Proper settling, debonding was done and fixed retainer was given from canine to canine (Fig-10).

Figure 7. After distalization (Occlusal view)

Figure 8. After distalization (Right lateral view)

Treatment result

5 mm of molar distalization was done successfully in three months with establishment of class I molar relation on both side (Fig-7 and 8). Canine was brought into the arch and class-I canine relation was established on both sides (Fig-10).35 was uprighted (Fig-10). Upper lip prominence was decreased (Fig-11 and 12). Post orthopantomogram showed there was no significant root resorption (Fig-13).

Figure 9. Intra oral photograph after disimpaction of canine

Figure 10. Post Treatment Intra-oral photograph

Figure 11. Post treatment extra-oral photograph

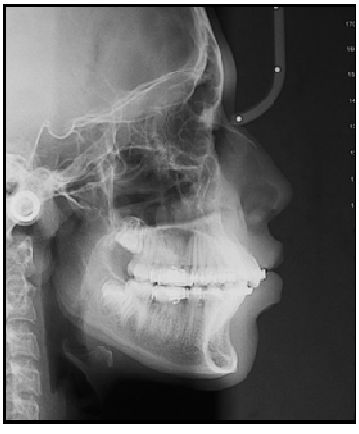

Figure 12. Post treatment lateral cephalogram

Figure 13. Post treatment orthopantomogram

Figure 14. Cephalometric Superimposition (done on SN plane)

DISCUSSION

Non extraction treatment protocol was always accepted to the orthodontists whenever possible. It is also well acceptable from the patient side also. Molar distalization is one of the best treatment protocols in non extraction therapy. There are several ways of molar distalization (Hilgers, 1992; Joseph, 2000; Gianelly, 1988 and Carano, 1996). Implant was used in this case as it acts as an absolute anchorage and does not cause any adverse effect to the anteriors (Park, 2001). As the 18 was placed high in the alveolus decision was taken not to extract it. Treatment was started in MBT prescription (0.022"X0.028" slot). After aligning rest of the teeth a micro-implant was placed between 16 and 15 as there was no sufficient space between 14 and 15. The point of application of force was kept higher so that it passed through the center of resistance of 16 and bodily movement was achieved. To increase the length of the open coil spring, force module was attached from distal side. After 3 month, 5 mm space was created mesial to 16. Then 14 and 15 was distalized and the 13 was brought into the arch after surgical exposure. After treatment class –I molar and canine relation was established on both side. Lip prominence was decreased (Fig-14).

Conclusion

Micro-implant is a good option to distalize molar whenever possible. It shortens the duration of treatment and also does not cause any adverse effect on anteriors. So Implant supported molar distalization can be done as a treatment protocol for non-extraction therapy.

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