

# CORTICOTOMY-PERIODONTALLY ACCELERATED OSTEOGENIC ORTHODONTICS - A SURGICAL TECHNIQUE AND CASE REPORT

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## Abstract :

Corticotomy-assisted orthodontic treatment involves selective alveolar decortication in the form of decortication lines and dots performed around the teeth that are to be moved. It is done to induce a state of increased tissue turnover and a transient osteopenia, which is followed by a faster rate of orthodontic tooth movement. This technique has several advantages, including faster tooth movement, shorter treatment time, safer expansion of constricted arches, enhanced post-orthodontic treatment stability and extended envelope of tooth movement. This case report describes a surgical technique and case report involving periodontally accelerated osteogenic orthodontics.

Keywords: periodontally accelerated corticotomy, case report, orthodontics.

## Introduction :

Now days, increasing number of adult patients are seeking orthodontic treatment [1]. When you compare there are a several psychological, biological and clinical differences between the orthodontic treatment of adults and adolescents. Adults have more specific objectives and concerns related to aesthetics, the type of orthodontic appliance and the duration of treatment. Growth is insignificant in adults compared to children, and there is a chance that hyalinization will occur during treatment [2]. Cell mobilization and conversion of collagen fibers is much slower in adults. Finally, adult patients are prone to periodontal complications as their teeth are in non-flexible alveolar bone [2]. These considerations make orthodontic treatment of adults different and challenging.

Advantages of corticotomy assisted orthodontics include a reduced treatment time, enhanced expansion, differential tooth movement, increased traction of impacted teeth and post-orthodontic stability. This case report describes the corticotomy surgical technique used in conjunction with orthodontic therapy and its effect on the periodontal status of the involved teeth.

## Case Report :

A 26 year old female patient had a complaint of forwardly placed upper and lower front teeth with spacing between the teeth. The case was diagnosed as Angles Class I malocclusion with proclination and spacing of upper and lower anterior teeth. Appropriate treatment plan was made through an interdisciplinary approach and PAOO was opted for the correction of spacing and proclination, in consideration with all the clinical and biological conditions.

Surgical procedure was described to the patient. Other orthodontic treatment options available were also explained to the patient including orthognathic surgery. The patient consented to the PAOO. Prior to surgical and orthodontic treatment, periodontal health of the patient

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Periodontally accelerated osteogenic orthodontics has offered solutions to many limitations in the orthodontic treatment of adults. This method claims to have several advantages.

was restored by phase I periodontal therapy including plaque control measures and scaling and root planing. The results obtained by this phase of therapy were monitored monthly during the treatment period.

**Surgical procedure**

The surgical procedures were performed under local anaesthesia. First, corticotomy was done for mandibular anterior teeth followed by maxillary anterior teeth. Vertical releasing incisions were placed extending from gingival margin toward level apical to the apices of mandibular anterior teeth. The vertical incisions were connected by buccal and lingual intracrevicular incisions. Mucoperiosteal flaps were reflected beyond the level of the apices of the teeth. Vertical buccal and lingual grooves

were made through the cortical layer of the exposed bone with a round fissure bur mounted on a micromotor hand piece with concomitant saline irrigation, starting 1.5 mm below the interdental crest. A horizontal groove penetrating the cortical bone connected all vertical grooves 2-3 mm apical to the apices of the teeth. Adequate bio absorbable grafting material was placed over the decortication site. The surgical sites were vigorously irrigated with saline prior to flap repositioning and sutured. Analgesics and adjunctive antibiotics were prescribed for 1 week.

After a period of 1 week, procedure was performed on the maxillary arch. Full thickness mucoperiosteal flaps were reflected beyond the level of the apices of the maxillary

PRE OPERATIVE - MAXILLA



INTRA OPERATIVE



POST OPERATIVE



PRE OPERATIVE MANDIBLE



INTRA OPERATIVE



POST OPERATIVE



anterior teeth. Vertical buccal and palatal grooves were made through the cortical layer of the exposed bone, starting 1.5 mm below the interdental crest. A horizontal groove penetrating the cortical bone connected all vertical grooves 2 to 3 mm apical to the apices of the teeth. Adequate bio absorbable grafting material was placed over the decortication site. The surgical sites were vigorously irrigated with saline prior to flap repositioning and sutured. Analgesics and adjunctive antibiotics were prescribed for 1 week. Follow up was done after 1 week. Presently patient is undergoing orthodontic treatment.

#### Conclusion :

Periodontally accelerated osteogenic orthodontics is a technique that has many applications in the orthodontic treatment. This technique helps to overcome many of the

current limitations, including lengthy duration, potential for periodontal complications, lack of growth and the limited envelope of tooth movement. The mechanism can be summarized as the induction of bone metabolism *via* decortication lines and points around the teeth to be moved to enhance bone and periodontal turnover, resulting in a transient stage of osteopenia during treatment. This increases the rate of tooth movement if followed by a short period of orthodontic appliance treatment. This method its effects and mechanism were confirmed by recent well designed histological studies. However, further randomized testing in humans is needed to confirm the claimed advantages of this technique and to evaluate the long term effects.

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