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The Management of Forlorn Positioned Abutment – A Case Report

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ABSTRACT:-
In long-span fixed partial denture restoration, especially when pier abutment is present,itfunctions as a fulcrum, causing more fixed dental prosthesis to debond, which eventually has an impact on the success of fixed partial dentures,so a non-rigid connector is indicated in that conditions. The non-rigid connector is classified into a dovetail, loop connector, split pontic, cross-pin and wing.The rotation and resilience between the prosthetic restoration and abutment teeth are made possible by the split pontic stress-releasing action, which serves as "safety valves" against connector leverage forces.Split pontics are anticipated to offer a design with a promise for prosthesis stability and retention with a recognised aesthetics.

KEYWORDS:Split pontic, Stress breaker,Non rigid connector, Pier abutment.

I. INTRODUCTION

The pontic, connector, and retainer transmit the occlusal stresses exerted on a fixed partial denture to the supporting structures.[1]Span length,occlusion, bone loss, and periodontal condition are all factors that determines the prognosis of the fixed partial denture and its abutment.[1]Overload, leverage, torque and flexing are biomechanical elements that cause excessive stress concentration in a fixed partial denture.[1]

The occlusal stresses on the pier abutment is likewise referred to as a "intermediate abutment." According to GPT 9, it is "a terminal abutment that is situated between a natural tooth or implant and serves to support a fixed or removable dental prosthesis."[2]A long span fixed partial denture cannot be created in clinical scenarios where a pier abutment is present because the abutment acts as a fulcrum. A precision or semi-precision attachment is possible with an attachment.[3]

In order to effectively achieve a stress-breaking effect, this case report demonstrates the attachment of a "split pontic" precision attachment to a pier abutment problem.

II. CASE REPORT

A 47 year old male patient reported to department of prosthodontics with a chief complaint of missing lower right back teeth region since 6 months. On intraoral examination, teeth missing were mandibular right 1stpremolar.[Figure1]Radiographic examination showed that 2nd premolar was root canal treated and a core build up was done with composite with sound periodontium all over. The treatment plan was discussed with the patient and 3 options was given:

1. Single implants in relation to 44 and 46
2. Fixed partial denture with split pontic design
3. Removable partial denture

Due to financial constraints, patient opted for 2nd option i.e fixed partial denture with split pontic design. Tooth preparation in relation to 43,45,47 was done, then gingival dilation with retraction cord was done. Impression was madewith putty and light body impression material using putty reline technique. Temporization was done by using tooth coloured acrylic resin [DPI tooth moulding powder] using indirect technique. Wax pattern was fabricated with a dovetail shaped male component with female component enclosing attachment wasplaced in the distal aspect of pier abutment.[Figure 2] Casting was done in two partsin that the male part was connected to the anterior segment consisting of 43,44,45 and female component was connected to posterior segment consisting of 46,47.[Figure 3(a)]metal try in was done.[Figure 3(b)]ceramic layering was done to obtain a polished surface.[Figure 4(a)] Occlusal pre-maturities were corrected prior to cementation. The anterior segment was cemented, then the posterior segment was cemented using class 1 glass ionomer cement. Excess cement was removed.[Figure 4(b)]

III. DISCUSSION

This pier abutment acts as a fulcrum because of its strategic position when it is subjected to occlusal forces acting on the ends of the prostheses that will tend to lift the other end like a

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class I lever causing stress on the terminal abutments and ultimately failure of the fixed dental prosthesis and trauma to the periodontium.[3]

The success of the fixed partial denture is greatly influenced by the type of connector utilised, whether rigid or flexible.The application of these connectors must be done in a clinical setting.[4]It is not the best course of action to use rigid connectors in anfixed partial denture that calls for the restoration of two lost teeth and involves the presence of an intermediate pier abutment.

Non-Rigid Connectors are connectors that allow only a small amount of movement between separate parts of a fixed dental prosthesis.A split pontic is a flexible connector that makes it possible to put a fixed prosthesis without compromising how the tooth is prepared.[5]It entails creating the key-keyway mechanism underneath the pontic and constructing the half of the pontic that is integrated into either retainer in order to derive a parallelism.

An attachment selector method was created by Mensor M in 1973 to precisely identify the optimal attachment to employ depending on the height of the abutment tooth.Utilising pre-fabricated non-rigid connectors offers an added benefit over semi-precision alternatives because they are machine-made, which would be more accurate in function, stability, and reliability.[6]

According to Grubb HD, for fixed bridgework to be successful, a good occlusion, radiographic diagnosis, and proper care when making retainers on the abutment teeth are required.Similar to how a broken stress joint releases a fixed bridge from harmful strain, the tension caused by one tooth moving and rubbing against the others was reduced.[7]

In this case, we employ a modified split pontic, with the attachment positioned totally inside the pontic.When installing the pontic, the dovetail-shaped male component is positioned at the distal end of the pier abutment and the female component encloses the entire male component. This design has a number of benefits, including conventional tooth preparation with little tooth reduction for the tilted tooth and better aesthetics because the porcelain build-up may be completed without exposing the non-rigid connector's metal and stress distribution will be equalized, avoiding the breakage of the prosthesis. Technique-specific and requiring more time and money are the drawbacks.[8]The patient was followed up for 6 months and no problems were reported.

IV. CONCLUSION-

As a result, precise design philosophy, planning is essential for the reflexive fit of non-rigid connectors, which significantly decreased the leverage effect and contributed to the long-term performance of the long-span FPD with pier abutments.

Figure 1- Intraoral image

Figure 2- Wax pattern

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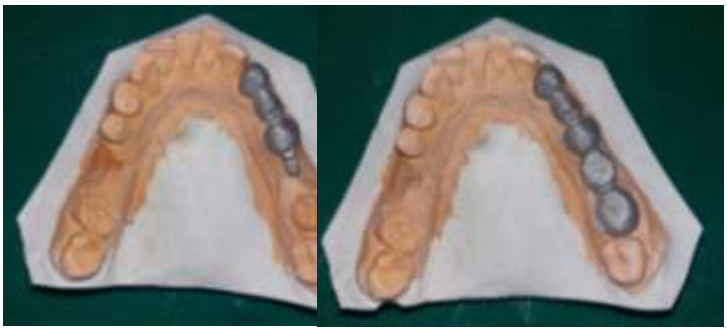

3(a)

3(b)

Figure 3(a)- Metal coping with split pontic configuration
Figure 3(b)- Metal try in

4(a)

4(b)

Figure 4(a)-porcelain fused to metal bridge,after ceramic firing, 4(b)- Post cementation of the prosthesis

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