Effect Of Different Treatment Protocols For Kennedy Class II Cases Using OT Attachment Versus Using Conventional Partial Denture On The Supporting Structures

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بسم الله الرحمن الرحيم
﴿ قالوا سبحانك لا علم لنا الا ما علمتنا
إنك انت العليم الحكيم ﴾
صدق الله العظيم
الآيه(32) سوره البقره

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Hossam El-Deen Abdel Hamied Ibrahim

Dedication

***To** my **great parents**:*

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Hossam El-Deen Abdel Hamied Ibrahim

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INTRODUCTION

Removable partial dentures remain an essential prosthetic consideration in many conditions of oral rehabilitation, especially when the edentulous spaces posterior to the remaining teeth are to be restored. Functional successful prosthetic rehabilitation requires careful attention and meticulous treatment planning. Rehabilitation of partially edentulous arch can be challenging when it is a distal extension situation classified under Kennedy's class I and class II situations because a natural tooth retained fixed prosthesis cannot be fabricated. Implant retained prosthesis is an option but this is sometimes impossible due to insufficient bone or economic reasons [1, 2].

Removable partial dentures (RPDs) serve as a simple and popular treatment option for partially edentulous patients, but the possibility for not accepting this treatment by patients should be considered [3]

Attachment retained removable partial dentures is a viable treatment alternative through which a significant number of patients could be benefited. In this particular case, an attachment retained removable partial dentures was chosen a treatment modality. An attachment is connector consisting of two or more parts. One part is connected to a root, tooth or implant and the other part to the prosthesis [4] .

RHEIN OT Cap (Extracoronal castable semi-precision attachment) is a resilient distal extension attachment. It is indicated to be used with

combined prostheses and removable partial dentures. For treatment plans that require a rigid substructure with milling and adequate counter attachments, OT Cap functions as a stabilizing retentive connector. In addition, for treatment plans which require resiliency, OT Cap provides a "Cushion Effect" similar to a shock absorber.

For patients with unilateral edentulism in molar region, removable partial dentures with a unilaterally designed framework claimed to be more comfortable during mastication and speech, and more profound effect is anticipated on patients' acceptance due to its relative simplicity. However, clinical use of the unilaterally designed framework is criticized owing to the poor retention and stability and difference in effect on the supporting structure compared with the removable partial denture with bilaterally designed framework [(5)]. Each treatment option has its own advantages and disadvantages, the question is can we substitute the bilateral prosthesis option with unilateral one in unilateral edentulous cases?

REVIEW OF LITERATURE

Distal extension RPD is defined by the academy of prosthodontics as a removable dental prosthesis that is supported and retained by natural teeth only at one end of the denture base segment and in which a portion of the functional load is carried by the residual ridge. According to Kennedy's classification of the RPDs, Kennedy class II is a unilateral edentulous area located posterior to the remaining natural teeth.(6)

The primary objectives of partial denture design should be the preservation of the remaining teeth and their supporting structures in a healthy condition, at the same time replacing the missing teeth and improving aesthetics, phonetics ,mastication and patient satisfaction.(7)

I-Problems and management of kennedy class II cases:

A) Problems of kennedy class II cases:

The problems associated with the kennedy class II (unilateral free end saddle)partial dentures are support, poor stability, and minimal retention .these problems are attributed to the stomatognathic structures which support the removable partial denture which are anatomically made of different tissues.Due to absence of distal tooth support. Therefore, difference in the resiliency between the mucoperiostium of the residual ridge and periodontal ligament of the last abutment.(8)

The partial denture design influences distribution of forces to abutment teeth because it is through the structure of the denture forces of mastication are transmitted from the occlusal surfaces of the artificial teeth to the natural teeth and ridge. Basic denture design should incorporate proper bracing, retentive and supporting elements that distribute forces as widely as possible through the teeth and ridges, which means less torquing of abutment teeth.(9)

a)Support:

Support is defined as the quality inherent in the dental prosthesis acting to resist the displacement towards the basal tissues or underlying structures.[6]

It is the major problem in distal extension base removable partial dentures due to the absence of the posterior abutment, the partial denture shares its support between the teeth and the edentulous ridge, which differ markedly in the viscoelastic response to loading. The mucosa covering the edentulous ridge is much more easily displaced than the periodontal ligament of the abutment teeth and has a slower rate of recovery that may extend to several hours. The difference in displacement between the mucosa and the periodontal ligament was estimated to be up to 13 times.[11,12]

i) Tooth support:

Vertical support for RPDs is provided by any unit of the partial denture that rests on a tooth surface which is termed a rest. Rests should be always located in rest seats which are teeth surfaces properly prepared to receive them. Rests serve in transferring portion of the functional stresses to the teeth, while the remainder of the load is absorbed by the edentulous ridge where firm and positive contact between rest and rest seat minimizes vertical displacement of the prosthesis and prevents injury of the soft tissues.[10,11]

ii) Tissue support:

The viscoelastic reaction of the supporting soft tissues plays an important role in the evaluation of design concepts for removable partial dentures for patients with distal extension ridges. An increase in the loading time as during continuous clenching even if it is light, results into ischemia and delays the recovery of the blood flow in the mucosa underlying the denture after release of compression.[12,13]