Corticotomy: Assisted Orthodontic Treatment


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Objectives

Ever more adults are demanding effective orthodontic treatment in as little time as possible. Achieving the facial, dental, esthetic and functional objectives while decreasing treatment time is a real challenge for orthodontists. Since Köle defined corticotomy in 1959 as a lineal technique in the cortical bone around teeth that would allow better and immediate tooth mobilization. Ever less invasive techniques that make it possible to incorporate this tool to our daily practice have been proposed by different authors, including Wilcko, Vercellotti, Kim or Sebaoun.

This paper proposes a review of the most recent literature and will present a synthesis of the actual benefits of this technique and its mechanism of action.

Materials and Methods

The bibliography for the years 2001 to 2012 on corticotomy in the electronic free data bases (Medline, Pubmed, Cochrane Library) of the Madrid Complutense University has been reviewed. Randomised clinical studies, case studies and systematic control studies, reviews and meta-analyses have been included, while isolated clinical cases, publications connected with manufacturers and opinion articles were excluded. Our results were scarce as only 23 articles were identified. Only eleven could be analysed for the purpose of this study.

Results

Corticotomy is defined as a surgical procedure whereby only the cortical bone is cut, perfored, or mechanically altered. Corticotomy is an adjuvant surgical technique in orthodontic treatment. It is believed to present several advantages, such as reduction in the treatment time because of the osteopenia and the Regional Acceleratory Phenomena (RAP), is local response to a noxious stimulus describes a process by which tissue forms faster than the normal regional regeneration process. This is bone remodeling triggered by the inflammatory phenomenon is regulated by the activation of cytokines like IL-1 beta, IL-6, TNF-alfa, PG, which mediate and stimulate osteoclastic and osteogenic activity. Other advantages depend of the technique used, like a greater expansive potential, greater stability after an orthodontic treatment, less root resorption. (Wilcko), increase traction capacity on the treated teeth, differential dental movement (Vercellotti, Podesta).

Conclusions

- Corticotomy is a technique that facilitates rapid tooth movement and the accelerated orthodontics treatment because of osteopenia and a greater remodelatory osseous activity in the alveolar bone associated to the corticotomy (RAP).
- The effectiveness of the different techniques compared to each other in relation to the desired orthodontic movement remains unknown.
- More studies are needed to understand the biology of tooth movement with this procedure, the effect on teeth and bone, post-retention stability, and determining the status of the periodontium and roots after treatment.

References