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CASE REPORT

Immediate Removable Partial Denture For Aesthetic Anterior Maxillary Tooth Rehabilitation

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ABSTRACT

Background: An anterior tooth extraction can cause aesthetic and psychological problems. An Immediate Removable Partial Denture could be the choice of aesthetic rehabilitation because is inserted immediately following the natural tooth extraction. **Purpose:** This paper reported the case of Immediate Removable Partial Denture for aesthetic anterior maxillary tooth rehabilitation in a 41-years old woman teacher. **Case Report:** A 41-years-old woman teacher wasn't confident with her #22 tooth microdontia and malpositioned. In order to rehabilitated her aesthetic problem could be done by immediate #22 tooth extraction. **Case Management:** Removable Partial Denture preparation was done by removing the #22 tooth. The denture was inserted immediately after the extraction. After the denture was inserted, at the 24-hours, 3 days, 1 week, and 1 month should be evaluated to know the bone resorption process and whether the Immediate Removable Partial Denture should be relined or not. **Conclusion(s):** The Immediate Removable Partial Denture provides an aesthetic rehabilitation and increases the patient's self-confidence because the patient has no edentulous period.

Key Words: Immediate Removable Partial Denture, Aesthetic, Anterior Tooth Extraction

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BACKGROUND

Modern dentistry offers many options for the restoration of partially edentulous patient, like Removable Partial Dentures (RPDs). Many patients choose RPDs due to factors ranging from cost to physiology.¹ RPDs are utilized to improve the aesthetic and masticatory functions.^{2,3} According to Gunadi, et al. (2013), there are two types of RPDs depend on the fabrication and the timing of insertion, Conventional RPDs and Immediate RPDs (Immediate Denture).⁴ Immediate denture could be inserted immediately following the natural teeth extraction, mainly anterior teeth so that minimize the aesthetic problem.

Immediate denture (ID) is a removable partial denture or a complete denture that was constructed for placement immediately after the natural teeth extraction.^{5,6} ID is a necessity to prevent anxiety and embarrassment because patient has no edentulous period and can do the daily activities without worried.^{7,8} ID can restore the phonetic and mastication functions, also preserve the remaining oral tissues.^{9,10}

Currently, there are two popular types of ID, Conventional (*or Classic*) Immediate Denture (CID) and Interim (*or Transitional or Nontraditional*) Immediate Denture (IID).¹¹ In CID, the patient has lost the posterior teeth and the anterior teeth are removed at the day of immediate denture placement. After the placement of the CID and after the healing process is completed, the denture is refitted or relined to serve as the long-term prosthesis. While in IID, the anterior and the posterior teeth remain until the

day of extraction. After the healing process is completed, a new denture is fabricated as the long-term prosthesis.^{12,13}

This paper reported the case of RPDs with CID for aesthetic anterior maxillary tooth rehabilitation.

CASE REPORT

A 41-years old woman teacher visited the Department of Prosthodontic Faculty of Dentistry Hang Tuah University, needed for RPDs to rehabilitate her aesthetic and masticatory functions. The patient was willing to have her 22 tooth being extracted and reshaped without being edentulous because the patient was a teacher and asked for immediate replacement of the extracted tooth in order to continued her professional duties. Beside that, the patient also had lost some of her posterior teeth. The patient was informed about Immediate Removable Partial Denture to maintain her aesthetic and masticatory problems.

Extra-oral examination revealed that temporomandibular joint was normal, face shaped was tapering, eyes, nose, and lip were normal. Intra-oral examination revealed that 22 tooth was microdontia and malpositioned, 14, 15, 16, 22, 23, 24, 25, 26, 36, 37, 44, 45, 46 teeth had been extracted because of dental caries, calculus on the anterior and posterior region both maxillary and mandibular, caries on cervical mesial side 43 tooth, 27, 33, 34 teeth were supraposition, and also there were diastema and gingival recession on the anterior region mandibular teeth (Fig 1).



Fig 1. Pre Treatment Intra-Oral Condition Of The Maxillary And Mandibular Teeth.



Fig 2. Panoramic radiographic examination revealed that the remaining teeth had lost a few bone resorption.

According to Kennedy classification, maxillary: Class III Kennedy modification 1 with 22 tooth microdontia and malpositioned, mandibular: Class II Kennedy modification 1.

CASE MANAGEMENT

In initial appointment, the patient was interviewed for the dental and medical history related to the chief complaints which accompanied the diagnostic examination. Panoramic radiographic examination was also taken. The patient was informed about the limitations of the Immediate Denture. Primary impressions for the diagnostic casts were made with irreversible hydrocolloid impression material (alginate) in perforated stock trays and were poured using gypsum type III (dental stone). The diagnostic casts served several purposes as an aid to diagnosis and treatment planning.

Mouth preparation followed the preliminary diagnosis and the development of a tentative treatment plan. Mouth preparation included

periodontal treatment planning, scaling and root planing on the anterior and the posterior region both maxillary and mandibular to reduce oedema possibility and prevent the complications after extraction. Restorative procedure, caries on cervical mesial side 43 tooth was filled with Glass Ionomer Cement (GIC). After that, occlusal adjustment 27, 33, 34 teeth that were supraposition on the incisal and occlusal side in accordance to the Curve of Spee, so that the maxillo-mandibular relationship would be harmony and also prevented the traumatic occlusion. Then occlusal rest seat preparation on 17, 27, 47 teeth. The dentinal tubules should be covered by varnish to prevent the sensitive teeth.

The mandibular individual tray was made with ostron blue and was border moulded with green stick compounds and then the spacer was removed, the perforations were made in the tray to enhance the flow of the impression material. The mandibular functional impression was made with silicone impression material and the maxillary functional impression was

made with irreversible hydrocolloid impression material (alginate) to produce the working casts (Fig 4). The working casts were poured using gypsum type III (dental stone).



Fig 4. Maxillary And Mandibular Functional Impressions.

The working casts were surveyed and blocked out. Afterwards, maxillary and mandibular relations were recorded with the occlusion rims in the patient (Fig 5), then the working casts with the occlusion rims were mounted on the articulator (Fig 6).



Fig 5. Maxillary and Mandibular Record With Occlusion Rims In The Patient.

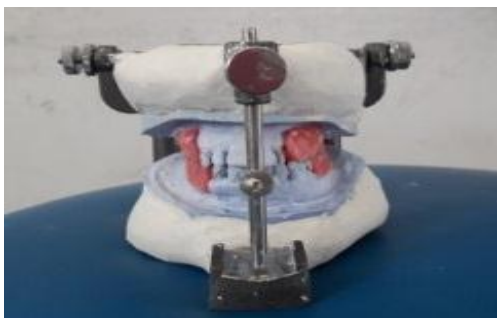


Fig 6. The Mounted Working Casts On The Articulator.

Artificial teeth shade selection based the patient's natural teeth were selected by a shade guide. While artificial teeth shape and size selection based on the patient remaining teeth as a guide. After making the clasps, the artificial teeth arrangement on the posterior region both maxillary and mandibular (Fig 7). The occlusion of the artificial teeth arrangement were evaluated in the patient if the occlusion was harmony or not (Fig 8).

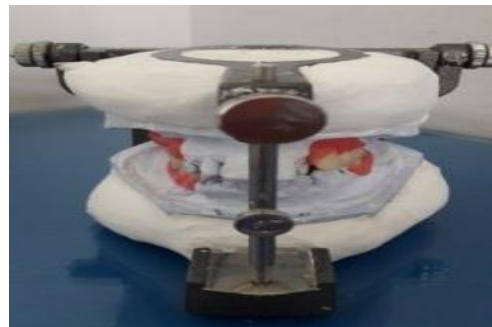


Fig 7. The Artificial Teeth Arrangement On The Articulator.



Fig 8. The Evaluation Of Artificial Teeth Arrangement In The Patient.

After the evaluation was done, 22 tooth was trimmed on the working cast with a carbide bur. The trimming used the pocket depths as a guide and should be concave. The labial tissue could be trimmed deeper about 1mm than the pocket depths. The aim was to preserve as much bony tissue as possible.

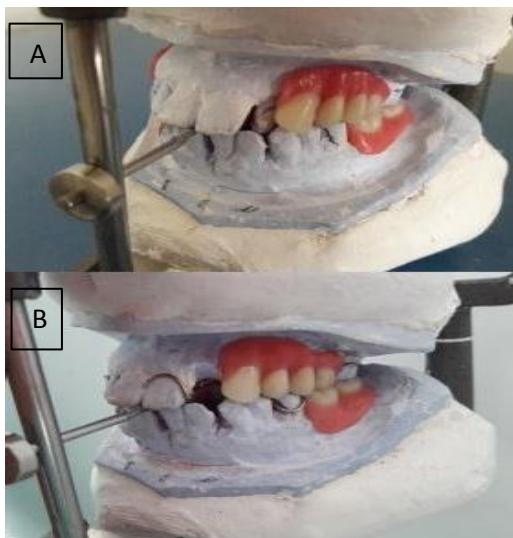


Fig 9A. #22 Tooth Before Trimmed.
Fig 9B. #22 Tooth After Trimmed.

After that, 22 artificial tooth arrangement on the trimming site followed by contouring (Fig 10). After contouring was done, the dentures were then fabricated with heat cured polymethylmethacrylate resin.



Fig 10. #22 Artificial Tooth Arrangement On The Trimming Site.

The dentures that had been constructed, were prepared and polished, should be considered about the borders of the denture bases, the facial surfaces, teeth and adjacent areas. All of the sharpened margins were rounded off.

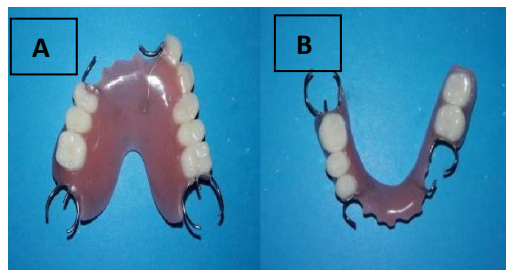


Fig 11A. Maxillary RPD With An Immediate Denture.
Fig 11B. Mandibular RPD.

At the day of the denture placement, the patient was prepared for the extraction. Asepsis on the extraction site with povidon iodine 2%, then 22 tooth was extracted under local anesthetic, nasopalatine nerve block and anterior superior alveolar nerve block with pehacain (lidocain 2% + adrenaline 1:80.000). A hemostat was placed in the extraction socket to reduce the bleeding and the patient was instructed to bite the sterile gauzed firmly for about 20 minutes.



Fig 12. Extraction Procedures.

Before the denture's placement, the dentures were cleaned with antiseptic liquid soap. After the bleeding had stopped, the maxillary and mandibular RPDs were inserted and should be considered about if there were sharpened clasps, occlusion, and articulation, mainly if there was a premature contact with an articulating paper.



Fig 13. Insertion Of The RPDs With An Immediate Denture.

The patient was given post-extraction home care instructions, which include not to removed the immediate denture and used it all day during the first 24 hours due to post-extraction oedema that could make its reinsertion impossible for 3 to 4 days until reduction of oedema. The patient should avoid rinsing, avoid drinking hot liquids, and diet should be liquid or soft. Ice packs could be wrapped in a cloth and applied in 20 minutes intervals immediately after the extraction and throughout the first 24 hours could reduce bleeding and swelling. Antibiotic and analgesic medications were prescribed as required and the patient was recalled for the 24 hours visit for necessary adjustments and checked up.

At the 24 hours visit, the patient complained if she felt a little pain on the gingival around the extraction site because of the labial flanged. The labial flanged was reduced on the inside using a fraser bur. Intra-Oral examination revealed that there were not any pain or irritations. There were not any swelling or bleeding in the patient. The patient was instructed to continue the antibiotic and analgesic medications. After the 24 hours visit, the patient should be shown how to removed the denture after eating to clean it with soft toothbrush and antiseptic liquid soap, also to rinse the mouth at least three to four times daily

to kept the extraction site clean. After cleaning, the dentures should be worn immediately.



Fig 14. Condition Of The Maxillary And Mandibular Teeth At The 24 Hours Visit.

On the 3 days visit after the insertion, the extraction socket began to healing. There were not any sore spots or traumatic ulcerations. The patient felt more comfortable with the dentures and could eat well. There were no problems with the occlusion and articulation, also the retention and the stabilitation of the dentures were in a good condition.

On the first week visit after the insertion, the extraction socket healing was almost completed. The patient's adaptation with the dentures were better and felt really comfortable with the dentures. The retention and the stabilitation of the dentures still in the good condition.



Fig 16A. Condition Of The Maxillary And Mandibular Teeth Without The Dentures On The 1 Week Visit.

Fig 16B. Condition Of The Maxillary And Mandibular Teeth Without The Dentures On The 1 Week Visit.

On the first month visit after the insertion, the extraction socket was completely healing. The patient's adaptation with the dentures were better and felt really comfortable with the dentures. The retention and the stabilisation of the dentures still were in the good condition so that the relining wasn't needed.



Fig 17A. Condition Of The Maxillary And Mandibular Teeth Without The Dentures On The 1 Month Visit.

Fig 17B. Condition Of The Maxillary And Mandibular Teeth With The Dentures On The 1 Month Visit.

DISCUSSION

On this case, the maxillary RPD with the conventional immediate denture was constructed with partial flanged. Partial flanged gives more natural appearance so that the aesthetic factor could be better achieved.⁴ Healing process is faster because the less contact between the oral tissues and the partial flanged so could minimize the irritation and helps accelerating the healing period.^{4,14} Partial flanged also gives better retention and stabilisation.^{15,16}

Immediate denture gives many advantages, especially increases the

patient's self-confidence because the patient has no edentulous period after the anterior teeth extraction.¹⁷ 22 tooth that was malpositioned, became looking better. The patient who is a teacher could do her professional duties without worried. Immediate denture also has therapeutic and prophylaxis functions, because immediate denture acts as a bandage to help control bleeding, to protect against trauma and oral environment aggressions, such as food, debris, and saliva coming in contact with the wound, to protect the blood clot, and promote rapid healing.^{18,19} The patient is likely to adapt more easily to the dentures because speech and mastication are rarely compromised.^{8,12}

Less postoperative pain is likely to be encountered because the extraction sites are protected by the immediate denture.^{13,19} Immediate denture also may result in reduced residual ridge resorption and also promotes better ridge form.^{20,21} Less bone resorption by using immediate denture than waiting for the healing process, because there is functional stimulation from the used denture. Moreover, by using immediate denture face height and circumoral support can be maintained.

Immediate denture also has many disadvantages, there is no try-in possible so the final result couldn't be predicted. Increased treatment cost because more chair time and immediate denture might be relined after few months.^{12,13}

When trimmed 22 tooth, the labial tissue could be trimmed deeper than the pocket depths. This is because the anterior maxillary ridge resorbs

upward and backward with progressive bone loss.²²⁻²⁴

The success or failure treatment depends on several factors, such as professional-patient relationship, the patient's attitude towards the use of the dentures, personality, the quality of the dentures, and the oral condition of the patient. The cooperative patient plays an important role in the successful treatment. The patient should be explained about the advantages and disadvantages of the immediate denture before the treatment was planned. The instructions should be emphasized to the patient so that the dentures could properly function and comfortably used.

CONCLUSION

The patient was satisfied with the dentures and was happy with her aesthetic appearance. Immediate denture could rehabilitated the aesthetic and increases the patient's self confidence because the patient has no edentulous period.

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