Comparing Overdenture Therapies with Teeth and Implant Abutments

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In the oral implant era where high technologies allow the rehabilitation of the great majority of patients with fixed prosthodontics, are overdentures (ODs) still considered to be outstanding and up-to-date? If the socioeconomic-epidemiologic situation of populations around the world and the need for equal opportunities in the health field* are taken into account, and if Peter Owen's editorial "Appropriatech: Prosthodontics for the Many, not Just for the Few"¹ is shared and accepted, ODs are and will absolutely be one of the first choices of treatment.²

ODs have been successfully used for many years and are still considered to be a valid treatment.

ODs on the Natural Dentition

When patients retain some of their natural teeth it is important to guide them into a completely edentulous state in a gradual and inexpensive manner. Patients must be able to adapt themselves psychologically and functionally to the new situation. One option to achieve such a result is OD treatment on natural teeth.

The advantages of such treatment are psychologic, functional, and biologic.² The possible complications and failures include: tooth decay (controlled by covering the abutments with cast copings, use of bonding agents, thorough oral hygiene, and fluoride and chlorhexidine protection), gingivitis (controlled via excellent home care and professional assistance), endodontic failure, and vertical root fracture (more frequent in the maxilla when opposed by natural teeth).²

Implant-Retained ODs and RPDs

When the remaining teeth are healthy but periodontally compromised (an unfavorable quantity of alveolar bone) or in a nonstrategic position, it is inconvenient to use them for retention; however, they can be maintained for transitory support. Removable partial dentures (RPDs) are a viable treatment option in cases of loss of vertical dimension of occlusion and tooth wear. The height and morphology of worn mandibular teeth can be restored at a low cost by use of an RPD with clasps.

ODs may be retained using ball attachments on cast copings, a bar, or telescopic crowns. Ball attachments are the least expensive option. The "one-step post" (a prefabricated gold post with a ball attachment) has been proposed to decrease the costs of OD therapy.² When patients are completely edentulous, OD therapy is still a possible treatment option through use of implants. The mandibular OD retained by two implants followed an unexpected scientific course: it was first used clinically and then tested and validated by research through many studies.³ Mandibular ODs have also been tested for immediate loading with encouraging results.

The advantages and performances of ODs retained by implants are similar to ODs on natural teeth⁴: psychologic (self-esteem), functional (mandibular movements, masticatory efficiency, thickness threshold), and biologic (soft tissue and alveolar ridge change and preservation).

There are essentially two types of anchorage available for implant-retained ODs: bars and balls. When looking at the literature it is not clear which type is better, and when compared, bars seem to be more reliable. In this author's personal experience, since balls are less costly than bars, they have been used all along without problems and are still the main type of anchorage adopted for mandibular implant-retained ODs.

Mandibular implant-retained ODs could be considered the choice treatment for the edentulous patient, but implant costs remain a disadvantage. To lower costs, it has been proposed to anchor mandibular ODs on one implant only. Even though some studies have been conducted on this rehabilitation, it is not yet possible to consider it validated by evidence.

A procedure for maxillary implant-retained ODs has yet not been defined regarding the number and position of implants and the denture design. In relation to full fixed partial dentures, maxillary OD treatment finds its indication when lip and facial support are needed (Figs 1a and 1b).

Implants can also be useful in RPDs to improve biomechanics (Fig 2) and preserve the residual teeth (Fig 3). Indeed, the use of a few strategic implants enables a more functional design, improving treatment with RPDs.⁵

*Equal Opportunities for Health Action for Development is a project implemented by 29 European partners and associates from the health community with the aim of mobilizing public support in Europe for global health and health equity as a strategy and policy for more equitable North-South relations and poverty reduction in developing countries.





Fig 2 Kennedy Class I relationship. The insertion of two implants in the molar region offers a quadrangular support for an RPD.





Fig 3 Kennedy Class I relationship with residual periodontally compromised but still healthy and stable teeth. The mandibular left lateral incisor cannot support a clasp. The ball attachment on the right premolar ("one-step post") and that on the left implant (strategic premolar position) are used to retain an RPD to preserve the residual teeth.

Conclusion

When comparing ODs on natural teeth with ODs on dental implants, some considerations can be made. Implants seem to have a better prognosis than natural teeth, but their duration is similar over time. As already reported in a previous communication,² when patients are partially edentulous and retired with modest financial possibilities, they must be gradually rendered completely edentulous at a low cost. Mandibular ODs retained by implants are preferable only when heroic endodontic and periodontic treatments and expensive cast copings are needed.

References

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Fig 1 (a) The position of implants is too palatal to use fixed prosthodontics. **(b)** The use of an RPD allows a more buccal position of the artificial teeth to support the lip

and cheek by the resin flange.

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