Conservative dentistry achieved through a multi-disciplinary approach

Combining orthodontics and CAD/CAM technology to achieve conservatism for a rehabilitation case

By Dr. Thomas Colina, DMD

Complex treatment needs can necessitate oral rehabilitation of patients. Often these patients will require a multi-disciplinary approach to correct problems. When patients have significant concerns, such as severe malocclusions or destruction of dental tissue, oral rehabilitation can entail extensive treatment that may involve reconstructions. To return the patient to optimal function, regain normal form and address possible concerns such as esthetics, an integrated approach that involves various disciplines needs to be taken. The challenge posed to a particular treatment plan may involve the treatment of many teeth and possibly the need to prepare a significant number of teeth and corresponding dental tissue. Another challenge in reconstruction cases is the cost associated with the restoration of numerous teeth. Cost may be a factor for patients. There are often many options and approaches that can lead to the same successful treatment outcome. The variety of options can be at different ends of the spectrum. Diagnostic tools, including tomograms and the use of CAD/CAM systems, are useful in achieving complex treatment goals. This paper presents a treatment option that is an alternative to the reconstruction approach through the innovative application of multiple disciplines and current technology.

Case presentation
A 31-year-old male patient presented with the chief complaint of his upper front teeth breakings off a few months after being placed. He has had the front teeth restored numerous times with the same outcome. A comprehensive examination and records revealed the following findings:

Medical history and functional concerns
There is a history of arthritis in the family. The patient experiences transient pain from his back, neck and shoulders. He has noted he clenches and grinds his teeth day and night. He was involved in a motor vehicle accident and sustained head trauma 12 years before his presentation to our office. Along with routine examination protocols, the temporomandibular joint (TMJ) was examined using a TMJ health questionnaire, range of motion examination, muscle palpation and TMJ imaging.

Occlusion
A visual examination and cast analysis revealed a Class II dental pattern with a deep overbite and tight overjet, fractured upper incisor restorations, slight crowding of the upper and lower arches, and severe worn dentition (especially the anterior teeth). The upper incisors were retroclined, and the upper and lower incisors had severe wear (Fig. 2). There was generalized moderate wear on the posterior teeth. The patient presented with a posterior shift of 2 mm from centric occlusion. One of the main goals for the treatment was to achieve a stabilized occlusion. This approach will provide a stable occlusion and would entail restoration of numerous teeth — both anterior and posterior — to support the anticipated changes in vertical dimension. The disadvantage to the approach is the introduction of artificial material in the mouth and the need for maintenance of the restorations. Of course, this approach also entails significant dental tissue reduction to provide partial and full coverage restorations to support the occlusal scheme. In addition, although the treatment can be provided in a fairly short amount of time, the cost for the restorations can be significant for most patients.

Treatment plan details
Straight wire appliance treatment (SWA) was proposed to attain ideal inter- and intra-arch alignment augmented by a mandibular repositioning mechanism by way of posterior build-ups and plastics or a fixed orthotic or use of a Twin Force Appliance. This phase of treatment was anticipated to last 20 months. After the orthodontic treatment, restoration of the six anterior or maxillary teeth with porcelain restorations would follow. The lower incisors will be evaluated for the need of restorations. The need for an upper bicuspid appliance would also be evaluated after the completion of the restorations.

Discussion of the treatment
The first phase of the treatment was the provision of orthodontic therapy using GAC Innovation C Self Ligating Bracket System. The Innovation C bracket system has a highly translucent porcelain structure and a rhodium coated clip, which provide superb esthetics as well as a high-torque component for the incisors of 17 degrees for the upper central and 10 degrees for the upper lateral incisors. One of the main goals for the treatment was the correction of the maxillary incisor torque. The retroclined upper incisors had contributed significantly to the wear of the anterior teeth and had resulted in an intercuspation that produced a posteriorly displaced condyle. The correction of the incisor torque brought about a natural repositioning of the mandible, which was a treatment goal for the patient. The JVA, which has been proven effective in discriminating joint vibrations to assess TMJ2 conditions, was utilized to evaluate the JVA during and after treatment. Anterior repositioning of the mandible has been described in the literature as a viable approach in the treatment of Class II malocclusions and TMJ dysfunction.
been described in later literature.6–7 Simmons' further describes the alleviation of symptoms after mandibular repositioning. As noted, there was a natural anterior reposi-
tioning of the mandible upon removal of the centric interference in this patient, and appliance therapy was unnecessary. Posterior resin build-ups with Class II elastic transient approach to an intuitive format that allows the user to work at their own pace through the material from the upper echelon of dental medicine, but also presents a regional perspective in terms of perspective and subject matter. How can professionals enroll? They can either sign up for a one-year (10 exercises) by subscription for the magazine for one year ($40) or pay $50 per issue. After the payment, participants will receive their membership number and will be able to attend to the program.

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