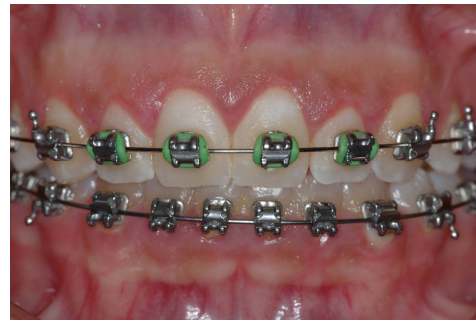
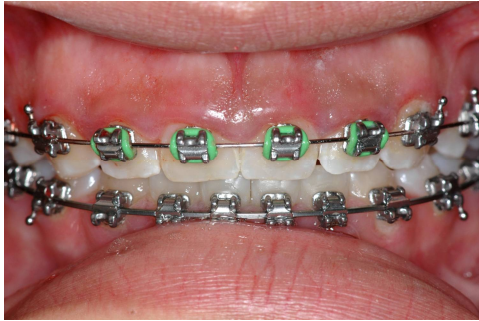


## Gingival Hyperplasia, Altered Passive Eruption and Orthodontic Treatment



In a previous newsletter, the diagnosis and treatment of the “gummy smile” was reviewed in detail and can be caused by gingival hyperplasia, dentoalveolar extrusion, vertical maxillary excess or altered passive eruption.

Orthodontic treatment can lead to gingivitis in most adolescent patients and patients with poor oral hygiene. In some cases this can cause hyperplastic inflammation that manifests itself as excessive fibrotic tissue that bleeds easily on probing. This hyperplastic gingivitis has coalescing papillae and short clinical crowns. A gingivectomy /gingivoplasty procedure can be performed during orthodontic treatment to improve oral hygiene, esthetics and the final outcome of orthodontic treatment, and is oftentimes performed in conjunction with a frenectomy or fibrotomy prior to removal of orthodontic brackets.

Patients with altered passive eruption as described previously, typically have thick, boxy marginal tissues that do not bleed easily. The shortened clinical crowns are a result of excessive gingival tissues and an improper alveolar crest position. A gingivectomy in conjunction with an osteotomy and osteoplasty must be performed to prevent rebound and for biologic width considerations.

Dentoalveolar extrusion can result in excessive display of gingival tissues and may be corrected with intrusive orthodontic forces. Certain limitations and difficulties are inherent with this treatment but it may be the last resort before a segmental osteotomy is needed. The same principles of this tooth movement are applied in orthodontic extrusion, whereby an otherwise hopeless tooth is retained and extruded several millimeters to translate the bone and soft tissue complex coronally prior to implant or other prosthetic treatment. This allows a predictable method of vertical bone gain as compared to the limitations encountered with vertical gain with current bone grafting techniques.

### **Wilckodontics**

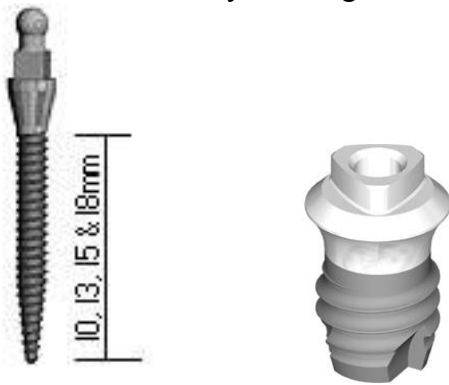
The technique of decortication-facilitated orthodontics was described in a publication by W.M. Wilcko in the International Journal of Periodontics and Restorative Dentistry, 2003

whereby cases were decrowded and finished in 60-70% less treatment time than conventional orthodontic techniques. The technique involves a surgical procedure following bracket placement, whereby cuts are made through the cortical plate of each tooth and demineralized freeze-dried bone graft placed over the alveolar crest. Forces are then placed on the teeth allowing a more rapid tooth movement with less relapse post-orthodontically.

This procedure is based on the Regional Acceleratory Phenomenon, whereby the cortical cuts induce increased osteogenic turnover combined with the osteoinductive properties of the bone graft and allow for an accelerated rate of bone resorption and apposition. The end result is that teeth can be moved faster with less relapse than conventional orthodontics alone. Although this technique shows promise, further studies are needed to evaluate the long term outcome of these cases and report more in depth on the incidence of tooth devitalization and/or significant root resorption.

## **Implant-Retained Orthodontic Anchorage**

In recent years, there has been an explosion of research and information regarding the use of implants as temporary anchorage devices. The use of mini-screws placed in interradicular spaces in the buccal cortical plate have shown promise in facilitating intrusive, protractive and retractive forces, as well as distalizing and uprighting molars in the posterior quadrants. Mini-implants used especially in the palate are showing promise for orthodontic anchorage. They are utilizing the short healing times needed for successful osseointegration with similar surface designs to allow a stable implant that can be loaded indefinitely with higher success rates.



## **Temporary Miniscrews**

There are multiple companies that promote their mini-screw systems. These screws vary in length (from 6 to 12mm), but usually have a diameter of 1.8mm and a smooth polished titanium surface. They are not intended to integrate permanently, and utilize the primary stability of the implant for the anchorage function needed. Therefore, they are usually loaded immediately with the ligature wires or elastics looped through an eyelet at the top portion of the implant. Some systems recommend a delayed loading approach. Because of their design, the success rates of these miniscrews are significantly lower than their

dental implant counterparts. However for temporary anchorage, the miniscrews show promise.

### **Mini-Implants**

Anchorage control systems used by orthodontists are often limited in predictability and success due to the fact that the treatment often relies on the compliance of the patient. The use of mini-implants, especially those anchored in the midsagittal area of the palate, have significantly broadened the success rate and shortened treatment times of anchorage dependent cases.

Most implant companies are developing their orthodontic implant systems utilizing 3.3mm diameter implants with 4 or 6mm lengths. The surgery is fairly straightforward using a series of increasing diameter drills to prepare an osteotomy and allow the placement of a self-tapping implant for good initial stability. The technique and sequence of steps is very similar to traditional dental implant surgery. A lateral cephalogram is often useful to identify which cases have sufficient palatal bone height for this procedure. The palatal arch depth and soft tissue thickness must also be evaluated to select the appropriate size implant. After a twelve-week healing period, this implant can be loaded using a transpalatal bar secured to the implant following healing cap removal providing absolute anchorage without the need for extraoral devices.

### **Conclusion**

Complex cases often involve an interdisciplinary approach to treatment. The interplay between orthodontics, periodontics, prosthetics and occlusion must be carefully considered in order to achieve consistent and predictable results. This newsletter is intended to briefly review some of the newer concepts and therapies that are shared between the fields of periodontics and orthodontics. A future newsletter will expand further on these interrelationships and treatment modalities.

Please call our office if you would like further information on these topics, or have any questions.

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