ORIGINAL RESEARCH PAPER

Volume-8 | Issue-6 | June-2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

OTHODONTIC CORRECTION OF UNILATERAL SCISSOR BITE AND ELIMINATING DARK BUCCAL CORRIDORS TO ENHANCE SMILE ESTHETICS: A CASE REPORT

Dental Science

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ABSTRACT

Unilateral cross bite is a very rare malocclusion. Correction of a unilateral cross bite is often challenging and difficult for the clinician. Unilateral scissor bite leads to an asymmetric smile arc and results in different show of buccal corridors bilaterally. This leads to poor smile esthetics. This case report describes the importance of correcting a unilateral scissor bite and reducing dark buccal corridors equally bilaterally to enhance smile esthetics. A comparison of pre-treatment and post-treatment frontal smile photographs is the best way to appreciate the importance of having equal and minimal show of buccal corridors.

KEYWORDS

Smile esthetics, Buccal corridor, Scissor bite, Smile attractiveness, Smile arc

INTRODUCTION

Overall attractiveness is also determined by dentofacial attractiveness.[1] According to a study condeucted by Miller[2], individuals mainly focus on other people's eyes and mouths during an interpersonal interaction. Smile ranks second to the eyes as the most important feature in facial attractiveness.[3]

The buccal corridor is more commonly referred by orthodontists as negative space present between the lateral aspects of maxillary posterior teeth and the corner of the mouth during smile which appears as a black or dark space. Frush and Fischer demonstrated that the presence of buccal corridors added the illusion of a natural dentition, whereas its absence gave the patient an artificial appearance. Moore T et al in their study classified patients into five different widths of buccal corridors: 1) narrow (28% buccal corridor), 2) medium-narrow (22% buccal corridor), 3) medium (15% buccal corridor), 4) medium-broad (10% buccal corridor), and 5) broad (2% buccal corridor).[4] Having minimal buccal corridors is a preferred esthetic feature in both men and women, and large buccal corridors should be included in the problem list during orthodontic diagnosis and treatment planning.[4]

CASE REPORT

The present case report describes the importance correcting a unilateral scissor bite and getting an equal and minimal buccal corridor bilaterally.

DIAGNOSIS AND TREATMENT PLAN

A 21 year old male patient reported with a chief complaint of spacing and irregular smile on the upper right side. Extraoral examination revealed a straight profile and orthognathic divergence. Nasolabial angle was normal. (Figure 1) Dark buccal corridors were observed upon frontal smiling. The buccal corridors were asymmetric with less dark buccal corridors on the right side and increased dark buccal corridor on the left side. (Figure 2) This was due to buccoversion of 14 and 15 resulting in a scissor bite in occlusion. A non consonant smile arc was aso observed. (Figure 2)

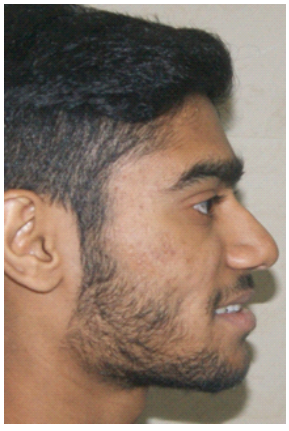


Figure 1: Profile view

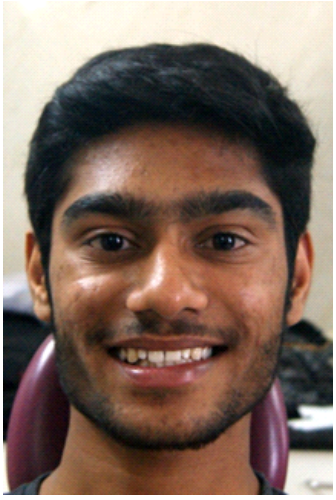


Figure 2: Frontal smile view

Upon intraoral examination patient was diagnosed with Spacing in maxillary anterior teeth (Figure 3 and 4) and crowding mandibular anterior teeth (Figure 5), Midline diastema and unilateral scissor bite in 14,15. Maxillary lateral incisors were microdontic.

Figure 3: Intraoral frontal view

Figure 4: Intraoral Maxillary occlusal view

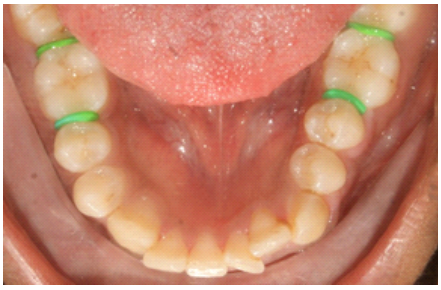


Figure 5: Intraoral mandibular occlusal view

An Angle's class I molar relation was present bilaterally. 4mm overjet and 5mm overbite were also noted. Canine guided occlusion was present on the left side whereas absence of canine guided occlusion on the right side was attributed to the scissor bite on this side. (Figure 6)

Figure 6: Intraoral right lateral view with scissor bite in premolar region

Following a comprehensive clinical and database analysis, we devised a treatment plan which was a non extraction approach since there was enough space in the anterior segment and patient had a straight profile. Correction of scissor bite and reducing the buccal corridor to an equal ratio bilaterally was the treatment plan to achieve the desired smile esthetics.

TREATMENT PROGRESS

An MBT prescription with 0.022" slot metal brackets was used for the treatment. Banding of first and second molars was done to increase the posterior anchorage. Tight lacebacks made from 0.010" ligature wire were placed from second molars to the canine in all four quadrants. A GIC bite turbo was placed for 3 months to disocclude the locked premolars in the right quadrant. Lingual buttons were bonded on the lingual surface of lower right first and second premolars. An initial 0.016" HANT wire was used for initial leveling followed by 19X25" HANT wire in upper and lower arches. Light yellow 5/16" cross elastics from lower bonded ligual button to the hooks of 14 and 15 were given from the very start of treatment. This was followed by 0.019x0.025" SS archwire in upper arch and continued use of 19X25 HANT wire in lower arch and yellow cross elastics were replaced by red cross elastics. Scissor bite was corrected at the end of 5 months. This was followed by 19X25 SS wire in lower arch and continued use of yellow cross elastics to maintain the results achieved. E chain was used on crimpable hooks to close the spacing in upper anterior segments. Lower crowding was corrected after gaining 4 mm of space by proximal stripping.

At the end of treatment, scissor bite was corrected, Katz Class I premolar relation achieved (Figure 7), spacing closed (Figure 8) and crowding corrected in lower arch. (Figure 9)

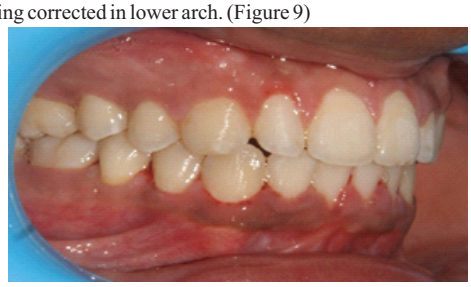
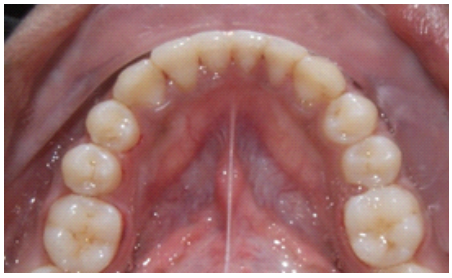


Figure 7: Post treatment occlusion after correction of scissor bite

Figure 8: Post treatment intraoral frontal view



Post-treatment extra oral examination showed a consonant smile arc. A reduced show of buccal corridor with equal ratio bilaterally was achieved at the end of treatment. This correction of buccal corridor problem was achieved by correction of scissor bite and coordinating upper and lower archwires at every stage of treatment. Reshaping of microdontic lateral incisors was done by componeers.

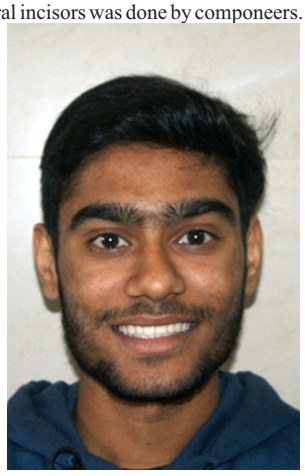


Figure 9: Consonant smile arc, reduced and equal ratio of buccal corridor at the end of treatment.

A fixed lingual retainer was bonded in the upper and lower arches to maintain the results achieved.

DISCUSSION

Small buccal corridors are more attractive, and that laypeople prefer smiles with no or small BCs.[5,6]

The following findings from a study[7] were kept into consideration while designing the patient's smile:

1) Laypeople and orthodontists prefer smiles with small or no Bcs.
2) Laypeople are less discriminating than orthodontists in their perceptions of BC size.
3) Laypeople tended to prefer PM2–PM2 (10 teeth) smiles; orthodontists tended to prefer M1–M1 (12 teeth) smiles.
4) BC ratio has more impact on smile attractiveness than mild asymmetry.
5) There are no gender or age group differences in BC attractiveness ratings

Upon comparing the pre-treatment and post-treatment smile, we were able to achieve all the factors satisfactorily and it was evident that these factors of buccal corridor are indeed important to achieve an ideal smile. (Figure 11)

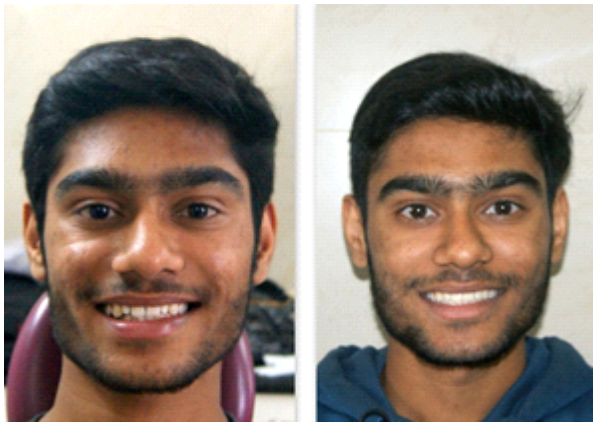


Figure 10: Comparing the pre-treatment and post-treatment frontal smile.

CONCLUSION

A thorough diagnosis and making an accurate problem list is of utmost important while designing an esthetic smile for a patient. Every aspect of smile should be considered when treating a patient with asymmetric dark buccal corridors due to unilateral scissor bite. Consonant smile arc along with zero buccal corridor was achieved for this patient and a wide PM2- PM2 smile was achieved at the end of treatment.

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