

Implant supported prosthesis on edentulous mandible with multiple impacted teeth - a case report with 5 year follow up

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Abstract

Multiple impacted teeth are quite often syndromically related, which could be hormonal or metabolic. It may be also due to infection, cyst, or trauma. A number of idiopathic multiple impacted teeth cases have been reported in the literature. In most of these situations, the impacted teeth are few in number. Here, we present a case with all mandibular teeth impacted. The number of reports in the literature of rehabilitation of such a clinical situation is very less. Impacted teeth can significantly complicate the rehabilitation of an otherwise straight forward case. When all teeth are impacted, the situation becomes even more complex. This case report illustrates prosthodontic rehabilitation of mandibular arch of a 24-year-old, asyndromic patient with implant-retained dentures following the surgical removal of impacted teeth. The objective of presenting this clinical report is primarily to increase the awareness, with which, the rehabilitation can be handled in a similar situation and also for the fact that such a report is a rarity.

Keywords: All teeth impacted, allografts, dual record bases, full-arch rehabilitation with implants, implant-retained fixed restorations, multiple teeth impacted, screw-retained hybrid denture

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INTRODUCTION

Dental impaction has been reported in 25%–50% of the population.^[1] 1%–3% of the population has the maxillary canine impacted with the ratio of 2:1 female to male.^[2] The maxillary canines are more commonly impacted than the mandibular canines.^[3] Other teeth are less commonly impacted.^[4] There are situations where all teeth are impacted and complete lack of eruptive force can be the reason when all teeth are present radiographically.^[5] When all permanent teeth are missing, in a young individual, a removable complete denture can never be the answer. Fixed

prosthodontic rehabilitation of such a situation is extensive and time consuming for the patient and the prosthodontist. This is due to the surgical involvement and delayed loading protocols of the permanent prosthesis. The available clinical evidence of similar rehabilitation is very less.

The purpose of this article is to report the rehabilitation of mandibular arch with implant-retained prosthesis, following the removal of most of the impacted teeth, and to highlight the fact that all teeth can be impacted in a perfectly normal individual and the duration of time required for a good treatment outcome could be longer.

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CASE REPORT

A 24 years old female patient reported to the department of prosthodontics for fixed replacement of lower teeth. Clinical examination revealed multiple fixed partial dentures in the maxilla and a completely edentulous mandibular arch [Figure 1] restored with an all acrylic complete denture. The patient was healthy and not medically compromised in any terms. The computed tomographic image revealed that all the 16 teeth were impacted in the mandible [Figure 2]. The treatment plan was to provide implant-retained fixed prosthesis in the mandibular arch and replacement of maxillary fixed partial denture for greater esthetics.

The impacted teeth were removed under general anesthesia and were retrieved from the body of the mandible. Few teeth (33, 37, 38, 47, and 48) were left behind because of their deep placement in the mandible and their noninterference with the future placement of implants. The defect in the mandible was filled with PUROS (Cortico Cancellous Particulate Allograft, Zimmer Dental, Carlsbad, CA, USA) mixed with platelet-rich fibrin. The grafts were sealed with BioMend (Absorbable Collagen Membrane, Zimmer Dental, Carlsbad, CA, USA), and the mucosa

was tailored with 3–0 Vicryl (Ethicon – Johnson and Johnson, Aurangabad, India). The lower complete denture was relined using Soft Reline Material (Soft-Liner, GC Corporation, Tokyo, Japan). The reline was changed every month for a period of 6 months.

After 6 months of healing, postextraction orthopantamograph (OPG) was taken to determine the position of implant placement [Figure 3]. A crestal incision was made under local anesthesia, and five implants were placed in the mandible (blueSKY implants, Bredent GmbH and Co. KG, Senden, Germany) [Figure 4]. Except one, all the other implants exceeded a torque value of 45 Ncm. Multiunit abutments were placed on implants that exhibited optimal torque values, and a cover screw was placed on the implant with lower torque value. An OPG was made as a final radiographic assessment [Figure 5]. A screw-retained acrylic fixed partial denture (visio.lign – Bredent GmbH and Co. KG, Senden, Germany) was inserted in the



Figure 1: Completely edentulous mandibular arch

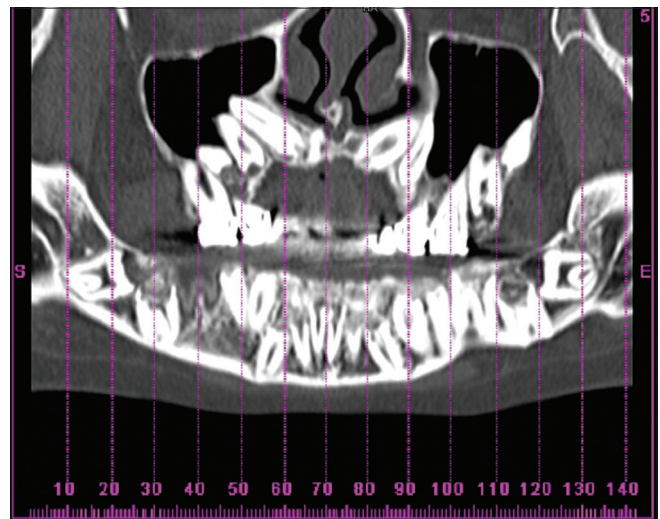


Figure 2: Computed tomographic image revealing all teeth impacted in the mandible



Figure 3: Postextraction orthopantamograph

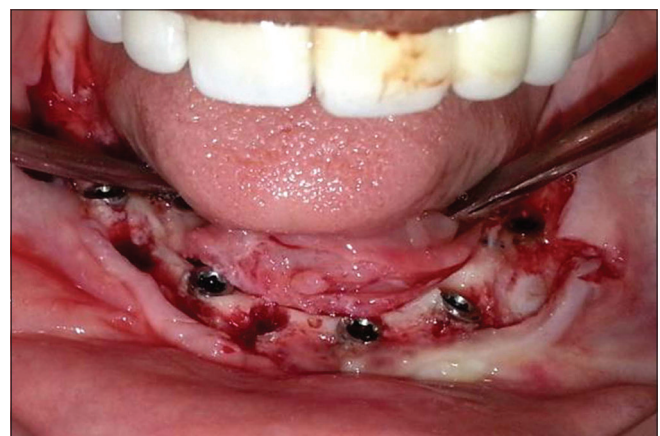


Figure 4: Five implants placed in the mandible

implant-protective occlusion (IPO) in accordance with immediate loading protocol [Figure 6].

The maxillary fixed partial dentures were replaced. After 4 months, multiunit abutment was placed over the implant which had a lower torque value earlier [Figure 7]. Pickup impression copings were placed and stabilized using dental floss and pattern resin [Figure 8]. The jaw relation was recorded using dual record bases to increase stability [Figure 9]. A metal-ceramic hybrid denture was screw retained at 25 Ncm in IPO [Figure 10]. The patient was successively reviewed for 5 years [Figures 11 and 12].

DISCUSSION

Maed believed that the principle reason for teeth to be impacted was a delay in eruption.^[6] Dachi and Howell, following their radiographic survey, claimed that teeth were impacted primarily due to the lack of space in the jaw.^[7] Pushpinder and Lewis, in their study on the incidence of unerupted permanent teeth and related clinical cases, revealed that impactions or maleruptions seemed to involve

every permanent tooth except mandibular incisors and first molars. They also observed six unusual cases of impacted permanent teeth.^[8] In syndromes such as cleidocranial dysostosis, Gardner’s syndrome, and Yunis–Varon syndrome, it is not uncommon to see multiple impacted teeth as a part of the syndrome.^[9–11] Whenever a number of teeth or all teeth are missing, and there is an absence of a history of extraction, it can be clearly deduced as a situation of anodontia or teeth impaction. When radiographic examination reveals multiple impactions, clearly anodontia can be ruled out.^[9,12,13] Abnormal eruption paths within the dentoalveolar processes may result in impactions and clinical ramifications.^[14–16] In earlier reports, impacted teeth were supernumerary or permanent teeth.^[17]

In the current clinical situation, all mandibular permanent teeth were impacted, and the patient was asyndromic. A treatment protocol of such a clinical situation is hardly reported in the literature. Literature indeed reports on restorations that have been done on syndromic patients, wherein some of the remaining natural teeth were used

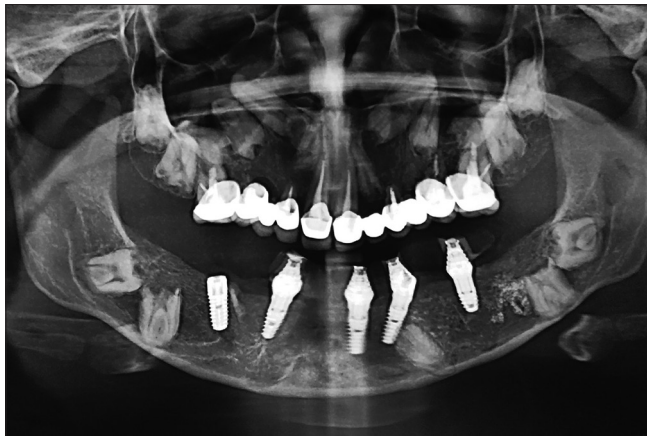


Figure 5: Panoramic radiograph following implant and multiunit abutment placement



Figure 6: Immediate loading with acrylic fixed partial denture in implant-protective occlusion



Figure 7: Multiunit abutments over the implants



Figure 8: Reinforced pickup impression copings



Figure 9: Dual record bases for jaw relation. One record base is screw retained over the multiunit abutments. The other record base carrying the occlusal rim, clip fits over the first record base



Figure 11: Five-year follow-up panoramic radiograph

for the fabrication of tooth-supported prosthesis, and the rest was replaced by implant-supported prosthesis.^[18-23] The case reported here is very peculiar from those that have been reported earlier in the sense that all the mandibular teeth were impacted. As quoted earlier, this could be due to a total lack of eruptive force. While most teeth from the jaw were removed, teeth which were not in the path of implant placement were left *in situ*. This also made the procedure less invasive. Following the removal of the tooth, the regions of extractions were grafted. It was proposed to give the prosthesis with two straight implants and two angulated implants. However, we also placed the fifth implant as an additional zone of support and retention for the final restoration. We chose to give a screw-retained provisional prosthesis to increase patient confidence in the interim period. A screw-retained hybrid prosthesis was the prosthesis of choice as against a fixed partial denture. Implant-supported hybrid prosthesis enables wider force distribution, compensates for the excessive vertical dimension, and provides superior esthetics and better lip support and phonetics. The indigenous procedure performed during the jaw relation was the use of dual record bases. The first record base was fabricated to be screw retained over the multiunit abutments. This creates the stability of the record base. The second record base, which carries the occlusal rim, was fabricated to clip fit



Figure 10: Screw-retained metal-ceramic hybrid denture in implant-protective occlusion



Figure 12: Clinical picture, 5-year-follow-up

over the first record base. This ensured 100% stability during the jaw relation record. Abiding by the patients request, the final restoration was completely layered in ceramic. The choice of occlusion was IPO for the final prosthesis. The material and the type of occlusion used in the final prosthesis enhanced both comfort and esthetics.

CONCLUSION

An implant-retained prosthesis is the best choice in edentulous situations, especially in younger age groups. This is the only way by which the psychological concerns of the patient can be solved. A successful 5-year follow-up was done in the current clinical situation which proved satisfactory.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will

not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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