ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at:www.ijdsir.com

Volume – 7, Issue – 6, November – 2024, Page No. : 18 - 22

Locator Implant-Supported Overdenture

[1]Dr. Sunita Choudhary, Professor, Department of Prosthodontics & Crown & Bridge, D.J.College of Dental Sciences & Research, Niwari Road, Modinagar, Uttar Pradesh

[2]Dr. Pravender Kumar, Sr lecturer, Department of Prosthodontics & Crown & Bridge, Sudha Rustagi College of Dental Sciences & Research Faridabad NCR (Haryana)

[3]Dr.Vikas Sharma, Sr lecturer, Department of Prosthodontics & Crown & Bridge, Department of Prosthodontics, IDST, Modinagar, Uttar Pradesh, India

[4]Dr. Shubham Kumar, PG Student, Department of Prosthodontics & Crown & Bridge, D.J.College of Dental Sciences & Research, Niwari Road, Modinagar, Uttar Pradesh

[5]Dr. Grace Thanglienzo, MDS Department of Pedodontics and Preventive Dentistry

[6]Dr. Abhay Saini, PG Student, Department of Oral Medicine & Radiology & Diagnosis, Swami Devi Dyal Hospital and Dental College - [SDDHDC], Panchkula

Corresponding Author: Dr.Vikas Sharma, Sr lecturer, Department of Prosthodontics & Crown & Bridge, Department of Prosthodontics, IDST, Modinagar, Uttar Pradesh, India

Citation of this Article: Dr. Sunita Choudhary, Dr. Pravender Kumar, Dr. Vikas Sharma, Dr. Shubham Kumar, Dr. Grace Thanglienzo, Dr. Abhay Saini, "Locator Implant-Supported Overdenture", IJDSIR- November – 2024, Volume –7, Issue - 6, P. No. 18 – 22.

Copyright: © 2024, Dr.Vikas Sharma, et al. This is an open access journal and article distributed under the terms of the creative common's attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Edentulous individuals often encounter difficulties with their mandibular complete dentures, especially those with resorbed mandibular ridges. Common complaints include inadequate stability and retention, which can lead to reduced chewing efficiency and overall dissatisfaction.

While implant-supported fixed prostheses offer numerous benefits, their high cost and specific contraindications may restrict their applicability. An alternative solution is the implant-supported removable prosthesis, or overdenture, which can effectively address these challenges.

This clinical report presents a method for rehabilitating a patient with a resorbed mandibular ridge through the use of an implant-supported overdenture. By strategically placing implants, we can significantly enhance the stability and retention of the denture, thereby improving the patient's chewing function and comfort.

The report covers the diagnostic evaluation, treatment planning, surgical placement of the implants, and the fitting of the overdenture. Results indicate a marked

improvement in patient satisfaction and functional ability, showcasing the advantages of implant-supported overdentures for those facing similar issues.

Keywords: Implant, Restoration, Tooth Replacement, Edentulous, Mandibular Ridge, Stability, Retention, Overdenture, Chewing Function, Rehabilitation, Surgical Placement, Patient Satisfaction, Removable Prosthesis, Dental Implants.

Introduction

Edentulous individuals frequently encounter issues with their complete dentures, particularly those in the mandible. Patients with resorbed mandibular ridges often express concerns about the stability and retention of their dentures, which can lead to reduced chewing efficiency.[1] The placement of implants provides a more beneficial environment for restoration in edentulous patients. Options for implant-supported prostheses for an edentulous arch include both fixed and removable types. While fixed prostheses can be aesthetically pleasing and mimic the feel of natural teeth, they tend to be costly and may not be suitable for all situations. On the other hand, implant-supported removable prostheses offer distinct advantages compared to fixed restorations.[2] Many patients find that a stable implant-supported overdenture meets their needs while requiring less clinical time and financial investment.[1] This clinical report outlines a technique for rehabilitating a patient with a resorbed mandibular ridge using an implant-supported overdenture.

Case Report

A 49-year-old male presented at clinic with complaints of difficulty chewing and a loose-fitting lower denture. He had been edentulous for 1.5 years following the extraction of periodontally compromised and decayed teeth. For the past six months, He had been using complete dentures but was dissatisfied with the stability and fit of the lower denture. Clinical examination showed edentulous maxillary and mandibular ridges with a class I ridge relation. (Fig. 1) The mandibular ridge exhibited significant resorption (Atwood's class IV).

Figure 1: Preoperative intraoral view

The patient was informed about the various treatment options available. An implant-supported fixed prosthesis was not feasible, as it would not enhance lip support or aesthetics. Since the patient's main concern was the retention of her dentures, we opted to rehabilitate his with a mandibular implant-supported overdenture, paired with a maxillary complete denture. Diagnostic impressions were taken, and the diagnostic orthopantomogram (OPG), along with casts and records, (Fig. 2). was analyzed. Implant placement was scheduled for the B and D positions after obtaining the patient's consent (Misch's overdenture options – OD1). The treatment was organized into three phases: (1) fabrication of the diagnostic denture, (2) implant placement, and (3) fabrication of the final prosthesis.

Figure 2: Maxillary and mandibular diagnostic models

©2024 IJDSIR, All Rights Reserved

Diagnostic denture fabrication

The diagnostic denture was created following standard denture fabrication procedures. It was utilized to assess the space available for overdenture attachment and to create a radiographic stent, which would later serve as a surgical guide (Fig. 3).

Figure 3: Surgical stent placed intraorally

Implant placement

A cone beam computed tomography (CBCT) analysis was performed. Two implants measuring 4.2 × 10 mm were placed at the B and D positions. Stage II surgery was conducted three months later, following radiographic and clinical confirmation of healing (Fig. 4). Healing abutments were then inserted, and after the soft tissue healed, prefabricated locator attachments were attached (Fig. 5).

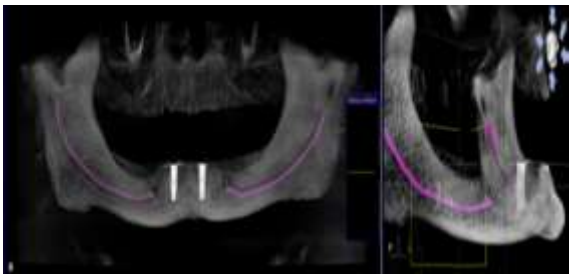

Figure 4: CBCT after healing

Figure 5: Locator attachment incorporated

Final prosthesis fabrication

Two weeks after the healing abutments were placed, a primary impression was taken using irreversible hydrocolloid material. The final impression for the maxilla was made using standard techniques. For the mandibular final impression, a custom tray was created with a window to allow for a splinted open tray pickup/direct impression of the implants. Border molding was completed, and open tray impression copings were positioned over the implants. Low-viscosity polyvinyl siloxane was applied to the tray, and the impression copings were splinted with self-curing acrylic resin. Once the polymerization was complete, the copings were unscrewed, and the tray was removed (Figs 6 and 7). Definitive casts were then produced.

Figure 6: Final impression

©2024 IJDSIR, All Rights Reserved

Figure 7: Impression copings splinted with acrylic resin

Autopolymerizing acrylic resin was utilized to create the denture bases over the definitive cast. The upper cast was mounted using a face bow record, and a centric relation was recorded. A bilateral balanced occlusion scheme was employed for arranging the teeth, followed by a try-in. Retentive metal housings were added using an indirect method: after dewaxing, locator attachment analogs were attached to the cast. Retentive rings were positioned over the analogs before processing the denture. Finally, the denture was finished and polished using conventional techniques.

The prosthesis was successfully delivered, and the patient was provided with guidance on aftercare as well as the schedule for follow-up appointments (Figs 8 and 9).

Figure 8: Postoperative intraoral view

Figure 9: Preoperative and postoperative extraoral view

Discussion

An overdenture is defined as a removable dental prosthesis that covers and rests on one or more remaining natural teeth, their roots, and/or dental implants, offering partial support from these structures (Glossary of Prosthodontic Terms 10). It is often the treatment of choice for edentulous patients who wish to maintain a removable option.[2] Implant-supported overdentures offer dentists an excellent chance to enhance both the oral health and quality of life for their patients.[3] Chewing efficiency is nearly 20% greater with an implant-supported overdenture than with a conventional complete denture.[2] The main reason for recommending a mandibular implant-supported overdenture is to address common issues associated with mandibular dentures, including insufficient retention and stability, reduced functionality, speech difficulties, tissue sensitivity, and abrasion of soft tissues.[2] The number of implants used should be chosen based on the unique clinical and personal requirements of the patient.[4] In this situation, a plan was made for a two-implant-supported mandibular prosthesis, taking into account anatomical features, the patient's expectations, and cost considerations. The selection of attachments is influenced by the necessary retention, jaw structure, distance between ridges, condition of the overlying mucosa, oral function, and the patient's willingness to attend follow-up appointments.[3] Single attachments offer several benefits: [5]

- They are more affordable
- They require less technical precision
- They are easier to maintain and clean[6]

The condition of the opposing arch affects the selection of the occlusal concept. Many practitioners suggest using a balanced occlusion for patients with an edentulous maxilla facing an implant-supported

©2024 IJDSIR, All Rights Reserved

overdenture.[7] Many patients looking to enhance the retention and stability of their mandibular denture, as well as reduce oral discomfort, are generally open to removable prostheses and do not seek complete fixed options, which often come with more challenging oral hygiene requirements.[1]

Summary

This case report introduces an innovative treatment approach for rehabilitating an edentulous patient with a resorbed mandibular ridge. An implant-supported overdenture is shown to be a superior option compared to traditional dentures. Therefore, this treatment method should be utilized when appropriate, as it helps preserve both hard and soft tissues and provides the psychological relief that patients seek from dental care.

References

1. Batenburg RH, Meijer HJ, Raghoebar GM, Vissink A. Treatment concept for mandibular overdentures supported by endosseous implants: a literature review. *Int J Oral Maxillofac Implants*. 1998 Jul-Aug;13(4):539-545.
2. Misch CE. Contemporary implant dentistry. *Implant Dent*. 1999;8(1):90.
3. Cakarer S, Can T, Yaltirik M, Keskin C. Complications associated with the ball, bar, and locator attachments for implant-supported overdentures. *Med Oral Patol Oral Cir Bucal*. 2011 Nov 1;16(7):953-959.
4. Mericske-Stern R. Treatment outcomes with implant-supported overdentures: clinical considerations. *J Prosthet Dent*. 1998 Jan;79 (1):66-73.
5. Prasad DK, Prasad DA, Buch M. Selection of attachment systems in fabricating an implant-supported overdenture. *J Dent Implants*. 2014;4(2) :177-181.
6. Sadowsky SJ. Mandibular implant-retained overdentures: a literature review. *J Prosthet Dent*. 2001 Nov;86(5):468-473.
7. Wismeijer D, van Waas MA, Kalk W. Factors to consider in selecting an occlusal concept for patients with implants in the edentulous mandible. *J Prosthet Dent*. 1995 Oct;74(4):380-384.

©2024 IJDSIR, All Rights Reserved