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*Case Report*

# Rehabilitation of maxillary and mandibular arch by immediate implant placement and loading using all-on-six protocol: A case report

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## ABSTRACT

Edentulism is a prevalent oral health issue that has a detrimental social and psychological impact on patients' quality of life. The treatment option adopted has a significant impact on the level of quality with which the goal can be achieved. For edentulous patients, implant-supported fixed restorations are a well-established treatment modality. Implant dentistry philosophies and procedures have evolved and changed over time to give improved esthetics and functional outcomes. Immediate loading has various advantages over traditional loading without sacrificing the quality of the output. An immediate fixed provisional promotes a high level of patient satisfaction with respect to esthetics, phonetics, mastication, and psychological comfort, enabling patients to return to their normal routine and maintain quality of life within a short period of time. In this case report, immediate implant placement in recent extraction sockets was followed by immediate loading with all-on-six implants with multi-unit abutments within 24 h.

**Keywords:** Dental implants, Full-mouth rehabilitation, Implant-supported prosthesis, Edentulism

## INTRODUCTION

Implant-supported prosthesis is effective treatment options from single tooth replacement to full-mouth reconstruction. The restoration can be removable or fixed, depending on the amount of implants placed in totally edentulous individuals.[1] It would be a major clinical advantage to restore function and esthetics in the same session for a patient with severe periodontal disease or total edentulism.[2]

Earlier restoration over implant theories suggested a loading protocol after 3–6 months or extraction of decaying teeth, socket healing, and implant placement. In cases of complete edentulism, immediate loading might be a viable option. Several researches have shown that an immediately loaded full-arch-fixed prosthesis is a viable treatment option with a high implant and prosthesis survival rate.[2]

This paper describes a case report of immediate implant placement in recent extraction sockets followed by immediate loading with all-on-six implants with multi-unit abutments within 24 h.

## CASE REPORT

A 55-year-old female patient visited the department of prosthodontics with a chief complaint of multiple missing teeth, poor esthetic, and wanted replacement of the same. Intraoral examination revealed periodontally compromised remaining natural teeth in maxillary and mandibular arch and missing upper and lower posteriors.

The OPG of the patient revealed impacted third molars in the maxillary and mandibular arch. Patient's medical history was not significant. Without being identified as edentulous, the patient demanded a fixed rehabilitation. Hence, the treatment option was decided for full-mouth rehabilitation of immediate extraction and immediate loading followed by six implants in maxilla and six implants in mandible. The remaining maxillary teeth appeared not to be suitable for fixed treatment because of Grade 3 Mobility 14, 16, and 23; Grade 2 mobility with 44, 45, and 33; Grade 1 mobility with 31, 32, 41, 42, and 43, and therefore, it was decided to remove them.

After patient's consent, initial treatment started with diagnostic impressions, photographs, radiographs (Panaromic and full-mouth Rvgs), and CBCT analysis, as shown in [Figure 1a-f].

Prophylactic antibiotic coverage (amoxicillin 1 g) was given 2 h before surgery followed by rinse with chlorhexidine mouth wash (0.20%) for 1 min before surgery. Local

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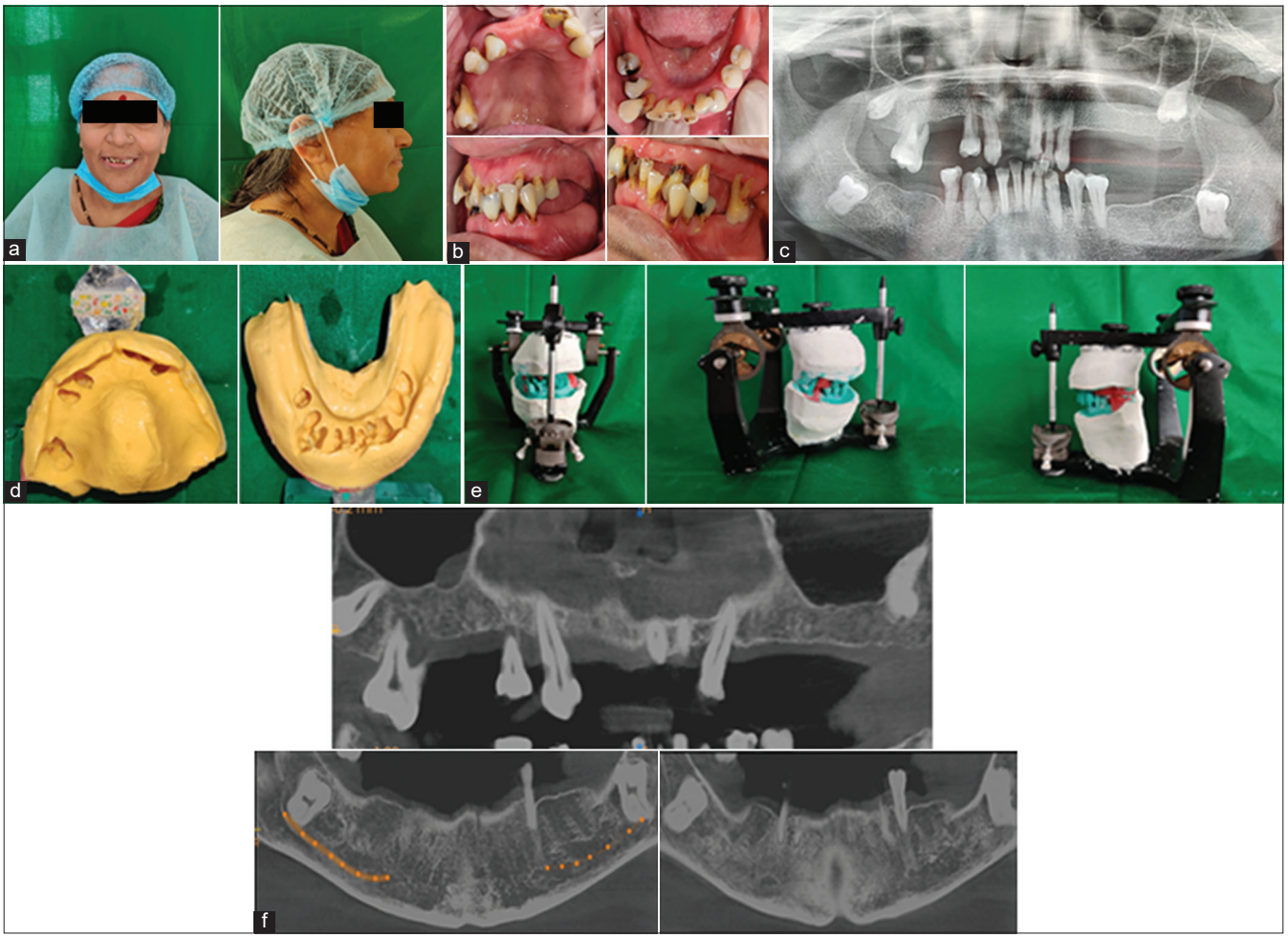


**Figure 1:** (a) Pre-treatment extraoral view, (b) pre-treatment intraoral view, (c) pre-treatment OPG, (d) diagnostic impressions, (e) diagnostic mounting, and (f) CBCT analysis.

anesthesia was administered containing 2% lignocaine. All the remaining maxillary and mandibular teeth were extracted atraumatically, granulation tissue was removed, and sockets were cleaned [Figure 2].

This was followed by sequential drilling and six implants were placed in axial direction at site 43, 44, 46, 33, 34, and 36 in the mandibular arch. In the maxillary arch, indirect sinus lifting with the sequential drilling was done followed by six implants at the site of 13, 14, 16, 23, 24, and 26 [Figure 3]. Multi-unit abutments were tightened at 25Ncm torque and paralleling pins were inserted to check and maintain relative parallelism of abutments after implants [Figure 3] were placed in sockets and primary torque of 35Ncm was confirmed. In this situation, a prefabricated polymethyl methacrylate acrylized interim prosthesis with perfectly polished intaglio surface was fabricated using a diagnostic model and sterilized by keeping in iodophor solution for 24 h before to surgery. Paralleling pins were removed once the parallelism was verified and to approximate the flaps, sutures of 3-0 vicryl resorbable sutures were used.

The position of multiunit abutments was then determined using a thin-layered alginate impression generated with prefabricated prosthesis. After evaluating interarch space, the height of titanium cylinders was changed. To attach the prosthesis/superstructure to the cylinders, pour type chairside resin was used. Excess material was trimmed and polished and the prosthesis was again seated screws for seated titanium cylinders tightened with a final torque for 10 s each, access holes were blocked and filled with flowable composite resin [Figure 4].

Occlusal adjustment was done to get maximum contacts in centric occlusion and canine guided disocclusion. A thorough post-operative instruction session was given which includes consumption of soft diet for 3–4 weeks, maintenance of oral hygiene using chlorhexidine mouthwash twice a day for 2 weeks and regular follow-ups.

## DISCUSSION

Brånemark *et al.* used 4–6 vertical implants put within the anterior segment of the edentulous maxilla and mandible

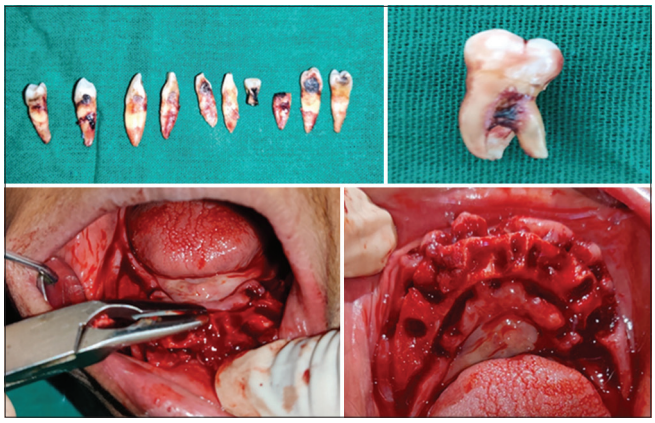

**Figure 2:** Extracted teeth and Extraction socket

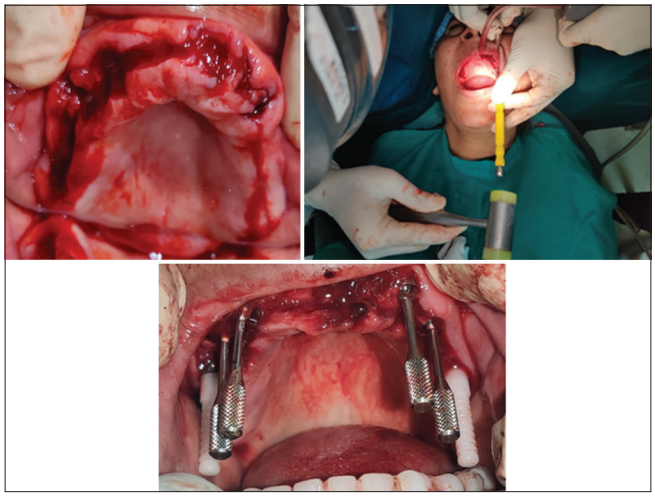

**Figure 3:** Indirect sinus lift and paralleling pins

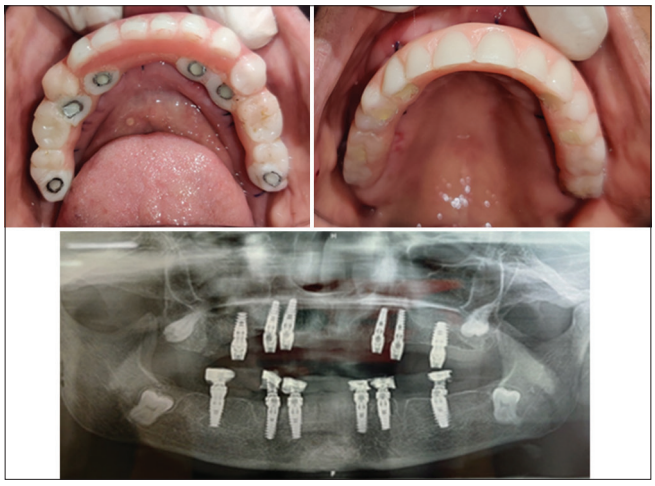

**Figure 4:** Provisional prosthesis and post-operative OPG

that were cantilevered to allow a full-arch-fixed prosthesis in their 1977 study.[3]

Fixed prostheses are used to restore completely edentulous jaws using four implants.[4] Prosthetic survival, on the other hand, is slightly lower (up to 95% after 10 years).[3] Prosthetic fracture, porcelain crown fracture, abutment loosening, and prosthetic screw loosening, as well as factors that contribute to prosthesis overloading, such as bruxism or the presence of a long cantilever, may be associated to a reduce prosthetic survival rate in the all-on-four concept.[5-8]

The presence of cantilever may be unavoidable depending on the position of the posterior implant and the degree of jaw atrophy, which increases the risk of mechanical difficulties in the prosthesis (up to 50%). As a result, the availability of bone volume in the posterior jaw that allows for the placement of multiple implants (six implants in each arch) is advantageous for improving prosthetic support and reducing cantilever length.[5-8]

Rehabilitation of posterior maxilla is often challenging due to resorption of alveolar ridge and sinus pneumatization. It often presents with poor bone quality and quantity. Treatment options available include sinus lifting, ridge augmentation, bone grafting, and short or zygomatic implants.[2]

Many systematic and meta-analyses showed that immediate implant loading does not impair treatment success. Their results pointed on proper patient selection, treatment planning, and implant micro morphology for better outcomes. Immediate loading should be done within 48 h of implant placement with restoration in occlusion with opposite arch. In case of full-arch immediate loading implants should have adequate primary stability at the time of placement, rigid interimplant splinting and occlusal forces should be appropriately controlled during osseointegration period to prevent micromovements.[2]

## CONCLUSION

Correct diagnosis and treatment planning are the key for successful immediate implant rehabilitation in resorbed ridges. The "All-on-six" treatment concept seems to be a viable option for rehabilitating edentulous jaws. However, this approach is considered highly technique sensitive and requires careful selection of cases, proper treatment plan, skilled clinician with more experience, and a better understanding of the range of prosthetic components.

### Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

### Conflicts of interest

Saee Deshpande is the editor in chief of this journal.

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