



Minimally Invasive, Non-Surgical Anterior Rehabilitation of Congenitally Missing Maxillary Laterals : A Case Report

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(Received: 07 January 2024

Revised: 12 February 2024

Accepted: 06 March 2024)

KEYWORDS

Maryland Bridge,
Congenitally
missing anterior
tooth, Resin-
bonded fixed
partial denture

ABSTRACT:

A space in the anterior region of the dental arch of a youngster, either due to trauma or a congenitally missing tooth, can not only lead to psychological trauma but also create a functional dilemma for the dentist, as the usual treatment options of implant, removable partial denture and fixed partial denture available for adults, are often inapplicable or inconvenient for an adolescent. In such a situation, a resin-bonded fixed partial denture (RBFDP), such as Maryland Bridge fulfills all the requirements of an ideal solution for patients who choose a non invasive treatment approach to enhance their appearance.

1. Introduction

Tooth agenesis is the most frequent congenital or developmental dental abnormality. Congenitally absent teeth are those whose germs did not grow enough to allow differentiation of the dental tissues¹. It is characterized as missing one or more teeth. It can appear sporadically or in inherited syndromes². Congenital missing teeth (CMT), also known as hypodontia, is a common and costly dental abnormality. Aside from an unappealing appearance, individuals with missing teeth may experience malocclusion, periodontal disease, insufficient alveolar bone formation, impaired chewing ability, inarticulate pronunciation, and other issues. Treatment may be expensive and multidisciplinary³. Implants are a preferable therapeutic option, but their placement is dependent on a variety of parameters such as bone availability, medical problems, financial considerations, and patient preferences⁴. Long-term use of a removable partial denture can cause bone resorption and flattening of the interdental papillae; however, it can be used as an interim prosthesis to improve initial

appearances. In young adult patients, a traditional fixed partial denture necessitates extensive tooth preparation of all abutment tooth surfaces, which might result in pulpal trauma and hypersensitivity. A more conservative and less invasive treatment option for such individuals is a resin-bonded prosthesis, which retains the residual alveolar ridge and soft tissue^{5,6}. This case report describes how the Maryland Bridge was used to restore congenitally lost maxillary lateral incisors in a minimally invasive and successful manner

2. Case Report

A 15 year old female patient reported to the Department of Prosthodontics with the chief complaint of missing upper front teeth and compromised looks due to the missing teeth. Patient gave a history of malaligned upper and lower teeth and also congenitally missing of bilateral maxillary lateral incisors. Orthodontic treatment was also undergoing and the orthodontist was successful in gaining adequate space for the missing maxillary laterals. As minor orthodontic corrections were to be undertaken for the remaining teeth , rehabilitation of the missing



teeth was planned keeping into consideration its possible repercussions on the final outcome of the orthodontic treatment. 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 willing for any invasive treatment option, so implants were opted out. She was willing for fixed prosthesis with minimal tooth reduction, so resin bonded bridges were chosen as the treatment option for the patient.



Figure 1 : Preoperative view



Figure 2 : Palatal preparation of left maxillary canine and left maxillary central incisor and right maxillary central incisor and right maxillary canine; orthodontic wire was removed before tooth preparation



Figure 3 : Presence of orthodontic brackets caused difficulty in retrieval of irreversible hydrocolloid and rubber base impressions , hence digital impressions were made using an intraoral scanner (iScanPro IOS)

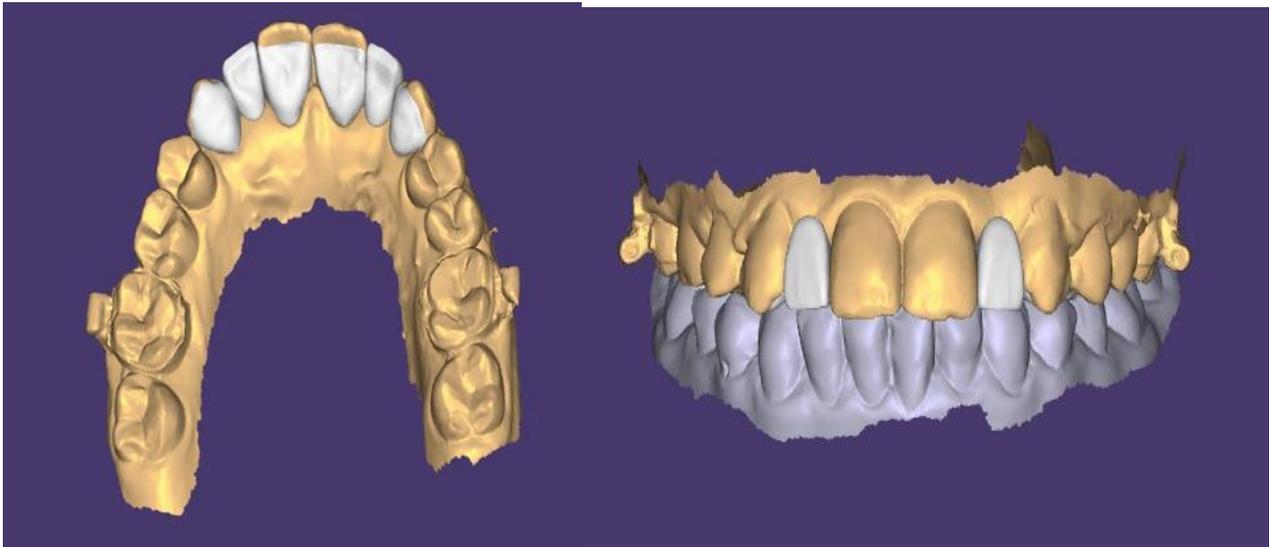


Figure 4 : Designing of the Prosthesis using the STL file



Figure 5 : Finished Lithium Disilicate (Emax) Maryland Bridge on 3D printed maxillary cast

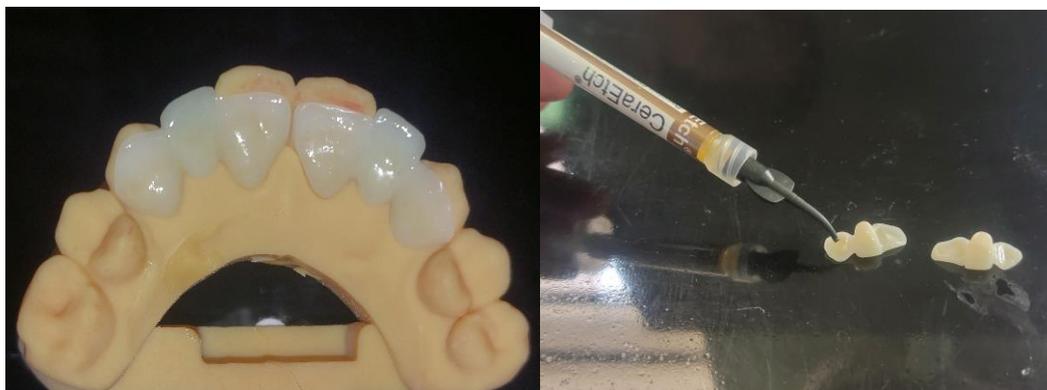


Figure 6 : Palatal surfaces of the retainers were etched with 5% HF acid (CeraEtch,Prevest) for 20 seconds followed by rinsing and drying ; followed by application of silane coupling agent (Monobond N; Ivoclar Vivadent)

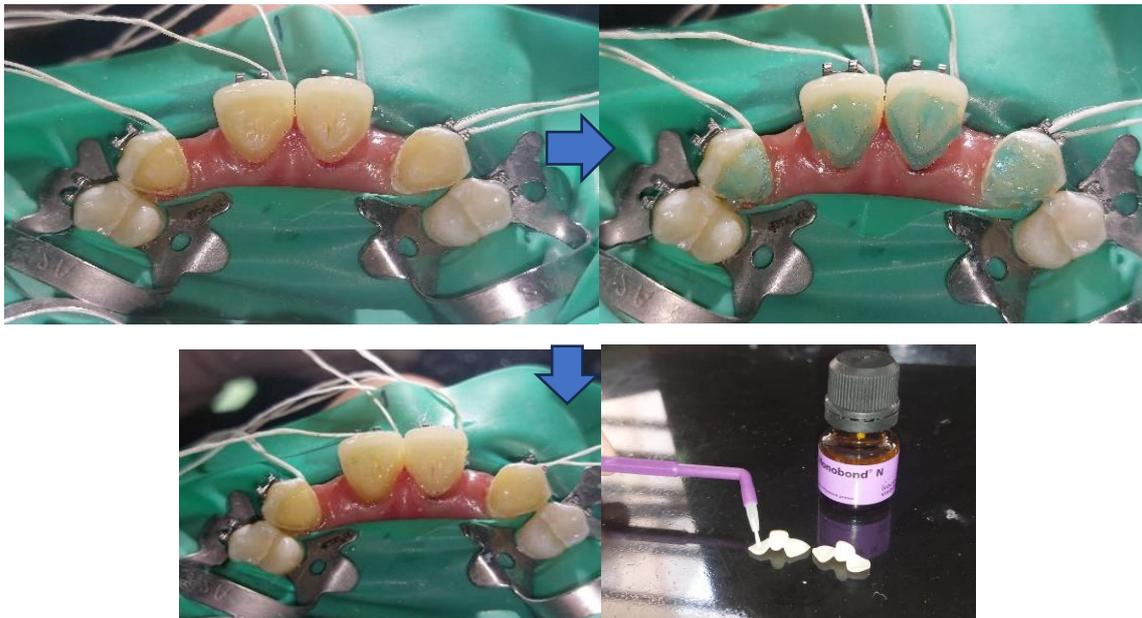


Figure 7 : Rubber Dam Isolation was done ; followed by etching of prepared palatal tooth surface with 37% Phosphoric Acid (BestETCH,Waldent) after rinsing and drying ; dentin bonding agent (Fusion,Prevest) was applied



Figure 8 : Bonding of the prosthesis with Dual cure Resin Luting Cement (Variolink N LC , Ivoclar Vivadent)

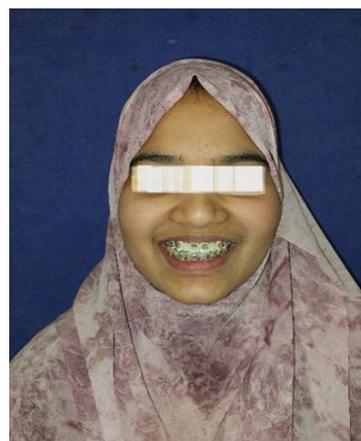


Figure 9 : Postoperative view after bonding of the definitive prosthesis



DISCUSSION :

To restore missing teeth with a standard fixed partial denture, all surfaces of the abutment teeth must be prepared, which in young patients may result in pulpal damage due to the high size of the pulp chambers. Resin-bonded fixed dental prostheses are an efficient treatment in such cases. The 'Maryland Bridge' was created at the University of Maryland as a resin-bonded permanent dental prosthesis. The development of novel resin cements that chemically attach to both the tooth surface and the etched metal alloy has enhanced the retention of the resin-bonded prosthesis.^{6,7} The Maryland Bridge is held together via micromechanical retention. Maryland bridges provide several advantages, including little tooth preparation that preserves the enamel, minimal pulpal stress, and a lower risk of gingival irritation., a single path of insertion prevents displacement, improves esthetics, increases patient satisfaction, and eliminates the need for local anaesthesia.^{8,9} However, there are several drawbacks, including as the need for precise application and the metal retainer's visibility through thin anterior teeth.^{10,11} Certain precautions, including as appropriate sealing of the prosthesis and tooth surface edge, are required to prevent cavities. The gingival surface of the pontic should be well glazed and have passive tissue contact to maintain gingival health. A few considerations to examine while selecting a case include acceptable enamel thickness, no severe rotation or malpositioning of abutment teeth, periodontal problems, adequate occlusal clearance, and parafunctional habits¹². Careful case selection and meticulous design planning, 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.

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.

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