



Hidden Overdenture Bar in Fixed Implant-retained Hybrid Prosthesis: Report of a Novel Technique

¹Prajna P Shetty, ²Makam Gangaiah, ³Ramesh Chowdhary

ABSTRACT

Introduction: Every patient needs a comprehensive treatment planning. Dentists must consider the advantages and disadvantages of the available implant prosthetic options and match them to patient's expectations. Hybrid denture prosthesis is one, i.e., fabricated and retained by screw threaded into implant abutments, most of the time on four implants. Sometimes due to failure of an implant, the prosthesis needs to be replaced with a newer casting to accommodate the existing implants.

Clinical consideration: This article presents a novel technique, wherein the existing framework of the fixed prosthesis can be used to convert the fixed prosthesis to removable prosthesis on the existing implants, without recasting.

Clinical significance: The implant is economical and easily convertible from a fixed-fixed to a fixed-removable prosthesis. Hence, there is reduced morbidity, reduced cost, and an increased psychological comfort for the patient.

Keywords: Dental implants, Hidden bar, Hybrid prosthesis, Overdenture.

How to cite this article: Shetty PP, Gangaiah M, Chowdhary R. Hidden Overdenture Bar in Fixed Implant-retained Hybrid Prosthesis: Report of a Novel Technique. J Contemp Dent Pract 2016;17(9):780-782.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Every patient needs a comprehensive treatment planning. Dentists must consider the advantages and disadvantages

of the available implant prosthetic options and match them to patient's expectations.¹ A hybrid denture prosthesis is one, i.e., fabricated and retained by screw threaded into implant abutments, most of the time on four implants.² A passive-fitting substructure for fixed removable screw-retained hybrid prosthesis is arguably one of the most technically intricate tasks in implant dentistry. The rehabilitation of edentulous patients with hybrid dentures has been observed to achieve greater masticatory function and psychological satisfaction than with conventional overdentures.² It can be a fixed-fixed type or a fixed-removable type of prosthesis. Each of them has a varied amount of advantages and their own shortcomings. Sometimes, due to failure of an implant, the prosthesis needs to be replaced with a newer casting to accommodate the existing implants. To harness the advantages of both types, a novel way of fabrication of the prosthesis has been explained.

CASE REPORT

A 40-year-old female presented to our department with complete edentulous maxillary and mandibular arch. An all-on-four implant-supported hybrid prosthesis was planned for both the arches and was conveyed to the patient. After consent from the patient, surgical placement of four implants in maxilla and four in mandible was carried according to the protocols of the all-on-four concept (Fig. 1).

At the time of follow-up after 3 months, it was found that one of the maxillary implants was mobile and was required to be retrieved (Fig. 2). After retrieval of the failed implant, the patient was not willing for any further implant placements. Hence, it was decided to go ahead with the existing three implants in maxilla and four implants in the mandible. Due to the financial constraints of the patient, it was decided that, even after any additional implant failure in future, the prosthesis

¹⁻³Department of Prosthodontics, RajaRajeswari Dental College and Hospital, Bengaluru, Karnataka, India

Corresponding Author: Prajna P Shetty, Department of Prosthodontics, RajaRajeswari Dental College and Hospital Bengaluru, Karnataka, India, Phone: +919880200298, e-mail: prajna.shetty21@gmail.com

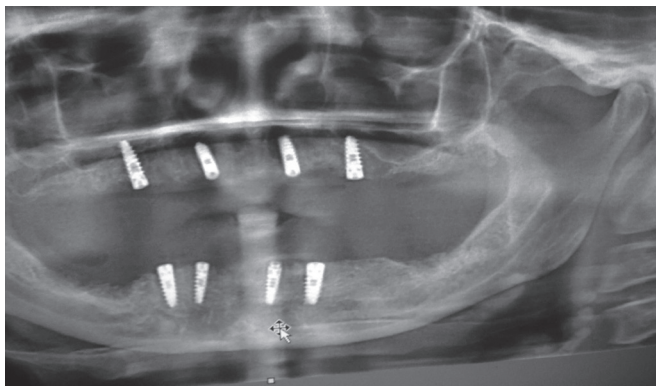


Fig. 1: Radiograph showing four implants each placed in maxillary and mandibular edentulous arch

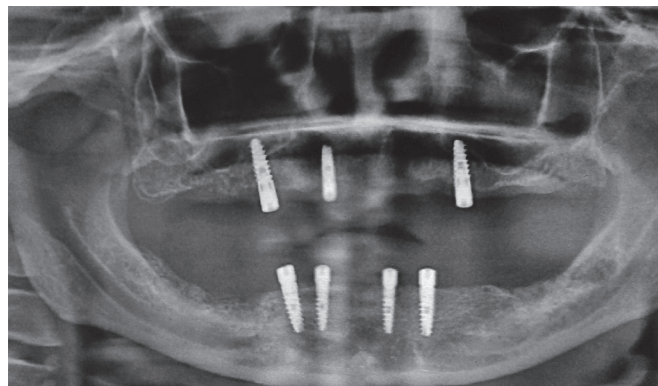


Fig. 2: Radiograph showing one implant failed in the maxillary arch from the previous four implants placed

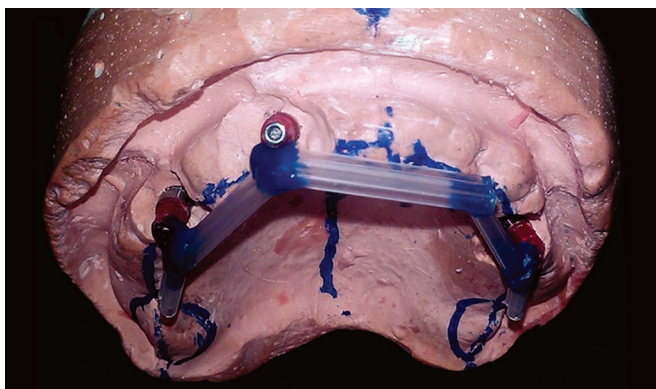


Fig. 3: Wax pattern framework of the coffee stick bar connected on to the UCLA abutments mounted on the cast



Fig. 4: Casted Hader bar connected to dental implants

made can be converted and can be used as bar-retained overdenture, without redoing the framework.

Technique

- UCLA non-hex abutments were used, the custom abutments were milled and checked for parallelism with a surveyor, and these milled abutments were connected with each other with a coffee straw with the help of inlay wax.³ The coffee straw mimicked the Hader bar in size and dimension accurately (Fig. 3).³
- The wax pattern was thus invested and casted into a nickel chromium bar framework. The framework was checked for the fit in the mouth, which was confirmed with an orthopantomogram. Special care was taken to see that the Hader bar design of the bar is maintained (Fig. 4).
- The bar was enveloped in the modeling wax, and jaw relation recording was carried out in the patient's mouth followed with teeth arrangement. Once the try-in was satisfactory esthetically and functionally, heat cure polymerization was carried out in the routine procedure.
- The cured hybrid prosthesis was finished and polished, and access vents were made in the place of

abutment screws in the hybrid prosthesis. After occlusal corrections and patient's concern, the prepared prosthesis was tightened in the patient's mouth, followed by a confirmatory radiograph to check for the final fit of the prosthesis (Figs 5 and 6).

- A 2-year periodic follow-up showed no bone loss or any other untoward failures or problems, which is our minitstep toward success.

DISCUSSION

Dental implant-retained restorations in edentulous patients can be performed by screw-retained prosthesis, screw-retained metal-ceramic prosthesis, and cement-retained metal ceramic prosthesis.⁴ Polymethyl methacrylate denture bases have a very good biological, mechanical, and esthetic properties.⁴ The hybrid gets its strength from the metal substructure that limits the chances of fracture. Use of screw-retained prosthesis is recommended in cases of poor denture retention.⁵⁻⁷ The rehabilitation of the edentulous patients with hybrid dentures has proven to achieve greater masticatory function, esthetics, and psychological satisfaction than conventional overdentures, and it is more affordable with similar results than the full mouth implants.^{8,9}

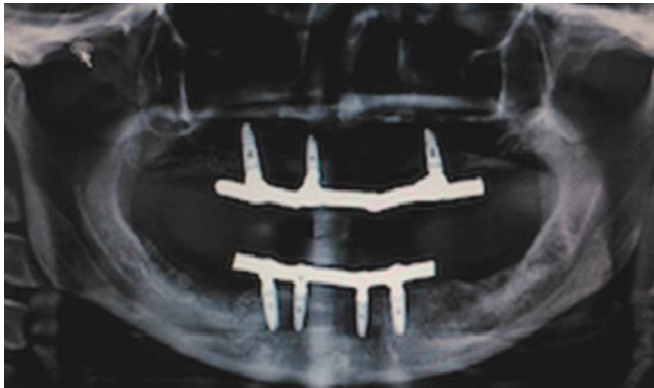


Fig. 5: Radiographic image showing coffee stick bar fitted on the implants intraorally



Fig. 6: Hybrid prosthesis *in situ* made on the coffee bar framework

Bar-retained implant hybrid prosthesis is usually customized with a Hader bar. In the present technique, plastic coffee straw (stirrer), which mimics the dimension and size of the Hader bar, was used. The purpose of using a Hader bar design, instead of a conventional metal frame for the hybrid prosthesis design, was to provide a hidden overdenture bar. In case the patient is not maintaining the fixed prosthesis in a good condition (it is mandatory to maintain oral hygiene), the prosthesis can be removed any time. This fixed prosthesis can be converted to a bar-retained removable overdenture, just by removing the acrylic portion of the prosthesis and providing retentive clip to the newly made overdenture and connecting the attachments to the existing Hader bar. When an existing implant fails, in an all-on-four concept, the prosthesis can be converted to a removable overdenture, and the hidden bar concept can thus be useful.

CONCLUSION

This novel concept of hidden overdenture bar designed for a hybrid prosthesis will be very helpful in easily converting a fixed implant-supported restoration to a removable implant-supported restoration, without changing the metal framework, thus providing an economical approach to the clinicians and patients.

REFERENCES

1. Branemark PI, Svensson B, van Steenberghe D. Ten-year survival rates of fixed prostheses on four or six implants ad modum Branemark in full edentulism. *Clin Oral Implants Res* 1995 Dec;6(4):227-231.
2. Adell R, Eriksson B, Lekholm U, Branemark PI, Jemt T. Long-term follow-up study of osseointegrated implants in the treatment of totally edentulous jaws. *Int J Oral Maxillofac Implants* 1990 Winter;5(4):347-359.
3. Guttal SS, Shetty US. Coffee straw can replace Hader bar for bar retained overdentures – a clinical report. *Eur J Prosthodont Restor Dent* 2012 Dec;20(4):181-183.
4. Cobb GW Jr, Metcalf AM, Parsell D, Reeves GW. An alternate treatment method for a fixed-detachable hybrid prosthesis: a clinical report. *J Prosthet Dent* 2003 Mar;89(3):239-243.
5. Salenbauch NM, Langner J. New ways of designing suprastructures for fixed implant-supported prostheses. *Int J Periodontics Restorative Dent* 1998 Dec;18(6):604-612.
6. Taylor TD, Agar JR. Twenty years of progress in implant prosthodontics. *J Prosthet Dent* 2002 Jul;88(1):89-95.
7. Mericske-Stern R. Treatment outcomes with implant-supported overdentures: clinical considerations. *J Prosthet Dent* 1998 Jan;79(1):66-73.
8. Bauman GR, Mills M, Rapley JW, Hallmon WW. Plaque-induced inflammation around implants. *Int J Oral Maxillofac Implants* 1992 Fall;7(3):330-337.
9. Jain AR, Nallaswamy D, Ariga P, Philip JM. Full mouth rehabilitation of a patient with mandibular implant screw retained Fp-3 prosthesis opposing maxillary acrylic removable overdenture. *Contemp Clin Dent* 2013 Apr;4(2):231-235.