ORIGINAL RESEARCH PAPER

Prosthodontics

KEY WORDS: loop connector, diastema, anterior missing tooth

ESTHETIC REHABILITATION OF ANTERIOR MISSING TEETH WITH LOOP CONNECTOR- A CASE REPORT

Dr. Krishnapriya Srinivasan* Post Graduate Student, Department Of Prosthodontics, KSR Institute Of Dental Science And Research, KSR Kalvi Nagar, Thokkavadi, Tiruchengode, Tamil Nadu -637215. *Corresponding Author

Dr. Chalakuzhiyil Abraham Mathew Head Of The Department, Department Of Prosthodontics, KSR Institute Of Dental Science And Research, Tiruchengode

Dr. Sheela Kannan Post Graduate Student, Department Of Prosthodontics, KSR Institute Of Dental Science And Research, Tiruchengode.

ABSTRACT

Esthetic rehabilitation of missing anterior teeth with diastema is a relatively complex procedure. Only limited treatment options are available for this condition, which includes, implant supported prosthesis and fixed partial denture with loop connectors. If implant prosthesis is not feasible, fixed partial denture with loop connector is the best alternative treatment to achieve optimum esthetic results. This case report describes the fabrication of loop connector to restore missing anterior teeth with diastema.

INTRODUCTION:

Replacing the missing anterior teeth is always a prostho dontic challenge. Various treatment options are available for replacement that includes removable partial denture, fixed partial denture and implant prosthesis. Loss of teeth may lead to drifting of adjacent teeth into the edentulous space, which leads to reduced pontic space. Whereas replacement of teeth with existing diastema is more complicated situation because of the available excessive mesio distal pontic space. In such conditions which conventional fixed partial denture (FPD) is given it leads to widened anterior teeth and over contoured emergence profile which ultimately results in poor esthetic appearance[1,2]. Implant prosthesis may be used for replacement of missing teeth but it is expensive ,time consuming and its requires favorable medical and oral conditions[3]. Maximum esthetic results are provided by maintaining the diastema , anatomic form of teeth and minimal over contouring of adjacent teeth[3,4]. This case report describes the fabrication of three unit FPD with loop connector to restore the missing lateral incisor to provide maximum esthetic result. Loop connectors provide the best possible solution to address the problem of excessive mesiodistal width pontic space and provides optimum restoration of esthetics[5].

INDICATIONS FOR LOOP CONNECTOR[3,4]:

1. When the patient wishes to maintain the diastema,
2. Presence of excessive mesiodistal pontic space
3. Multiple joined prosthetic restorations in clinical situations with presence of localised or generalised spacing between abutments.

LIMITATIONS

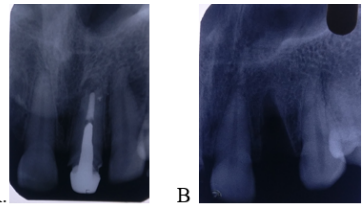
1. Leads to food accumulation.
2. Difficulty in maintaining hygiene especially in patients with limited manual dexterity.
3. Interference in tongue movements and phonetics.
4. Relative flexibility as compared to conventional conne ctors.

CASE REPORT:

A 44 years old female reported to the department of prosth odontics to restore her missing upper anterior teeth. Intraoral examination revealed the presence of post and core restora tion in 11 and missing 22 with generalized spacing was seen between the upper anteriors. a midline diastema was seen in lower anteriors (figure1). Patient lost her natural tooth due to trauma before 5 months.

Figure 1 : Intraoral image

Pulp vitality test revealed that 21 and 23 were vital. Radiographic examination showed adequate amount of bone support in 21 and 23. 11 was endodontically treated. Patient wanted a fixed replacement for the missing tooth. A Conventional FPD could not be suggested because of the excessive mesiodistal space in the region of 22. Patient was not willing for an implant supported prosthesis also. FPD with loop connector design was planned for replacing missing 21, 22, 23. Both 21 and 23 were taken as abutments and a single metal ceramic crown was planned for 11.



A. B

Figure 2A : Radiographic examination of 11, Figure 2B: Radiographic examination of 21, 22, 23

PROCEDURE:

Teeth preparation was done in 21, 23 and retraction cord placement was done (figure 3). Final impression was made with condensation silicone putty and light body using two stage putty wash technique (Zhermack Zetaplus, Germany) (figure 4). Master cast was poured using type IV dental stone. Die cutting and ditching was done. Wax pattern was fabricated on the master cast using pattern wax (Thowax, Yeti dental , Germany) (figure 5). During fabrication of wax pattern for the loops, care was taken to place the loop away from the rugae for hygiene maintenance. The wax pattern was invested in phosphate bonded investment (Metavest , Delta , Germany)and casting was done using base metal alloy (Ni-Cr alloy, Denchrome NG, Germany). Metal try in was done

and clearance was checked intraorally for ceramic layering (figure 6). After metal try in, ceramic layering was done (figure 7) and bisque try in was done. The occlusion was checked and permanent cementation was done using type 1 GIC(GC, Japan) (figure 8). Patient reported back after 1 week for a review. She was comfortable and had no signs of inflammation or food accumulation in the connector region.

Figure no 3 : Teeth preparation with retraction cord plac ement done

Figure no 4 : Final impression made with condensation silicone putty and light body

Figure 5 :Wax pattern fabrication on the master cast

Figure 6 : Intraoral metal try in

Figure no 7 : Final prosthesis

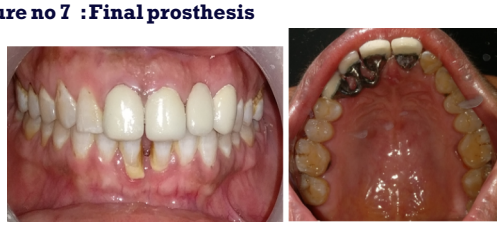


Figure 8: Bisque try in and permanent cementation

DISCUSSION:

The replacement of missing anterior teeth with existing diastema is a challenging case for the prosthodontist, to achieve optimum esthetic results. In this condition the available treatment options are implant supported prosthesis and FPD with loop connector. If implant prosthesis is not chosen then the only viable treatment option is loop connector FPD[4]. Maximum esthetic results may be obtained only if the natural anatomic forms of the teeth are protected and the diastema is maintained[6]. The FPD with loop connectors enhance the natural appearance of the resto ration, maintain the diastemas and the proper emergence profile[3]. In a loop connector the loop may be cast from sprue wax either circular in cross-section or shaped from platinum-gold-palladium (Pt-Au-Pd) alloy wire[7]. Disadvantages of loop connectors includes additional laboratory procedures, difficulty in maintenance and may affect the phonetics especially linguopalatal sounds[8]. However keeping the connectors round and small in size will not affect the phonetics[9]. Photoelastic analysis revelaed that highest stress area was found in the gingival region of connector, therefore smoother, less angled, rounded connectors should be used for lower stress level [2]. If routine oral hygiene measures are followed by the patient, food accumulation and gingival inflammation could be reduced[3]. Loop connectors are used not only to manage excessive (single/multiple) pontic space(s), but also to splint pathologically migrated teeth effectively.

CONCLUSION

Proper treatment planning is essential to rehabilitate the missing tooth, Although they are rarely used, loop connectors are sometimes required when an existing diastema is to be maintained in a planned fixed prosthesis, as in the above case. If the patient can get adapted to a projecting connector, loop connector FPD offers a simple and excellent solution to a prosthodontic dilemma involving an anterior edentulous space,

REFERENCES

1. Rami DS, Bavaria S, Sethuraman R, Shah N, Agrawal N, Detroja K. An aesthetic management of missing maxillary central incisor with loop connector: An endodontic-prosthodontic approach. Journal Of Applied Dental and Medical Sciences. 2016;2:1.
2. Kalra A, Gowda ME, Verma K. Aesthetic rehabilitation with multiple loop connectors. Contemporary clinical dentistry. 2013 Jan;4(1):112.
3. Gautam V, Gupta SJ, Gupta A, Srivastava T, Gupta A. An Imminent Approach in Esthetic Enhancement Through Loop Connectors. Rehabilitation. 2017;2(1):12-5.
4. Modi N, Bhayana R, Kaurani P, Padiyar N. Loop Connectors: Aesthetic Solution to Spaced Mandibular Anteriors-Case Report.
5. Dandekeri SS, Dandekeri S. Single anterior tooth replacement by a cast lingual loop connector-a conservative approach. Journal of clinical and diagnostic research: JCDR. 2014 Sep;8(9):ZD07.
6. Singh V, Singh S, Gupta V, Sinha AK. Loop connector: a treatment option to achieve optimal esthetics for maintaining the diastema-a case report. Journal of Advanced Medical and Dental Sciences Research. 2016 Mar 1;4(2):75.
7. Ashwini BL. Anterior loop connector fixed partial denture in replacing missing central incisor: a case report. CODS journal of dentistry. 2013 Sep:5(2):1-5
8. Nayar S, Jayesh R, Venkateshwaran VD. Loop connectors in dentogenic diastema. Journal of pharmacy & bioallied sciences. 2015 Apr;7(Suppl 1):S279.
9. Raja DR, Nesappan T. Aesthetic correction and replacement of missing tooth in maxillary aesthetic zone using modified FPD with loop connectors–A case report. Int J Dent Sci Res. 2014;2(4):73-5.
10. 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 Jul 1;8(3):162.