

Case Report MP

This case report describes the successful diagnosis and treatment of a Class I malocclusion characterized by a convex facial profile and vertical maxillary excess with concomitant lower lip eversion. Identifying the problem is only one of many hurdles to overcome in treating the person with excessive gingival display when smiling. What do you say during the consultation when you realize the patient's mother has that same smile. . . yes, it's a family trait. And there is always the dilemma of whether or not orthognathic surgery can be justified when the skeletal disharmony is not particularly severe. The answers to these concerns and others are presented in this report of a case treated by Dr. John Grubb in partial fulfillment of the requirements for membership in the Edward H. Angle Society.

—Editor

By John Eastman Grubb, DDS, MSD

This 14 year 6 month old female presented with a Class I malocclusion. Her general physical condition was excellent and she reported no unusual disabilities. Gingival tissues appeared normal and the patient had normal perioral musculature. Study cast analysis revealed a mild overjet and moderate mandibular anterior crowding. Upon examination of the intraoral radiographs it was noted the maxillary left central incisor root was shortened. There was no history of trauma. All third molars were present and impacted. Tomograms were unremarkable and both condyles appeared to be centered with adequate joint space.

Cephalometric radiographs revealed Class I dental and skeletal relationships. Both dental arches were protrusive and the lower face height was excessive. There appeared to be a vertical maxillary excess which, when combined with mild mandibular retrognathia and dental protrusion, caused eversion of the lower lip upon closure. A "gummy" smile made the vertical problem more apparent. Lips were incompetent when relaxed.

In general, the characteristics of the patient's malocclusion were almost identical to those of her mother.

Treatment plan

Initially, two different plans of treatment were presented to the family and the patient. It was unclear at the examination appointment what the patient's family wanted. Surgery had not been mentioned during the first contact since

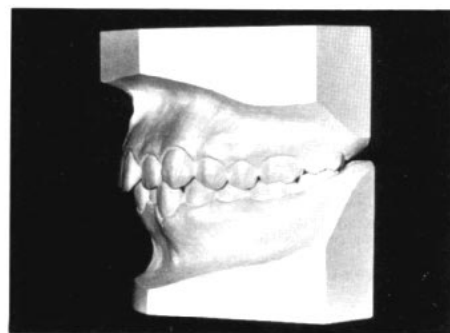
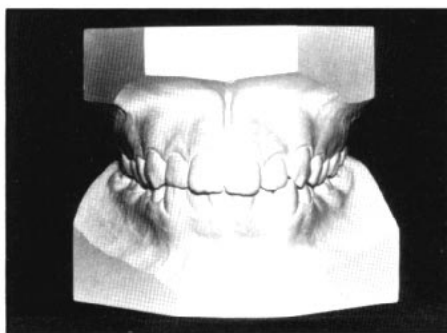
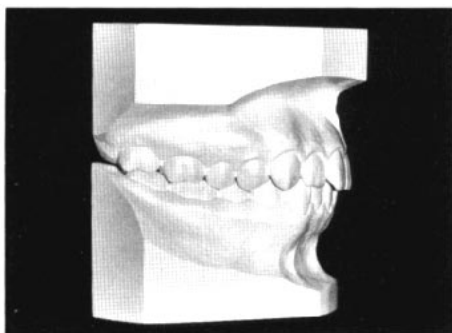
initial concerns were seemingly directed at "alignment of the teeth." However, it became apparent during the workup that the patient would benefit most by the inclusion of a surgical approach to reduce the vertical maxillary excess. The following treatment plans were presented to the family.

Plan A: Comprehensive care including maxillary surgery

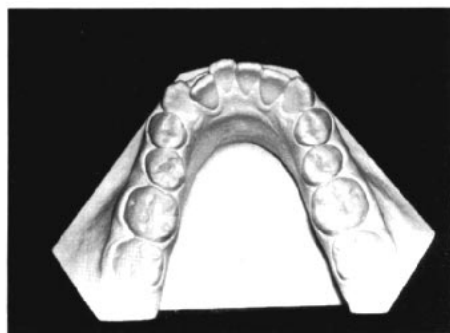
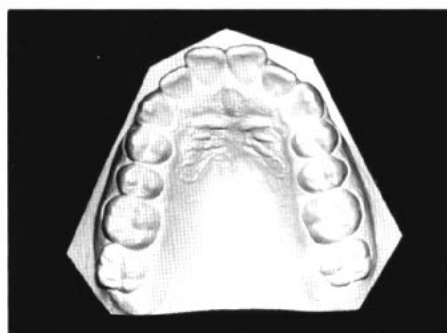
1. Extract mandibular right and left first premolars as well as third molars on the left side.
2. Band and bond all teeth except the maxillary central incisors (delay bonding due to short roots).
3. Level and align all teeth.
4. Retract mandibular incisors to an ideal NB relationship over the ridge. Use elastics as needed to achieve this goal.

Pretreatment photographs at 14 years 6 months.



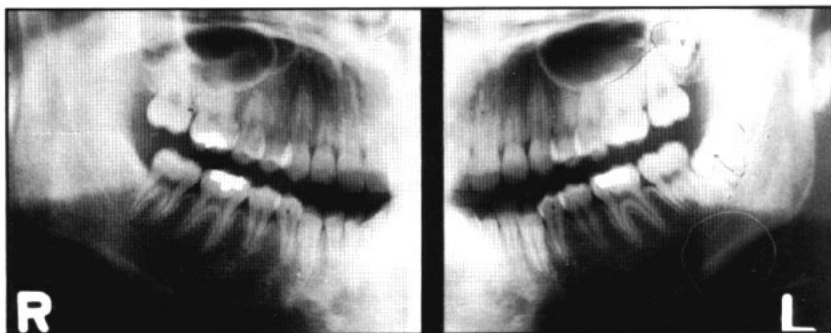


Pretreatment study casts.



Pretreatment radiographs.

Cephalometric tracing at 14 years 6 months.



5. Coordinate arches and take progress records.
6. Surgically impact the maxilla with a LeFort I osteotomy, creating ideal vertical, anterior and posterior relationships as well as allowing for autorotation of the mandible.
7. Stabilize with rigid internal fixation.
8. Finish and retain with a maxillary Hawley and mandibular 3-3 retainers.

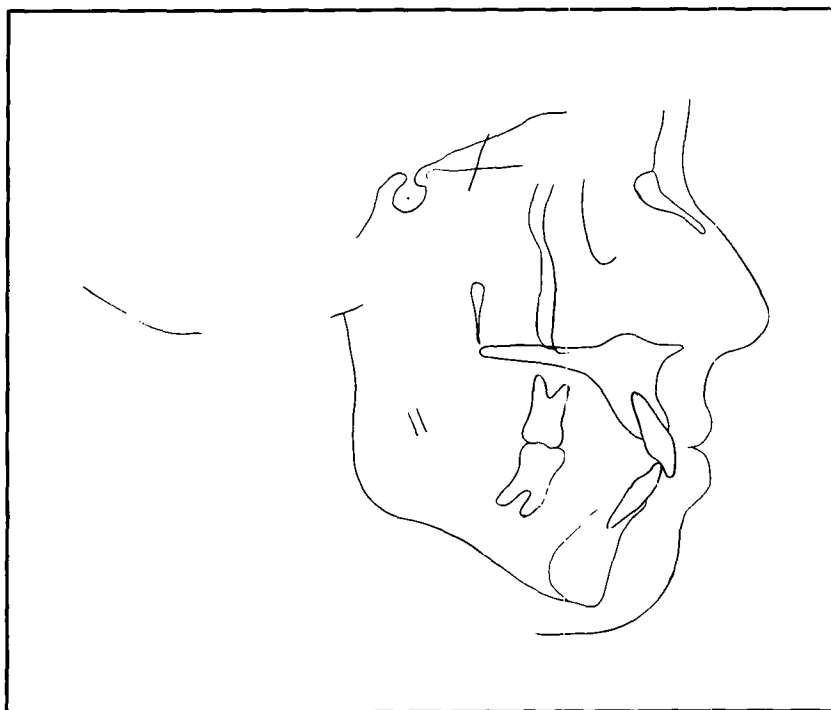
Plan B: Non-surgical alternative

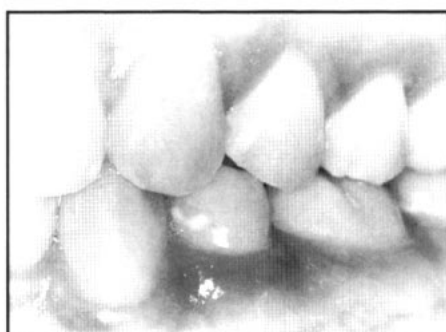
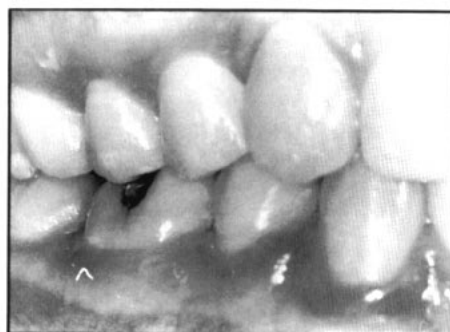
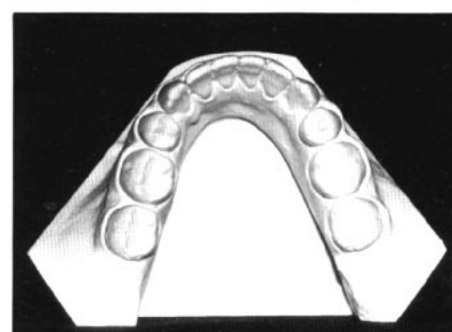
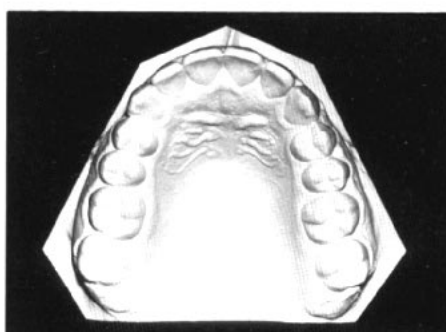
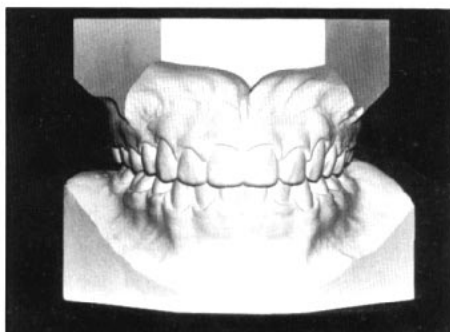
1. Band and bond all teeth except maxillary central incisors (delay bonding due to short roots).
2. Level and align all teeth.
3. Strip maxillary and mandibular anterior teeth.
4. Close all spaces and retract incisors.
5. Direct bond and align maxillary centrals; coordinate arches with .018 x .025 archwires.
6. Finish and retain with maxillary Hawley and mandibular 3-3 fixed retainers.
7. Extract third molars on the left side.

Following additional consultation with the patient's family and the oral and maxillofacial surgeon, the surgical alternative was selected. Cooperation was excellent and treatment progressed as outlined in Plan A. At the completion of active therapy 28 months later, maxillary and mandibular retainers were placed and final records were gathered.

Observations and conclusions

The original treatment objectives were achieved as outlined. Study cast analysis after extractions, orthodontic treatment and orthog-





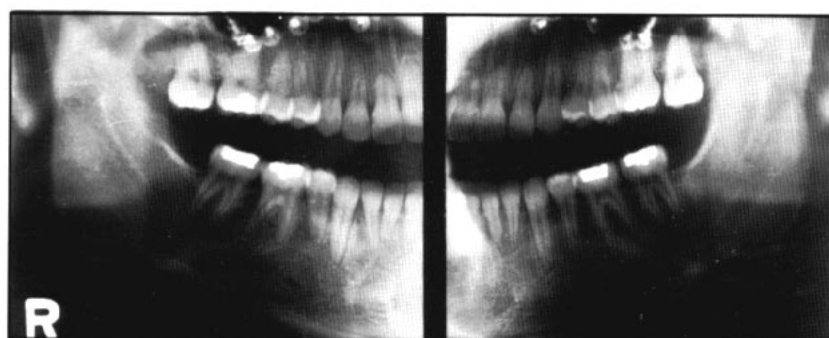
Posttreatment study casts.

Note posterior occlusion following the extraction of mandibular first premolars.

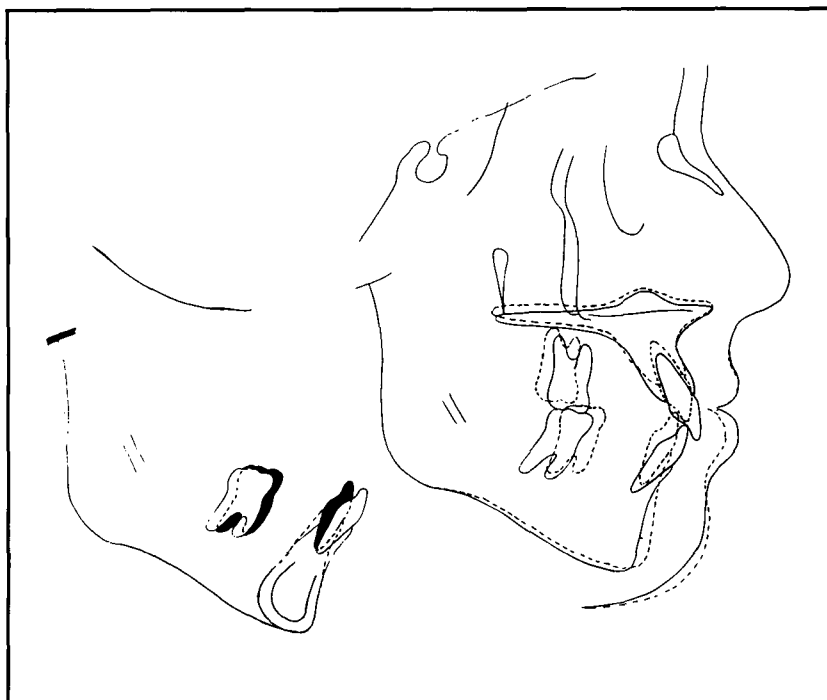
Posttreatment cephalometric radiograph following LeFort I osteotomy and rigid fixation.

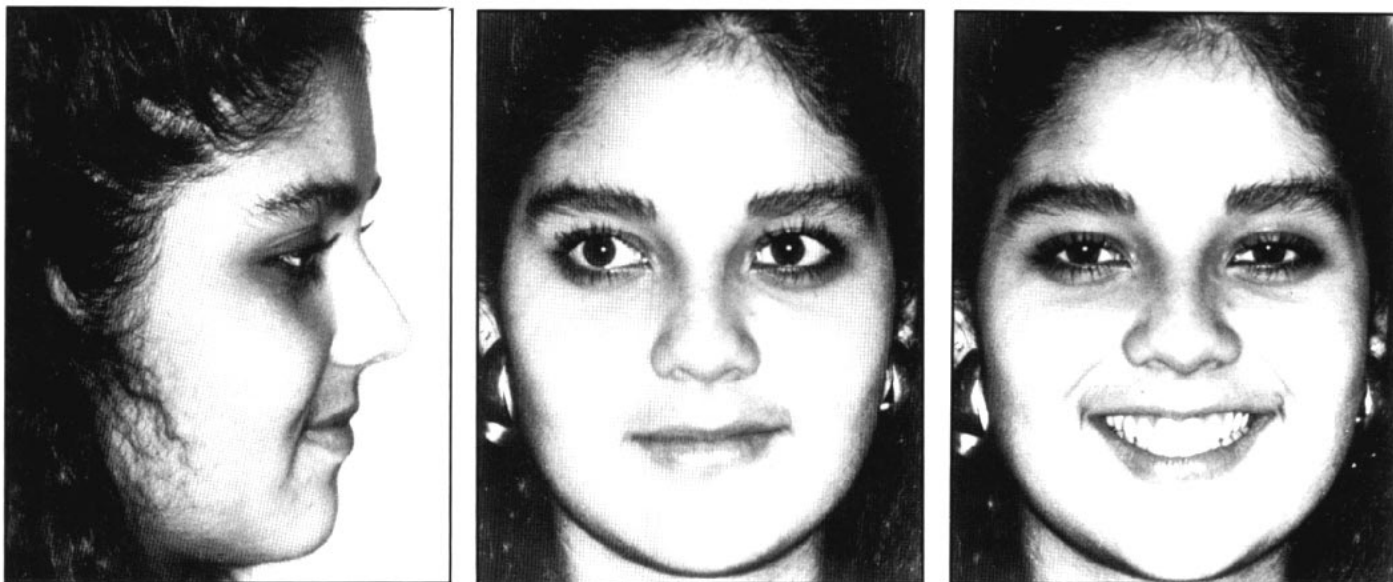
Posttreatment radiographs.

Superimposed cephalometric tracings at 14 years 6 months and 17 years 8 months.



nathic surgery showed a Class III molar relationship. Overbite and overjet were reduced to normal limits and mandibular incisor crowding was eliminated. Midlines are coincident with one another and the face. The decision to extract in the lower arch was based on the need to position the mandibular incisors over basal bone, to facilitate a stable orthodontic result, and to increase the anterior overjet preoperatively. This allowed the correction of VME to be confined to maxillary impaction surgery with Class I canine occlusion obtained by autorotation of the mandible. The autorotation produced a Class III molar occlusion but eliminated the need for mandibular surgery. While this may be seen as a departure from "traditional" orthodontic treatment planning, the results are stable with effective anterior coupling and canine protection in





Posttreatment photographs at 17 years 8 months.

lateral excursions. A mutually protected occlusion was achieved with minor posterior occlusal adjustments.

Intraoral radiographs reveal some anterior root blunting in the maxilla with the maxillary right central root length approximately the same as it was prior to treatment. Titanium plating used for rigid fixation is obvious on the radiographs following the LeFort I osteotomy. Tomograms show centered condyles, adequate joint space, and no unusual bony contours.

Cephalometric tracings reveal impaction of the maxilla by the osteotomy with reduction in overall vertical maxillary excess. As a result of the vertical change in the maxilla, the mandible autorotated, bringing the teeth into occlusion. Following mandibular space closure and retraction of all incisors, the lower lip lost its eversion resulting in a well-balanced facial profile. The improved vertical relationship of the maxilla resulted in elimination of the gingival display when smiling.

As can be seen from pre- and posttreatment records, the esthetic benefits of this approach to the correction of vertical maxillary excess are excellent. Tissue corregation and strain due to lip incompetence have been alleviated by decreasing the vertical dimension. Lower lip eversion has been corrected; the superimposition shows increased maxillary lip support even though the maxilla was set back somewhat. This is probably due to release of maxillary lip strain as a direct result of the vertical impaction of the maxilla and relaxation of the lip in repose.

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