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SHORT COMMUNICATION

ESTHETIC MARYLAND BRIDGE: A SHORT REPORT

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ABSTRACT

Missing teeth in the anterior region negatively impacts the patient's appearance and adversely affects the patient's self-confidence. Various treatment options such as removable partial dentures, fixed partial dentures and implants are available to rehabilitate such loss. In this case report, a zirconia based esthetic resin bonded bridge was fabricated to replace the missing right anterior tooth temporarily for a young patient till he achieves the age when he can get permanent replacement. The procedure was done with minimal tooth preparation and the outcome was esthetic with superior bonding with resin cement.

KEYWORDS: Maryland Bridge, Zirconia, aesthetics, anterior fixed partial dentures, Resin bonded partial dentures

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INTRODUCTION:

A temporary procedure involving no tooth reduction and using a composite resin splinting system to cement a perforated cast metal retainers to the acid-etched enamel of periodontally involved lower anterior teeth was reported by Rochette in 1973.[1] Later a technique using electrolytically etched nonprecious Ni-Cr alloys was introduced by Livaditis et al. and Thompson et al.[2,3] which was called Maryland Bridge technique wherein a small amount of tooth reduction including proximal extensions was a definitive procedure. In 1998, zirconia was introduced as a biomaterial, yttrium oxide added to zirconia stabilized the tetragonal form at room temperature. It was biocompatible and offered excellent esthetics, thus was an ideal restorative material. Due to absence of metal, finishing line at the level of gingiva provides optimal esthetics. Recent alternatives to conventional fixed partial dentures when intact abutments are present and minimal intervention is to be done are resin bonded restorations and oral implants, irrespective of their location. The current case report is on an anterior tooth replacement in the esthetic zone using resin bonded zirconia Maryland bridge.

CASE REPORT:

A young 19-year-old male patient reported to the Department of Prosthodontics, H.P. Government dental college and Hospital, Shimla, with a chief complaint of missing right lateral incisor (Fig. 1, Fig. 2 and Fig. 3).

Fig 1: Frontal Profile

Fig 2: Intraoral View - Maxillary Arch

Fig 3: Intraoral Frontal View

Past history revealed the loss of right lateral incisor due to sports injury. On intraoral examination, right lateral incisor was missing (since 2 years). Various treatment options were available for the patient but a definitive treatment option was deferred to a later stage because of patients age and financial constraints. A conservative option which would require lesser amount of tooth preparation was planned for the patient. After taking consent from the patient, rehabilitation of lateral incisor was planned with all-ceramic zirconia Maryland Bridge framework and porcelain layering with a compatible ceramic.

PROCEDURE: Tooth preparation was done on right central incisor and right canine for Maryland Bridge leaving intact 1mm of incisal enamel and light chamfer finish line was given 1mm supra-gingivally (Fig. 4 and Fig. 5).

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Fig 4: Marking the preparation areas

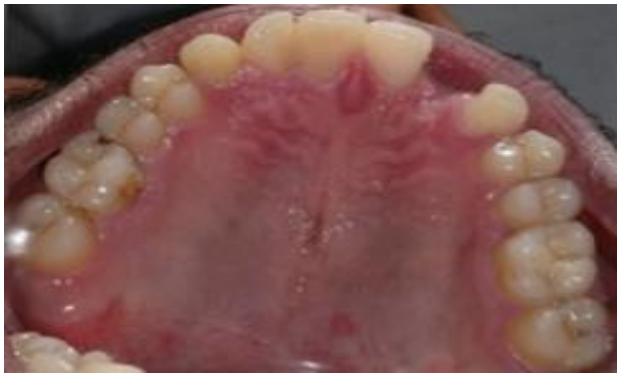

Fig 5: Final Preparation

A box preparation was made on the lingual and inter-proximal areas except at buccal line contact area which provided mechanical retention to the lingual wings. A single step impression was made using putty and light body addition silicone (Zhemark) Fig. 6 and model was poured in die stone (Ultrarock, Kalabhai).

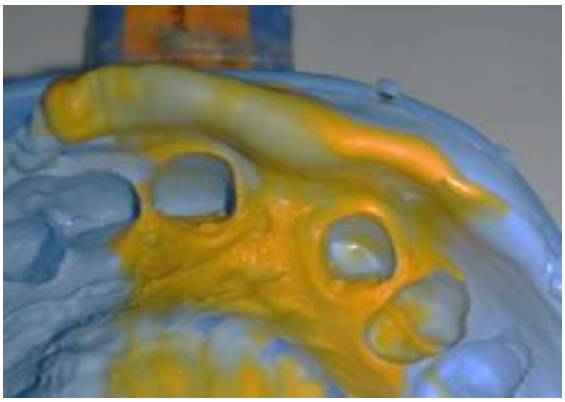

Fig 6: Final Impression

A trial of framework was done before final cementation and the interferences were checked with occlusal spray (Okklean, DFS) and clearance with the opposing arch was assessed.

After necessary occlusal adjustments, the zirconia framework was pre-treated with 40 µm alumina, dried with alcohol and teeth were treated with 37% orthophosphoric acid for 30 sec. Zirconia Maryland Bridge was cemented with adhesive cement (RelyX Unicem; 3M ESPE, St. Paul, Minn) according to manufacturer's instructions. Excess cement was cleaned with an explorer. The final restoration had good esthetic and functional value (Fig 7, Fig 8, Fig 9).

Fig 7: Try-in

Fig 8: Final Cementation

Fig. 9 Final Profile Post Cementation

Follow-up: The patient was advised of the importance of returning for follow-up every 6 months until he was ready to replace the bridge with an implant.

DISCUSSION

A missing tooth in anterior region is an emotional loss for the patient. It is a challenge to restore a single

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missing anterior tooth as various aspects such as shade, morphology, gingival contours, and occlusion need to be considered[4,5]. Fixed partial denture prosthesis involves an aggressive preparation of adjacent abutments and Implant therapy is an expensive treatment option available once the patient had achieved osseous maturation. The treatment with Maryland Bridge prosthesis for the above-mentioned patient can serve as good option shielding the patient from the ill effects related to edentulous space and invasive replacement procedures like fixed dental prosthesis and implants. Metal base in Maryland Bridge interferes with shade matching imparting a grey appearance in the incisal third whereas zirconia ceramics having the highest fracture toughness, considerable flexural strength and superior esthetics make it an excellent restorative material4. The technique described in this case report gave the patient an advantage of superior esthetics and reduced chances of debonding due to use of adhesive technique.

CONCLUSION

The best solution for missing incisors is implants. But this option is available when the patient attains full physical maturity, till a transitional prosthesis is often necessary to replace the missing tooth. Maryland Bridge offers as the treatment of choice till definitive restoration is made. It requires minimal preparation of the abutment teeth and provides superior esthetics. Thus, zirconia based all-ceramic material offers an ideal prosthetic and restorative material.

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