

# Fixed Prosthodontics in Periodontally Challenged Teeth: A Case Report

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**Abstract:** ***Introduction:** Teeth with pathological mobility that are used as abutments due to their movement will not have the same insertion axis as the preparations on the plaster models. **Material and Method:** for the specific case with abutment teeth with mobility we have designed a non rigid connector to diminish the paraaxial forces apply on the supporting teeth. **Results and Conclusion:** The described protocol offered a conservative and reliable approach to patients affected by the periodontal disease.*

**Keywords:** non rigid connectors, teeth mobility, fixed partial denture

## 1. Introduction

The standard treatment for anterior intercalated edentulous areas is a dental bridge if the neighboring teeth require complete crowns or if they already have this type of dental restoration [1]. This type of treatment is highly reliable over time and is one of the simplest and cheapest therapeutic options available. In the literature, studies support conventional prosthetic therapy for teeth with periodontal disease if treatment is applied correctly and follow-up is rigorous [2]. It is possible that abutment teeth affected by periodontal disease show various degrees of mobility, making extremely difficult the precise location of an insertion axis for the future restoration. Tooth mobility does not reduce the chances of success of fixed dental restorations [3], but their design and the preparation of abutment teeth should be meticulous. In order to ensure the resistance of the restoration and stress distribution on it depending on the mobility of abutment teeth, a dental restoration with non-rigid connectors can be placed [4]. Even if this type of fixed dental restorations is not routinely used in current practice, and they are rarely mentioned in the literature, there are clinical situations where all means should be used to achieve a reliable prosthetic restoration. The distribution of stress on intermediate abutment teeth is studied in various literature studies, and stress is reduced by using articulated connectors [5]. The use of some of these prosthetic restorations with the new CAD/CAM techniques in order to preserve mobile teeth in the dental arch for a certain time period has not been studied in the literature, which is why this case report describes this concept.

### *Fixed partial denture with 2 insertion axes*

A 56-year-old male patient presented for the treatment of periodontal disease. Specialized examination and complementary investigations were performed, which evidenced periodontal involvement of several teeth. Establishing a treatment plan included dental cleaning, SRP, extraction of unrecoverable teeth and placement of dental implants. The patient did not want to have his maxillary arch rehabilitated, where he had a removable partial prosthesis that was no longer aesthetically and functionally adequate, its marginal fit being deficient.

Dental cleaning, SRP with extraction of teeth 41,42, and placement of dental implants in quadrant 3 were carried out

successively. At 2 days after extraction, endodontic treatments of teeth 43,43, 32,33 were performed. These had 4-6 mm attachment loss. Subsequently, the teeth were prepared and an impression was taken for a provisional FPD, intended to provide aesthetic and functional rehabilitation during the healing period.

The patient presented for follow-up 1 month after the placement of the provisional restoration, and the plaque indices and the integrity of the restoration were verified. Three months after the surgeries, the implants were uncovered and the abutment teeth were reevaluated, which had grade I mobility and another 1-2 mm attachment loss compared to baseline. The tooth preparations were finished for impression taking. The impression was taken at the same time for the prepared teeth and for the prosthetic overdenture using polyvinyl siloxane materials. A type IV plaster model was cast. The master model and the maxillary model were scanned with a laboratory scanner. The two individual dental restorations, one supported by implants and the other for the natural teeth, were digitally designed. Due to tooth mobility present in teeth 33,32-42,42, the insertion of the provisional bridge along a single axis was not possible, so that an articulated connector was used to compensate the insertion axis difference.

The non-noble metal alloy framework was processed by SLM. This was tried in the oral cavity, and the fit to the prosthetic abutments was checked using the special Fit-Checker materials (GC). Ceramic was applied to the metal framework, occlusion and contact points were adjusted intraorally, and the final restoration was cemented with zinc phosphate cement. The articulated connector was also cemented with the same type of cement.

A recall session was scheduled at 1 month after cementation. It reported no problems with the restoration; all functions were well restored and the patient already felt the bridge as his own teeth.

## 2. Discussions

Dental restorations replacing the missing teeth are constantly used as routine therapy for intercalated edentulous areas. This type of restoration rehabilitates the aesthetic and masticatory function in a satisfactory manner. An accepted

doctrine is that dental restorations should be inserted at the level of parallel abutments. The clinical reality forces us to find solutions that can be applied in less ideal cases, such as mobile teeth or opposing tooth axes [1]. These situations require additional efforts from both the technician and the treating doctor because in this case the intermediate prosthetic component was fabricated by casting; the CAD/CAM software was not programmed for such situations. The development of systems to reduce para-axial forces on abutment teeth affected by periodontitis is found in literature studies that report a good function rate over time and a low risk of fracture [2]. Therapeutic solutions are sometimes preferred by the patient and the doctor because they are easily accessible. In line with the current literature trend is the insertion of dental implants with FPD as the prosthesis, but the clinical reality sometimes requires us to be ingenious. The forces transmitted to the connectors are independent of the bone [6], and with correct periodontal therapy and rigorous follow-up, the survival period increases.

### 3. Conclusions

The treatment plan in the case of mobile teeth affected by periodontal disease should also take into account the conventional prosthetic rehabilitation possibilities. The described protocol allows for a more conservative approach to dental structures and restores the masticatory and speech function in a satisfactory manner.

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**Figure 1:** A FPD design, B, C, D endooral aspects of the bridge