

**THE EFFECT OF TWO DIFFERENT TYPES  
OF OCCLUSION ON THE SUPPORTING  
STRUCTURES IN DISTAL EXTENSION  
REMOVABLE PARTIAL DENTURES**

**THESIS**

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# INTRODUCTION

The goal of restoration is to preserve the remaining teeth and peridontium more than restore the missing teeth .So this must be highly considered when designing removable partial denture.

Management of distal extension partially edentulous cases presents problems to both the prosthodontists and the patients. Lack of uniform support, retention, and stability are the main reasons for destruction of the supporting structures. (**Mensor, ١٩٨٠**).

The occlusion is important especially on partially edentulous patients. To give the correct distribution of occlusal forces between the teeth and the ridge (**Davies et al., ٢٠٠١**).

Many different occlusal schemes have become popular during the last few decades.

For kennedy class I mandibular partial denture, opposing completely edentulous maxilla, working, balancing and protrusive contacts of the posterior teeth ,with light contact of the anterior teeth (bilateral balanced occlusal scheme) should be formulated to promote stability of the maxillary denture. (**Phoenix et al., ٢٠٠٣ ;Carr et al., ٢٠٠٥**).

Although, a balanced occlusion is recommended if the restoration is to oppose a complete denture. Some clinicians believe that balanced articulation is not desirable or clinically obtainable and select a non-balanced articulation scheme (**Ivanhor, J. R, and Plummer, K. D., ٢٠٠٤**)

It is a matter of controversy, whether there is a different effect on the abutment between the balanced and non-balanced occlusal scheme or not ?

# REVIEW OF LITERATURE

## Jaw Relation

Many authors have explained the phenomenon of jaw relation according to their philosophies and their facilities available for their researches. In consequence, the same phenomenon may have received more than one nomenclature. **El Mahdy, (١٩٦٨).**

**The Glossary of prothodontic terms (٢٠٠٥)** described the jaw relation (maxillomandibular relationship) as “any spatial relation of the maxilla to mandible, any one of infinite relationships of the mandible to the maxilla”. While the jaw relation record is defined as “a registration of any positional relationship of the mandible relative to maxilla, these records may be made at any vertical, and/or horizontal orientation”.

**Boucher et al., (١٩٧٥)** pointed out that, “all jaw relations are bone to bone relations” and that the mandible has specific relationships with the cranial bones.

**Zarb et al., (١٩٩٠)** classified the horizontal jaw relations into centric relation and eccentric relations. They cleared out that the eccentric positions might be either anterior or lateral; those that occur anteriorly were known as protrusive relations, while those occurring laterally were known as lateral relations.

**Sheppard and Sheppard, (1968)** described the centric relation as a physiologic relation of the mandible to the maxilla when the condyles are properly related to their articulation discs, and these condyle-disc units are stabilized and braced against the posterior slope of the articular eminences of the glenoid fossa.

**Dawson, (1995)** defined the centric relation as “the precise location of the horizontal condylar axis when properly aligned condyle-disc assemblies are completely seated in their respective bony sockets” and added that the mandible is in centric relation if four criteria are fulfilled:

- 1- The disc is properly aligned on both condyles.
- 2- The condyle -disc assemblies are at the highest point possible against the posterior slopes of the eminentiae.
- 3- The medial pole of each condyle-disc assembly is braced by bone.
- 4- The inferior lateral pterygoid muscles have released their contraction and are passive.

According to the **Glossary of prothodontic terms (2005)**, the centric relation is defined as “the most retruded physiologic relation of the mandible to the maxilla to and from which the individual can make lateral movements. It is a position which can exist at various degree of jaw separation and it occurs around a hinge.”

While the eccentric relationship is defined as any relationship between the jaws other than centric relation.

**Winkler, (1988)** classified eccentric relation records into protrusive jaw relation record and lateral relations record . Protrusive jaw relation record

could register the influence of the condylar paths over the mandibular movement. It depends upon the condylar path and might follow the contour of the glenoid fossae. Lateral movements are complex activities in most people.

**Ash and Ramfjord (1990)** advocated that, the goals for recording of eccentric relations are to provide multidirectional, unrestricted, and smooth gliding contacts.

**Heartwell and Rhon (1986)** reported that the centric relation is important in complete denture construction because it is a definite learned position that the patient can voluntarily and reflexly return to this position so this position can be recorded and repeated. The centric relation is a reference point in recording maxillomandibular relations and a starting point for developing occlusion.

**Winker (1988)** used the term occlusion to describe a static contact relationship of the teeth that exists after the jaw movement has stopped and tooth contact are identified whether the jaws are centrally or eccentrically related.

**Lang R. (1996)** stated that although this term occlusion has found its way into numerous publications on complete denture occlusion, its explanation as the functional and non-functional contacts of artificial teeth during mandibular movements is somewhat limited. A more appropriate term to be used would be □□“Articulation”, which is defined as the contact

relationship between the occlusal surfaces of the teeth during function.

The definition implies that specific contacts occur during movements of the mandible as the teeth pass over one another which is are different than the contact in the static position.

According to the **Glossary of prothodontic terms (٢٠٠٥)** the term occlusion is defined as “Any contact between the incising or masticating surfaces of the maxillary and mandibular teeth”, and that the dental articulation is defined as “The static and dynamic contact relationship between the occlusal surfaces of the teeth during function”.

**Ash and Ramfjord, (١٩٩٥)** described articulation by the contact relationship between the occlusal surfaces of the teeth during function.

According to the **Glossary of prothodontic terms (٢٠٠٥)** the centric occlusion in the natural dentition is defined as “the occlusion of opposing teeth when the mandible is in centric relation” This may or may not coincide with the maximum intercuspation position.

The maximum intercuspation is defined as “the complete intercuspation of the opposing teeth independent of the condylar position”.

However **Lang R. (١٩٩٦)** pointed out that the tooth contacts in centric occlusion and maximum intercuspation distinctly could be different in the natural dentition and this is not the case in complete denture occlusion.