Case Report
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A Customized Impression Technique for Highly Placed Mal-Aligned Implant for a Hybrid Over Denture Patient: A Case Report

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Abstract

A hybrid implant denture is a fixed prosthesis over a metal framework and engaged by screws into the implant abutments. The anterior and posterior part of a mandibular hybrid denture is rigid on implants. Implant supported hybrid prosthesis provide satisfactory results on the mastication, esthetics and phonetics. This article describes a customized impression technique for highly mal aligned placed implants for hybrid implant denture. The total of five implants was present in the mandibular arch. Author advocates surveying of mal aligned implant analogue cast. The current technique depicts a customized resin impression tray with open border at two sites that concomitant at highly mal aligned implant position (canine region). Technique also uses the hard elastic chain for splinting of impression analogue. Final impression is recorded with single putty wash technique with polyvinyl siloxane elastomeric material. Although, technique is quite clinical sensitive. Asserting over this technique, it eliminates the use of transmucosal or multi unit abutments. This advocated technique is also economical for both clinician and patient. Impression was quite satisfactory.

Keywords: Customized Impression Tray, Elastic chain, Mal-placed implants, Ney's Surveyor

1. Introduction

The goal of dental science is to conserve health, function and integrity of the dental arch of an individual. This makes the impression an integral part of fixed and removable prosthodontic treatment[1,2]. Dental impressions are used to record the form and relation of the surrounding oral tissues. A well-fitting indirect restorations could only be made if precise models of the oral tissues are obtained from high excellence of impression impressions[3,4].

Modern implantology has lit up the lives of million individuals across the world. The objective of impression making in implant dentistry is to communicate the coronal abutment portion of the implant to other structures of oral cavity. Achieving passive adaptation is one of the most important biomechanical purposes in prosthetic treatment based on implant[5–7]. Precision of implant impressions is a pre-requisite for long term success of implant supported prosthesis, If implants are highly mal-aligned in full mouth rehabilitation cases, the condition is critical at the time of impression recording. Regularly, recording of implant impression is made by close tray (Indirect technique) or open tray (Direct technique) impression method with continuous impression border tray and multiple implants splinting method. The essential principle of splinting is to connect all the impression copings together using a rigid

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material to prevent individual coping movement during the impression making[8]. Assif et al., (1996) described the splinting technique, significantly more accurate than un-splinting technique[9]. The implants splinting provide stabilization of transfer coping against torque from analogue tightening and reduce rotational movement within resilient impression materials[10]. The current case report depicts the use of dental Ney's surveyor, open border tray and splinting of impression analogue (without pattern resin).

2. Case Report

A 68 years' aged patient consigned to department of prosthodontics for implant prosthesis fabrication. On oral examination, five mal-aligned placed implants in mandibular arch (figure 1) and two implants in right side maxillary arch were present. Patient history reveals failure of one implant in left maxillary arch, one year back and patient is not willing for replacement of implant in left maxillary region. Therefore, Conventional removable complete denture in maxillary arch and implant and tissue supported hybrid denture in mandibular arch is planned. The treatment plan was explained to the patient and a written consent was taken.



Figure 1. Open tray impression post screwed over implants showing mal-alignment implants.



Figure 2. Surveying of cast with impression post.

3. Procedure

Diagnostic impression of maxillary and mandibular arch is made using type I sodium alginate (Algitex, DPI, Mumbai). Diagnostic model was poured with class II dental stone (Kalabhai, Mumbai). And over diagnostic model custom tray was made using self cure acrylic resin (Pyrax, Roorkee). On patient, impression post were placed and Concomitantly, an putty impression (Virtual, Ivoclar) recorded and model is poured with type II dental stone. After surveying the model from Ney's surveyor, the path of insertion and removal of customised impression tray had decided (figure 2, 3). This decides open border at highly mal-placed implants in canine region.

Final impression is recorded using polyvinyl siloxane (virtual, Ivoclar-regular Set) (figure 4) after splinting the impression post which with elastic chain (Figure 1 without pattern resin rigidity). Impression is recorded with single putty wash technique and lab analogues were attached to the impression copings and cast was poured with type III



Figure 3. Passive seating of open border customized resin tray over the cast at canine region with impression post.



Figure 4. Impression material with final impression.



Figure 5. Castable and non-enganging abutment over the final cast with resin-zig.

dental stone. Castable, non-engaging (Adin, Israel) was placed over the cast and a pattern resin zig (Gc, America) prepared (figure 5).

4. Discussion

Partial and complete edentulism with dental implants has evolved a unsurprising procedure for majority of patients in oral rehabilitation. Traditionally, four to five implants in the mandible with distal cantilevers has been a popular approach for fixed restorations[10]. An increase in the antero-posterior spread and more number of supporting implants and tissue support increase the predictability of a successful outcome[11].

Author advocates surveying of the cast with open tray impression analogue in place to provide passive seating of customized impression tray in mouth for making impression of highly mal-aligned implants. Here, author advocated a customized acrylic resin open end border tray (Pyrex, rapid repair, Roorkee) at two sites. Open tray border facilitate the easy insertion and removal of tray at the time of impression recording.

Auto polymerizing acrylic has been reported to be the material of choice for splinting. It has been reported some disadvantages as distortion of splint materials, fracture of connection between splint material and impression copings, bulk shrinkage caused by long splinting might cause considerable distortion[9]. To avoid the distortion and fracture of splinting material at the site mal-aligned impression post, hard elastic chain was used for splinting the impression copings in patient's mouth, author the same also advocated. Advantage of using hard elastic chain was as it is elastic enough to connect mal-aligned impression post and hard enough to keep impression post in place avoid movement. Pattern resin could not be used because high mal-placed implants. The impression procedure with open tray border is quite sensitive and needs one assistant to hold the material in patient mouth. Pattern resin zig with castable plastic sleeves facilitates to check the fitting of pre casted metal framework[12].

5. Conclusion

This case report, asserting, the use of advocated open border technique diminishes the use of multiunit or transmucosal attachments in mal aligned implants. The current hybrid denture prosthesis gave satisfactory results in dental implants patients without vigilant treatment planning. Therefore, it is essential to evaluate the patient not only with a surgical viewpoint, but also from Prosthodontic point of view.

6. References

1. Chai JY, Jameson LM, Moser JB, Hesby RA. Adhesive properties of several impression material systems: part 2. *J Prosthet Dent.* 1991; 66: 287–292. https://doi.org/10.1016/0022-3913(91)90251-Q
2. Pande NA, Parkhedkar RD. An evaluation of dimensional accuracy of one-step and two-step impression technique using addition silicone impression material: an in vitro study. *J Indian Prosthodont Soc.* 2013; 13: 254–9. https://doi.org/10.1007/s13191-012-0182-1
3. Wadhwani CP, Johnson GH, Lepe X, Raigrodski AJ. Accuracy of newly formulated fastsetting elastomeric impression materials. *J Prosthet Dent.* 2005; 93: 530–9. https://doi.org/10.1016/j.prosdent.2005.03.007

4. Kumari N, Nandeeshwar DB. The dimensional accuracy of polyvinyl siloxane impression materials using two different impression techniques: An in vitro study. *J Indian Prosthodont Soc.* 2015; 15: 211–15. https://doi.org/10.4103/0972-4052.158074
5. Wadhwani CP, Johnson GH, Lepe X, Raigrodski AJ. Accuracy of newly formulated fastsetting elastomeric impression materials. *J Prosthet Dent.* 2005; 93: 530–9. https://doi.org/10.1016/j.prosdent.2005.03.007
6. Kumari N, Nandeeshwar DB. The dimensional accuracy of polyvinyl siloxane impression materials using two different impression techniques: An in vitro study. *J Indian Prosthodont Soc.* 2015; 15: 211–15. https://doi.org/10.4103/0972-4052.158074
7. Mahesh Lahori, Mahesh Lanka, Rahul Nagrath, Shweta Singh. An evaluation of the accuracy of multiple implant impression technique: An in vitro study. *The Journal of implants and Advanced Clinical Dentistry* 2012; 4: 57–69.
8. Assif D, Marshak B, Schmidt A. Accuracy of implant impression techniques. *Int J Oral Maxillofac Implants* 1996; 11: 216–22. https://doi.org/10.1097/00008505-199600540-00028
9. N.A.Tarib, T W Seong, KM Chuen,MS Khan. Evaluation of Splinting implant impression Techniques: Two Dimensional Analyses: *Eur J Prosthodont Rest Dent* 2012; 20: 35–39.
10. Misch CE. St. Louis, MO: Mosby Elsevier; 2008. Contemporary Implant Dentistry; p. 99. p. 100.
11. Thalji G, Bryington M, De Kok IJ, Cooper LF. Prosthodontic management of implant therapy. *Dent Clin North Am.* 2014; 58: 207–25. https://doi.org/10.1016/j.cden.2013.09.007
12. Yao, C., Lu, J., & Webster, T. J. Titanium and cobalt–chromium alloys for hips and knees. *Biomaterials for Artificial Organs*, 2011; pp. 34-55. https://doi.org/10.1533/9780857090843.1.34