Case Report

It is not uncommon for an orthodontic patient to have a disease entity that dictates an alternative approach to treatment. In this 28-year-old female the specific condition is fibrous dysplasia. Dr. Donald R. Joondeph discusses the diagnosis and treatment planning appropriate for this issue's "Case Report."

—Editor

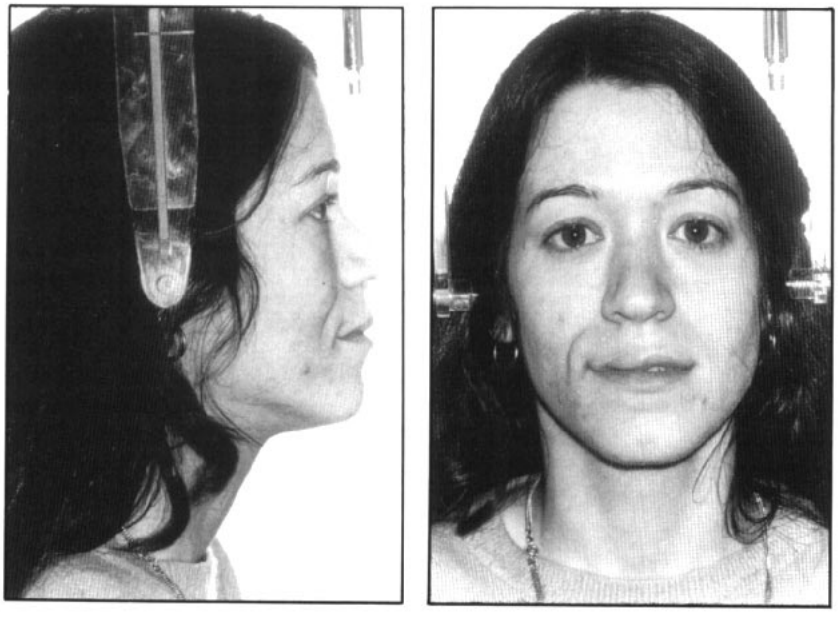
The patient's chief complaint was the presence of a maxillary lingual crossbite on the right side. At 28 years 3 months of age the patient presented with a Class I skeletal pattern associated with mild dentofacial protrusion. Cast evaluation revealed a mild, mandibular arch length deficiency in the anterior segment with the mandibular right central incisor in crossbite. The left buccal segments were in excellent Class I occlusion while the right maxillary buccal segment was in lingual crossbite. Note the lingual positioning of the mandibular right second molar, in compensation for observed changes in the maxilla. As an adolescent, the patient had fibrous dysplasia which was treated by surgical excision of the dysplastic area. At the time of surgery the maxillary right first premolar and first and third permanent molars were removed. Clinical examination and review of study casts disclosed an enlarged maxillary alveolus. Radiographic evaluation indicated the presence of a vertical bony defect in the right first premolar area with previous dysplastic involvement of the right tuberosity. The patient's frontal photographs indicated altered lip posture on the right side which appeared to be secondary to her previous dysplasia and the surgical procedure.

Fibrous dysplasia can be located in either the maxilla or mandible and is primarily a childhood disease. There is a higher incidence of this dysplastic condition in females. Clinical and radiographic features include the presence of single or multiple radiolucent areas in the jaws accompanied by similar lesions in other bones of the skeleton. Migration of teeth, deformity and malocclusion are associated with these bony changes. The patient may also exhibit skin pigmentation and sexual precocity which is termed Albright's Syndrome. Microscopic features reveal the replacement of bone with fibrous connective tissue. Within this connective tissue, numerous small sickle-shaped bone trabeculae can be seen. The treatment for this condition is symptomatic with surgical excision sometimes being necessary. The prognosis for affected individuals is fair.

Treatment objectives for patient EG

1. Align the dentition for periodontal health

Facial photos at 28 years, 7 months.

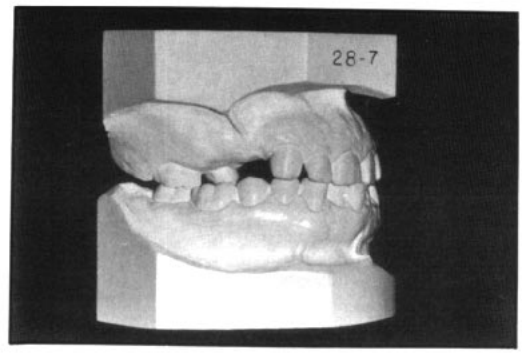


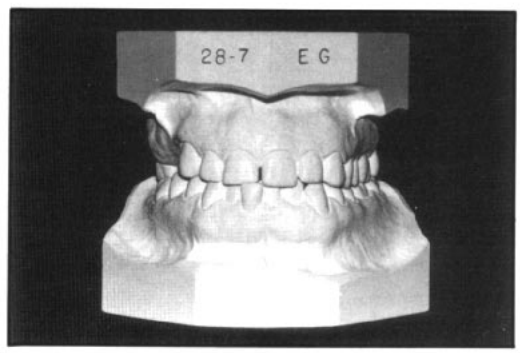
2. Achieve a more ideal overbite-overjet relationship to improve function
3. Provide a functional occlusion in the right buccal segments

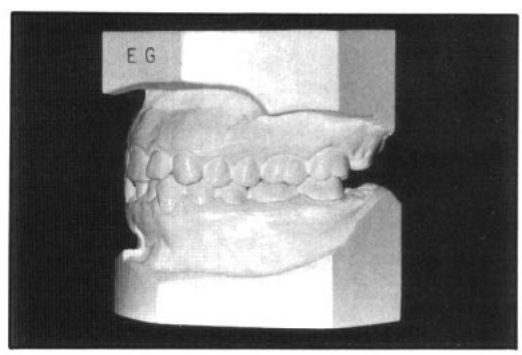
Treatment options

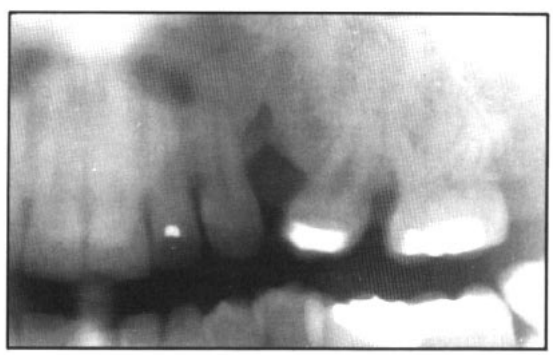
1. Orthodontic treatment alone. This plan would necessitate extraction of the mandibular right central incisor to correct the patient's arch length deficiency and achieve a more ideal overbite-overjet relationship. Orthodontic tooth movement to correct the crossbite on the right side would require asymmetric mechanics in an attempt to maintain the excellent occlusion on the left side. The patient's crossbite is actually more severe than it appears on the study casts as the mandibular right second molar has compensated through lingual movement. Following crossbite correction, prosthetic replacement of the missing teeth could be accomplished.

2. A combined orthodontic-surgical treatment approach. This plan would also necessitate removal of the patient's mandibular right central

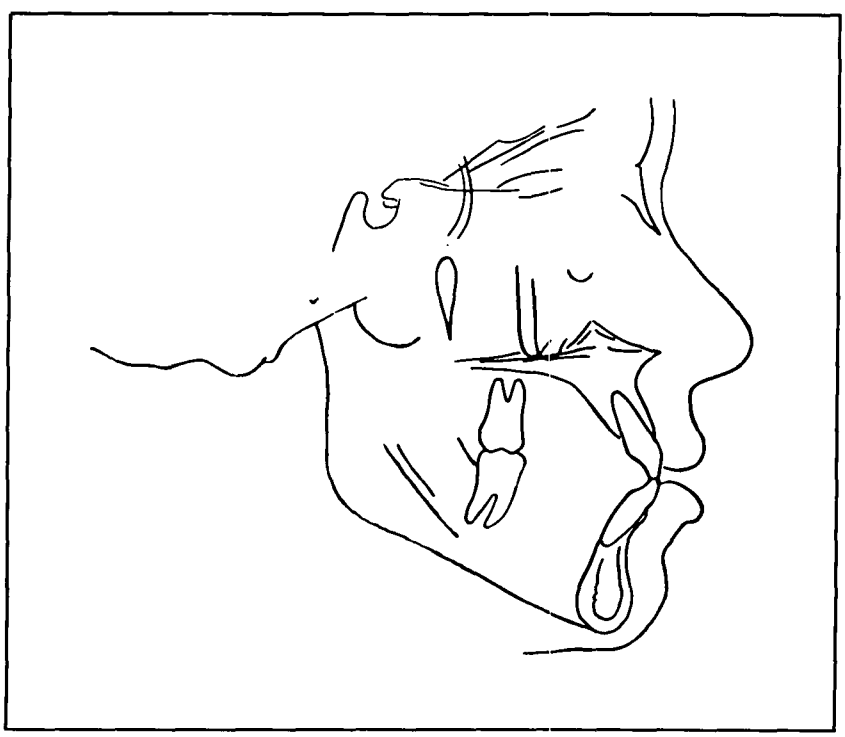


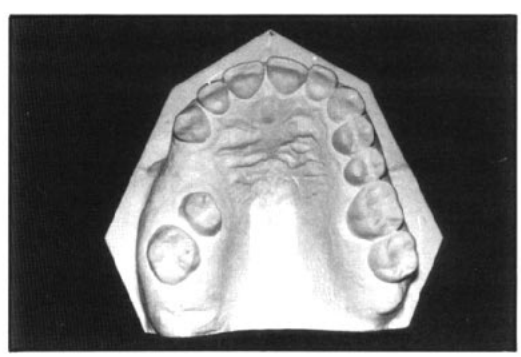


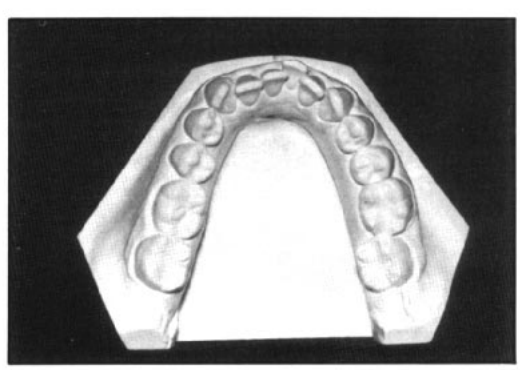




Pretreatment radiographic examination of surgical site discloses a vertical bony defect. Cephalometric tracing reveals a Class I skeletal pattern with mild protrusion. Study casts show the enlarged alveolus and ectopic eruption in the maxillary right quadrant.





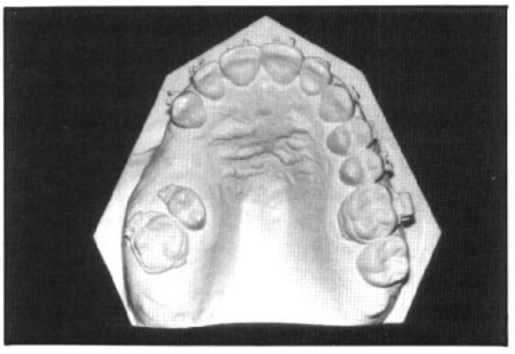


incisor to provide room for tooth alignment and to achieve a more ideal overbite-overjet relationship. The right second molar and second premolar would be aligned relative to each other in preparation for a segmental maxillary osteotomy with possible bone graft. These teeth could be moved to the buccal and surgically advanced requiring the placement of a fixed prosthesis with the insertion of a single pontic.

Due to the severity of the patient's transverse discrepancy in combination with the difficulty in achieving desired tooth movement using asymmetric mechanics, it was decided to proceed with a combined orthodontic-surgical plan of treatment. Prior to instituting therapy it was important to ensure that the disease process had "burned out." It was determined through consultation with the patient's treating physician that her condition had not been active for over ten years. Therefore it was felt that both orthodontic tooth movement and maxillary surgery were appropriate. A number of surgical considerations were addressed. Due to the lack of pneumatization of the maxillary sinus in the right quadrant, it was believed it might be difficult to position the segments adequately. In the normal maxilla, the thin bony walls of the sinus facilitate positioning of the osteotomy segments. In this case, the patient's bone in the affected area was thick and spongy which made approximating two surfaces of the osteotomy site similar to repositioning two pieces of a puzzle. This bone, however, is not highly vascularized and bleeding would be minimal.

Presurgical records were taken at 30 years of age and the patient's segmental maxillary osteotomy was performed without the need for intermaxillary fixation. Fixation was maintained through the use of an acrylic splint for four weeks, followed by placement of a palatal retainer to maintain the transverse relationship of the buccal segment. As soon as possible postoperatively a new continuous archwire was placed in the maxilla to include the mobilized right maxillary segment and to facilitate maintenance of the expansion. The patient continued to wear the palatal retainer for approximately three months until the maxillary segment was sufficiently stable to proceed with the final phase of orthodontic tooth movement.

Appliances were removed and final orthodontic records gathered at 32 years of age. At that time, excessive soft tissue surrounding the right maxillary second molar and second premolar precluded immediate prosthetic replacement. It was believed that much of the tissue hypertrophy was secondary to the appliances and



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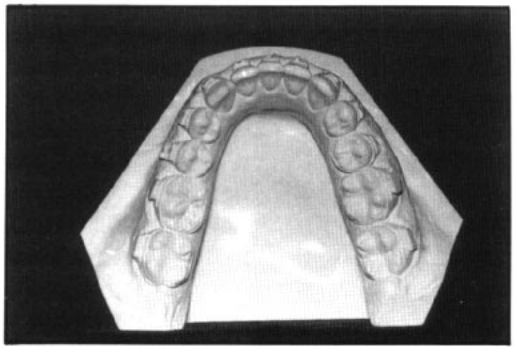
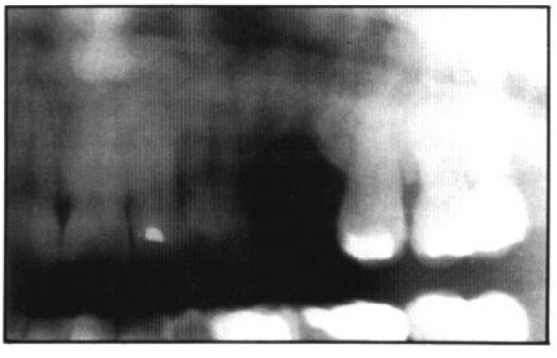
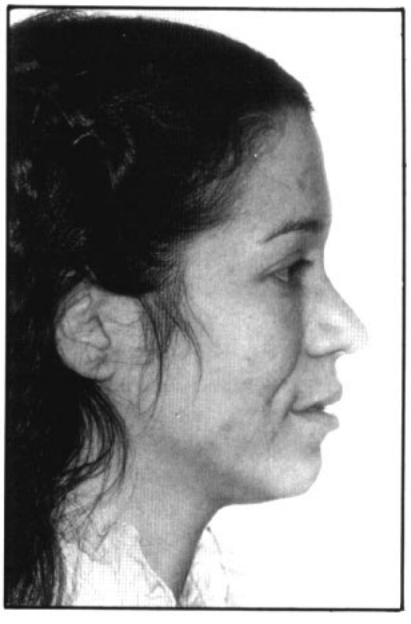
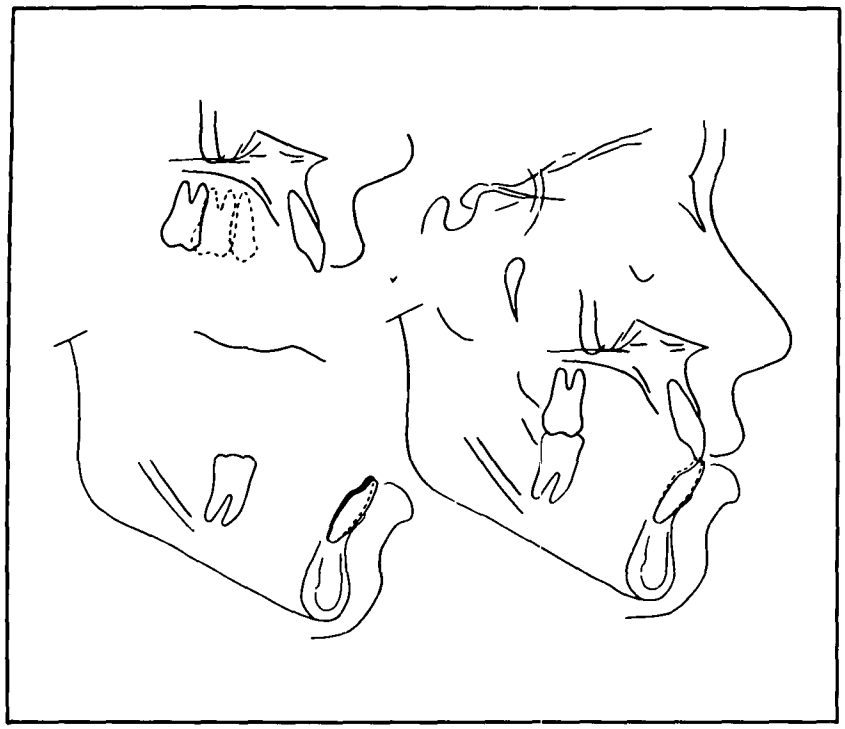


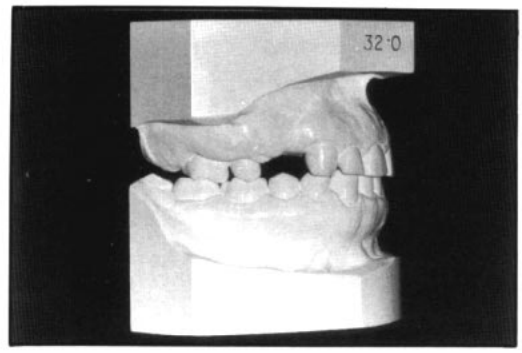


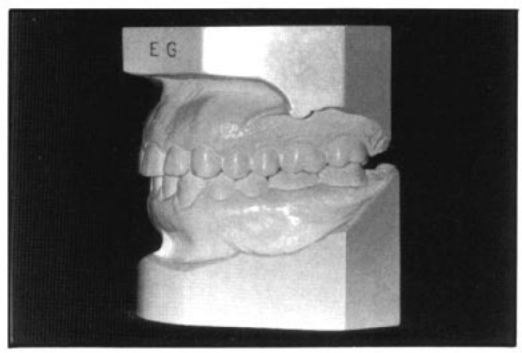
Postsurgical radiograph.

Facial photos at 32 years.





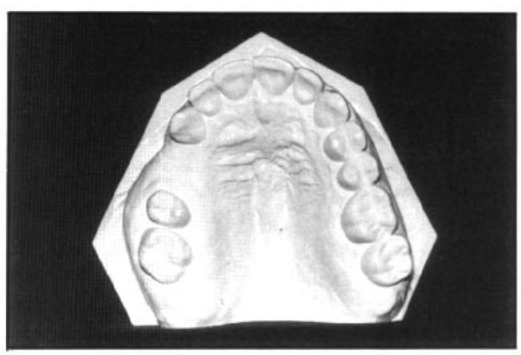


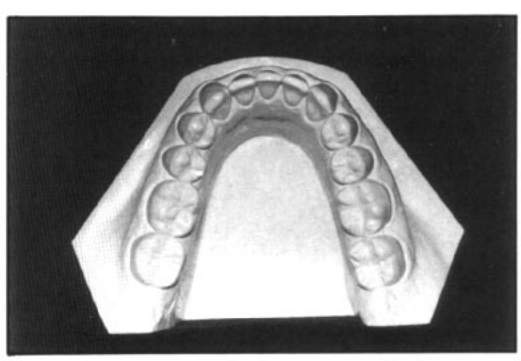


Superimposed cephalometric tracings at 28 years, 7 months and 32 years. Right: Posttreatment study casts.

surgery and would resolve itself in time. Accordingly, maxillary and mandibular removable retainers were placed in order to maintain the skeletal and dental correction achieved, waiting for more ideal crown length to be achieved on the abutment teeth.

Following a period of retention, fixed prosthetic replacement of the missing teeth was achieved. The maxillary right second premolar was crowned to morphologically simulate a first molar, leaving space for a second premolar pontic. A new maxillary retainer was fabricated after placement of the fixed bridge to ensure stability of the surgically repositioned segments as well as the dental correction achieved.





Following appliance removal this quadrant was retained to allow for soft tissue reduction. One year later, placement of a fixed bridge stabilized the area.