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RESEARCH ARTICLE

CAST PARTIAL DENTURE USING PRECISION ATTACHMENT: A CASE REPORT

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ABSTRACT

Aim: The aim of this case report is to demonstrate the clinical and prosthodontic management of a partially edentulous patient using a cast partial denture with precision attachments, emphasizing its advantages in improving retention, esthetics, and patient comfort compared to conventional clasp-retained removable partial dentures. **Methods**: This clinical report shows how to use the extra coronal attachment, precisagix, to restore a partially edentulous mandibular arch with detachable partial dentures. A matching fitting or housing was integrated into the removable prosthesis along with the crown, which allowed for some movement between the two parts of the prosthesis. This served as a non-rigid stress breaker and assisted in distributing the occlusal load. **Conclusion:** Semi-precision attachment retained cast partial dentures would be a great choice in situations when aesthetics are a top priority and the financial situation precludes the use of dental implants. The success of a distal extension cast partial denture depends on the abutment's ability to regulate stress, which is accomplished by using precise impression technique, wide coverage, a sturdy denture base, abutment splinting, and appropriate attachment selection. Semi-precision attachments are a feasible option that can enhance function, retention, and appearance with appropriate case selection and treatment planning.

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INTRODUCTION

A retainer made up of a metal container and a closely fitting component is called an attachment. The male "patrix" component is connected to a pontic or the denture framework, while the female "matrix" component is typically contained inside the extended or normal contours of the abutment tooth's crown. They are separated into two categories: semiprecision and precision attachment. All precision attachments have a very accurate smooth movement and are prefabricated, machined to extremely fine tolerances. They are often adjustable, some contain elements that can be replaced, and some have many functions like switching from friction retention to snap retention. [1,2] Furthermore, some are resistive to a certain level of unfavourable stress transfer to the abutment tooth. These attachment styles are referred to as "stress directors," Rotatory movement (movement in numerous planes) or hinge-like movement (movement in one plane) are the two types of flexible attachments. Semi-precision attachments are formed using patterns made of wax, nylon, or plastic, or they can be hand waxed by a dental laboratory worker. Because of the nature of their creation, they have less exact tolerances.[3,4] Attachments are further divided into two categories. Intra-coronal refers to a semi-precision or precision attachment that is situated inside the abutment tooth's contours, whereas extra-coronal refers to an attachment that is situated outside of them. [5] This clinical report shows how to use the extra coronal attachment, precisagix, to restore a partially edentulous mandibular arch with detachable partial dentures. A matching fitting or housing was integrated into the removable prosthesis along with the crown, which allowed for some movement between the two parts of the prosthesis. This served as a non-rigid stress breaker and assisted in distributing the occlusal load.

CASE REPORT

A 53 year old male patient reported to the Departmentof Prosthodontics and Crown and Bridge with complaint of missing teeth. Extraoral examination revealed facial asymmetry. Onintraoral examination teeth numbers #14, 24, 25,26,27,46, were found missing ,there was generalised attrision, silver amalgam filling with 16, facets with upper and lower posterior teethwere found missing.Past dental history revealed , Patient had undergone multiple extraction in maxillary and mandibular region. After clinical and radiological examination andexplaining the pros and cons of the treatment optionsit was decided to rehabilitate the case with attachment retained cast partial denture. To create the

diagnostic cast, an irreversible hydrocolloid imprint material was used to take a primary impression, which was then poured into a dental stone. Ceka Sagix attachment placement was intended for distal surface of 23 And a 1.7 mm spherical male was planned to be placed. The first master cast was created by preparing tooth number 23 by taking an impression using extra silicone impression material and pouring it into a die stone. The plastic male portion of the attachment was affixed to the mesial side of the wax patterns after the prepared teeth were waxed up in the standard way. The correct insertion path must be chosen in order to enter the cast plastic male.

Pre Operative A] Maxillary Arch

Pre Operative; A] Mandibular Arch

Pre operative intraoral view

Occlusion on right side

Occlusion on left side

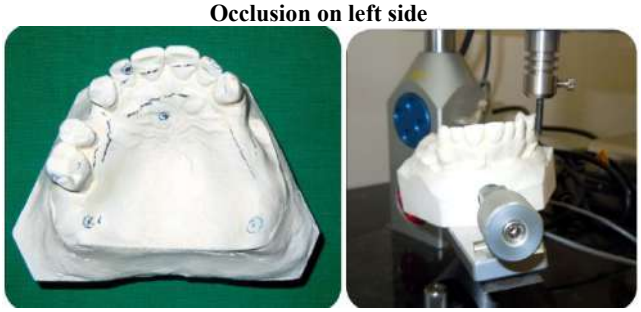


Fig 1. Diagnostic surveying

Fig 2.]CEKA PRECI SAGIX attachment

Following the attachment of a paralleling mandrel to the surveyor, the plastic males were integrated into the prepared tooth's wax-up. All of the males' paths were drawn parallel to one another. When using detachable partial dentures, a lingual bracing arm is advised. A hard dental alloy was used for the casting process.An impression of the male portion was made at the subsequent visit using extra silicone impression material. The male part's impression was placed in cold-cured acrylic resin, and die stone was used for the remaining portion. This made sure the male portion wouldn't shatter during the retrieval of the second master cast. The female is being

Fig. 4. Tooth preparation with 23 for metal ceramic crown

Fig. 5. Elastomeric impression

Fig. 6. Wax pattern for coping along with preci sagix plastic male attachment

processed. Lay the pink replicating dummies on top of the males and line them up in a line. Remove the duplication in the refractory material and the undercuts. Complete the cast frame without causing any harm to the female's cavity's retentive ledge. The access opening should be highly polished. A framework try-in was conducted. A record of the jaw connection and a tooth arrangement were established. Once the denture has been tried on, process the acrylic resin by pressing the pink processing female into the frame with the insertion tool.

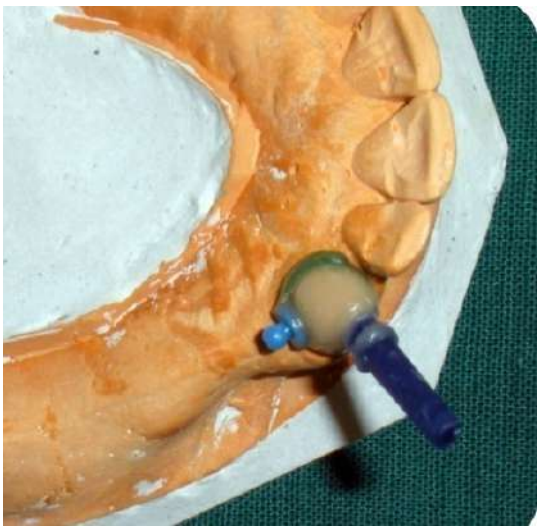


Fig. 7. Spruing of wax pattern

Fig. 8. Spruing in the investment ring

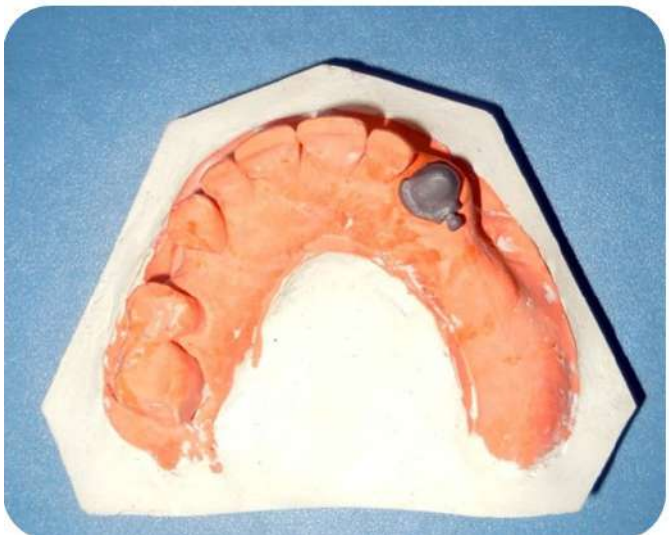


Fig. 9. Casted coping along with preci sagix male attachment

Changing the processing female: To swap out a processing female, remove it using a pointed tool. Insert a fresh female using the insertion tool. There are three retention levels available:

Fig. 10. Temporary crown cementation and rest seat preparation on 13 , 16

Fig. 11. Pick upimpression

Fig. 12. Retrieved cast

Fig. 13. Refractory cast

Yellow: typical retention White: decreased recall Red: higher retention. The smile's postoperative appearance demonstrated a noticeable improvement. Recall visits were made at one week intervaland regular oral hygiene instructions were explained to the patient.

Fig 14. Wax pattern fabrication for cast partial framework

Fig 15. Spruing the wax pattern

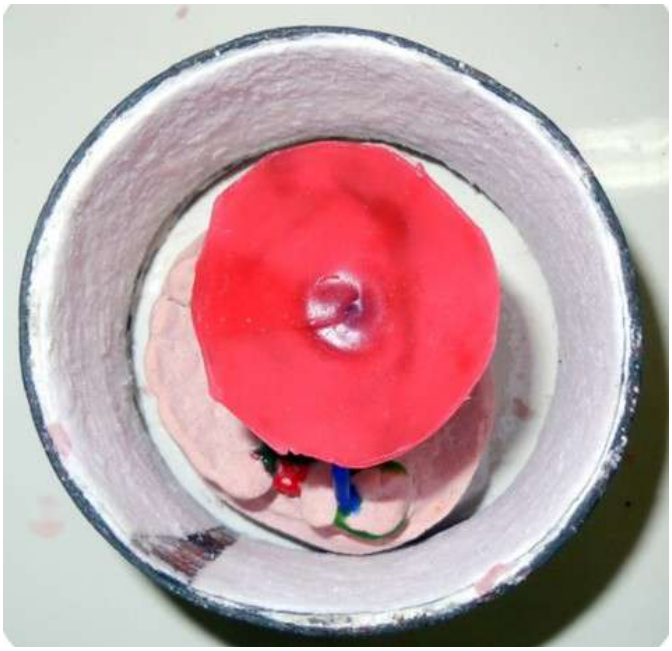


Fig 16. Investing the pattern

Fig. 17. Retrived casting

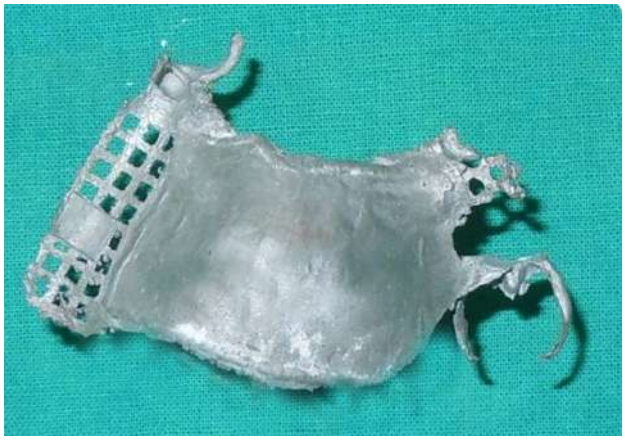


Fig. 18. After sprue cutting

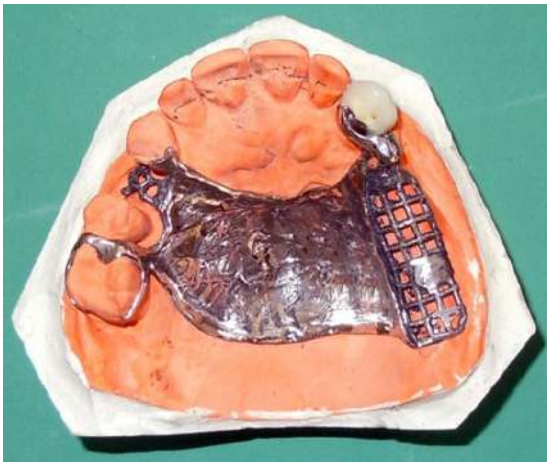


Fig. 19. After finishing and polishing

Fig. 20. After border moulding in green stick impression compound

Fig. 21. Wash impression in light body elastomeric impression material

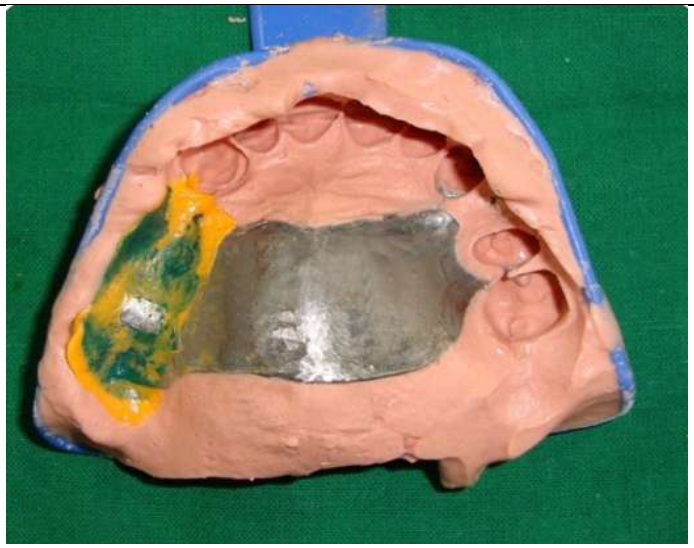


Fig. 22. Pick up impression

Fig. 23. Bite recorded on wax rim

Fig. 24. Try in

Fig. 25. Flasking procedure

Fig. 26. Facebow Recorded

Fig 27[Acrylised cast partial denture

Fig. 28. Placement of female processing clip

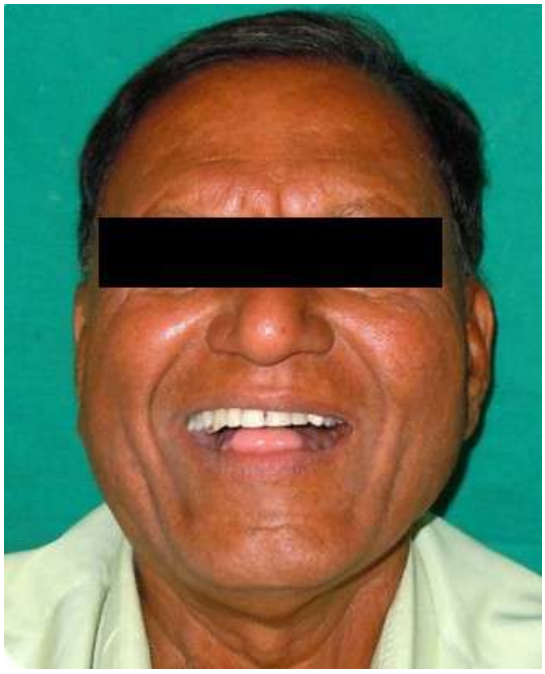
Fig. 29. CPD Insertion

Pre Operative

Post Operative

DISCUSSION

Direct casting of plastic wax or a refractory pattern is used to create semi-precision attachments. It offers the remarkable benefits of increased comfort, retention, and aesthetics as well as less postoperative cast partial denture corrections. Usually recommended for nonparallel abutments, distal extension bases, and long span edentulous arches. Precision attachments were developed in response to the need to balance functional stability and aesthetic appeal in partial dentures. The size and form of the abutment teeth should be taken into consideration when choosing between an intracoronal and an extracoronal attachment. Compared to extracoronal attachments, intracoronal attachments necessitate greater tooth reduction and preparation.[5,] Here, the extracoronal male and female components made up the preci-sagix. Castable plastic males that are integrated into the wax-up with paralleling mandrels make up Sagix. There was a 2.2 mm diameter sagix utilised.[6,7]



Post Operative

Three levels of retention are offered for female components: The colours red, white, and yellow indicate increased, decreased, and normal retention, respectively. The excessive tooth reduction, compromised embrasures, and poor aesthetics that occur with using intracoronal attachments are all addressed with semi-precision attachments. The other benefits include a large selection of alloys and simplicity of handling. Each resilient counterpart attachment has a shelf life specified by the makers. The plastic resilient cap needs to be replaced when its retentive capacity is depleted due to wear and tear from use.[7-9]

CONCLUSION

Semi-precision attachment retained cast partial dentures would be a great choice in situations when aesthetics are a top priority and the financial situation precludes the use of dental implants. The success of a distal extension cast partial denture depends on the abutment's ability to regulate stress, which is accomplished by using precise impression technique, wide coverage, a sturdy denture base, abutment splinting, and appropriate attachment selection. Semi-precision attachments are a feasible option that can enhance function, retention, and

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REFERENCES

1. The glossary of prosthodontic terms. 9th edition. J Prosthet Dent 2017;117: e1-e105.
2. Burns DR, Ward T. A review of attachments for removable partial denture design: Part Classification and selection. Int J Prosthodont 1990;3:98-102.
3. Becerra G, MacEntee M. A classification of precision attachments. J Prosthet Dent 1987;58:322-327.
4. Preiskel HW. Precision Attachments in Prosthodontics. Vol 1: The applications of intracoronal and extracoronal attachments Chicago: Quintessence, 1984.
5. Gozneli R, Yildiz C, Vanlioglu B, Evren BA, Kulak-Ozkan Y. Retention behaviors of
6. different attachment systems: Precious versus nonprecious, precision versus semi-precision. Dent Mater J. 2013;32:801-7.
7. Thapa D, Shrestha P. Removable prosthesis with extra coronal attachment for the management of distal extension case: a case report. J Nep Prosthodont Soc (JNPS) 2018; 2:100-04.
8. Pandey B, Joshi SP, Thapa D, Shrestha P. Use of a semi-precision attachment to fabricate a removable partial denture: a case report. Journal of Nepalese Prosthodontic Society. 2019 Dec 31;2(2):108-12.
9. Hedzelek W, Rzatowski S, Czarnecka B. Evaluation of the retentive characteristics ofsemi-precision extracoronal attachments. J Oral Rehab 2011; 38:462-68.
10. Patil S, Kulkarni S, Thakur S, Naik B. Crown lengthening procedure following intentionalendodontic therapy for correction of supraerupted posterior teeth: Case series with long-term follow-up. J Ind Soc Periodontol 2016;20:103-8.

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