

# Half sphere and single clip-bar retained implant supported silicone auricular prosthesis

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## ABSTRACT

Implant supported auricular prosthesis can be retained by several mechanical means, one of them being the Hader bar and clip system. Conventionally two or more rider clips are used. This technique describes a modified Hader bar design to maintain retention while eliminating the requirement of a second clip, significantly bringing down cost.

## 1. Introduction

Success of auricular prosthetics is dependent on retention. Extra-oral implants along with providing predictable retention, a definitive path of placement and freedom to feather the edges, negate the use of adhesives thus prolonging the longevity of the prosthesis and eliminating irritable tissue reaction.<sup>1</sup> Implant retained prostheses may be retained by various means such as bar and clip, and magnetic attachments.<sup>2</sup> The commonest problem encountered with the bar and clip system is loosening of the clips after 3–4 months, with recurrent expenditure needed.<sup>3</sup>

This technique proposes modifications in the Hader bar retained auricular prosthesis to increase the retention, prevent movement of the prosthesis in multiple planes and reduce retentive clip requirement.

## 2. Technique

1. Perform routine 2 implant retained auricular prosthesis procedures till the second stage surgery. Place healing abutments and recall the patient after 7–10 days.
2. Make an implant level impression using open tray impression copings in addition poly-vinyl siloxane(PVS) impression material (3 M ESPE Dental Products, St. Paul,MN) by applying a thin layer of light-body PVS around the copings and over the area where the prosthesis would be fabricated (after scribing orientation marks on the tissues).<sup>4</sup> Back this in putty viscosity addition PVS.
3. When the material sets, unscrew the impression copings and remove the impression. Connect implant analogs to the

impression coping and pour the model in die stone (Kal Rock, Kalabhai Karson Pvt. Ltd., Mumbai, India).

4. Fabricate a jig in pattern resin (Pattern Resin, GC America) to verify the implant position recorded, and check on site for passive seating. If required, reconnect the jig and make a new set of impressions & models, as described above.
5. Place UCLA/plastic sleeve abutments on both implant analogs.
6. Cut a prefabricated plastic Hader bar (Preci-Horix, Alphadent NV, Belgium) into two (the second half can be used for fabricating another prosthesis) and join the UCLA abutment sleeves<sup>5</sup> with required length of the cut bar.
7. Extend this bar in inlay casting wax, 8–10 mm beyond the lower implant at 45-degree angle in the same plane.
8. Ensure that the entire bar remains within the thickest portion of the prosthetic ear i.e., anti-helix and anti-tragus, by employing a pattern or stent. This is done for esthetic reasons and to prevent prosthetic tearing.
9. Also ensure that the entire bar should have a clearance of at least 2 mm from underlying soft tissue. This facilitates cleansibility and prevents tissue irritation.
10. At the end of the 45-degree extended bar, fabricate a half spherical attachment, 5 mm in diameter, again using type 2 casting inlay wax (Kement, UK). The flat surface of the semi-sphere connects with the bar.
11. Cast the framework (Wirolloy, Bego Dental Products, Bremen, Germany), finish, polish and assure passive fit (Fig. 1).

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12. Position the bar on the model with the sole rider clip on the bar portion between the UCLA abutments. Block undercuts of the bar and custom-made attachment with wax and fabricate a housing in self-cure acrylic resin (Rapid Repair, Dentsply) to pick up the retentive clip.
13. Roughen and groove the external surface of acrylic housing to improve bonding with silicone in the final prosthesis.
14. Create the wax pattern over this housing. Alter, adjust and try out the ear patterns.
15. Color match, create a 3 part mold, flush out wax, prime the housing, pack with silicone,<sup>6</sup> polymerize and characterize as per routine (Fig. 2).

### 3. Discussion

The proposed modification is a cost-effective way to retain and stabilize the prosthesis in 3 planes (with the 45-degree cantilever segment), using half Hader bar and one rider clip, for 1 auricular prosthesis. Hader bar system comes with 1 bar and 2 rider clips. As the half sphere attachment is cast with the bar, it eliminates use of second rider clip, which can then be used with the remaining Hader bar for a second ear prosthesis in the same or a different patient. The longevity of the clip retention may be enhanced as well, with the attachment being an accessory retentive feature not burdening the clip alone.

The cantilever should not extend more than 8–10 mm, to prevent transfer of excessive forces on the implants, compromising their long-term success. Disadvantages of the design involve extra laboratory steps and increased bulk of attachment.

### 4. Summary

This technique describes a modification to the Hader bar in implant retained auricular prosthesis to prevent movement of the prosthesis in multiple planes, decrease cost and enhance retention.

### Ethical approval

Ethical approval is not required. However informed consent form has been filled out by the patient.



Fig. 2. Silicone prosthesis with acrylic substructure and clip.

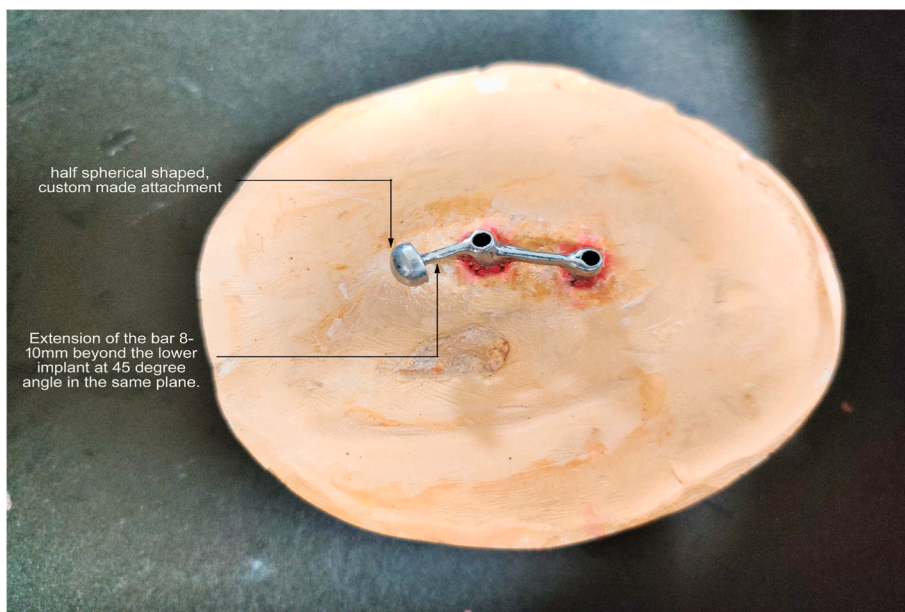


Fig. 1. Hader Bar with half-spherical attachment.

### Declaration of competing interest

None of the authors declares a conflict of interest.

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