



Immediate screw retained Implant Supported Full Mouth Rehabilitation with Porcelain Fused to Metal Prosthesis

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ABSTRACT

Person without teeth is like a vehicle without engine. Completely edentulous state is the most serious consequences of the teeth loss. There are number of etiological factors responsible for loss of teeth which affects esthetics, phonetics, masticatory efficiency etc. Removable dental prosthetic rehabilitation can improve esthetics but reduces masticatory efficiency to one fourth of natural dentition and also can't prevent alveolar ridge resorption. The only option of fixed dental prosthesis in completely edentulous state with completely decayed root stumps is implant supported prosthetic rehabilitation which is no doubt an expensive and time taking procedure but can restore masticatory efficiency up to 80% and can prevent alveolar ridge resorption. Immediate implant placement further reduces ridge resorption and takes less time in comparison to conventional method of implant placement. In this case report 76 years old man, was successfully rehabilitated with screw retained implant supported- porcelain fused to metal prosthesis.

Key words: - Complete edentulous state, Immediate implant placement, Implant supported fixed prosthesis, Masticatory efficacy

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INTRODUCTION

Completely edentulous state is the most serious consequences of the teeth loss. Patients are unable to chew the food which results in poor general health. There are number of etiological factors responsible for loss of teeth, which affects esthetics, phonetics, masticatory efficiency etc. We can restore the edentulous condition either by removable dental prosthesis i.e. complete denture or by fixed dental prosthesis[1]. We can restore facial esthetics and phonetics with the removable prosthesis but can't restore masticatory efficiency[2]. Also Residual ridge resorption is an unavoidable consequence of tooth loss irrespective of perfect denture fabrication. If we want to restore the condition with implant supported fixed prosthesis the amount of alveolar bone is a vital factor. We can prevent alveolar bone resorption by preserving tooth root or replacing it immediately with dental implants[3-4]. Here we present a case report of a 76 yr. old person who reported to the department of Prosthodontics with multiple root stumps in maxillary and mandibular arch and want to replace them with fixed prosthesis. We had planned for immediate implant placement followed by fixed screw retained porcelain based prosthesis.

CASE REPORT

Pre-operative information and treatment planning.

A 76 yr. old man reported to the Department of Prosthodontics with the chief complaint of inability to chew the food due to absence of teeth. Also, he wants to correct his facial appearance.

On general examination:-no relevant medical history.

On extra-oral examination:- no facial asymmetry, all the mandibular movements were within range, no abnormality with TMJ and muscles of mastication.

On intra-oral examination:- no gross abnormality present with soft tissues like cheeks, oral mucosa, palate, floor of mouth and Tongue. He had multiple root stumps in maxillary and mandibular arch i.e. 11,12,13,14,17,22,23,24,25,26,31,32,33, 34,35,38,42,43,44,45,47.(Figure 1)



Figure 1.A. Pre-operative Intra Oral.B. Occlusal of Mandibular Arch..C. Intra Oral Occlusal of Maxillary Arch.

Radiographic examination:-OPG and CBCT(Figure 2 and 3) investigations were done which shows adequate bone in all quadrants.

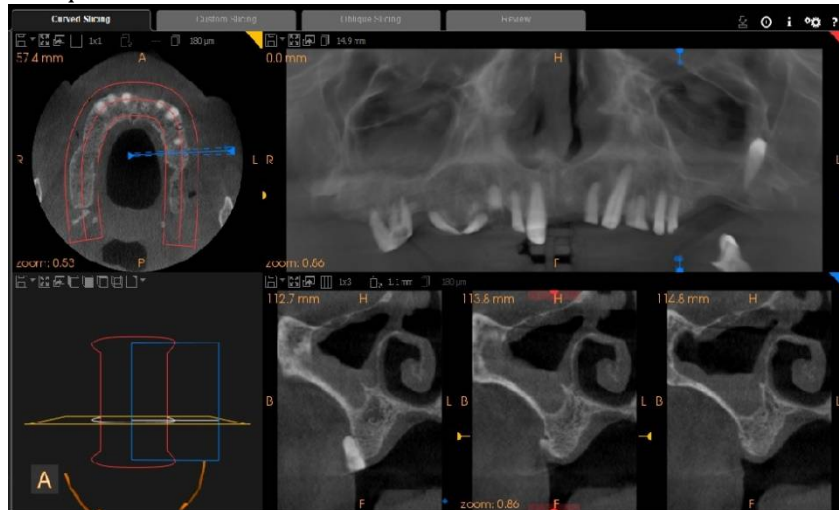


Figure 2.Maxillary CBCT.



Figure 3.Mandible CBCT.

Laboratory investigation:- All blood investigations were within normal range.

Treatment plan:-Immediate removable of all root stumps, Immediate complete denture and immediate placement of implants followed by screw retained implant supported fixed prosthesis was planned.

Surgical procedure:- Alginate impressions were made, both for maxillary and mandibular arch and jaw relation were made after border molding and a final denture was made after trimming of cast. Removal of all root stumps was done under local anesthesia followed by immediate implants placement in maxillary and mandibular arch. Six implants were placed in maxilla and 5 implants were placed in mandible(**Figure 4**)[(4.2x13mm, 16, 14, 26, 24, 34, 44),(3.75 x 13mm, 12, 22),(3.75x 10mm, 31)(5 x 10mm 46) and(5x13mm, 36).]

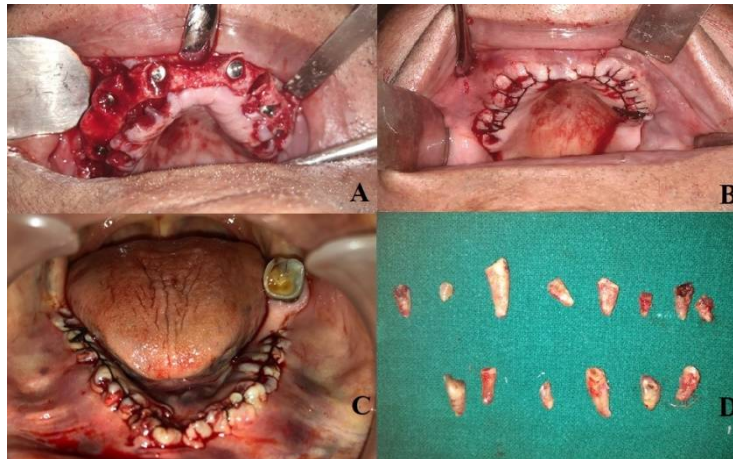


Figure 4.A. Surgical Procedure with Implant Placement in Maxillary Arch.

Figure 4.B. Complete flap approximation with suture in Maxillary Arch.

Figure 4.C. Implant Placement and Complete flap approximation with suture in Mandibular Arch.

Figure 4.D. Extracted root stumps.

Relining of complete denture was done after 3 weeks and denture was given to patient as an interim prosthesis for 6 months. After 6 months 2nd stage surgery was done for mandibular arch and after one week open tray impression copings were attached and splinting was done with ligature wire (Figure 5). Impressions were made with polyether impression material with a customized impression tray (Figure 6). Analogue was attached and gingival mask was made and cast was poured. Jig trial was done in order to check the correct implant position (Figure 7). After that jaw relation was done with previous maxillary denture (Figure 8), followed by fabrication of DMLS metal framework (cobalt-chromium nickel free alloy) with non-hexed casting abutments. After its trial for passive fitting (Figure 9, 10)

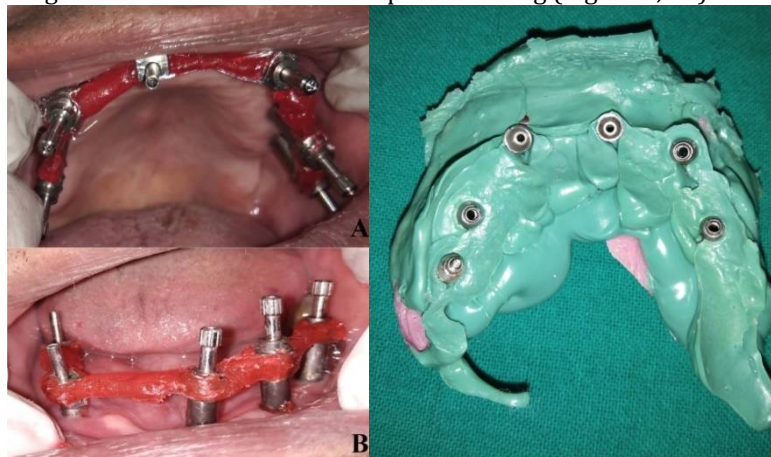


Figure 5. Impression Maxillary (A) and Mandibular (B) Figure 6. Polyether Material of Maxillary arch.

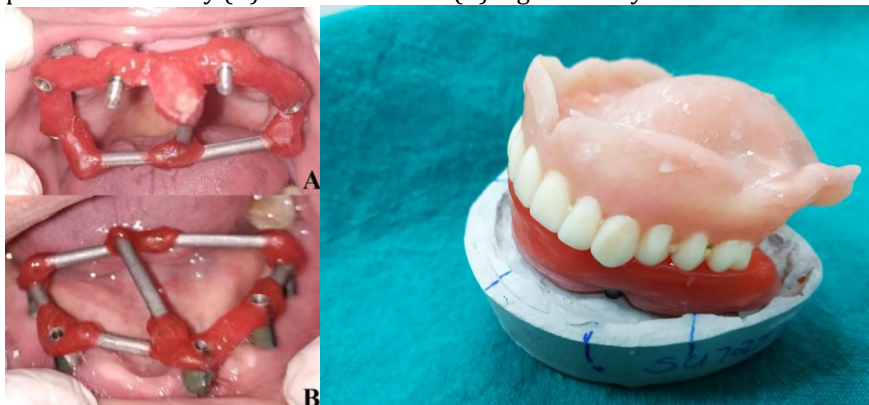


Figure 7. Confirmatory jig trial Figure 8. Mandibular jaw records with previous maxillary denture.



Figure 9. Mandibular frame work trial. Figure 10. Post-Operative Radiograph.

final porcelain layering was done. Same procedure was done for maxillary arch. 2 multi-unit abutments were used for maxillary anterior implants. Jaw relation and final trial was done (Figure 11,12). The screw of both the arches were preloaded with 25 N/cm² and screw holes were blocked followed by final screwing of prosthesis (Figure 13),



Figure 11. Jaw Relation - Intra Oral View. Figure 12. Trial for final Prosthesis.



Figure 13.A. Intra-oral Frontal view of Final Prosthesis in complete occlusion. Figure 13.B. Intra-oral Left Lateral view of Final Prosthesis in complete occlusion.

The occlusion was verified for mutually protected occlusion and final prosthesis was delivered to patient with a night guard w.r.t. to maxillary arch. Patient was recalled after 1 week, 1 month, 3 months, 6 months and 1 year for verification of occlusion and other problems (Figure 14).



Figure 14. Pre (A) and Post (B) operative extra-oral frontal view.

DISCUSSION

Edentulousness leads to reduce overall growth of a person. So, faster rehabilitation is a necessity. Conventional procedure of implant rehabilitation takes around 1 year. Immediate implant procedure

reduces overall time for the final prosthesis fabrication and also prevents the resorption of hard and soft tissues. Primary stability is the pre-requisite for immediate implant procedure[5]. There are many prosthetic treatments options available with implants for completely edentulous patients, hybrid prosthesis is used when we have to restore the soft and hard tissue resorption in-order to improve the facial esthetics, in these cases we generally use acrylic as the material of choice for final prosthesis. Acrylic reduces weight of the prosthesis. With fixed prosthesis we generally restore lost teeth and associated gingival tissue. Fixed prosthesis is mainly recommended in those cases where tissue loss is not much[6]. In this case we don't have much recession because all the root stumps were present so we decided to go for fixed prosthesis in which, ideally one implant should be placed for one missing tooth but this is not possible in every scenario may be due to cost factor or available bone for implant placement. In this case we have placed 6 implants for maxillary arch and 5 implants for mandibular arch. Fixed and immediate prosthesis is always the first choice of patient but literature suggested that there are some chances of failure with immediate implant and immediate loading as compared to immediate implant with delayed loading [7]. It may be due to host factors or uneven stresses. So, in this case we prefer to go for II stage procedure in which we have followed delayed loading protocol.

Peri-Implantitis affects both cement-retained and screw-retained prosthesis[8-9]. The Cement-retained prosthesis are cheaper than screw retained prosthesis[10-13] Cement retained prosthesis are simple and more esthetic but have drawback of cement retention and difficulty of retrievability Also it is difficult to maintain oral hygiene. With screw retained prosthesis, maintenance of oral hygiene is easy and also there are no problems of cement retention or peri-implantitis. The only drawback is of screw loosening which can be maintained by dentist without much investments, we have decided to go for the screw retained prosthesis[14-15]

CONCLUSION

Implant restorations can increase the chewing efficiency of an edentulous patient and also gives him psychological satisfaction. Although it has more complications than the removable prosthesis but with thorough knowledge and following proper protocol can reduce the complications.

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