

Review Article

Concepts of Complete Denture Occlusion: An Imperative Review of Literature

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ABSTRACT:

Occlusion encompasses a wide section in dentistry and has been described as the most important subject in all the disciplines of dentistry. Occlusion is the meeting ground of all phases and all specialties of dentistry. Since then, several balanced and nonbalanced occlusion concepts were proposed in the literature. It is necessary for clinician to have knowledge about occlusion-related issues for good clinical practice in all dental disciplines. Occlusion has attained its current role as 'the medium of dentistry'. Successfully treated patients has the capability to fundamentally change static and dynamic relationships of occlusion, while aiming for achieving as near "ideal" occlusion as possible. Occlusal surfaces of the teeth should essentially replaced either by restorations in natural teeth, or replacement of some or all of the teeth which is required for the routine functioning of teeth. The masticating mechanism of successfully treated patients carry out its normal physiologic functions while the TMJ, the neuromuscular mechanism, the teeth, and their supporting structures remain in a good state of health. The concepts of occlusion involve not only the static relationship of teeth but also their functional interrelationships and all components of the masticatory system. Studies have been done to investigate the occlusal relationship of maxillary and mandibular teeth during protrusion and lateral excursion movements. Based on these studies, there are various occlusal concepts of balanced occlusion, group function cuspid protection and mutually protected occlusion. A balanced occlusion appears to be most appropriate because of tooth contacts observed during nonfunctional activities of patients. This article discusses about different concepts of occlusion in complete denture.

Keywords: Denture, Mastication, Occlusion.

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INTRODUCTION:

Dentate status of a person can affect diet, nutritional status, and general health. Achieving predictable functional working and beauty of smile design is dependent on incorporation of sound occlusal principal.¹⁻² Dental occlusion plays a central and important role in clinical dentistry and is essential for physiologic function. The role of the dental occlusion becomes more important when teeth are missing. Edentulous, occlusion-free jaws are subjected to a variety of functional, aesthetic, psychological and social impairments.³⁻⁶ Establishing occlusion that permits normal and efficient masticatory function is basic to dentistry and survival.⁷

STATIC CONCEPT ¹:

The static concepts of occlusion include centric occlusion, protrusive occlusion, right and left lateral occlusion which must be balanced with the simultaneous contacts at their very first contact of all the teeth on both sides of the arch.

DYNAMIC CONCEPT^{1,8}

The dynamic concept of occlusion is primarily concerned with jaw movements involved in mastication. As the teeth of one jaw glide over the teeth of the opposing jaw, the jaw movements and occlusion are made.

Four occlusal concepts of occlusal rehabilitation in complete denture are :

- Unbalanced articulation
- Balanced articulation
- Linear or monoplane articulation
- Lingualized articulation.

UNBALANCED ARTICULATION⁹

Pound's concept

Sharp palatal cusps of maxillary posterior teeth should occlude with opposing widened central fossae of the mandibular posterior teeth. In the right lateral position, the occlusal contact forces are directed toward the lingual side of the lower ridge and the buccal cusps on the working side are out of occlusion. (Fig 1a, 1b)

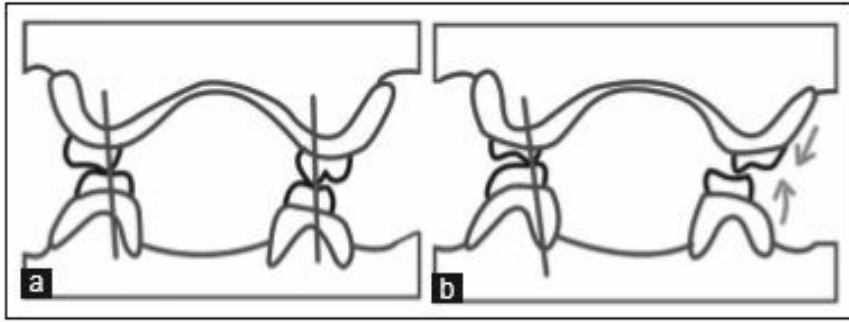


Fig 1 (a) Pound's concept: In centric occlusion (b) Pound's concept: Right lateral position

Aull's concept

Maxillary posterior artificial teeth should have 33° cusp form teeth with occlusal surface. In centric occlusion, the contact forces are directed toward the ridges (Fig 2a). In the right lateral position, the canine guidance disocclude the posterior teeth (Fig 2b).

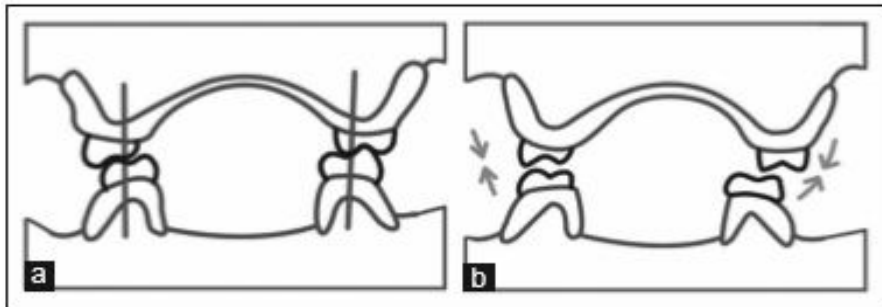


Fig 2: (a) Aull's concept: In centric occlusion. (b) Aull's concept: In right lateral position

Hardy's concept

Both maxillary and mandibular nonanatomic posterior teeth are arranged in a flat plane with a minimum overbite. In a right lateral position, if the path of the condyle is not parallel to the occlusal plane then only the buccal cusps on the working side contact. (Fig 3b, 3b).

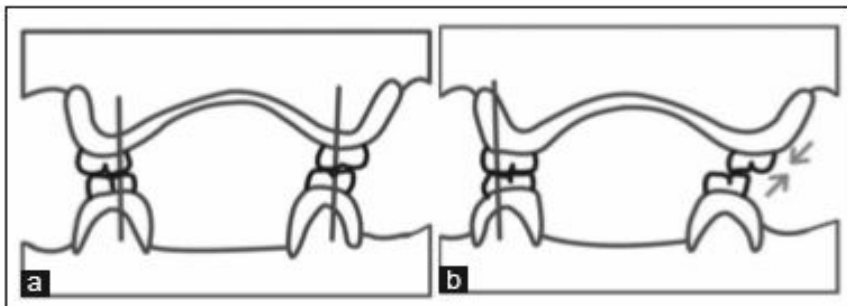


Fig 3: (a) Hardy's concept: In centric occlusion. (b) Hardy's concept: In right lateral position

Kurth's concept

Maxillary and mandibular posterior artificial teeth arranged incorporating the reverse lateral curve. In centric occlusion the masticatory forces are directed toward the lingual side of the mandibular ridge (Fig 4a). In the right lateral working position, the masticatory contact forces directed toward the ridges on the working side (Fig 4b).

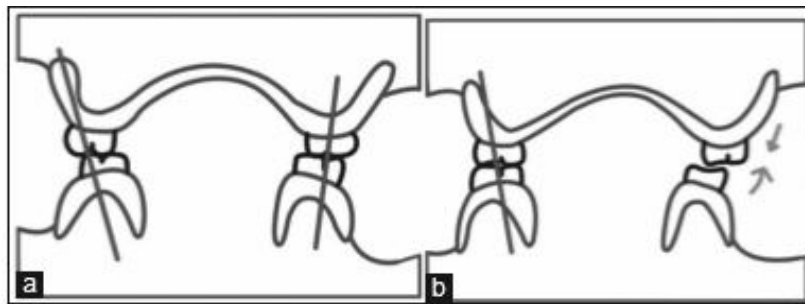


Fig 4: (a) Kurth's concept: In centric occlusion. (b) Kurth's concept: In right lateral position

Concepts proposed to attain balanced occlusion ¹:

Gysi concept:

In 1914, Gysi introduced 33° cusp form inclination to the cuspal inclines to harmonize them with the condylar inclination of 33° to the horizontal. In centric occlusion position, the occlusal forces directed toward the ridges (Fig 5a). In a right lateral working position, the occlusal forces are directed away from the ridges (Fig 5b).

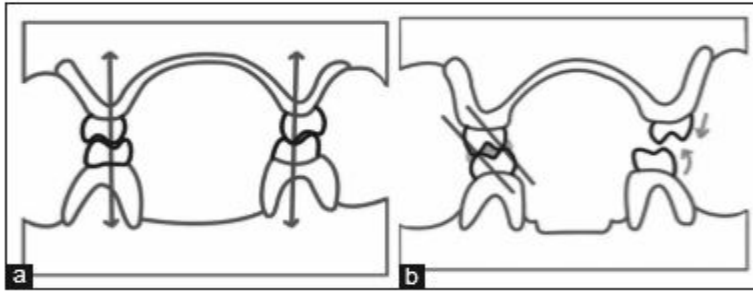


Fig 5: (a) Gysi's concept: In centric occlusion (b) Gysi's concept: In right lateral position

French concept:

According to french concept, the occlusal surface of the mandibular posterior teeth had been reduced to increase the stability of the dentures. In centric occlusion position, half of width of mandibular posterior teeth helps to direct the occlusal forces in a buccal direction to the mandibular residual ridge. In right lateral working position, the occlusal forces are directed away from the ridges on the balancing side and toward the ridges on the working side. (Fig 6b)

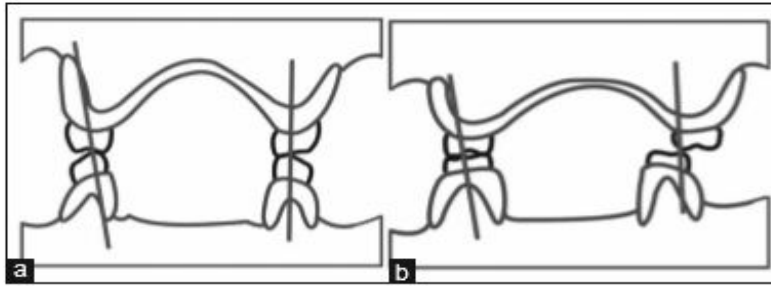


Fig 6: (a) French's concept: In centric occlusion (b) French's concept: In right lateral position

Sears concept:

Sears in 1922 developed a balanced occlusion with his chewing members and in 1927 with channel teeth (both were nonanatomic teeth) by a curved occlusal plane anteroposteriorly and laterally. In centric occlusion position, nonanatomic teeth will exert masticatory forces directly toward the ridges (Fig 7a). In right lateral working position, the occlusal forces directed toward the ridge on the working side and (Fig 7b).

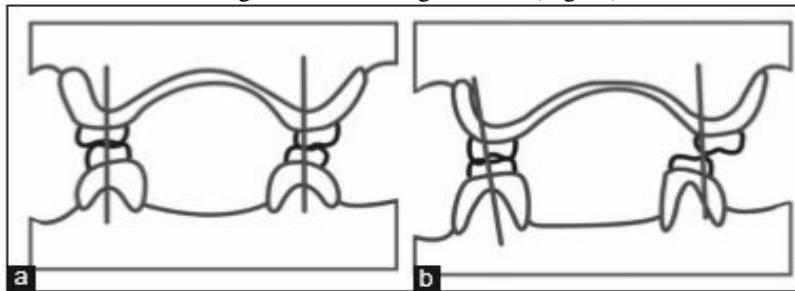


Fig 7: (a) Sear's concept: In centric occlusion (b) Sear's concept: In right lateral position

Pleasure concept:

In 1937, Dr. Max Pleasure gave an occlusal scheme called the "pleasure curve," in which a reverse curve is used in the bicuspid area for lever balance, a flat scheme of occlusion is set in the first molar area, and by raising the buccal incline a spherical scheme set in the second molar area to provide for a balancing contact in lateral position.

In centric occlusion position, contact forces are directed toward the ridges (Fig 8a) and in right lateral working position, the masticatory forces are directed toward the lingual side of the lower ridge on the working side and toward the buccal side of the mandibular ridge on the balancing side depending on the inclination of ramp of second molar. (Fig 8b).

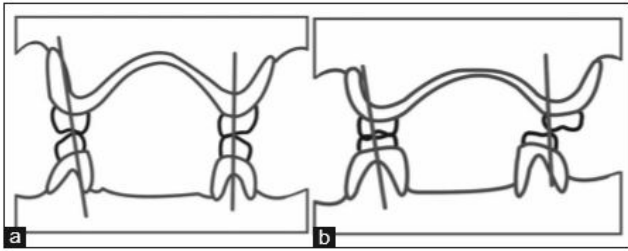


Fig 8: (a) French's concept: In centric occlusion (b) French's concept: In right lateral position

Frush concept:

In 1967, Frush presented the "Linear occlusal concept," which employed an arbitrary articulator balance. A single mesiodistal ridge on mandibular posterior teeth contacted a flat occlusal surface of upper posterior teeth set at an angle to the horizontal. In centric occlusion position, contact occlusal forces directed toward the ridges according to the linear occlusal concept (Fig 9a). In right lateral position, the masticatory forces toward the ridge on the working side and toward the buccal side of the lower ridge on balancing side at a given inclination of 6° (Fig 9b).

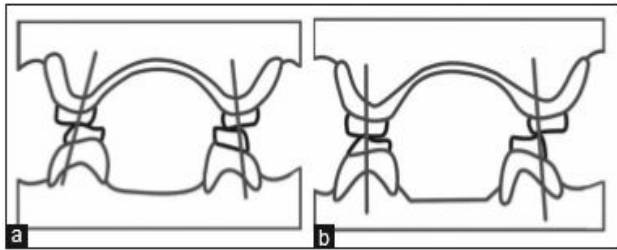


Fig 9: (a) Frush's concept: In centric occlusion (b) Frush's concept: In right lateral position

DISCUSSION

A good occlusion can be defined as synonymous with a physiological occlusion; i.e., it is comfortable for the patient both functionally and esthetically.¹¹ Good occlusal practice has a significant and immediate impact on the overall success of the treatment and results in denture stability.⁸ The natural and artificial teeth, both functionally and esthetically, must coexist in a harmonious relationship for treating a patient with the removable partial denture.⁹ A prosthodontist must decide the occlusal concepts for each patient before proceeds to any treatment. These include maxillomandibular relationships, form of residual ridge, dislodging forces, presence of functional and parafunctional activity, need of the patient and the esthetic requirements of the patient.¹⁰⁻¹¹ One important outcome of the modern understanding of occlusion in dentistry should be avoidance of occlusion-changing procedures in healthy functioning patients, while another should be the

recognition that irreversible treatments are rarely required in the treatment of orofacial pain patients. Based upon this in mind, occlusion will take its place within the biologically oriented and patient-centered dental sciences of the 21st century.¹² The tentacles of this word "Occlusion" has touched almost every branch of dentistry, so much so, that it is often quoted: "Occlusion is dentistry and dentistry is occlusion".

CONCLUSION

Complete edentulism not only affect the mastication, esthetic but also affect the general health of the patients. There are various different concepts and theories to achieve the occlusion. Oral condition of the patient should be individually evaluated to achieve occlusion. Occlusion of the successfully treated patient allows the masticating mechanism to carry out its normal physiologic functions and form while the TMJ, the neuromuscular mechanism, the teeth, and their supporting structures remain in a good state of health.⁹

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