

Egyptian Prosthodontic Association (EPA Newsletter)

Management of severely worn dentition (part 2)



Electronic Newsletter

Volume 1. Issue 4

November 2022

In several cases, the need for full mouth rehabilitation arises from the wear patterns that destroy the dentition. In others, the rehabilitation is needed as a part of the process of repeating all old restorations or replacing all missing teeth with implants. The mechanisms of attrition, abrasion and erosion may act together, each with different intensities and duration to produce a multitude of different wear patterns. Management of such complex wear patterns varies as per the severity of its manifestations and the patient's reported symptoms of thermal sensitivity. The management will also depend on the extent of the lesion intraorally as far as number of teeth affected.⁽¹⁾

Phases in Complex Rehabilitation:

Phase 1: Remove faulty restorations and assess all teeth for structural worthiness.

Phase 2: Foundation Work & Surgical Phase: Extractions, Implants and Crown lengthening as needed and other periodontal procedures as required. Any endodontics if necessary, to be carried out.

Phase 3: Final restorative phase. Follow the ten steps listed below.

Phase 4: Maintenance phase.⁽²⁾

Ten steps in full mouth rehabilitation⁽³⁾:

(1) Data collection and diagnosis. (2) Mount upper cast with correct orientation relation. (3) Deprogram and mount lower cast with centric relation. (4) Finalize vertical dimension of occlusion and diagnostic

waxing up construction. (5) Fabricate bonded mock up or provisional. (6) Decision making for final restorative materials. (7) Volume based tooth preparations. (8) tissue management, impression and bite records. (9) Bonding and delivery. (10) Diligent occlusal management.

STEP 1 : DATA COLLECTION AND DIAGNOSIS:

Clinical examination, full dental photography and pre-operative video analysis must be carried out and findings charted. A radiographic examination must be carried out to evaluate the bone condition and chart out any pathology. Carious lesions as well as defective endodontics and open margins on old restorations must all be evaluated with pre-operative radiography.

STEP 2: MOUNT UPPER CAST WITH CORRECT ORIENTATION

RELATION: The upper cast must be mounted with a facebow record that allows aesthetically correct orientation relation. The preexisting cant in the maxilla must be recorded in relation to the facial midline to allow accurate decision making regarding the midline and the axial inclinations of the upper anterior teeth and an upper occlusal plane that is parallel to the horizon.



Fig.1: Centric relation record



Fig.2: Aesthetic and function waxing up .



Fig.3: Putty index

STEP 3: DEPROGRAM AND MOUNT LOWER CAST WITH CENTRIC RELATION:

The Patient must be deprogrammed before the centric bite record to allow the jaw relation record to be taken at optimal joint position. A Lucia jig deprogrammer may be used to record the CR at an increased vertical dimension of occlusion (Fig. 1).

STEP 4: FINALIZE VERTICAL DIMENSION AND GET DIAGNOSTIC WAXUP COMMISSIONED:

Aesthetics, phonetics and a required space for the final restoration combine to give the required guidelines for the increase in vertical dimension of occlusion for cases with generalized wear by calculate the difference between vertical dimension of rest and vertical dimension of occlusion, the result is the required amount of elevation as the maximum opening not exceed 5mm. .⁽⁴⁾ Judicious changes in vertical dimension will allow the tooth preparations to be conservative and allow the vitality of most teeth to be maintained. Changes in vertical dimension are well tolerated in patients with healthy joints and when there is friction free stable occlusion. Once an empirical vertical dimension is arrived the case is sent to the lab for diagnostic wax up. All the changes that are desired in the case must be achieved with the wax up. Restorative designs; onlay, veneers or full coverage must be finalized during the wax-up (Fig.2)⁽⁴⁾

STEP 5: FABRICATE BONDED MOCK UPS OR PROVISIONALS:

All teeth in one arch must be isolated and etched with 37% phosphoric acid for 10 seconds, followed by drying and application of universal adhesive. Once the adhesive is cured, the Bis-GMA based chemically cured resin is loaded on the putty-wash matrix generated from the diagnostic wax up (Fig. 3). With correct orientation the putty matrix is seated on the teeth. After the material has set, the putty matrix is removed and the gross excess material cleaned from the teeth (Fig. 4). The procedure is then repeated on the opposing arch. Fine tipped finishing carbide and a 12-

number blade should be used carefully to remove all excess material from the gingival sulcus around all teeth. The patient should be allowed to use the provisional restorations for a couple of weeks and at the end of that period, if there are no negative signs reported in the musculature or the joint, phonetics is comfortable and aesthetics acceptable, the clinician must record the approved provisional in form of digital data or an analogue impression that can be used as a guidance in the laboratory. **STEP 6: DECISION MAKING FOR FINAL RESTORATIVE MATERIAL:**

If occlusal clearance without excessive tooth prep is not an issue it could be monolithic or stained lithium disilicate for posteriors and layered option for anteriors. If clearance is on lesser side zirconia may be the chosen option as it would be also in case a fixed dental prosthesis in stress bearing area had to be fabricated. **STEP 7: VOLUME BASED TOOTH PREPARATIONS:**

In this way all the required teeth are treated and the patient is now ready for the definitive impressions. The final impressions for all the teeth for full arch restorations can be done at one time. The challenge here is to see that the approved vertical dimension does not fluctuate. To prevent any change in vertical dimension of occlusion, the upper and lower anterior teeth are prepared first. Depth cuts are used on the provisional restorations to control the preparation. After the anterior preparations are finalized, a Lucia jig is constructed intraorally with the posterior provisional restorations still in place. The Lucia jig on the anterior preps is used to maintain the vertical dimension of occlusion and ensure adequate room for the final restorations on



Fig.(4): Bonded provisional restorations.



Fig. (5): The Lucia jig is holding the vertical dimension as an anterior stop



Fig. (6): Post operative retracted view.

posterior teeth. **STEP 8: TISSUE MANAGEMENT; IMPRESSIONS AND BITE RECORDS:**

Digital or analogue impressions are taken for the upper and the lower prepared teeth. The bite record is done on the posterior teeth while the Lucia jig is holding the vertical dimension as an anterior stop (Fig.5).

Facebow record should be done again to orient the maxillary working cast in an aesthetically correct position. **STEP 9:**

BONDING/DELIVERY: Trials should be carried out and the final checks performed to verify aesthetics. Proximal contacts must be checked and occlusion marked to see that uniform equal intensity bilateral contacts are achieved. After final glazing the restorations are bonded using the adhesive protocol (Fig. 6).

STEP 10: DILIGENT OCCLUSAL MANAGEMENT:

Occlusion check must then be performed to achieve uniform contacts of equal intensity on all teeth with 40 micron articulating paper. Thereafter the final finishing of occlusal contacts should be done with 8 microns and uniform contacts of equal intensity should be achieved on all teeth from cuspids to molars. The incisors must be adjusted to not hold the shimstock.

References:

- 1- Meurman JH, Sorvari R. Interplay of erosion attrition and abrasion in toothwear and possible approaches to prevention; Tooth Wear and Sensitivity. London: Martin Dunitz, 2000. 171–180.
- 2- Jatana I , Gupta S , Vaidya V N. Restoring Esthetic and Functional Harmony in A Severely Worn Out Dentition with Full Mouth Rehabilitation. J Med Dent Sci. 2019; 18: 01-04.
- 3- Tunkiwala A. A Methodical Approach to Full Mouth Rehabilitation. J Prosthodont Dent Mater 2021;2(1): 58-67.
- 4- Bakeman EM, Kois JC. The myth of anterior guidance. J Cosmet Dent. 2012 Fall;28(3): 56-62.

Egyptian Prosthodontic Association (EPA)

Address: 15 Ahmed Abo El-Ela St. – 8th district Nasr City, Cairo Egypt.

Mobile : 010 28203484 (Calls & Whatsapp) Phone: 02 26705035