

Implant Supported Over Denture (Bar and clip): A Case Report

NB Prashanth^{1*} Snigdha Hara² K Sravanthi³ Ravi UD⁴ Mohammed Khwaja Moinuddin⁵

¹Senior Lecturer, Department of Prosthodontics, SVS Institute of Dental Science, Mahbubnagar, Telangana, India.

²Private Consultant, Department of Prosthodontics, Sowjanya Dental Hospital, Hyderabad, Telangana, India.

³Private Consultant, Department of Prosthodontics, Sowjanya Dental Hospital, Hyderabad, Telangana, India.

⁴Private Consultant, Department of Prosthodontics, Sowjanya Dental Hospital, Hyderabad, Telangana, India.

⁵PG Student, Department of Conservative Dentistry and Endodontics, Sri Sai College of Dental Surgery, Vikarabad, Telangana, India.

ABSTRACT

Background: Bar and clip attachments are used to increase the retention and stability of the prosthesis thereby considerably improving the level of satisfaction of patients. These attachments are generally employed for connecting the prosthesis to implants, but also can be used successfully to retain tooth-supported prosthesis. Here we report a case of implant supported over denture (Bar and clip).

Keywords: dental implants, edentulous, retention, overdenture.

INTRODUCTION

An implant supported denture is a form of over denture that is supported by and attached to implants. Normally dentures rest on the gingiva, and is not supported by implants. Removable complete dentures are usually suggested to the patients who are edentulous. But there are conditions in which even though patients are edentulous, they have adequate bone in the jaw. In such cases implant supported over dentures are suggested. Such dentures have special attachments that snap onto attachments on the implants.^{1, 2}

Patients usually complain more about lower dentures as they are less stable, whereas upper dentures do have a support, therefore are supposed to be more stable. Hence implant supported dentures are usually made for the lower jaw. But such implant supported dentures can be made for either of the jaws or both jaws.³

The main functions of bar attachments are to splint the abutments, to distribute forces equally to the abutments and supporting areas, to guide the prosthesis into place, improves the retention,

stability, support and comfort of the patient. For successful bar attachments, there should be sufficient vertical and buccolingual space and adequate thickness of acrylic denture base to reduce frequency of denture fracture in the area of bar assembly.⁴ Here we report such a case where implant supported over denture (Bar and clip) was made.

CASE REPORT

A female patient aged 42 years came to our clinic with a chief complaint of missing teeth in her upper and lower arches and wanted the teeth to be replaced. Both medical and personal history were normal.

On clinical examination both the upper and lower arches were completely edentulous. On radiographic examination the bone density available was good for a favourable prognosis for an implant supported over denture in the lower arch. So three implants were planned in the lower arch for implant supported Hader bar and clip over denture.

Received: Feb. 2, 2016; Accepted: Apr. 15, 2016

*Correspondence Dr. NB Prashanth.

Department of Prosthodontics, SVS Institute of Dental Science, Mahbubnagar, Telangana, India.

Email: nprashanth60@gmail.com



Fig 1: Intra-operative photograph-Implants placed.



Fig 2: Implants after 4 months of healing period.



Fig 3: Processing of Hader bar and clip.



Fig 4: Processing of the dentures -Bar and clip.



Fig 5: Final denture placed.

Initially we made an incision in the anterior lower jaw area where the implant is supposed to be placed. Then a hole was drilled in the bone in to which the implant is placed and then the incision area is sutured and closed. Then we waited for 4 months before scheduling the second surgery. During this time, the bone and the implants integrated (Fig 1 and 2). Then we made a temporary denture until the implant-supported denture was placed. The advantage of this denture we supposed was we were able to determine the best position for the teeth in the final denture.

Once we thought that the implants have become fused with the bone, the second surgery was carried out. A small incision was made in the same area in order to expose the tops (heads) of the implants. A healing cap (collar), a round piece of metal that holds the gingiva away from the head of the implant, was placed on the head of each implant after it was exposed. This collar was placed for 10 to 14 days.

Two weeks after the second surgery, the healing caps were replaced with regular abutments. Then an impression was made to make the denture framework and teeth. A metal bar was placed on the abutments. The prepared denture framework was try in to see if it fitted properly (Fig 3 and 4). Once we found that the metal bar and the denture framework have been fitted together properly, the teeth were temporarily placed on the framework in wax. The whole denture was then tried and the teeth were secured in the denture framework permanently. The denture was clipped onto the bar (Fig 5). The patient was given instructions like to remove the denture at night and carefully clean around the attachments. The attachments have to

be regularly checked, hence the patient was called for regular visits.

DISCUSSION

Retention of over dentures depends on the site, design and the alignment of supporting dental implants and also on the type of attachments. Implant supported dentures can be broadly categorized in to 2 types: bar-retained and ball-retained. The denture in both the types is made up of acrylic base with porcelain or acrylic teeth attached to it. For a successful prosthesis, it is suggested by various authors to have a minimum of two implants for support.¹⁻³

The procedure for bar-retained dentures is that initially implants are placed in to the jaw, then a thin metal bar is attached to the implants. Attachments like clips are fitted to the bar, denture or both. Then the denture is fit over the bar and is securely clipped into place by attachments.⁵

In the ball-retained dentures (stud-attachment dentures), each implant that is placed in the jawbone holds a metal attachment which in turn fits into another attachment that is on the denture. The attachments on the implants are ball-shaped and are called as male attachments and the sockets in to which they fit on the denture are called as female attachments. Few cases have been reported that have male attachments on the denture and the female attachments on the implants.^{1,6}

Dentists usually have the confusion of where to place implants. Studies have shown that anterior jaw tends to have more supporting bone even in cases where there is loss of teeth for considerable time. The other factor that favours anterior jaw region is that this site is usually devoid of vital structures like nerves or other attachments that might hinder with the placement of implants.^{3,7}

Another important factor regarding the placement of implants is the time frame for the completion of implants. It varies depending on many conditions like in upper jaws, 7 months should be sufficient where as in lower jaws 5 months is considered to be sufficient. This time frame should include surgery and also the placement of the denture. But in cases which necessitate bone grafting or other preliminary

procedures, the process can be done for a year or more.⁸

The main problem to the patients is the need of two surgeries, the first one to place the implants in the jawbone and the second one to expose the tops of the implants. The second surgery is usually done three to six months after the first. Now a days a single stage procedure in which implants and the supporting bar are placed in one step. The success rate of this procedure was found to be high.⁹

The major advantage of implant-supported denture is that such dentures will be more stable than a normal denture. Such a bar retained over denture can be used in both the upper and lower jaws. Apart from cleaning dentures after removing them at nights, patients have to brush the bar which remains attached to the implants in the mouth.^{1,10}

Bar systems may find use in over dentures, removable partial dentures, and implant based prosthesis. The role of bars which may be either rigid or resilient is to direct forces away from the retaining abutments to the supportive bone and tissue. Bar systems are of three types:

1. Direct Retainers, like Hader or Dolder bar systems
2. Incorporated into the bar, like Locator or Clix bar attachments.
3. Offset attachments, like Plunger Loc, Sagix, or Vertix.

We used the Hader Bar and rider system as this system is the most popular of all bar systems due to its cost effectiveness and simple procedure. Hader bars are preferred as they provide both stability and retention.^{1,2,10}

Complications

Complications due to Implant supported over dentures might be related to the surgical procedure, failure of implants or bar attachments. Main drawback is that a bar-retained denture needs space on the denture framework for the special attachments that are fitted to the bar. Therefore there will be less space available on the denture framework for the teeth to be placed. This might result in loose teeth. Another complication is regarding placement and balancing of bar

attachments and implants. Otherwise parts of the denture might break or implants may become loose.^{1, 3, 6}

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Savabi O, Nejatidanesh F, Yordshahian F. Retention of implant-supported overdenture with bar/clip and stud attachment designs. *J Oral Implantol*. 2013;39(2):140-7.
2. Laurito D, Lamazza L, Spink MJ, De Biase A. Tissue-supported dental implant prosthesis (overdenture): the search for the ideal protocol. A literature review. *Annali di Stomatologia* 2012; III (1): 2-10.
3. Savabi O, Nejatidanesh F, Yordshahian F. Retention of Implant-Supported Overdenture With Bar/Clip and Stud Attachment Designs. *Journal of Oral Implantology*. 2013; XXXIX: 140-7.
4. Feine JS, Carlsson GE, Awad MA, et al. The McGill consensus statement on overdentures: mandibular two-implant overdentures as first choice standard of care for edentulous patients. Montreal, Quebec, May 24–25, 2002. *Int J Oral Maxillofac Implants*. 2002;17:601–602.
5. Cune M, van Kampen F, van der Bilt A, Bosman F. Patient satisfaction and preference with magnet, bar-clip, and ball-socket retained mandibular implant overdentures: a cross-over clinical trial. *Int J Prosthodont*. 2005;18:99–105.
6. Chung KH, Chung CY, Cagna DR, Cronin RJ Jr. Retention characteristics of attachment systems for implant overdentures. *J Prosthodont*. 2004;13:221–226.
7. Rutkunas V, Mizutani H, Takahashi H. Influence of attachment wear on retention of mandibular overdenture. *J Oral Rehabil*. 2007;34:41–51.
23. Svetlize CA, Bodereau EF Jr. Comparative study of retentive anchor systems for overdentures. *Quintessence Int*. 2004;35:443–448.
24. Evtimovska E, Masri R, Driscoll CF, Romberg E. The change in retentive values of Locator attachments and Hader clips over time. *J Prosthodont*. 2009;18:479–483.
8. Alsabeeha NHM, Payne AGT, Swain MV. Attachment systems for mandibular two-implant overdentures: a review of in vitro investigations on retention and wear features. *Int J Prosthodont*. 2009;22:429–440.
9. Wright PS, Watson RM. Effect of prefabricated bar design with implant-stabilized prostheses on ridge resorption: a clinical report. *Int J Oral Maxillofac Implants* 1998; 13:7781.
10. Wismeijer D, Van Waas MAJ, Mulder J, Vermeeren JJ, Kalk W. Clinical and radiographical results of patients treated with three treatment modalities for overdentures on implants of ITI dental implant system. A randomized controlled clinical trial. *Clin Oral Implants Res* 1999;10: 297306.