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CASE REPORT

FULL MOUTH REHABILITATION OF COMPLETELY EDENTULOUS ARCHES WITH IMPLANT SUPPORTED FIXED PROSTHESIS-A CASE REPORT

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ABSTRACT

The conventional prosthetic treatment for the tooth loss can superiorly be improved by implant dentistry. Dental implants are used in oral cavity with the intention of improving the stability of a dental prosthesis. The predictability of well osseointegrated implant rehabilitation of the edentulous jaw as described by Branemark et al, introduced a new era of management of edentulous patient. A fixed restoration gives the psychological feeling similar to natural teeth, whereas overdenture, even though a fully implant supported, remain a removable prosthesis. This clinical report presents rehabilitation of completely edentulous patient who was not satisfied with his existing conventional complete dentures. The patient was rehabilited using full arch implant supported fixed ceramo-metal prostheses.

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INTRODUCTION

Rehabilitation of a completely edentulous patient is always considered a difficult task for a prosthodontist. So the selection of the appropriate treatment has a substantial influence on the level of quality with which patient's requirement can be fulfilled. Advances in dentistry aim to give such patients, the normal health and function in every predictable way.[1] The prostheses which are supported with implant give successful treatment options that can be used for single tooth replacement to full mouth rehabilitation. According to the number of the implants used in fully edentulous patients, the restoration can be removable or fixed.[2,3] The other factors that determine the type of the prosthesis include the amount and quality of remaining bone, inter-occlusal space, and the patient's needs [2-5]. Fixed implant-supported prostheses usually need five to nine implants in the mandible and six to ten implants in the maxilla .[6] The challenge today is not to prove functionality but, rather, to develop simple and cost-effective protocols. The development to fewer implants is encouraged by the results from implant load analyses, demonstrating that four implants is an optimal number for complete-arch prosthesis provided they are placed as "cornerstones": two posteriorly and two anteriorly, all well spread. If these implants are anchored optimally, the probability for success is high.[7] However, considering the complications of this treatment option, it is advised to choose this treatment plan only when placement of sufficient number of implants is not possible.

CASE REPORT: A 38-year-old male patient with a history of edentulism was referred to department of Prosthodontics in SMBT Dental College, Sangamner with a complaint regarding difficulty in mastication and senile looks due to lack of teeth. The medical history was non contributory. Patient gave history of extraction of teeth in upper and lower arches due to generalized caries with both arches six months back. The patient had complete dentures but didn't wear because of ill fitting. Despite the considerable amount of bone loss and unwillingness to undergo any major bone graft procedures, the patient demanded fixed prostheses. The intraoral examination revealed edentulous ridges of medium size, parallel walls with no severe undercuts and healthy and uninflamed mucosa (Fig 2). The panoramic radiograph and computed tomography scan were done to evaluate bone quality and quantity. The definitive treatment plan included fabrication of implant supported fixed ceramo-metal prosthesis to rehabilitate both maxillary and mandibular edentulous ridges.

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The surgical phase include two appointments, in first appointment under due consent of patient with local anaesthesia ; the rehabilitation of maxillary arch was done with placement of five implants, and in next appointment placement of implants were done in mandible with Paulo Maulo's "all on four" concept. The treatment plan included placement of five endosseous implants in maxillary edentulous ridge in the region of canine and second premolar bilaterally, and one in second molar region in the second quadrant to get an extra support to the prosthesis. After 15 days of first appointment, placement of four endosseous implants was done in mandibular edentulous ridge in the region of canine and second premolar bilaterally (Fig 3). After 6 months of uneventful healing and radiographic evaluation, the second stage surgery was designed and the, gingival former were placed in both arches in subsequent appointments.

Fig. 1. Pre-operation extra-oral view

Fig 2: Preoperative intra-oral view

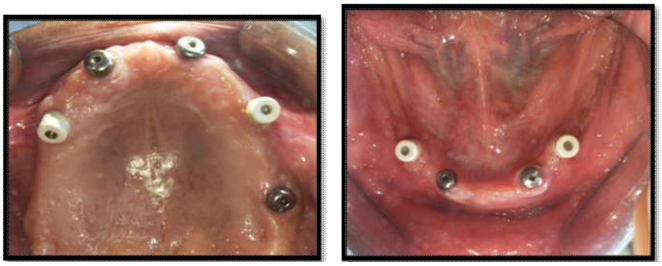

Fig. 3. Implant placed in upper and lower arch

Fig 4: Splinting of the implants

Fig 5. Final Impression

Two weeks later, the open tray technique with splinted impression copings (Fig 4) was used for the impression procedure. Cast was fabricated using dental stone. The resin jig (Fig 6) were fabricated for each arch and tried intra-orally for passive fit. The maxillo-mandibular relation (Fig 7) was recorded, and transferred to semi adjustable articulator with the help of self centering facebow in the same appointment. Teeth arrangement was checked intra-orally with the aspect of aesthetics, phonetics and the comfort of patient (Fig 8). Such approved teeth arrangement was then scanned in dental laboratory and prosthesis was planned digitally (Fig 9).

After trying in the screw-retained CAD-CAM milled metal framework(Fig 10) on multiunit abutments in the mouth and evaluating their passive fit, they were returned to the dental laboratory for tooth set-up at the previously established vertical dimension of occlusion. The ceramo-metal prostheses were screwed in respective arch and the occlusion was checked and corrected (Fig 11). The patient was explained the importance of maintenance of prosthesis and diet. The patient recalled after 1 week and 1, 3, 6 months. Presently after a year, patient is comfortable and happy and periodic recall examination reveals healthy and inflammation free gingiva.

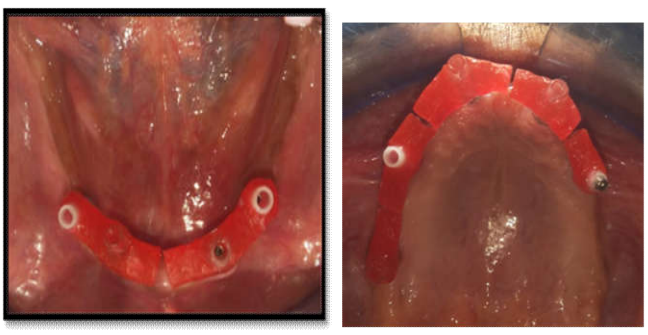

Fig 6. Jig trial

Fig 7. Maxillo-Mandibular Relation

Fig 8: Try In

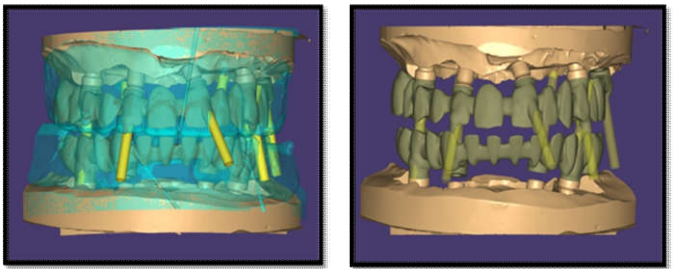

FIG 9: Digital planning workflow

FIG 10: Metal try in

Fig 11: Final ceramo-metal fixed prosthesis

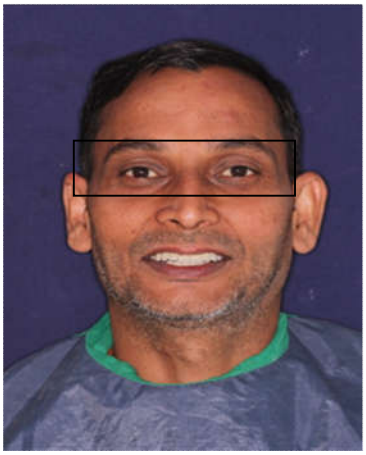

Fig 12. Post-operative extra-oral view

DISCUSSION

The new era implant dentistry has allowed a shift from the early paradigms established by the pioneer work of Branemark and his coworkers. The “All-on-4” concept is such treatment procedure which we use in the completely edentulous patients, which also leaves behind the routine treatment alternative of traditional dentures with successful outcome in the short term, long term and the retrospective studies that have been done in the past.[8] The clinical procedure explained in this clinical report for the rehabilitation of the edentulous patient results in accurately fitted, esthetic and functionally efficient prosthesis. The patient in this clinical report was previously restored with conventional complete denture but was not happy with removable prosthesis psychologically as well as functionally. The 4 implants were placed in each arch based on Paulo Malo’s “ALL ON 4” concept, the fifth implant was placed in maxillary arch for the extra bone support. The patient was carefully monitored for the period of 1 month so that we can evaluate the adaptation of implant supported fixed prosthesis. The trial period was shorter compared to the other case report, but the discomfort, wear, and muscle fatigueness were not observed during that period. Vertical Dimension of occlusion was determined by the patient's physiological factor like interocclusal rest space and speech.

The rehabilitation of the completely edentulous ridges using implant supported fixed restoration of ceramo-metal was done for aesthetic, functional, and psychological satisfaction to the patient. Although, the restored ridges can be easily exposed to excessive occlusal loads, if the patient fails to follow the strict diet and maintains the oral hygiene properly. Though the compliance of patients with prosthesis has been seen to be fair, the education on diet and hygiene maintenance is necessary, regular check-up for the occlusal adjustment and fitting is essential. Published studies on the “all on-Four” concept have shown cumulative survival rates to range between 92.2% and l00%. Owing to the freedom of tilting, the implants can be anchored in dense bone structures (anterior bone with higher density) and well spread anteriorly-posteriorly, giving an effective prosthetic base. By reducing the number of implants to four, each implant can be placed without coming into conflict with adjacent implants. This treatment approach, using tilting and few implants rather than inserting several implants competing for space, has demonstrated good results .[8]

Conclusion

Placement of dental implants previously in attempts to treat the severely resorbed maxilla and mandible has had only limited success. But the rehabilitation of completely edentulous, atrophied maxilla and mandible by the placement of implants using the AII-on-Four protocol gives new hope for a perceivable success, while becoming a promising treatment method of choice and standard in the care for severely compromised patients.[8] The advantage of fixed prosthesis also includes less repair, maintenance, less chances of embarrassment to the patient and they often last till the life of the implant support.[1]

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