

Coffee Straw can Replace Hader Bar for Bar Retained Overdentures – A Clinical Report.

S.S. Guttal* and U.S.Shetty*

Abstract - Bar attachment system provides retention and support for the overdenture. Retention of a mandibular denture can be achieved by an implant-retained or natural tooth-retained bar and stud attachment in the anterior segment of the mandible. A simple and cost effective treatment for more complex implant overdenture is the concept of conventional tooth-retained overdentures. The authors present a clinical report of a patient treated with a mandibular tooth-borne overdenture with a bar. The bar was fabricated using a coffee straw.

KEY WORDS: Overdentures, bar designs.

INTRODUCTION

Overdenture treatment provides an aesthetic and functional result that allows proper access for hygiene and maintenance¹. The bar attachments are commonly used for overdentures. They provide a splinting mechanism between the overdenture abutment teeth and increase the stability and retention of the prosthesis². A common bar attachment assembly for overdenture is the one-piece cast bar, connecting to the copings that are luted to abutment teeth. Several bar attachment systems have been described in the dental literature³. Guttal and Nadiger⁴ suggested an economical replacement for the above mentioned bar systems. The plastic coffee straw (stirrer) can be cast as a bar for splinting retained roots, copings on abutment teeth, or castable abutments for implants. Any straw which adapts well to the prefabricated clip can be used. The method is employed in the treatment of a patient who received mandibular overdenture.

Clinical Report

A 42-year-old male patient reported to the Department at our institution. Patient wished for the replacement of missing teeth in the upper and lower arches. On examination revealed, maxillary arch was completely edentulous and the mandibular arch had only four teeth remaining viz., the lower right second premolar and canine, and on the left side canine and first premolar. Radiological examination revealed that the teeth were firm without any periapical pathology. Based on the availability of adequate interarch distance it was decided to fabricate a maxillary complete denture and a mandibular bar and clip retained overdenture.

Elective endodontics was carried out for the remaining abutment teeth. They were prepared in a dome-shaped contour and hemispherically rounded in all directions.

Intra radicular dowel extension for both the canines was planned and the canal space was prepared accordingly making them parallel (Fig 1). Final impression was made with elastomeric impression material and cast was poured in dental stone. The wax pattern for the copings was made. A plastic sprue was used for dowel extension in the canines. A coffee straw was attached to the wax patterns splinting the right and left abutment teeth (Fig 2). The coffee straw bar framework was invested, burn-out and cast according to the manufacturer's instructions. The cast bar framework was adjusted to fit the master cast. The finished and polished bar was tried in the patient's mouth and the fit was found to be satisfactory. Two clips were placed on the bar and were evaluated for proper fit (Fig 3). The cast along with the bar and clips was duplicated in silicone duplication material. Refractory investment was poured to the resultant mould. Wax-up was done for the casting of the metal housing. The refractory cast with the wax pattern was invested and cast. The custom cast metal housing fitted well on the yellow coloured Hader clips. The further steps of complete denture treatment like jaw relation, try-in procedure, and denture processing were carried out in a conventional manner both for upper and lower arches. The yellow clips with metal housing were embedded in the tissue surface of the lower denture. Finally the bar was cemented using resin cement (Fig 4). The upper and lower dentures were placed.

DISCUSSION

Bar attachment provides splinting mechanism thereby stabilizes and strengthens the abutment teeth. It also allows the forces of mastication shared by the abutment teeth. Various bar attachment methods are used for overdenture bar fabrication². Among them, the Dolder bar and the Hader bar are most often used for overdentures³.

The coffee straw was functionally effective and the hader clip fitted well to the cast coffee straw. Radicular extension of the dowel aided in additional retention for the bar after cementation. Bidez *et al*⁵ carried out finite element analysis of two-abutment Hader bar designs. The clinical implication of this analysis was that the maximum length

* MDS

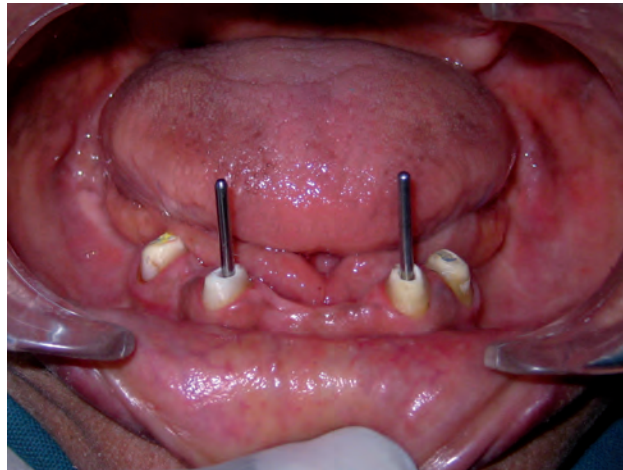


Figure 1. Remaining firm teeth prepared with radicular extension parallel to each other.

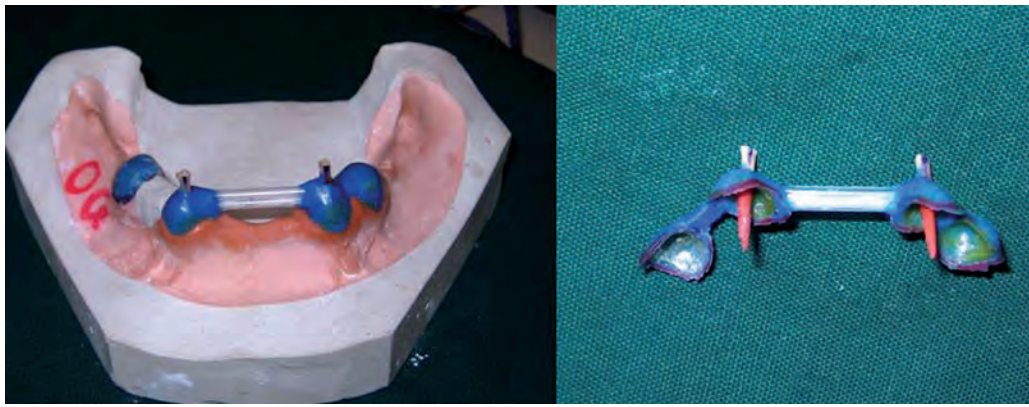


Figure 2. Wax pattern of the coffee bar with radicular extension.

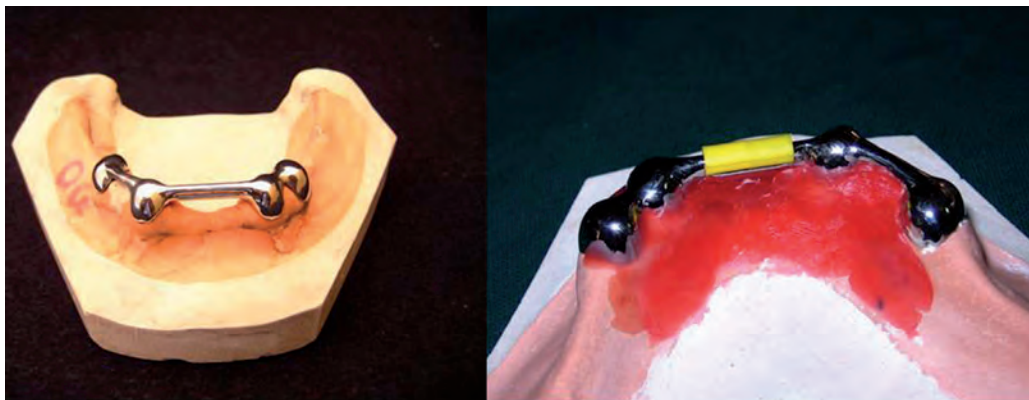


Figure 3. Cast coffee bar fitted on the master cast and Hader clips placed on cast coffee bar.

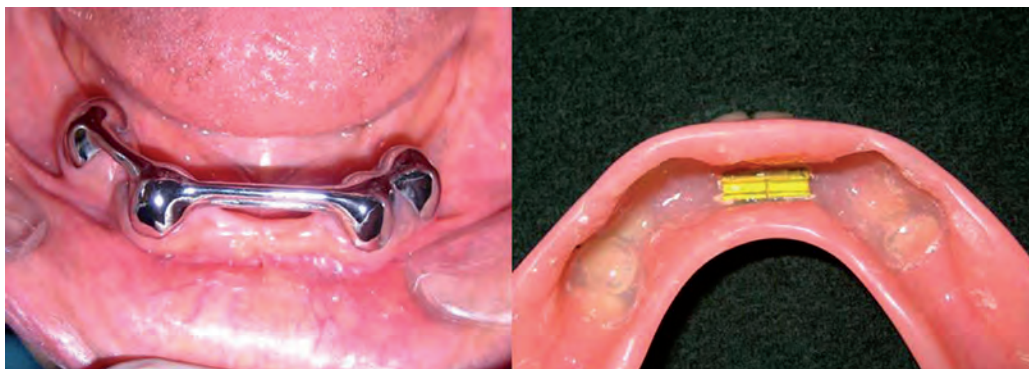


Figure 4. Cemented bar with clips embedded in the denture.

of the bar should be 18mm or less with a minimum vertical stiffener height of 2mm below the round portion of the Hader bar. The coffee bar had the same dimensions with a length of 14mm. The coffee straw bar was placed perpendicular to the line bisecting the angle between the posterior edentulous ridges. This design gave the favourable axis of rotation for the clip rotation to occur to compensate for tissue resiliency ².

CONCLUSION

The described technique provides a cost effective alternative to custom bar systems

ADDRESS FOR CORRESPONDENCE

Dr.Satyabodh S. Guttal, Department of Prosthodontics. SDM College of Dental Sciences and Hospital. Dharwad 580 009. Karnataka. India. Email: drsatyabodh@yahoo.co.in

REFERENCES

1. Bergendal T, Engquist B. Implant-supported overdentures: A longitudinal prospective study. *Int J Oral Maxillofac Implants.* 1998;13:253-262.
2. Preiskel HW. Precision attachments in prosthodontics; overdentures and telescopic prostheses. Vol 2 Chicago, IL; Quintessence Publishing Co, 1985; pp 243-306, 350-351.
3. Render PJ, Jennings DE. Simplified bar-clip attachment for an overdenture patient with divergent roots. *J Prosthet Dent.* 1989; 61:127-8.
4. Guttal SS, Nadiger RK. Use of coffee straw for the overdenture bar fabrication. *J Prosthet Dent.* 2009;102:266.
5. Bidez MW, McLoughlin SW, Chen Y, English CE. Finite element analysis of two-abutment Hader bar designs. *Implant Dent.* 1993;2:107-114.