

COMBINED PROSTHESIS WITH PRECISION ATTACHMENT FOR DISTAL EXTENSION KENNEDY CLASS II ARCH: A CASE REPORT

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ABSTRACT

Rehabilitation of a distal extension partially edentulous patient become challenging when patient is neither agree to place implants nor to have a removable prostheses. Fixed partial denture is not in option as there is no distal abutment. The solution of such a critical situation is to give combined prosthesis. A combined prosthesis carries the advantage of fixed prostheses without surgical intervention, where an acrylic prosthesis is retained with an extracoronal attachment to tooth or implant. This paper presents a case report of rehabilitating a mandibular unilateral distal extension partially edentulous with a combined prostheses of acrylic retained by extracoronal precision attachment system (OT unilateral attachment system, Rhein 83, USA)

KEYWORDS: Dental Prosthesis, Precision Attachment, Combined Prosthesis, Fixed-RPD, Extracoronal Attachment

Rehabilitation of partially edentulous Kennedy's class II is challenging when fixed prosthesis like implant placement is impossible due to unwillingness of patient and expect fixed prosthesis which is not possible as there is no distal abutment (Gupta et al, 2013). Therefore, combined prosthesis which consists of fixed prosthesis (crown) retaining acrylic partial denture with precision attachment is better treatment option. Precision attachment denture combines fixed and removable prosthodontics in such a way as to create most aesthetic partial denture possible. It consists of 2 components- matrix and patrix where matrix component is inserted into fixed prosthesis and matrix component into removable acrylic partial denture (Jain and Aggarwal, 2017). This case report presents fabrication of combined denture retained with extracoronal precision attachment system (OT Unilateral, Rhein 83, USA) in a partial edentulous Kennedy's class II mandibular arch.

CASE PRESENTATION

A 35 year old female patient reported outpatient department of Prosthodontics unit of Faculty of Dental Sciences, I.M.S., B.H.U. She complained of missing right lower posterior teeth i.e. 36 and 37. Following a thorough dental check-up to rule out other dental problems, clinical and radiographic evaluation was performed. She gave history of root canal treatment (RCT) in 34 and 35 teeth which was confirmed in IOPA radiograph. According to Kennedy's classification and Applegate's rule, mandibular arch was classified as Class II. Patient was diagnosed as mandibular unilateral distal extension Kennedy's class II. First treatment planned was implant placement for missing teeth and crowns for the RCT treated teeth but she refused to take any surgical and invasive procedure. She was also

given another option for removable prostheses but she wanted fixed prosthesis. Therefore, second best treatment option was executed. Combined prosthesis retained by extracoronal castable precision attachment was planned. Crowns were placed on previously RCT treated teeth and an attachment was given on distal surface of 35 crown to retain an acrylic prosthesis containing missing teeth. A written description of risks and benefits of proposed treatment was given followed by a written consent.

After proper history and clinical evaluation, radiograph was taken of the RCT treated teeth. Diagnostic cast was poured from the preliminary alginate impression. Tooth preparation of 34 and 35 abutment teeth was done (Figure-1, Figure-2) and temporary crowns were seated over the prepared teeth. Definitive impression was sent to lab where casting was done.



Figure 1: Preoperative (intra-oral view)



Figure-2 Preoperative (occlusal view)

The metal ceramic crowns were waxed up with attachment (male section) structures and casted. Porcelain firing was done. Acrylic denture record base with attachment (female section) was fabricated. The given attachment (OT Unilateral, Rhein 83, USA) consists of 2-in-1 combination of 1.8 mm horizontal and vertical spheres. The male section of the attachment have a vertical strut extending through the base of the attachment providing lateral stability and distal support to the prostheses (Figure-3). The female section is 1-piece castable housing which completely covers male section. Teeth-setting was performed after jaw relation. Denture trial was performed. Acrylisation of trial denture was done. Cementation of crown was done with glass ionomer cement (Figure-4, Figure-5) and acrylic prosthesis was attached with the given attachment (OT Unilateral Rhein 83, USA) (Figure-6, Figure-7). Occlusal contacts were evaluated in centric and eccentric positions. Patient was recalled after 1 day for post-insertion evaluation. Patient was instructed to maintain proper oral hygiene.



Figure 3: Patrix part attached to crown



Figure 4: Intra-oral view of fixed component



Figure 5: Occlusal view of fixed component



Figure 6: Combined prosthesis (intra-oral view)



Figure 7: Combined prosthesis (occlusal view)

DISCUSSION

According to GPT-9, "Precision attachment is a retainer consisting of a metal receptacle (matrix) and a closely fitting part (patrix); the matrix is usually contained within the normal or expanded contours of the crown on abutment tooth/ dental implant and the patrix is attached to a pontic or a removable partial denture" (Ferro,2017). Precision attachment is mostly indicated for long span edentulous arches, distal extension bases and non-parallel abutments (Gupta et al, 2013). Precision attachment is a connector consisting of 2 or more parts. One part is connected to root, tooth or implant and other part to the prosthesis. The attachment system used is extracoronal castable attachment positioned on distal surface of crown as an extension. The castable male component can be shaped easily with crowns during wax-up stage. Female component within the acrylic partial denture completely covers the male component. Fixed removable prosthesis was firstly introduced by Dr. James Andrews (Munot et al, 2017; Walid, 1995; Jain, 2013). With proper case selection, diagnosis and treatment plan, precision attachment denture is a good treatment option. The limitations associated with this attachment are its fabrication requires well-trained lab technicians and with time due to wear and tear parts of attachment needs to be replaced (Angadi et al, 2012).

CONCLUSION

This case report clarifies the dilemma of giving either fixed or removable prosthesis in cases where distal

abutment is missing and patient is unwilling for implants (due to fear of surgery). Combined prosthesis is the solution of placing prosthesis in distal extension cases without surgery. Combined prosthesis consists of fixed prosthesis (crown) and removable prosthesis (acrylic partial denture) which are attached with each other by an attachment system (OT Unilateral, Rhein 83, USA).

REFERENCES

- Angadi P.B., Aras M., William C., Nagaral S., 2012. Precision attachments: applications and limitations. *Journal of evolution of medical and dental sciences*, **1**(6):1113-1121.
- Ferro J.K., 2017. The glossary of Prosthodontic Terms. 9 edition. *J. Prosthet Dent.*, **117**(5S):71.
- Gupta N., Bhasin A., Gupta P. and Malhotra P., 2013. Combined prosthesis with extracoronal castable precision attachments. *Case Rep Dent*.
- Jain A.R., 2013. A prosthetic alternative treatment for severe anterior ridge defect using fixed removable partial denture Andrew's bar system. *W joud.*, **4**(4):282-285.
- Jain R. and Aggarwal S., 2017. Precision attachments- an overview. *Annals of prosthodontics and restorative dentistry*, **3**(1):6-9.
- Munot V.K., Nayakar R.P. and Patil R., 2017. Prosthetic rehabilitation of mandibular defects with fixed RPD prosthesis using precision attachment: a twin case report. *Contemp Clin. Dent.*, **8**(3):473-478.
- Walid S., 1995. Bone anchored Andrew's bar system a prosthetic alternative. *Cairo Dent. J.*, **11**:11-5.