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Case Report

Maryland bridge as a minimally invasive treatment modality for missing anterior teeth: A case report

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ABSTRACT

Missing anterior teeth in a young age produces a psychological impact on the individual due the unesthetic appearance of the teeth. Resin bonded fixed partial denture is a minimally invasive treatment option to restore the function and esthetics in such patients. Maryland bridge is a type of resin bonded bridge which has minimal potential to traumatise the pulp with supragingival margins which maintains the health of the periodontium. This case report describes Maryland bridge as a treatment modality for an effective restoration of the missing anterior teeth.

1. Introduction

The loss of the anterior teeth not just leads to functional loss but also have a huge psychological impact on young patients. The restoration of the missing mandibular incisors can be done with various treatment options, including implants, removable partial dentures, and fixed partial dentures. Implants are a better treatment option but its placement depends on various factors including amount of bone available, medical conditions, financial factor, and patient wishes.[1] Long-term use of a removable partial denture can result in bone resorption and flattening of the interdental papillae, however, it can be utilised as an interim prosthesis for the initial aesthetics. In young adult patients, a conventional fixed partial denture requires sufficient amount of tooth preparation of all surfaces of the abutment tooth, which might result in pulpal trauma and hypersensitivity.For such patients, a more conservative and less invasive treatment option is resin bonded prosthesis which preserves the remaining alveolar ridge and the soft tissue.[2,3] In contrast to conventional fixed partial dentures, which need substantial abutment tooth preparation, resin-bonded fixed partial dentures have been acknowledged as an alternate minimally invasive fixed restorative treatment option for the replacement of a single missing tooth.[4] This case report entails the restoration of the missing mandibular anterior central incisor using the maryland bridge as an effective and minimally invasive treatment option.

2. Case Report

A 26 years old male patient reported to the Department of Prosthodontics with the chief complaint of missing lower anterior teeth and the unesthetic appearance due to the missing teeth. Patient gave history of extraction due to the trauma of the lower anterior teeth 6 months back. Intraoral examination revealed missing left central incisor along with the slight rotation of the left lateral incisor (Figure 1A). A concavity was present labially in the region of the missing central incisor. Intraoral periapical radiograph revealed healthy adjacent abutment teeth (Figure 1B). All the treatment options including implant, conventional fixed dental prosthesis, removable partial denture, and resin bonded bridges were given to the patient. Patient was not

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willing for any invasive treatment option, so implants were opted out. He was willing for fixed prosthesis with minimal tooth reduction, so resin bonded bridges were chosen as the treatment option for the patient.

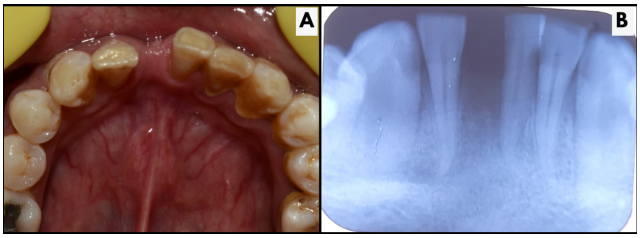

Fig. 1: A): Intraoral mandibular view showing missing left central incisor, **B):** Intraoral Periapical view radiograph showing healthy abutment teeth.

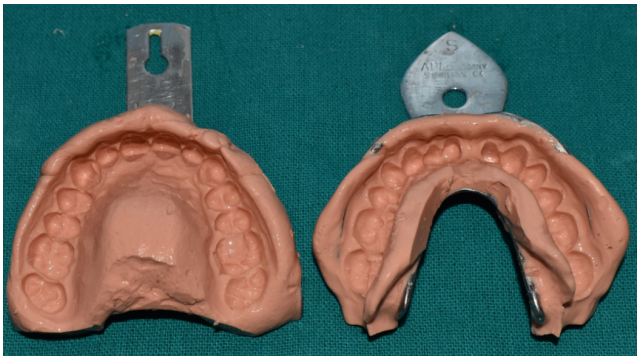

Fig. 2: Diagnostic impressions of the maxillary and mandibular arch

Fig. 3: Tooth preparation on the lingual surface of 32 and 41 teeth.

Diagnostic impressions of the maxillary and the mandibular arch were made (Figure 2). Diagnostic casts were obtained and the wax up for the missing tooth was done. Tooth preparation was done on the lingual surfaces of the left lateral incisor and right central incisor (32 and 41) with chamfer finish line prepared supragingivally. The incisal end of the tooth preparation was kept 1mm cervical from the incisal edge (Figure 3). Gingiva was retracted using the retraction cord and the final impression was made using single step putty wash impression technique using addition silicone impression material (Figure 4). Indirect temporization was done and the provisional restoration was luted using temporary non-eugenol based cement (Figure 5). The nickel-chromium metal framework was fabricated and try-in was done, followed by ceramic build up on the central incisor. The prosthesis was finished, polished and glazed. The final prosthesis was luted using the self etch resin

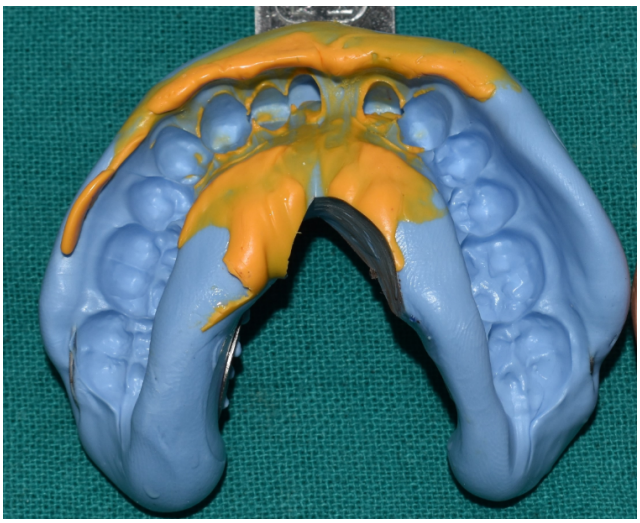

Fig. 4: Final impression of the mandibular arch using single step putty wash impression technique.

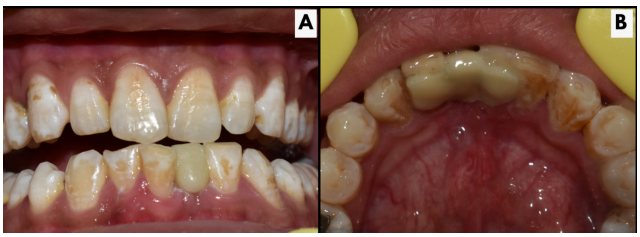

Fig. 5: A): Frontal view of temporization of the left central incisor, **B):** Intraoral mandibular view showing lingual surface of the temporary prosthesis.

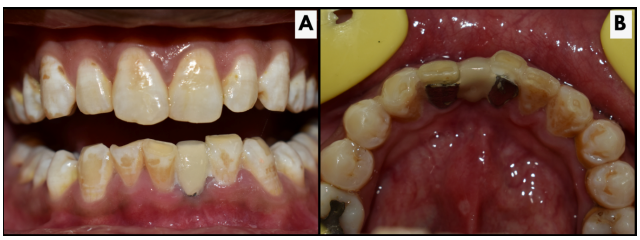

Fig. 6: A): Intraoral frontal view showing the maryland bridge cemented to the adjacent teeth, **B):** Intraoral mandibular view showing the lingual surface of the final prosthesis.

cement (Rely X U200,3M ESPE, Germany) on the abutment teeth (Figure 6). The occlusion was assessed and post-cementation instructions were given to the patient. Patient was kept on follow-up at regular intervals and he was satisfied with the result.

3. Discussion

Restoration of the missing teeth using conventional fixed partial denture requires tooth preparation of all the surfaces of the abutment teeth, which in young patients may lead to pulpal damage due to the large size of pulp chambers. Resin bonded fixed dental prosthesis are an effective solution in such scenario. The 'Maryland Bridge' was developed at the University of Maryland as a resin bonded fixed dental prosthesis. The developments of new resin cements that chemically link to both the tooth surface and the etched metal alloy have improved the retention of the resin bonded prosthesis.[3,5] Maryland Bridge is retained with the help of micromechanical retention. The Maryland bridges are alloy-specific, it is only utilised for non-precious alloys as precious alloys cannot be etched to give the micromechanical retention.

Maryland bridge have various advantages including minimal tooth preparation conserving the enamel, minimal pulpal trauma, decreased potential for gingival irritation, single path of insertion preventing displacement, enhanced esthetics, patient satisfaction, and precludes the use of local anaesthetic.[6,7] However, it also has certain disadvantages including its technique sensitive application and the tendency of the metal retainer to show through the thin anterior teeth.[8,9] Certain precautions like adequate sealing of the prosthesis and tooth surface margin is necessary for the prevention of caries. Gingival surface of the pontic should be highly glazed as well as should have passive tissue contact to ensure the maintenance of gingival health.

Adequate thickness of enamel, no severe rotation or malpositioning of abutment teeth, periodontal conditions, adequate occlusal clearance, and parafunctional habits are few of the factors that should be considered for the case selection. Careful case selection, meticulous design planning, precise tooth preparation, and judicious cementation can all lead to long term success of maryland bridges. Hence, maryland bridge is an effective treatment modality to restore single missing teeth in young patients.

4. Conclusion

Resin bonded bridges are an efficacious way of replacing missing teeth, restoring function, esthetics, and boosting the confidence of the patient. The resin bonded bridge should be considered more frequently as the restoration of choice for small spans, given thorough patient assessment and the use of judicious clinical methods.

5. Conflict of Interest

The authors declare no relevant conflicts of interest.

6. Source of Funding

None.

References

1. Gupta R, Gupta N, Weber KK. Dental Implants. [Updated 2021 Aug 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022.
2. Negi P, Jaikaria A. Rehabilitation of Patient with Missing Anterior Tooth with Maryland Bridge : A Case Report. *Int J Res Rev*. 2020;7(6):1–3.
3. Ahmad M, Naim H, Meshni AA, Siddiq A. A conservative approach to replace missing teeth in the aesthetic zone with A conservative approach to replace missing teeth in the aesthetic zone with Maryland bridge - A case report. *Dent Oral Craniofac Res*. 2017;3(4):1–3. doi:10.15761/DOCR.1000213.
4. Qiu HY, Wu SY, Fu L. Clinical performance of cantilevered resin-bonded fixed partial dentures for single tooth replacement in elderly patients. *J Int Med Res*. 2020;48(10):1–6.
5. Berekally TL, Smales RJ. A retrospective clinical evaluation of resin-bonded bridges inserted at the Adelaide Dental Hospital. *Aust Dent J*. 1993;38(2):85–96.
6. Miller TE. Reverse Maryland Bridges: Clinical Applications. *J Esthet Restor Dent*. 1989;1(5):155–63.
7. Miettinen M, Millar BJ. A review of the success and failure characteristics of resin-bonded bridges. *Br Dent J*. 2013;215(2):3. doi:10.1038/sj.bdj.2013.686.
8. Khatavkar RA, Hegde VS. A conservative treatment option for a single missing premolar using a partial veneered restoration with the SR Adoro system. *J Conserv Dent*. 2010;13(2):102–5.
9. Prathyusha P, Kaul JS, Sethi RB, Bridge NM. An Interim Prosthesis for Tooth Replacement in Adolescents. *Int J Clin Pediatr Dent*. 2011;4(2):135–8.

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