



Part 1 Introduction to Overdenture: A Forgotten Concept.

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Abstract

Overdentures have been around since the late 19th century, and they have been extensively used in dentistry ever since. Despite its success and popularity, people don't often discuss it or use it as much anymore, but this article hopes to change that. Here we will discuss what an overdenture is, who may benefit from having one, how it can change their lives, and how you can obtain one if you are interested. Prevention of future prosthodontic problems is a key goal of preventive prosthodontics. In preventive prosthodontics, the use of an overdenture makes sense. Overdentures are far from being a reality today. Although dental implantology has advanced recently, root preservation is still a conservative approach. Natural teeth or their roots should always be preserved as long as possible in reconstructive prosthodontics. Because complete dentures depend on the underlying alveolar mucosa to function, they have inferior functional status. Overdentures are discussed as well as their pros and cons, indications and contraindications in this article.

Introduction

Edentulous or complete tooth loss is a very common problem among adults, affecting millions of people in many parts of the world. It occurs when people lose all their natural teeth and need dentures to replace them. In many cases, edentulous patients are recommended fixed full dentures due to financial

reasons. At first glance, full fixed dentures look better than overdentures because they preserve bone volume around dental implants. However, other aspects make overdentures popular over full fixed dentures. For example

1. Patients with overdentures can eat better food and more kinds of food in comparison to those with full fixed dentures.
2. Unlike traditional denture wearers, patients who wear overdentures don't have any feeling that something is wrong in their mouth while eating, so they enjoy eating with less anxiety.
3. People who wear overdentures generally suffer from fewer problems such as prosthesis-related pain, irritation, ulceration and gingival recession in comparison to those with conventional dentures; hence it increases the patient's quality of life.
4. Further improvement on aesthetics may also be possible by selecting several prosthetic components from various colours available; i.e., adding an element of personalization to your smile rather than having a monotonous colour palette as you would with fixed full dentures. Hopefully, these factors mentioned above can aid elderly patients/edentulous patients to achieve a higher quality of life via overdenture therapy.

But only one thing needs to be kept in mind: The patient must strictly follow oral hygiene routines, take care of his or her skin and inspect his/her dentures regularly. We must teach our patients how to properly maintain their Tooth Supported Overdenture or implant-supported overdenture for them to be able to enjoy maximum benefit out of their treatment plan.

Concept of Overdenture

It is a prosthetic restoration that can be used in patients who have lost all or most of their natural teeth. It is a removable partial denture that is made from metal, porcelain or plastic, and it consists of a framework that has attachments for natural-looking artificial teeth. An overdenture fits over your remaining teeth, providing you with function, speech and appearance. It protects your gums in areas where there are no natural teeth for support. Retaining roots in the alveolar process is based on the proven observation that as long as the root remains, the bone surrounding it remains. This overcomes the age-old prosthetic problem of ridge resorption

An overdenture cover retaining four teeth, two molars and two canines (Figure 1, 2, 3), one each at the four divergent points of an arch, should guarantee perfect balance and long life to a full overdenture. It depends on how much space your jawbone offers after some of your natural teeth have been removed due to decay or periodontal disease. Overdentures are custom made to fit properly. They are available

only by prescription. Some types of overdentures include complete full dentures, partial removable dentures (PRDs), implant-supported complete full dentures and implant-supported PRDs (Figure:- 4). Sometimes they are called fixed dentures as opposed to removable. This means that once they're placed in your mouth, they remain. Traditional removable dentures must be removed nightly for cleaning. In contrast, overdentures can stay in place 24 hours a day and many patients forget they even have them.

Unfortunately, patients requiring prostheses seldom present just these ideal conditions, and the dentist must make do with the best that can be devised from the dentition remaining. Nonetheless, cross-arch arrangements should be avoided; for example, a molar abutment on one side and a canine on the other. The rocking and torquing action set up by this arrangement lead to problems and the loss of one or both abutments. The molar abutment alone is preferable to the diagonal cross-arch situation.

If the selected abutment teeth are reduced to a short rounded or bullet shape –literally tucking the abutments inside the denture base-the crown-root ratio of the tooth is vastly improved, especially when periodontally involved teeth have lost some alveolar support. The teeth will work well as abutments for full overdentures due to their shortened length.



Fig 1: Bilateral Canine for the Abutments for Overdenture.



Fig 2:- Metal Copings over the Bilateral Abutments



Fig 3:- Tooth Supported Overdenture in Patient Mouth.



Fig 4:- Implanted Supported Overdenture.

Indications and Advantages

fixed in place or removable. It is a popular choice among those who are edentulous and have compromised quality of life due to missing teeth. An oral examination with a prosthodontist will determine if you are a candidate for an overdenture (Table:- 1). Moreover, it gives patients

1. Improved speech ability,
2. Chewing efficiency and
3. Confidence when compared to partial dentures.
4. One of its most attractive features is that unlike full dentures, which are unable to preserve the facial structure (also known as esthetics).
5. overdentures allow your natural dental arch structure (or at least part of it) to remain intact while giving you back some functionality.
6. While removable dentures are great for those who have compromised saliva production, those with complete edentulism generally opt for fixed overdentures over full dentures.
7. Fixed overdenture is a traditional choice, which is capable of providing years of service when well cared for by their owners.
8. Overdentures also include the psychic support some patients receive from not being edentulous.

9. The preservation of the alveolar ridge and the shielding of the ridge from stress provided by firm abutment teeth.
10. One should also be aware that the vertical dimension is better preserved if ridge height is maintained.
11. Stability And retention derived from firm abutments.

A complete set of overdentures should be considered for almost every patient requiring full-mouth extractions. It is possible to use these "hopeless" teeth as abutments for overdentures, especially if they are paired with natural teeth or removable partial dentures. An overdenture resists the occlusal forces exerted by the natural teeth better than a full denture. The retained roots under the overdenture are thought to have provided this resistance because of the proprioceptive sensory mechanism that they possess. Even if only one abutment is available, an overdenture may be used as partial denture support.

OVERDENTURE	
ADVANTAGES	DISADVANTAGES
<ol style="list-style-type: none"> 1. Preservation of Alveolar Bone. 2. Preservation of Proprioceptive Response. 3. Support. 4. Stability. 5. Retention. 6. Equally effective or superior method of treatment. 7. Simplicity of construction. 8. Stabilization of existing structure. 9. Ideal occlusion. 10. Aesthetics excellence 11. Open palate possible. 12. Ease in making measurements 13. Less trauma to supporting structures. 14. Excellent patient acceptance. 15. Conversion to complete denture. 16. Transitional or training denture. 17. Minimal adjustments. 18. Possibility of using attachments or soft liners. 19. Ease of maintenance. 20. Ease of cleaning. 21. Reversibility. 	<ol style="list-style-type: none"> 1. Caries susceptibility. 2. Periodontal breakdown of the abutment teeth. 3. Over contour. 4. Under contour. 5. Encroachment of the interocclusal distance. 6. Cost. 7. Additional patient responsibility.

Table 1:- Advantages & Disadvantages of Overdenture.

Contraindications and Disadvantages

There are certain conditions in which a dental appliance cannot be safely used. The individual should consult with his or her dentist before deciding on an overdenture. These conditions include a patient’s (Table:- 2)

1. Age
2. Physical condition
3. Mental state
4. Oral health status
5. When the remaining alveolar support is so lacking that no tooth can be retained for very long.
6. If the remaining natural teeth are adequate to restore the mouth with fixed or removable partial dentures, instead of overdenture.

If a person has lost all of his or her teeth in one or both jaws and needs help supporting what remains of their natural dentition, then he or she is probably a good candidate for an overdenture. However, patients mustn’t rush into treatment without first discussing it with their dentist.

A thorough examination should be performed before any procedures are carried out. The objective of such an exam will be to ensure that no underlying health issues exist which would interfere with successful overdenture fabrication or use.

OVERDENTURE	
INDICATIONS	CONTRAINDICATION
<ol style="list-style-type: none"> 1. Patients with a poor prognosis for complete dentures. 2. Congenital defects like cleft palate, oligodontia, microdontia, cleidocranial dysostosis, class III patients with the prognathic mandible. 3. Acquired defects like accidents, diseases. 4. When pronounced vertical overlap of anterior teeth is required. 5. Teeth with questionable prognosis. 6. Unilateral overdenture 7. Removable partial overdentures. 8. Single complete denture opposing natural anterior teeth. 	<ol style="list-style-type: none"> 1. Another method is superior. 2. Patient co-operation. 3. Age 4. Physical condition 5. Mental state 6. Oral health status 7. When the remaining alveolar support is so lacking that no tooth can be retained for very long. 8. If the remaining natural teeth are adequate to restore the mouth with fixed or removable partial dentures, instead of overdenture.

Table 2:- Indication And Contraindication Of Overdenture.

Problems Related to Overdentures

Overdentures have caused several problems, mainly because of poor case selection and insufficient patient cooperation.

Prosthodontists have discovered that teeth close together make poor abutments and that the tissue and bone between them weaken when stressed. Torquing rotation is also a problem when it is focused on one abutment, usually an anterior mandibular tooth.

Unfortunately, dental caries and periodontal disease are the most serious problems. Overdenture patients must be taught to take excellent home care of their dentures - they should brush the abutments and surrounding area every day, and they should also brush the inside of their dentures possible.

Possible solutions for Overdenture Problems

Despite the Dentist help, some potential problems can occur with overdentures. Toothache and pain in your gums can be common if your teeth don't fit together properly or if you don't wear them often enough. Your dentist should always be able to fix these issues with a bit of work, but they may give you some tips on how to prevent them from happening in future. Better in-home patient cooperation is by far the best way to solve the caries-periodontal problem.

1. A special 0.4% stannous fluoride gel is now available to be used in the "well" within the base plate as a means to remineralize the dentin.
2. Periodontal disease, however, can only be controlled by removing plaque and applying equal and proper pressure to the abutments.
3. Relining may also need to be done more frequently.
4. Cast copings can be constructed to cover and contour the abutment teeth to solve the caries problem. In the end, this seems like a lot of money spent on a problem that could be solved with a toothbrush.
5. When there is severe abrasion of the dentin stump, coverage is recommended to prevent significant tooth loss. There are many factors contributing to these cases, but bruxism is the major cause.
6. Another common problem is that food gets stuck in between your gum and tooth while wearing an overdenture. This is called a sandwich bite; if it happens to you too much it could lead to plaque build-up which could damage your tooth underneath. You need to make sure that you are flossing properly before having new ones fitted.

Overdenture and its future

Dental therapy has benefited from the latest advancements in materials and technology adapted from other fields and applications. Today, post and core therapy are integral components of dental therapy. A cast metal post/core or a prefabricated metal post with an amalgam core was the standard technique as a restoration technique for badly broken down, endodontically treated teeth for nearly a century. Metal posts remained the standard of care into the 1990s, presumably because there were no viable alternatives, despite the imminent risk of galvanic response, corrosion, microleakage and worst of all, root fracture. Since the last decade of the 20th century, 4th and 5th generation adhesives have become readily available, making it possible for composite restorations to be greatly improved. Clinical capabilities and confidence have benefited from these advancements.

A fibre-reinforced composite endodontic post was developed, patented, and commercialized by two practising dentists in Grenoble, France, in the late 1980s using technology used in the automotive and aerospace industries. The original version of the dowel was not radiopaque nor aesthetically pleasing, but it did possess some of the ideal characteristics of a dowel, including atraumatic removal in several minutes and biocompatibility. Fibre-reinforced composite posts achieve the protective aspect, which has high strength and elasticity comparable to that of dentin: between 18 GPa and 50 GPa. As a result, the stress is distributed in a completely different way than that of metals and is more like that of natural teeth.

The radiopaque carbon fibre and nonradiopaque esthetics posts have been developed following successful comparative in vitro testing and clinical success. This post was introduced by other well-known manufacturers who are non-radiopaque, but aesthetic. The best known of these is Para Post White and FibreKor. Posts like these, which are parallel and are typically too narrow at their coronal ends and too thick at their apical ends, make additional dentin removal necessary.

Furthermore, aesthetic posts vary from brand to brand in terms of strength, fatigue resistance, and fracture resistance in endodontically created teeth. A study by Cormier and colleagues found the esthetics RTD / Bisco post systems superior to FibreKor post systems, for example. In comparison with the Zirconia Cosmopost, the DT Light-Post exhibited better fracture resistance. Their inherent differences may be attributed to their composition, the fibre type (quartz, glass, zirconia), the amount of fibre used (37 to 64%), the matrix material (epoxy, Bis-GMA), and the manufacturing processes. One of

the five DT Light Posts' tapered sections is located in the apical 5mm (20), another is in the next 5mm (60-100), followed by a parallel (1800) coronal section. The post meets the remaining two criteria for an ideal dowel: radiographic visibility and esthetics, along with the same desirable mechanical properties as its predecessor in carbon fibre. In addition to being highly translucent, this post can be used as a fibre-optic light guide, which will assist with the polymerization of adhesives and dual-cured cement deep inside the tooth.

With today's bonding systems, fibre posts, composite resins, and ceramics, clinicians have a wide variety of choices. To decide which dental materials to use for a given clinical situation, practitioners need to understand the chemistry and instructions of these materials. Patients' goals and needs can be met when evidence-based choices are made

Conclusion

Although the restoration of endodontically treated teeth has been rationalized considerably by recently available laboratory research data, information from controlled long-term clinical trials is still needed and may be more difficult to obtain. It is important to preserve as much tooth structure as possible, particularly within the root canal, where the amount of dentin remaining may be difficult to assess. A post-and-core is used to provide retention and support for a cast restoration. It should be of adequate length for good stress distribution but not so long as to jeopardize the apical seal. The safest method to create post space is to use a warmed endodontic plugger to remove the gutta-percha. Anterior teeth, partially those with flared or elliptical canals, should be built up with a custom cast post-and-core. Amalgam can be used satisfactorily on posterior teeth, although if much coronal tooth structure is missing a casting may be preferred.

Recent advances in materials science have had a significant impact on the restoration of endodontically treated teeth. The ability to bond multiple restorative materials to each other and tooth structure will continue to revolutionize this relationship in future.

There is not one post, core or final restoration that can be used in all clinical situations. Dentistry, like the other health profession, does not have the luxury of being able to limit those variables that occur daily in our clinical practice. We must learn to work with these variables and spend less time trying to find the one that applies to all cases: the ideal restoration that can be produced for the masses. When we understand the basic concepts of how to retain the various restorative components and how to protect the remaining tooth structure, our ability to answer the numerous questions that arise during the restorative process will be facilitated and will result in final restorations that are based on sound design principles.

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