

Complete Mandibular Arch Rehabilitation with Immediate Implant Supported Hybrid Prosthesis

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ABSTRACT

Background: Dental implant therapy along with implant supported hybrid prosthesis is now becoming treatment of choice for partially edentulous and fully edentulous patients to provide prosthetic restoration with the finest esthetic and function. This clinical report aims to present success, esthetic and functional rehabilitation of periodontally compromised mandibular dentition in 44 year old female patient with immediate implant supported hybrid prosthesis.

Materials and Methods: Extraction of periodontally compromised full mandibular arch dentition followed by placement of 7 implants was done under local anesthesia. An immediate hybrid denture was given as provisional prosthesis. After 6 months, final prosthesis was given to patient.

Result: After 1 -year follow up, clinical and radiologic findings were satisfactory with no functional, phonetic and esthetic complications.

Conclusion: Immediate implant-supported hybrid prosthesis proved to be successful. Esthetic and functional requirements were satisfactory after 1 year follow up.

Keywords: Edentulous jaw, dental implants, immediate implant placement, hybrid prosthesis.

INTRODUCTION

Many treatment modalities are available for replacement of missing teeth including removable denture, fixed partial denture or dental implants¹. Every treatment has its own advantages and disadvantages. In patients with removable dentures, lack of retention and stability, difficulty in maintaining oral hygiene was found to be a problem. On the other hand with fixed partial dentures, despite of good retention, removal of vital tooth structure, difficulty in maintaining oral hygiene leading to caries of abutments and chances of fracture are found as major problem¹.

For partially edentulous and fully edentulous patients, dental implant therapy is now rapidly

becoming prosthetic standard. It is easily accepted by patients as it provides prosthetic restoration with excellent esthetic and functional outcomes². All prosthetic treatments aim to recover masticatory capacity of edentulous patients. It is consensus in literature that chewing process is more effective when chewing rate is faster, which might explain higher masticatory capacity after rehabilitation in edentulous patients with implant-supported fixed prosthesis and implant-retained removable dentures³.

The purpose of this case report is to present clinical experience and positive outcomes of treating a patient with immediate implant placement and

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Fig 1: Immediate implant placement and provisional rehabilitation.



(a) OPG Preoperative



(b) Clinical view preoperative



(c) Immediate implant placement



(d) OPG Postoperative



(e) Temporary gingival former



(f) Titanium cylinders placed



(g) Pickup of provisional hybrid denture



(h) Clinical view postoperative

Fig 2: Steps for final rehabilitation.



(a) Jig trial



(b) Open tray impression



(c) Titanium framework trial



(d) Final prosthesis

implant supported hybrid prosthesis in patient of generalized aggressive periodontitis.

CASE REPORT

A 44-year-old female patient reported to outpatient department of periodontology with chief complaint of mobile teeth in lower jaw leading to inability to chew. She wanted a fixed solution for her periodontally compromised dentition. The medical history was non-contributory. On clinical examination, familial history and radiographic evaluation, patient was diagnosed with generalized aggressive periodontitis and mandibular dentition was found to be hopeless. The treatment plan consisted of extraction of all mandibular teeth and immediate implant supported hybrid denture. Fig 1(a-b)

Placement of implants

All mandibular teeth were extracted under local anesthesia. Seven nobel active implants were immediately placed in 31,32,34,35,43,45,46 region and guided bone regeneration of 36,37 using creoss bone graft and collagen membrane was done. Five implants had adequate primary stability with insertion torque > 35 Ncm at time of implant placement whereas two implants lacked initial primary stability for immediate loading. Healing caps were placed onto five implants and on other two implants, cover screws were placed and surgical sites were sutured. Since patient was diagnosed with generalized aggressive periodontitis, she was kept on anti-infective therapy for one week. Fig 1 (c-f)

For immediate hybrid denture

Mandibular denture fabricated prior to extraction was converted to screw-retained hybrid denture using temporary titanium cylinders and multiunit abutments and was delivered to patient very next day. Fig 1(g-h)

For final prosthesis

Six months post-operatively, submerged implants were exposed, closed tray impressions recorded, implant analogues attached to impression copings and casts were poured. Jig were fabricated, jig trial was done to ascertain accuracy of impressions. Customized trial denture base was fabricated to record maxilla-mandibular relation, vertical jaw relations obtained, milled titanium bar was fabricated and final prosthesis was delivered to patient. Fig 2 (a-d)

DISCUSSION

In this case, complete mandibular arch rehabilitation of patient with immediate implant placement followed by immediate implant-supported hybrid prosthesis was done. Immediate implants have been reported to have similar implant survival rates as implants placed into healed ridges with long-term survival rates of approximately 94%⁴. Several studies in literature showed that immediately loaded dental implants have success rates similar to conventionally loaded dental implants^{5,6}. Minimum of 12-15mm of space has been suggested for mandibular implant supported fixed prosthesis. However in more intra-arch space, suitable choice is hybrid restoration hybrid restoration is recommended⁷. In this case, intra-arch distance was more than 15mm, so implant supported hybrid prosthesis was planned. Another important parameter for this is cantilever length. To minimize risk of framework fracture, mandibular extension of between 15 and 20 mm is suggested by researchers⁸. In current case, 10mm cantilever was given in 3rd quadrant with no cantilever on 4th quadrant.

Passive fit of framework is another important factor for deciding implant supported hybrid prosthesis. Without passive fit, many complications like loss of bone around implants, screw loosening, implant fracture or abutment fracture were documented⁹. In this case, titanium framework was checked

intraorally to confirm their passively seating over implants.

Framework material is another important aspect to consider fabrication of implant supported hybrid prosthesis. Though zirconia frameworks are a promising alternative but complications such as veneering porcelain fracture and chipping were reported¹⁰. In current case titanium framework was considered due to possible need to section and solder to achieve passive framework fit and cost factor.

No implant failure, peri-implantitis, prosthesis fracture, framework fracture, loosening of screw or difficulty in oral hygiene maintenance were reported in patient during follow up period. Patient was satisfied with esthetics and functions.

CONCLUSION

After 1 year follow up, no functional, phonetic or esthetic problems were noted. Thus, it is concluded that on completely edentulous arch immediate implant with immediate hybrid prosthesis can be successfully delivered. Long term follow up is required to assess the actual success of implants.

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CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Guerrero C, Lopez P, Figueroa F et al. Three - dimensional alveolar distraction osteogenesis. In: Bell W, Guerrero C, editors. Distraction osteogenesis of the facial skeleton. 1st edition. Hamilton(Canada):BC Decker, 2007;457-93.
2. Sorni M, Guarinos J, Garcia O, Penarrocha M. Implant rehabilitation of the atrophic upper jaw: a review of the literature since 1999. *Med Oral Patol Oral Cir Bucal*. 2005;10 suppl 1:E45-56.
3. Thalji G, Bryington M, De KoK IJ, Cooper LF. Prosthodontic management of implant therapy . *Dent Clin North Am* 2014;58:207-25.

4. Wagenberg B, Forum SJ: A retrospective study of 1925 consecutively placed immediate implants from 1988 to 2004. *Int J Oral Maxillofac Implants* 21:71-80,2006.
5. Achilli A, Tura F, Euwe: Immediate/ early function with tapered implants supporting maxillary and mandibular posterior fixed partial dentures: Preliminary results of a prospective multicenter study. *J Prosthet Dent* 97:52-58,2007.
6. Goncalves TM et al. Mastication improvement after partial implant-supported prosthesis use. *J Dent research* 92(2013): 1895-1945.
7. Goncalves TM et al. Mastication and jaw motion of partially edentulous patients are affected by different implant- based prosthesis. *J Oral Rehabil* 2014;41:507-514.
8. El Askary AE. Fundamentals of esthetic implant dentistry . 2nd ed..Ames , Iowa, USA: Munksgaard, Blackwell; 2007.p 13.
9. Tourah A, Moshavernia A, Chee WW. Mandibular implant- supported fixed dental prosthesis with a modified design. A clinical report. *J Prosthet Dent* 2014;111:91-5.
10. Misch CE. Contemporary implant dentistry. St. Louis, MO: Mosby elsevier; 2008.p.99-100.