

**Use of Implant Retained Overdenture in Atrophic Mandible - A Case Report****Sheren Fatima<sup>1</sup>, Rajarshi Basu<sup>2</sup>, Neelkamal Hallur<sup>3</sup>, Aaisha Siddiqua<sup>4</sup>, Syed Zakaullah<sup>4</sup>, Sumaiyya<sup>2</sup>, Chaitanya Kothari<sup>1</sup>**

<sup>1</sup>Reader, Department of Oral and Maxillofacial Surgery, Al Badar Dental College and Hospital, Gulbarga, Karnataka, India; <sup>2</sup>Post Graduate Student, Department of Oral and Maxillofacial Surgery, Al Badar Dental College and Hospital, Gulbarga, Karnataka, India; <sup>3</sup>Professor and Head, Department of Oral and Maxillofacial Surgery, Al Badar Dental College and Hospital, Gulbarga, Karnataka, India; <sup>4</sup>Professor, Al Badar Dental College and Hospital, Gulbarga, Karnataka, India.

**Address for Correspondence:**

Dr. Rajarshi Basu, Post graduate student, Department of Oral and Maxillofacial Surgery, Al Badar Dental College and Hospital, Gulbarga, Karnataka, India.

**ABSTRACT:**

Edentulous patients with a severely resorbed mandible or maxilla often experience problems with conventional dentures, such as insufficient stability and retention, together with a decrease in chewing ability. Further, achieving proper stability becomes more problematic when the mandibular ridge is greatly resorbed. The traditional treatment modality for the edentulous patient is the fabrication of complete removable maxillary and mandibular dentures. But when it comes to denture stability and patient satisfaction, they are hardly any match for the implant retained over-dentures. In this case report a 65 year old male patient presented with completely edentulous upper and lower arch. He was denture wearer since the last 15 years with worn out occlusal surfaces and collapsed lower face height. He had tried a number of conventional complete dentures but was not satisfied with the results. Treatment plan included placement of two implants of 3.6mm diameter, 10 mm height with ball and socket abutment in the inter-mental region. When providing a two implant retained mandibular overdenture various attachment types are available: splinting the implant by means of a bar construction or loading them separately through ball-socket attachment, telescopic crown attachments, magnets, bar attachment. In this case the ball and socket type of attachments were used, which provides better retention hence increasing the comfort and functional ease of the overdenture. The patient has been on a 2 year follow-up since the denture fabrication and is highly satisfied with the results.

**Keywords:** Atrophic mandible, Ball abutments, Implant retained overdentures.

**INTRODUCTION**

Edentulous patients with a severely resorbed mandible or maxilla often experience problems with conventional dentures, such as insufficient stability and retention, together with a decrease in chewing ability.<sup>1</sup> Further, achieving proper stability becomes more problematic when the mandibular ridge is greatly resorbed. Continued bone loss in such patients causes compromise in esthetics, function, and health.<sup>2</sup> The traditional treatment modality for the edentulous patient is the fabrication of complete removable maxillary

and mandibular dentures. The fabrication process for traditional dentures are relatively simpler and are much economic for the patients.<sup>3</sup> But when it comes to denture stability and patient satisfaction, they are hardly any match for the implant retained over-dentures. The rate of residual ridge resorption in edentulous patients in mandible is much greater than maxilla. This resorption can render the current prosthesis inadequate and could end up in the patient acquiring an array of dentures from multiple dentists. Further with the advent of low-cost dental

implants, it has now become possible for the dentist to provide his patients with implant retained over dentures at reasonable prices. Many options are available for retention of the prosthesis, including magnets, clips, bars, and balls and socket abutments.<sup>4</sup>

### CASE REPORT

A 65 year old male patient presented with completely edentulous upper and lower arch. The patient was denture wearer since the last 15 years. The patient had worn out occlusal surfaces and collapsed lower face height. Routine blood investigations according to the standard surgical protocol were done and other investigations like radiographs including occlusal x-rays, intra-oral periapical radiographs and orthopantomograph were done to determine the bone density. The patient being diabetic, pre-operative blood sugar assessment was also done. The patient had tried a number of conventional complete dentures but was not satisfied with the results and wanted an affordable alternative to meet his needs. Treatment plan included two stage surgery with placement of two implant of 3.6mm diameter, 10 mm height with ball and socket abutment in the inter-mental region due to compromised bone availability. The ball and socket abutment used enhances the retention of the denture.



Figure 1: Pre-Op Occlusal View

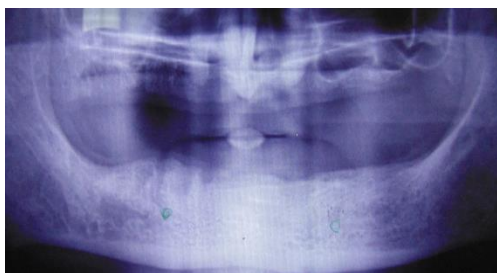


Figure 2: Pre-Op OPG



Figure 3: Edentulous Mandibular Arch



Figure 4: Incision & Reflection



Figure 5: Osteotomy



Figure 6: Post-Op OPG

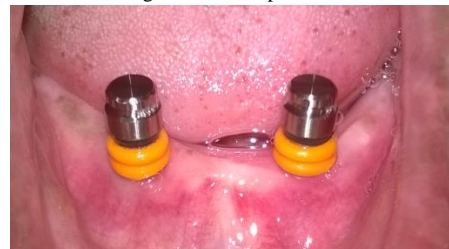


Figure 7: Ball & Socket Abutment



Figure 8: Prosthesis

## DISCUSSION

In the present case due to anatomical limitations in the posterior region (the minimum bone height of 10 mm is required above the mandibular canal), two implants were placed in the anterior region of the jaw. Manal A Awad et al in one of his studies concluded that the mandibular two implant overdentures rated general satisfaction, comfort, stability and overall ease of chewing significantly higher than the conventional denture.<sup>9</sup> Boerrigter et al reported that one year after receipt of treatment there were significantly fewer functional complaints from subjects wearing mandibular two implant overdenture than those wearing conventional denture.<sup>10</sup>

When providing a two implant retained mandibular overdenture various attachment types are available: splinting the implant by means of a bar construction or loading them separately through ball-socket attachment, telescopic crown attachments, magnets, bar attachment.

In this case the ball and socket type of attachments were used, which provides better retention hence increasing the comfort and functional ease of the overdenture. Approximately one-third of patients older than 65 years of age are fully edentulous, requiring replacement of missing teeth. While the conventional denture may meet the needs of many patients, others require more retention, stability, function and esthetics, especially for the mandibular dentures. The implant-supported prosthesis is a better alternative to the conventional complete denture. The implant-supported overdenture has many advantages. Although as few as 2 to 4 implants may be used for support, it is beneficial to use more than 2 implants in the unlikely event that one of the implants fails during the patient's life span. Meijer et al<sup>1</sup> conducted a finite element analysis of 2 versus 4 implants placed in the interforaminal region of the mandible. In neither of the models was a reduction of the principle stresses clearly demonstrated if the load was uniformly distributed. The resultant

implant supported denture has good stability and retention, and patients who have received them have reported improved function and satisfaction. A number of authors<sup>5-8</sup> have hypothesized that it is appropriate to use 2 implants with an interconnector parallel to the hinge axis and a resilient overdenture on an ovoid or round bar. Their aim was to enhance free rotation during dorsal loading with twist-free load transmission to the implants. However, a review of mandibular overdenture treatment concepts proposes that these concepts were based on empirical data, and the use of a rigid versus moveable retention mechanism remains controversial.<sup>9,10</sup> It has been seen that solitary ball attachments are less costly, less technique sensitive<sup>11</sup> and easier to clean<sup>12</sup> than bars. Moreover, the potential for mucosal hyperplasia reportedly is more easily reduced with solitary ball attachments.<sup>13</sup> Bars, however, have been shown to be more retentive. No surgical procedure, including the placement of implants, is without risk. The risks associated with implant placement include post-operative bleeding, numbness, infection and lack of osseointegration. The risks can be minimized with proper training and experience. Case selection is the key to success with implant procedures, as with all dental procedures. Other risk factors also may affect the outcome of the implant-supported prosthesis. Smoking is a risk factor for long-term implant success. Patients, who smoke, are more likely to experience infection and/or progressive alveolar bone loss, which ultimately may lead to implant loss. Untreated periodontitis is also a risk factor for the failure of dental implants. Fully edentulous patients do not have periodontitis, but even after the extraction of a single tooth with periodontal disease, the site may harbor pathogenic bacteria that may lead to peri-implantitis. Factors that may influence the healing or potential infection of the implant recipient site also may affect the outcome. Uncontrolled diabetes and use of drugs such as steroids need to be carefully considered in the treatment plan, and the

clinician may need to adjust time to loading accordingly. Anatomy and bone quality also affect the outcome and ease of surgical placement of implants. Implants need adequate bone height and width for placement. If the native bone at the recipient site is inadequate to accept the implant, bone grafts with or without guided bone regeneration must be considered. Bone quality, which is related to density of the trabecular bone, usually is not a problem in the anterior mandible.<sup>4</sup>

### CONCLUSION

Ball attachments are economical and easily available for overdenture. Fabrication with them is easier as compared with other attachments such as Graber, Dalbo, Rotherman and Zest anchor. Laboratory procedure for attaching ball attachments provides more durable and long lasting prosthesis as compared with chair side procedure. These attachments are reliable and more acceptable by the patient.

### REFERENCES

1. Meijer HJ, Starmans FJ, Steen WH, Bosman F. A three-dimensional finite element study on two versus four implants in an edentulous mandible. *Int J Prosthodont* 1994;7:271-9.
2. Batenburg RH, Raghoobar GM, Van Oort RP, Heijdenrijk K, Boering G. Mandibular overdentures supported by two or four endosteal implants. A prospective, comparative study. *Int J Oral Maxillofac Surg* 1998;27:435-9.
3. Mericske-Stern R. Clinical evaluation of overdenture restorations supported by osseointegrated titanium implants: a retrospective study. *Int J Oral Maxillofac Implants* 1990;5:375-83.
4. Misch CE. *Contemporary Implant Dentistry*. 2nd ed. Mosby: St. Louis (MO); 1999:179.
5. Sadowsky SJ. Mandibular implant-retained overdentures: a literature review. *Journal of prosthetic dentistry* 2001;86:468-73.
6. Aard NJ, Zarb GA. Long-term treatment outcomes in edentulous patients with implant overdentures: the Toronto study. *International journal of prosthodontics* 2004;17:425-33.
7. Redford M, Drury TF, Kingman A, Brown LJ. Denture use and the technical quality of dental prostheses among persons 18-74 years of age: United States, 1988-1991. *Journal of dental research* 1996;75:714-25.
8. Meijer HJ, Raghoobar GM, Van Hof MA. Comparison of implant-retained mandibular overdentures and conventional complete dentures: a 10-year prospective study of clinical aspects and patient satisfaction. *International journal of oral & maxillofacial implants* 2003;18:879-85.
9. Feine JS, Carlsson GE, Awad MA, Chehade A, Duncan WJ, Gizani S, Head T, et al. McGill consensus statement on overdentures. Mandibular two-implant overdentures as rst choice standard of care for edentulous patients. *Gerodontology* 2002;19:3-4.
10. Nissan J, Oz-Ari B, Gross O, Ghelfan O, Chaushu G. Long-term prosthetic care of direct vs. Indirect attachment incorporation techniques to mandibular implant-supported overdenture. *Clinical oral implants research* 2011;22:627-30.
11. Omason JM, Lund JP, Chehade A, Feine JS. Patient satisfaction with mandibular implant overdentures and conventional dentures 6 months after delivery. *Int J Prosthodont* 2003;16:467-73.
12. Awad MA, Lund JP, Dufresne E, FeineJS. Comparing the efficacy of mandibular implant-retained overdentures and conventional dentures among middle-aged edentulous patients: satisfaction and functional assessment. *Int J Prosthodont* 2003;16:117-22.
13. Awad MA, Lund JP, Shapiro SH, Locker D, Klemei E, Chehade A, Savard A, Feine JS. Oral health status and treatment satisfaction with mandibular implant overdentures and conventional dentures: a randomized clinical trial in a senior population. *Int J Prosthodont* 2003;16:390-6.

**How to cite this article:** Fatima S, Basu R, Hallur N, Siddiqua A, Zakaullah S, Sumaiyya, Kothari C. Use of Implant Retained Overdenture in Atrophic Mandible - A Case Report. Arch of Dent and Med Res 2016;2(3):134-138.