

LOOP CONNECTORS: BALANCING FUNCTION AND AESTHETICS IN
PROSTHODONTICSDr. Pooja Naik*, Dr. Nitesh Shetty, Dr. Sapana Chengappa, Dr. Iyer Seetha Balasubramanian, Dr. Sudarshan C.
S. and Dr. Riteek KashyapDepartment of Prosthodontics, Srinivas Institute of Dental Science, Srinivas Nagar, Mukka, Surathkal, Mangaluru,
Karnataka 575021.

*Corresponding Author: Dr. Pooja Naik

Department of Prosthodontics, Srinivas Institute of Dental Science, Srinivas Nagar, Mukka, Surathkal, Mangaluru, Karnataka
575021.

Article Received on 27/09/2024

Article Revised on 17/10/2024

Article Accepted on 07/11/2024

ABSTRACT

Dental implants appear to be the most effective option for replacing missing teeth. Traditional fixed partial dentures and resin-bonded bridges are frequently used alternatives. However, these options are not always feasible, particularly in cases where there is significant spacing in the anterior region. An often underestimated but straightforward solution for replacing missing teeth while preserving the diastema is the use of loop connectors. In certain cases when there is availability of limited space for replacement of missing teeth then this could be also used as a treatment option where in replacement with wide teeth could be avoided by replacing with appropriate teeth size by giving spacing in-between the teeth. This article discusses a case involving missing teeth in the lower anterior region where in two lower anterior teeth were missing and replacement could be done only for one anterior tooth due to constraints of mesio-distal space considering all the esthetic parameters.

KEYWORD:- Anterior edentulous space, Loop connectors, Spacing, Fixed partial denture.

INTRODUCTION

The replacement of missing anterior teeth presents a significant challenge for prosthodontists, as it demands careful planning to achieve both exceptional aesthetics and optimal functionality. Meeting the high expectations of patients requires a comprehensive understanding of dental materials and techniques. Several treatment options are available, ranging from implant-supported restorations to traditional fixed partial dentures. These include porcelain-fused-to-metal crowns, all-ceramic restorations for enhanced translucency and aesthetics, and resin-bonded bridges, which offer a more conservative approach. Selecting the most appropriate solution depends on various factors, such as the patient's oral health, aesthetic requirements, functional needs, and financial considerations.

In anterior restorations, the procedure becomes particularly challenging due to the high aesthetic demands of the visible zone and the minimal tolerance for errors. The complexity increases when additional factors, such as pre-existing diastemas or drifting of adjacent teeth into the edentulous area, result in an overly wide mesiodistal pontic space.^[1]

A loop connector is a frequently overlooked yet effective option for replacing missing anterior teeth, particularly in

cases with pre-existing diastemas. This non-rigid connector features a loop on the lingual side of the prosthesis, linking adjacent retainers and/or pontics, providing both flexibility and stability.^[2]

This is one of the most effective means of replacement of anterior missing teeth with providing of better esthetics and also functional demands of the patient. This case report details about replacement of lower anterior teeth with reduced mesio-distal space by using loop connectors to achieve ideal esthetics.

CASE REPORT

A 26-year-old male patient reported to the department of prosthodontics for replacement of missing lower anterior teeth. His prime concern was replacement of the lower anterior teeth for esthetic concern. On history taking revealed that patient had missing lower anterior teeth since the time he had lost his deciduous teeth and had not visited any clinic for replacement purpose. On intraoral examination revealed that there was missing lower right central incisors and lower left central incisors (Fig. 1). The available space for replacement of 2 missing anterior teeth was less. Hence it was decided that instead of replacement of 2 teeth it was decided that 1 teeth replacement with slight spacing in-between the fixed prosthetic teeth were given.

Maxillary and mandibular alginate impression were made for wax mock up of final restoration to assess the final outcome of the prosthesis.

Patient's right and left mandibular lateral incisors were prepared respectively to receive 3-unit porcelain fused to metal fixed prosthesis with lingual loop connectors. (Fig 2). Final impression was made using 2 stage double mix putty light body rubber base impression material (Aquasil, Dentsply) and poured in type IV dental stone. (Fig 3).

Wax pattern along with loop connector was designed on the cast. The two retainers were connected by a minor connector which was extended in the lower lingual

sulcus. The dimensions of the connector were 2 mm with a relief provided by 0.2 mm relief wax.

After the wax pattern was completed, casting procedures were carried out. (Fig4). The metal coping was tried in the patients mouth for accurate fit and proper marginal extension. The lingual loop connector was fabricated of adequate thickness of 0.5 mm such that it has no hinderance. (Fig 5, Fig 6). After verifying the fit of the prosthesis intraorally, ceramic buildup was completed. Once the final prosthesis was fabricated and tried in the patients mouth and verified for any occlusal interferences if present. After necessary occlusal adjustments, the prosthesis was cemented using glass ionomer cement type I. (Fig 7, Fig 8).



Fig. 1



Fig. 2

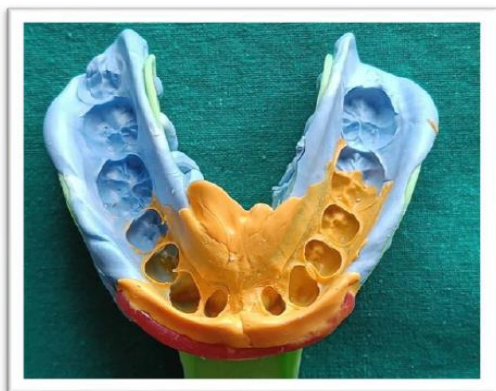


Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8

DISCUSSION

Maintaining space while replacing missing anterior teeth presents a considerable aesthetic challenge for prosthodontists.^[3] When implants are not a suitable option, a loop connector provides a practical and aesthetically pleasing solution.^[2] This non-rigid connector incorporates a loop on the lingual surface of the prosthesis, joining adjacent retainers and/or pontics. It is useful not only for managing excessive pontic space but also for stabilizing pathologically migrated teeth through splinting.^[4]

From a biomechanical perspective, it is essential to design the prosthesis for optimal hygiene while also ensuring sufficient strength and durability. Loop connectors are less rigid than conventional connectors, but their rigidity can be enhanced by increasing the loop's diameter and limiting its length.^[5] It is important to ensure that the loops are not excessively thick, as this could hinder tongue movement and affect speech. Studies indicate that when loop connectors are kept appropriately thin and maintain close contact with the underlying mucosa, any interference with tongue function and speech is minimal and resolves quickly.^[5] In a loop connector, the thickness must be sufficient to prevent deformation while remaining discreet enough not to be felt by the tongue. Integrating a loop connector into this design offers patients outstanding aesthetic results without sacrificing the functionality of the restoration. Therefore, loop connectors provide multiple benefits for enhancing the visual appeal.^[6,7,8]

CONCLUSION

The loop connector offers an effective solution to the prosthodontic challenge of preserving existing spaces while restoring anterior teeth.^[9] Achieving long-term success relies on meticulous design and fabrication by the dentist, along with the patient's commitment to maintaining proper oral hygiene. When these factors align, the loop connector can deliver both functional stability and aesthetic satisfaction.

ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to the department of Prosthodontics Srinivas Institute of Dental

Sciences. Special thanks to Dr. Nitesh Shetty Sir for the invaluable guidance and feedback throughout the development of this work. Lastly, we thank the anonymous reviewers for their constructive comments and suggestions, which greatly helped us to improve this manuscript.

REFERENCES

1. Madhav VNV, Jadhav R. Treatment options for replacement of missing central incisor. *TPDI*, 2011; 2(1): 6- 7.
2. Rosenstiel S, Land MF, Fujimoto J. Connectors for partial fixed dental prosthesis. *Contemporary fixed prosthodontics*. edition. Elsevier, 2007; 4: 843-869.
3. Kalra A, Gowda ME, Verma K. Aesthetic rehabilitation with multiple loop connectors. *Contemp Clin Dent*, 2013; 4(1): 112-115.
4. Malone WFP, Koth DL, Cavazos E, Kaiser DA, Morgano SM. *Tylman's Theory and Practice of Fixed Prosthodontics*. 8th ed. Ishiyaku Euro America Inc. Pub, 1997; 12- 13.
5. Bhandari S, Bakshi S. Survival and complications of unconventional fixed dental prosthesis for maintaining diastema and splint pathologically migrated teeth: A caseseries up to 8 years follow-up. *Ind J Dent Res*, 2013; 24(3): 375-380.
6. Fischer H, Weber M, Marx R. Lifetime prediction of all-ceramic bridges by computational methods. *Journal of dental research*, 2003; 82(3): 238-42.
7. Dange SP, Khalikar AN, Kumar S. Non-rigid connectors in fixed dental prosthesis-a case report. *JIDA*, 2008; 2: 356.
8. Shenoy K, Sajjad A. Anterior loop connector fixed partial denture: A simple solution to a complex prosthodontic dilemma. *The Journal of Indian Prosthodontic Society*, 2008; 1, 8(3): 162-4.
9. Gupta I, Rahangdale T, Nayak K, Kotnala P, Jain N, Noorani SM. Loop connectors: The lost boon in prosthodontics. *Acta Sci Dent*, 2017; 1: 26-30.