Tooth-Borne Overlay Denture for the Correction of Lingually Inclined Mandibular Dentition, a Collapsed Occlusal Vertical Dimension and Traumatic Occlusion

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Introduction: A 60-year-old female patient presented to our clinic with maxillary and mandibular traumatic occlusion, a severe case of lingually inclined mandibular dentition and a collapsed occlusal vertical dimension. The patient reports undergoing orthodontic therapy at 25 years of age, and states that she has noticed increased tooth movement, most notably the lingual inclination of her mandibular dentition, over the past 10 years. Upon initial presentation, the patient's chief complaint was, "It hurts everywhere in my mouth when I chew, and I want to be able to smile again." Extraoral exam findings included bilateral asymptomatic crepitus and a collapsed occlusal vertical dimension. Noteworthy findings during the intraoral examination included maxillary anterior diastemas, a 100% overbite with palatal impingement, crowding, malocclusion including severe lingually inclined mandibular dentition (Saravanan et al., 2010), maxillary and mandibular traumatic occlusion including fremitus at #7 and #10, and a collapsed vertical dimension of occlusion.

Procedure: The first step in treating this patient was to determine the patient's physiologic rest position and proper incisal edge position of #8 and #9. The patient had a freeway space of 9 mm. A centric relation record was obtained using a leaf gauge, and the patient's occlusal vertical dimension was increased by 7 mm. Diagnostic casts were mounted at the increased OVD, and a maxillary occlusal splint was fabricated to make sure the patient could tolerate this increased vertical dimension. The patient wore the occlusal guard for 8 weeks and symptoms of traumatic occlusion improved dramatically (Wank et al., 1981). A diagnostic wax-up was done for the patient's maxillary dentition, and SR Phonares II denture teeth were set over existing mandibular dentition at the predetermined vertical dimension. The mandibular denture was processed, and the patient wore this interim for three months to ensure she could tolerate a removable prosthesis of this kind, and to further confirm the increased OVD. Thorough OHI was provided and the patient began a twice per day regimen of Prevident 5,000. The patient tolerated the mandibular prosthesis very well, and symptoms of traumatic occlusion continued to improve. Prior to fabricating a definitive mandibular prosthesis, the mandibular incisors were extracted. The framework design for the definitive mandibular prosthesis included stops on occlusal surfaces of the mandibular posterior teeth, wrought wire clasps engaging the mesial aspect of the canines and circumferential clasps engaging the mesiolingual aspect of the molars.

Conclusion: This conservative and reversible treatment helped to establish a stable, healthy occlusion for a patient who was uncomfortable with the time commitment required for orthodontic therapy and without the financial means for mandibular extractions, implant placement and fabrication of an implant supported fixed dental prosthesis. The treatment addressed esthetics and function, which were the patient's two chief concerns. The patient is still functioning well after 18 months.

References:

1. Gerald S. Wank, Yale J. Kroll,Occlusal Trauma: An Evaluation of Its Relationship to Periodontal Prostheses, Dental Clinics of North America, Volume 25, Issue 3,1981, Pages 511-532
2. Saravanan R, Babu PJ, Rajakumar P. Trauma from occlusion - An orthodontist's perspective. J Indian Soc Periodontol. 2010 Apr;14(2):144-5. doi: 10.4103/0972-124X.70838. PMID: 21691555; PMCID: PMC3110471.