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Neutral Zone Impression Technique for Implant-retained Mandibular Overdenture

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ABSTRACT

Neutral zone is an important concept in providing stable, retentive, and comfortable prosthesis within the zone of oral muscular balance. A 73-year-old man complaint of feeling “alien” on the lower right side of his implant-supported bridge and was uncomfortable. The discomfort feeling started following the construction of the bridge four years ago. Clinically, he was partially edentulous with several implant-supported bridges and the complaint site was a long span screw-retained bridge supported by four implants replacing the right mandibular second molar to the left second molar. His oral hygiene was poor, which was exacerbated by the poorly designed prosthesis hence, impeding the oral hygiene care. The mandibular implant fixtures had deep peri implant pockets with suppuration. He was diagnosed with peri-implantitis on his mandibular implants and the right posterior region of his bridge was probably encroaching the tongue space leading to the discomfort. It was then decided to convert the mandibular fixed bridge to an implant-retained removable denture with neutral zone impression technique to guide teeth setting. This was to allow the determination of optimal teeth positioning and to enhance oral hygiene care before embarking on any irreversible treatments. The mandibular bridge was removed, and the implant fixtures were debrided chemo mechanically. Locator attachments were fixed on two anterior fixtures and the two posterior fixtures were loaded passively. After the bite registration stage, a custom-made impression stent was created to record the neutral zone utilizing denture conditioner as impression material. Denture teeth were set within the stipulated neutral zone. The implant-retained removable denture was then delivered to the patient and oral hygiene care was emphasized. The patient expressed his satisfaction during subsequent reviews and the “alien” sensation disappeared. This case highlighted the importance of respecting the neutral zone despite a fixed bridge reconstruction and the role of staged treatment planning.

Keywords: neutral zone, overdenture, implant-retained denture