



Full Mouth Rehabilitation using Fixed-removable Prosthesis - A Case Report

Diksha Singh^{1*}, OmkarShetty², AbhishekNagpal³, BhupenderYadav⁴

¹⁻⁴Department of Prosthodontics, Faculty of Dental Sciences, SGT University, Gurugram

*Email: diksha_fdsc@sgtuniversity.org

ABSTRACT

The completely edentulous mandibular arch is the most common clinical scenario in a dental clinic, and implant-supported overdentures have historically been the predictable solution. It is the optimal treatment option to start a learning curve in implant dentistry due to the increased flexibility of the implant position and the improvement of the overdenture's retention, support, and stability. In the case that follows, an overdenture supported and held by two implants put in the inter-foraminal region with ball abutments in opposition to the tooth-supported overdenture successfully restores a resorbed edentulous mandibular ridge. Consequently, implant supported overdentures seem to be a considerably more straightforward, cheap, and minimally invasive treatment for most of the patients.

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INTRODUCTION

Due to the mandible and its related musculature serving as their movable foundation, conventional mandibular dentures have little retention and stability. The capacity to cover a wider foundation in the maxilla offers the chance to create a denture that is more solid and retentive. Mandibular ridges are the primary candidates for implant-supported overdentures because they have undergone resorption and provide superior retention than conventional implants. However, implants are relatively expensive; hence, using only two implants rather than four offers a more affordable choice for a patient without teeth. Studies reported success rates were 95- 98% respectively[1]. Two ball-retained attachments are used in the mandibular arch in this case study, with each implant holding onto a metal attachment (male) that passively fits with another attachment (female) on the intaglio surface of the denture to provide the patients with the maximum amount of prosthetic stability[2]. The patient was examined first, and then acrylic dentures made to satisfy the patients' expectations. Over the years, RPDs, overdentures, segmented fixed prosthetics, and implants have all benefited from the use of precision attachments in both detachable and fixed prosthetics.[3-4]. In order to provide stability and strength for an either fixed or removable dental prosthesis, a tooth implant is described as a prosthetic device constructed of alloplastic material(s) that is/are inserted into the oral tissues beneath the mucosal and/or periosteal layer and on or within the bone[5-6]

CASE REPORT

A 60-year-old female patient reported to the Department of Prosthodontics, Crown & Bridge & Oral Implantology with the chief complaint of missing teeth, difficulty in chewing and speaking since 2 years. Oral examination (figure 1) revealed completely edentulous mandibular ridge and in the maxillary arch only canines were present i.e., 13,23. The patient was advised for a tooth supported overdenture in maxillary arch as patient also did not want to get her teeth extracted and implant supported overdenture was advised for mandibular arch.



Fig 1. Pre-operative intra-oral

After discussing the treatment plan with the patient, blood tests and informed permission were acquired. Pre-surgical diagnostic casts were created (fig 2), and an irreversible hydrocolloid impression was taken. The diagnostic casts included measurements of interocclusal distance. Separate from one another, the B and D positions were designated for the implant location.

Surgical Phase: The surgery was done under antibacterial prophylaxis and conventional aseptic protocol. With surgical blade number 15, a crestal incision was made that ran from the first premolar on the right side to the first premolar on the left side. Bone was exposed by raising the mucoperiosteal flap.



Fig. 2. Implant placement done in mandibular arch

Without endangering the nearby anatomical tissues, two osteotomy sites were made using a piezo surgery equipment after a pilot drill was inserted into the bone. Using a motor driver, two surgical implants were placed. Cover screws are inserted once the implant seating tip has sunk to the correct depth. Later flaps are approximated, and 3-0 Vicryl suture material is used for the suturing. The patient was given an antibiotic and anti-inflammatory prescription.

Seven days following the procedure, the patient was recalled, and sutures were removed.

Osseointegration was assessed clinically and radiographically three months following surgery and the implants were ready to receive the prosthesis.

In the second stage of surgery, healing abutments were put into the implants after cover screws were removed. Two weeks later, the repair of the peri-implant soft tissue was assessed.

Each implant was attached to a selected ball abutment using a hex driver and a 30 Ncm torque wrench. After, 3 months following the placement of attachments the prosthesis work was started for both the arches simultaneously. The teeth (13,23) in the maxillary arch were prepared for the cast post with coping. The impression was made with pattern resin and copings were casted (fig 3). The casted copings were checked for fit and then cemented with glass ionomer cement (fig 4-5).



Fig 3. Tooth Preparation and coping



Fig 4. Casted copings with post Fig 5. Copings cemented



Fig. 6. Ball attachments placed on mandibular implants

Primary impressions were made for both maxillary and mandibular arch with impression compound after the cementation copings of maxillary teeth (Fig 6). Border moulding was done, and secondary impression was made by zinc oxide eugenol paste. Jaw relation was recorded. And the trial was done. The patient was satisfied with the trial denture. The denture was processed (fig 7).

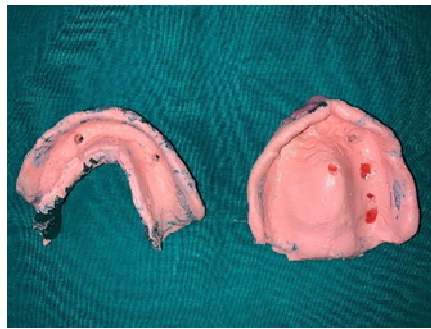


Fig. 7. Secondary impression

To know where attachment housings should go, each ball abutment should have a transferable mark made with an indelible pencil before the denture is seated. The denture's intaglio surface was prepared by cutting out recesses for the housings. Lingual vent holes are created to allow extra acrylic to escape. Using an insert seating tool, the nylon processing insert is inserted into each of the housings. The attachment housing is seated onto each ball-type abutment. To stop acrylic resin from fastening the denture to the abutment, undercuts are blocked out underneath the housing and soft tissue.

To bond titanium housings to dentures, self-curing acrylic is applied to recessed areas and all around them. Denture insertion was completed while assisting the patient in achieving correct occlusion with the opposing arch. After the acrylic has dried, the denture is taken off (fig 8). Around the housings and lingual vent hole, extra acrylic is scraped off before it is polished. Instead of processing an insert into the housings, replace it with a nylon retention insert. The insert must be level with the rim of the housing and well seated. The ball abutments are covered by the overdenture. Post-operative oral view is given in fig 9-10. The patient was given proper instructions on how to insert and remove the prosthesis. The patient was called back for follow-up visits after one week, three weeks, three months, and six months.



Fig. 8. Final denture



Fig. 9. Post -operative intra-oral view



Fig. 10. Post-operative extra-oral view

DISCUSSION

It has been demonstrated that using two implants in the mandibular arch has improved prosthesis stability and prevented rotating forces of the components[7].The wearing down or disengagement of the attachments is prevented by positioning two independent implants at the same height, equally spaced from the midline, parallel to one another, and with the right angulation. Achieving parallelism is essential Correct angulation is the most serious error[8]. The idea that a minimum treatment option for edentulous patients should be a 2-implant supported mandibular overdenture is now backed by a substantial body of evidence. Patients regularly report preferring ISODs over traditional complete dentures, according to systematic reviews and a substantial number of RCTs that have included patient-based assessment of outcomes like patient satisfaction and oral-health related quality of life[9-10]. In-depth qualitative assessments by patients provides more proof. The advantages of ISODs come from objective assessments of masticatory performance, which demonstrate that ISODs significantly improve masticatory performance compared to CDs for both the mandible and maxilla in patients with chronic functional issues caused by a pre-existing mandibular CD from a severely resorbed mandible[11-12].

There are currently enough studies using patient satisfaction and oral health-related quality of life outcomes to show that the data consistently indicates to real benefits of ISODs over CDs for rehabilitating the edentulous mandible. The research backs up the McGill and York consensus statements that the primary line of treatment for an edentulous mandible should be mandibular implants. The McGill and York consensus statements recommend that all patients who would prefer them and are likely to benefit clinically should at least be given the choice of ISOD's. This is despite the fact that patient preference should be taken into consideration, for instance, some patients are uneasy about implant surgery[13]

CONCLUSION

Patients with edentulous mouths frequently have trouble wearing traditional dentures. Progressive bone resorption undermines their support, leading to increased patient instability, unease, and discomfort.

Overdentures are a predictable and safe therapeutic option that offers a high level of patient satisfaction thanks to easier cleanliness and effective chewing. In some circumstances, such as those with lip support loss or an interocclusal space more than 15 mm, the use of overdentures is less expensive than fixed prostheses and will help prevent future cosmetic or phonetic issues.

CONFLICT OF INTEREST: Nil

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