Implant-supported mandibular overdenture.

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ABSTRACT
A 48 year old edentulous female presented to the Prosthodontic Department at Bir Hospital for replacement of missing teeth in both the upper and lower jaws. She wanted a complete set of teeth so that she would look esthetically good and masticate efficiently.

A conventional complete denture was fabricated but she repeatedly complained of looseness of the lower denture, soreness of the mucosa under the denture and not able to masticate efficiently.

Key words: edentulous, implant, overdenture.

INTRODUCTION
The standard treatment for the edentulous patient has been the provision of conventional complete denture. However, complete denture wearers frequently report problems with oral function, typically caused by retention and stability problems of the mandibular prosthesis.

An alternative to the conventional denture would be implant supported fixed bridges, hybrid prosthetic dentures and removable overdenture prosthesis.

Oral function significantly improves after mandibular implant overdenture treatment.

An implant supported overdenture is a conventional acrylic denture retained by attachments to the implants.

CASE REPORT
A 48 year old female edentulous patient presented to the Prosthodontic Department at Bir Hospital for replacement of missing teeth in both the upper and lower jaws. A conventional complete denture was fabricated but she repeatedly complained of looseness of the lower denture, soreness of the mucosa under the denture and not able to masticate efficiently.

The patient was told of the advantages and disadvantages of the different treatment modalities and she was convinced for an implant-supported overdenture in the lower jaw.

Biochemical evaluation and computerized tomography (CT) scan was done. She had category A bone that is abundant of bone in all dimensions, intact basal bone and intact alveolar bone.

An implant supported overdenture with a ball and socket attachment was planned for the patient. Attachments, composed of two parts, are used to gain retention. One part is incorporated into the denture and the other part connects to the implant.

An informed consent form was given for signature after acceptance of treatment plan and estimation of cost and time.

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SURGICAL PROTOCOL

A two stage implant protocol was planned. Implant is placed in the first stage surgery, after primary closure is achieved; implant needs exposure to second stage procedure.

Surgically four Xive implants were placed in the mandible parallel to each other. The implants were placed between the two mental foramens. The implants were of 3.8 mm in diameter and 13mm in length.

After eight days the gingival formers on the implants were removed and retentive ball attachments were inserted and tightened with a prosthetic ratchet. It is important that all the ball attachments are at the same level.

IMPRESSIONS

The implants were parallel to each other so the close tray impression technique was followed. A custom tray was prepared with auto polymerizing acrylic resin. The final impression was made with polyether impression material.

Record bases and occlusion rims were fabricated on master casts. Vertical and horizontal jaw relations were recorded. Artificial teeth were selected and arranged. The trial arrangement was evaluated intraorally for esthetics, phonetics, occlusal vertical dimension, and centric relation.

The denture came from the lab with four spaces which are accurately placed for the attachments to be received. The corresponding female attachment with an O-ring, were placed on the ball attachments and incorporated directly into the denture base with autopolymerizing resin in a closed mouth procedure.

During the placement visit, the patient was given thorough instructions for cleaning the dentures. The patient was called for follow up after two months.

At one year evaluation of the prosthesis no complications had occurred and the patient was satisfied with her lower denture. However she now complains that her upper denture is loose.

DISCUSSION

With the average population living longer, having more disposable income, and seeking better health care, implants have become a realistic alternative for the partially or completely edentulous individual.

Conventional mandibular dentures for patients with atrophic mandibles often present problems with retention, phonetics, function, and pain due to instability.

The literature review indicates that implants placed in the anterior mandible (anterior to the foramen) have a success rate better than 95 percent. Patients have reported a high degree of satisfaction with the implant-supported overdenture.¹
The results of a 5-year clinical study show that patients treated with complete maxillary dentures and mandibular overdentures demonstrate less vertical alveolar bone reduction than patients with complete maxillary and mandibular dentures.

The buccal flanges of the overdenture can provide excellent soft tissue support of the cheeks and lips; and for elderly, frail, or disabled patients, oral hygiene and home care are simple and easy to accomplish.

An implant-retained overdenture requires more treatment planning than a conventional complete denture. An important consideration in fabricating a mandibular overdenture is ensuring sufficient space for the prosthetic components of the implant attachment system.

The predominant categories of retention for mandibular overdentures are either bars or individual attachments.

The bar attachment rigidly connects two or more implants together over an edentulous space. A denture is retrofitted over a round cast bar that is firmly attached to the implants by screwing it into position. Hader or Dolder bars accomplish the same effect. A metal clip embedded into the denture is retained by the ovoid section of the bar.

However, bars prescribed for mandibular overdentures complicate and increase the cost of the prosthesis. They are also more technique sensitive and generally require more space than individual attachments.

A mandibular overdenture supported by two or four implants is an effective treatment alternative for the maladaptive denture wearer. When the use of a ball attachment is contemplated, the implant abutments should be parallel to one another along the path of insertion. The ball attachment, screwed into two to four freestanding implants, interlocks into a corresponding female attachment with an O-ring retrofitted to the denture base.

CONCLUSION

The standard treatment of the edentulous patient has, for many years, been a complete denture. Many complete denture wearers have significant problems in adapting to their mandibular prosthesis. Complete dentures have many disadvantages such as: continual ridge resorption with fibrous replacement, instability of the complete denture, displacement of the complete denture, variable levels of acquired muscular control, changes in facial support, reduced masticatory efficacy and emotional distress from tooth loss.

The introduction of dental implants has improved the quality of life for edentulous patients. The benefits and success of mandibular implant retained dentures are well documented.

With delivery of the overdenture, the patient reported increased satisfaction with her prostheses which allowed her to eat a greater range of foods and enabled her to feel confident when speaking and socializing.

When planning treatment for patients with edentulous mandibles, clinicians should consider the implant supported prosthesis.

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