INTRODUCTION - The goal of orthodontic treatment is to improve patient’s quality of life through the enhancement of dentofacial function and esthetics. Orthodontic treatment duration is an issue of importance, particularly for adults. Rapid orthodontic tooth movement can be attained through a combination of orthodontic treatment and surgical alveolar corticotomies.

AIMS AND OBJECTIVE - To compare the rate of tooth movement and anchorage control (mesial molar displacement) in corticotomy assisted group (group-1) and conventional maxillary anterior enmass retraction group (group-2).

SUBJECTS: The sample of this study was selected from the patients diagnosed with Class I Bimaxillary protrusion requiring orthodontic treatment with extraction of all 1st premolars.

Inclusion criteria –
Patient with < 4mm of crowding, Normodivergent skeletal patterns, Anterior proclination (Upper Incisor to NA value range = 24° - 28°), Age range 22±3 years. (Gender dimorphism was not considered)
All 12 subjects were then given an option of corticotomy to fasten their treatment time and based on their consent; we divided them into two groups:
Group 1 - corticotomy assisted en-masse maxillary anterior retraction (n=6)
Group 2 - conventional en-masse maxillary anterior retraction (n=6)

Methods - All subjects were bonded with four Stainless-steel bands on the molars and ten metal brackets on remaining teeth (0.022 Roth - Gemini Metal Brackets-3MUnitek). The wire sequence consisted of 0.016 / 0.018 Ni-Ti for initial levelling and alignment, and anterior en-masse retraction was performed using 0.019X0.025 SS continuous T-loop retraction wire, with a β moment of 40° and a Trans-palatal arch (TPA) was placed in both groups.
Corticotomy was performed in patient of group 1 after leveling and alignment. Each patient was reviewed after 2 weeks to begin en-masse retraction using T-loop, which was activated every 2 weeks thereafter (ranging from 1 to 3 weeks).
Group 2 patients were recalled after 6-8 weeks for reactivation of the loop.

RATE OF TOOTH MOVEMENT – Time required to complete maxillary en-masse retraction was recorded. Rate of retraction was measured at 2, 4, 8 and 12 weeks, until the completion of space closure. Digital vernier calliper was used to measure interbracket distance between canine and second premolar bracket.

ANCHORAGE CONTROL – To determine the amount of mesial movement of the maxillary first molar, the pterygoid vertical plane (PTV) was used as a reference on standard lateral cephalogram.

RESULTS –

RATE OF TOOTH MOVEMENT – Average time required for maxillary enmass retraction was 25.83 ± 1.72 weeks in group 2 whereas 12.5 ± 0.55 weeks in group 1. Mean rate of tooth movement was 1.16 ± 0.05 mm/week and 0.56 ± 0.02 mm/week in group 1 and group 2 respectively. Independent sample t-test showed that rate of tooth movement was significantly higher in group 1 than group 2 (p<0.001).

ANCHORAGE CONTROL – The mean anchorage loss was 1.42 ± 0.42 mm and 2.33 ± 0.52 mm in group 1 and 2 respectively. Independent sample t-test revealed that the mean anchorage loss was significantly higher for group 2 than group 1 (p<0.003).

Conclusion – Mean rate of tooth movement was higher and anchorage loss was less in corticotomy assisted group than conventional maxillary anterior enmasse retraction group. The corticotomy assisted orthodontics procedure is technique sensitive and requires the utilization of numerous modified treatment parameters, but once these are mastered the orthodontist has a powerful new treatment option to offer his or her patients.

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