Complete oral rehabilitation of a patient with hereditary gingival fibromatosis: A clinical report

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Hereditary gingival fibromatosis (HGF) is a rare benign gingival overgrowth with a prevalence of 1 in 750,000 and equal distribution in both sexes. 1-3 Clinically, it is characterized by slowly progressive, nonhemorrhagic, fibrous enlargement of the keratinized gingiva, which affects the marginal gingiva, attached gingiva, and interdental papilla. The gingiva is pink, firm, fibrotic, with abundant stippling. 4-8 The onset of HGF usually occurs with the eruption of the permanent teeth but also can occur with the eruption of the primary teeth and, very rarely, is present at birth. 3,5 It may cover the clinical crown of the dentition and compromise the affected individual esthetically, functionally, and psychologically, and can interfere with normal mastication and tooth eruption. 9 Treatments have ranged from conservative to surgical procedures to extraction of all teeth and reduction of the alveolar bone. Because of the high recurrence rate of the condition, most clinical reports discuss the necessity for repeated surgical excision of the tissue to restore the gingival contours. 10-12

With severe HGF, the extraction of all the teeth has been recommended. The psychological effect of oligodontia, hypodontia, and other dental abnormalities has been reported. 13,14 A complete denture has been the routine treatment for replacing missing teeth in those patients. However, fixed implant-supported complete dentures compared with implant overdentures and conventional complete dentures are the most predictable treatment options for improving patient satisfaction and quality of life. 15 This clinical report describes a multidisciplinary approach to treating a young patient with hereditary gingival fibromatosis by using implant-supported prostheses.

ABSTRACT

Hereditary gingival fibromatosis is a rare disease that has several debilitating oral and psychological manifestations, especially with young children and adolescents. The complexity of the treatment as well as the timing relative to the growth and maturation of the patient present a challenge. Few treatment options have been reported in the literature. This clinical report presents a multidisciplinary approach to treating a young patient with hereditary gingival fibromatosis by using implant-supported prostheses. The treatment steps and its outcome are discussed. (J Prosthet Dent 2015;113:1-7)

CLINICAL REPORT

A 14-year-old girl who had been diagnosed with HGF with concurrent psychosocial implications was referred to the prosthodontics department for consultation regarding available treatment options. A clinical examination revealed oligodontia, with the maxillary and mandibular anterior teeth being the only erupted teeth (Fig. 1). Discussion with the patient identified her self-consciousness regarding her appearance and her concerns, compromised function, and the continued overgrowth of gingival tissue. Orthodontic treatment along with routine periodontal care had been provided previously with limited outcome. Results of radiographic (Fig. 2) and cone beam computerized tomographic examinations found a fully dentate maxilla and mandible. However,
only the anterior teeth had erupted. All other permanent teeth were present but unerupted. No other syndromes associated with HGF were identified.

Diagnostic mandibular and maxillary impressions were made with irreversible hydrocolloid impression material (Jeltrate Fast Set; Dentsply Caulk) and poured with Type III dental stone (Buff stone; Whip Mix Corp). A custom base plate was fabricated for the maxillary and mandibular jaws from visible light-polymerized acrylic resin (Triad TruTray custom tray material; Dentsply Caulk). A facebow (model 8645; Whip Mix Corp) record was made, and the maxillary cast articulated on a semi-adjustable articulator (model 2240; Whip Mix Corp) with mounting stone (Mounting stone; Whip Mix Corp). Wax rims were evaluated, and the occlusal vertical dimension established. A maxillary and mandibular jaw relation record was made by using the fabricated base plates with wax rims. The mandibular cast was articulated with the interocclusal record (Fig. 3). A complete evaluation and diagnostic tooth arrangement was completed before treatment planning. Different treatment options were discussed, and a multidisciplinary treatment plan was established after consultation with the patient and her parents. The treatment plan consisted of the extraction of all teeth (erupted and unerupted) up to the second premolars, implant placement and restoration of each jaw with long-term interim acrylic resin fixed complete dental prostheses, and definitive restoration with fixed complete dental prostheses.

During the initial surgical phase, impacted teeth (canines and premolars) were extracted, and ridge preservation completed under intravenous sedation (Fig. 4).
After 4 months, the remaining erupted maxillary and mandibular teeth were extracted. A total of 11 tissue-level implants (4.1×10 regular neck; Institut Straumann) were placed, 6 in the maxilla and 5 in the mandible, with the aid of a laboratory-fabricated surgical guide. One implant in the maxilla was lost because of poor bone quality. All the other implants were sound and approved for loading by the oral surgeon after 4 months (Fig. 5). Maxillary and mandibular implant level impressions were made with custom trays, impression posts (Institut Straumann), and polyvinyl siloxane impression material (Aquasil Ultra; Dentsply Caulk) in an open tray technique. A wax evaluation was completed at the next appointment, and interim maxillary and mandibular fixed complete dental prostheses were fabricated and delivered (Fig. 6A, B). A panoramic radiograph was made to verify the complete seating of the fixed complete dental prostheses (Fig. 6C). The patient was followed up for 1 year. No abnormal soft tissue reaction was observed during the follow-up and maintenance appointments. A noticeable positive change in patient self-esteem and lifestyle was observed and recorded.

Definitive impressions and a jaw relation record were made with the previously described technique. The impression was poured with Type III dental stone (Buff stone; Whip Mix Corp). The definitive casts were scanned in the laboratory, and a pink anodized metal framework for fixed complete dental prostheses was designed, milled (AccuFrame Plus; Cagenix), and returned for evaluation (Fig. 7). The complete seating of the bars was verified radiographically (Fig. 7C). The prosthetic teeth were evaluated with the custom-milled computer-aided designed and computer-aided manufactured titanium bar as determined by the approved interim fixed complete dental prostheses by using a silicone matrix. Processing of the definitive tooth arrangement was completed with heat-polymerizing acrylic resin (Fig. 8) (SR Ivocap High Impact; Ivoclar Vivadent). The prostheses were inserted after polishing and finishing in the dental laboratory (Fig. 9). The patient was followed up for 18 months after implant placement, and no adverse effects were observed. The soft tissue did not show hyperplastic regrowth, and the
Figure 6. Interim fixed complete dental prostheses. A, Before insertion. B, Frontal view. C, Panoramic radiographs of completely seated interim fixed complete dental prostheses.

Figure 7. Computer-aided design (CAD) of titanium bar. A, CAD for maxilla. B, CAD for mandible. C, Pink anodized titanium bar.
implants were all healthy after the follow-up period. We noted a major positive psychosocial impact from the treatment on the patient. The patient’s smile before and after the treatment is shown in Figure 10.

**DISCUSSION**

Locker et al\(^{14}\) considered the oral health-related quality of life of children with oligodontia. They reported that patients with oligodontia exhibit oral symptoms, functional limitations, and emotional and social difficulties. A strong correlation was found between emotional well-being and the number of missing teeth, especially anterior teeth. Although implant treatment has been widely accepted in restorative dentistry to replace missing teeth, its application and placement in children and teenagers is still not common. Analysis of study results indicated that self-awareness starts at 7 to 8 years of age and that the problem is not only psychological but also may be functional.\(^{17,18}\)

When placing implants in children and teens, the additional factor of growth must be considered.\(^{19}\) Dental, maturation, and chronological ages are not necessarily interrelated but, nonetheless, are related. Every child has a unique sequential pattern of events and sequence of maturation stages. The technique of skeletal maturation assessment with hand-wrist radiographs can facilitate an objective evaluation of skeletal maturation.\(^{20}\) For the patient presented in this clinical report, we confirmed her complete growth with skeletal maturation assessment by using hand-wrist radiographs. Heuberer et al\(^{21}\) evaluated, both clinically and radiographically, dental implant treatment in adolescents with extensive oligodontia (more than 9 congenitally missing permanent teeth) and implant treatment before the age of 16 years. They concluded that dental implant treatment for adolescents had long-term survival. However, other treatment options need to be considered, the areas of skeletal growth should be respected, and the patients should be well informed. The disadvantages of this treatment option are the potential need for multiple ridge augmentation surgical procedures, its complexity, and the cost involved. However, the most notable advantages are the marked improvements in the patient’s psychosocial and emotional well-being, as previously emphasized.
SUMMARY

This clinical report describes the oral rehabilitation of an adolescent girl with HGF. Treatment was accomplished by means of teeth extraction, implant placement in both jaws, and fabrication of maxillary and mandibular fixed complete dentures. The patient’s complete growth was verified with hand-wrist analysis. After an 18-month follow-up, no complications were observed, and the patient reported a noticeable improvement in her overall self-esteem and emotional well-being.


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