International Journal of Enhanced Research in Medicines & Dental Care, ISSN: 2349-1590
Vol. 1 Issue 5, July-2014, pp: (9-16), Available online at: www.erpublications.com

Corticotomy facilitated orthodontics for correction of posterior cross bite with Amex (Asymmetric Maxillary Expansion)

Dr. Varun Goyal[1], Dr. Anil Kadian[2], Dr. Gunjan Gupta[3], Dr. Alpa Gupta[4]

[1]SR Orthodontics MDS
[2]PG Orthodontics MDS
[3]PR Osthodontics MDS
[4]SR Endodontics MDS
[1,2,3,4]Department of Orthodontics and Dentofacial orthopaedics PGIDS, Rohtak

---

Abstract: Corticotomy is a minor surgical procedure used to facilitate & accelerate tooth movement in certain cases where conventional orthodontics find its limitation. A very few published case reports of corticotomy facilitated orthodontics are present till date to substantiate its scope. Here is case report of a patient who reported to the Department of Orthodontic & Dentofacial Orthopedics after being rejected during her medical examination for armed force service on account of having bilateral posterior crossbite . She was given 60 days for the correction of this malocclusion before she could reappear for the examination . Considering the age for rapid maxillary expansion & limited time circumstance so corticotomy facilitated orthodontic was indicated in this case & also hyrax followed AMEX (asymmetrical maxillary expansion appliance) was required to correct the crossbite.

Keywords: Corticotomy , Amex appliance , Hyrax , Elastics.

INTRODUCTION

Corticotomy[1] found to be effective in accelerating orthodontic treatment. The most important factors in the success of this technique is proper case selection and careful surgical and orthodontic treatment Corticotomy facilitated orthodontics is advocated for comprehensive fixed orthodontic appliances in conjunction with full thickness flaps and labial and lingual corticotomies around teeth to be moved. Tooth movement should be initiated two weeks after the surgery, and every two weeks thereafter by activation of the orthodontic appliance. Orthodontic treatment time with this technique will be reduced to one-third the time of conventional orthodontics. Corticotomy facilitated orthodontics is promising procedure but only few cases were reported in the literature. Controlled clinical and histological studies are needed to understand the biology of tooth movement with this procedure, the effect on teeth and bone, post-retention stability, measuring the volume of mature bone formation, and determining the status of the periodontium and roots after treatment.

PRINCIPLE & PROCESS

Corticotomy surgery initiates and potentiates normal healing process (Regional Acceleratory Phenomena)[2] (Wilcko et al., 2000, 2001, 2003, 2008)[4,5,6,7]. Regional Acceleratory Phenomen (RAP)[2] is local response to a noxious stimulus describes a process by which tissue forms faster than the normal regional regeneration process. By enhancing the various healing stages, this phenomenon makes healing occur 2–10 times faster than normal physiologic healing (Frost, 1983). The RAP begins within a few days of injury, typically peaks at 1–2 months, usually lasts 4 months in bone and may take 6 to more than 24 months to subside (Wilcko et al., 2000, 2001, 2003, 2008). A recent histological study showed that selective alveolar decortication induced increased turnover of alveolar spongiosa (Sebaoun et al., 2008). The surgery results in a substantial increase in alveolar demineralization, a transient and reversible condition. This will results in osteopenia (temporary decrease in bone mineral density). The osteopenia enables rapid tooth movement because teeth are supported by and moved through trabecular bone. As long as tooth movement continues, the RAP is prolonged. When RAP dissipates,

the osteopenia disappears and the radiographic image of normal spongiosa reappears. When orthodontic tooth movement is completed, an environment is created that favors alveolar re-mineralization.

CASE REPORT

Cortiotomy facilitated orthodontics for correction of posterior crossbite with AMEX (ASYMMETRIC MAXILLARY EXPANSION)

CASE- HISTORY

A 23 year old female patient, reported to the Department of Orthodontics and Dentofacial orthopedics with chief complaint of bilateral posterior crossbite.

HISTORY OF PRESENT ILLNESS

She was rejected in army medical on the account of bilateral posterior crossbite and given a period of 60days for correction of the problem.

EXRA-ORAL EXAMINATION

On extra oral clinical examination, patient had no gross facial symmetric, mesoprosopic face, with a convex facial profile, with a protrusive maxilla and a normal mandible

INTRA-ORAL EXAMINATION

On intraoral examination, bilateral posterior crossbite was present irt 16,17, 26, 27, in the maxillary arch was narrow in molar region. The mandibular arch was symmetrical and ovoid shaped. Overjet of 5mm and overbite of 4mm with Class II molar relation & end on molar relation on left side.

DIAGNOSIS

Angle's Class II division1 malocclusion on Class I Apical base with average growth pattern

TREATMENT OBJECTIVES

Correction of posterior crossbites.

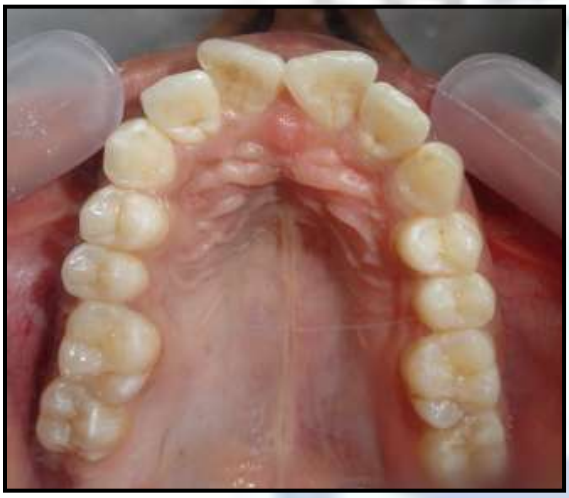
TREATMENT PLAN

Corticotomy to facilitate the tooth movement.
Rapid maxillary expansion with a bonded Hyrax screw.
Retention with semifixed appliance.
Finishing & detailing of occlusion.

PRETREATMENT EXTRAORAL PHOTOGRAPHS


PRETREATMENT INTRAORAL PHOTOGRAPHS






MIDTREATMENT INTRAORAL PHOTOGRAPHS

Corticotomy


22nd day

25th day

AFTER CORTICOTOMY 32th day after bilateral corticotomies to 42th day

It was activated 1 mm per day for 10 days

AMEX [7]

For correction of asymmtery expansion

Cross Elastics

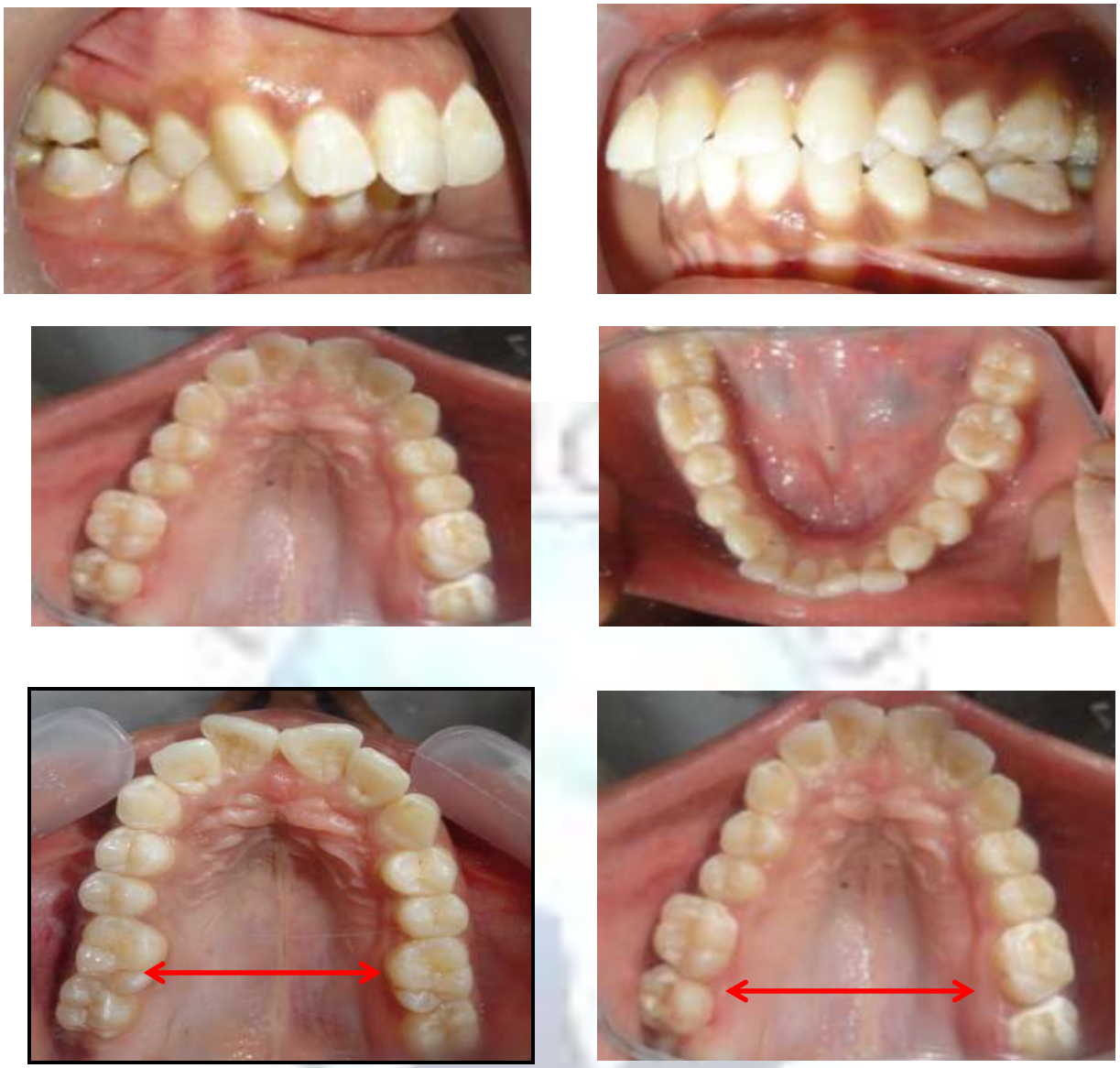
Acceptable occlusion achieved on around 60th day

Trans palatal arch appliance

Lingual arch appliance

POST TREATMENT INTRAORAL PHOTOGRAPHS

Settled occlusion



Pre treatment Post treatment

RESULTS

Acceptable correction of occlusion is achieved after a short period of time (around 40 days)with correction crossbite & she cleared the medical in armed force in given time duration

DISSCUSION

This is one of the case to expand scope of convention orthodontics in term of arch expansion in grown up individual. More studies need to be done to understand the scope of corticotomy facilitated orthodontics in arch expansion in grown up adult with limited scope arch expansion. Such a simple surgical when combined with conventional orthodontics can give desired result .

CONCLUSION

A case report has been presented that demonstrate coticotomy facilitated orthodontic helped in rapid tooth movement This procedure provide a safe solution to patient who desires the benefit of orthodontic treatment in relatively short duration or in limited time duration as compared to conventional surgical procedure.

REFERENCES

[1]. Suya H. Corticotomy in orthodontics. In: Hösl E, Baldauf A (eds). Mechanical and Biological Basics in Orthodontic Therapy. Heidelberg, Germany: Hütlig Buch, 1991: 207–226.Frost, H.M., 1983. The regional acceleratory phenomenon: a review. Henry Ford Hosp. Med. J. 31, 3–9.
[2]. Frost, H.M., 1983. The regional accelerated phenomenon: a review. Henry Ford Hosp. Med. J. 31 (1), 3–9.
[3]. Kole, H., 1959a. Surgical operations on the alveolar ridge to correct occlusal abnormalities. Oral Surg. Oral Med. Oral Pathol. 12, 515– 529.
[4]. Wilcko, M.T., Wilko, W.M., Bissada, N.F., 2008. An evidence-based analysis of periodontally accelerated orthodontic and osteogenic techniques: a synthesis of scientific perspective. Seminars Orthod. 14, 305–316.
[5]. Wilcko, M.W., Ferguson, D.J., Bouquot, J.E., Wilcko, M.T., 2003. Rapid orthodontic decrowding with alveolar augmentation: case report. World J. Orthod. 4, 197–205.
[6]. Wilcko, W.M., Wilcko, M.T., Bouquot, J.E., Ferguson, D.J., 2000. Accelerated orthodontics with alveolar reshaping. J. Ortho. Practice 10, 63–70.
[7]. Wilcko, W.M., Wilcko, T., Bouquot, J.E., Ferguson, D.J., 2001. Rapid orthodontics with alveolar reshaping: two case reports of decrowding. Int. J. Periodont. Restorat. Dent. 21, 9–19.
[8]. Toroglu M S, Uzel E, Kayalioglu M, Uzel I. Asymmetric maxillary expansion (AMEX) appliance for treatment of true unilateral posterior crossbite . Am J Orthod Dentofacial Orthop 2002;122:164-73.