

The Multy Faceted Putty

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ABSTRACT

Background: Dimensional instability of elastomeric impression materials has been the subject of numerous reports. The instability is a function of number of variables, including various factors. Usually low viscosity elastomers are polymerized against high viscosity elastomers, which are bonded with adhesive to acrylic resin custom trays. Putty elastomers, apart being used as impression materials, has various other uses in prosthodontics because of its viscosity and its ability to rebound without undergoing permanent deformation on removal. It can be used in many laboratory and clinical procedures. Putty elastomers for their better physical properties and mechanical properties have been extensively used in making impression because of its good dimensional stability; it can be used in many lab procedures and clinical procedures and ease the work of a dental practitioners and lab technicians.

Keywords: Putty, Elastomers, Impression Materials.

INTRODUCTION

Putty elastomers for their better physical properties and mechanical properties have been extensively used in making impression because of its good dimensional stability; it can be used in many lab procedures and clinical procedures and ease the work of a dental practitioners and lab technicians.¹ Polyether elastomers were found to exhibits the greatest bond strength to trays, and polysulphide elastomers adhered better than silicone elastomers. Putty materials typically exhibit good dimensional stability because of a low polymer to filler ratio.^{2, 3} Their dimensional stability is related to high polymer concentration, particularly in regard to by product formation and polymerization shrinkage. Therefore these materials shrink less than lower viscosity materials.^{4, 5}

PUTTY IN DENTURE REBASING

Rebasing is usually done when the denture teeth have not worn out in comparison to the denture base material. It is a process of retrofitting dentures by replacing the entire acrylic denture base with new acrylic, which provides a stable denture without replacing the denture teeth.⁶ Problems encountered in denture rebasing is when the denture is indexed in dental plaster it is very difficult to retrieve the denture from the index mould and while retrieving the dental plaster breaks. In this study soft putty is used for indexing the polished and occlusal surfaces of the denture (fig1.1), which is flexible and after flasking procedure it is easy to remove. After the putty is adapted to the occlusal and polished surface a third pour of dental plaster is done. (Fig1.2) This is done to stabilize the putty and to give a rigid base. Then

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the tissue surfaces are trimmed off and occlusal surface is indexed into the putty index (Fig-1.3) and then regular rebasing procedure is carried out.

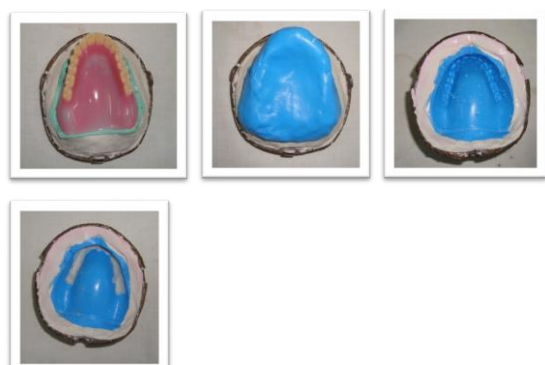


Fig 1, 1.1, 1.2, 1.3: Denture for rebasing, putty impression of occlusal surface of denture, second pour, teeth on the putty index for acrylization.

PUTTY IN RECORDING NEUTRAL ZONE

Neutral zone technique is long being used for the management of severely resorbed mandibular ridges. Various materials are used in recording neutral zone, which have their own advantages and disadvantages. This article discusses the use of Polyether impression material which is simpler and more practical.^{7,8}

TECHNIQUE

1. Maxillary and mandibular primary impressions are made in stock trays using Impression compound. Custom trays are fabricated in auto polymerizing resin and final impression taken in zinc oxide eugenol impression paste after border moulding. Jaw relation records are then recorded using conventional occlusal rims made of modelling wax and occlusal blocks are mounted on semi adjustable articulator.
2. An additional auto polymerizing resin mandibular denture base is fabricated and is attached with retentive loops made of thin orthodontic wire in the centre. Two vertical pillars made of low fusing compound are placed in First molar region at established vertical dimension (Fig. 2). This autopolymerizing resin base is placed in the mouth, checked for stability and ensured that loops and vertical pillars do not interfere with muscle movements during function. Maxillary occlusal rim is placed back in the mouth.
3. Poly ether impression material of medium-bodied consistency (3 M ESPE,) is placed over the base and inserted in the mouth and patient is instructed to perform all muscle functions by sucking and swallowing movements and by producing exaggerated 'EEE' and 'OOO' sounds. Excess material if any will be displaced upward in the upper denture space from where it can be easily removed. In case of insufficient material, additions can easily be made using extra material and the process is repeated. The final record should be perfectly stable in place (Fig-2.1)
4. The impression of denture space is placed over the mandibular master cast. Indexing is made on side and centre of the land area of cast. Lingual matrices of this denture space are made using silicone putty (Aquasil, Soft putty). Putty is adapted into the tongue space of the neutral zone record so that it is in level of occlusal plane of record and extends over the posterior land area of cast. Likewise facial matrices are developed along the facial contours of the neutral zone record. Once polymerized, putty matrices is sectioned and removed from the cast (Fig-2.2). Poly ether material is removed from the base and replaced with wax using putty matrices (Fig-2.3).
5. Neutral zone limits the labial position of the mandibular anterior teeth. The mandibular posterior teeth are arranged first. They must be positioned within the neutral zone and to the proper height of the occlusal plane as established on the polyether occlusion rim with the putty matrices in position. However position of maxillary anterior teeth can be modified based upon the esthetic and phonetic requirements of the patient. The upper posterior teeth are then positioned. Care must be taken that the occlusal surfaces of the upper posterior teeth fit perfectly against the occlusal surfaces of the lower posterior teeth.
6. Carefully remove wax apical to denture teeth on the facial and lingual aspect of the mandibular trial denture. Apply zinc oxide eugenol impression paste onto the facial aspect of

mandibular trial denture and carefully place it in the patient's mouth. Instruct the patient to pucker the lips forward, smile broadly. Have the patient repeat these movements several times. Remove the trial denture and evaluate the impression. Similarly external impression of the lingual aspect of mandibular denture is made with zinc oxide eugenol impression paste. Remove the trial denture and examine denture flange dimensions and extensions (Fig-2.4). Trim the excess material and eliminate all material covering the denture teeth.

7. Flasking, processing, finishing and polishing of denture is then done using conventional method.

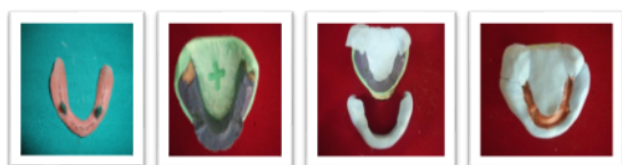


Fig 2, 2.1, 2.2, 2.3: Studs on denture base for vertical stop, putty place on denture base for neutral zone recording, putty index of recorded neutral zone, putty removed from plaster index and wax to be poured.

USE OF PUTTY IN REPAIRING CAST

When master cast is broken (Fig-3) whileretrieving the temporary denture base. a putty impression of the broken area can be made (Fig-3.1) and then the cast is duplicated using agar impression material⁹(Fig-3.3)



Fig 3, 3.1, 3.2, 3.3: Broken master cast, putty placed on the broken area and denture base adopted, reconstructed cast with putty, duplicated master cast.

PUTTY IN REPAIRING BROKEN DENTURES

When the denture is broken in two pieces and there is master cast (Fig-4). The denture can be repaired using hard lab putty. First the broken dentures are stucked using cyanoacrylate, then a putty impression of the tissue surface of the denture is made using lab putty then conventional repair is carried out using self cure acrylic resin (DPI).¹⁰



Fig 4, 4.1, 4.2: Broken denture, putty impression of the tissue surface, conventional repaired denture,

PUTTY FOR MAKING TEMPORARY/INTERIM PARTIAL DENTURES

Interim partial dentures can be made using lab putty. First teeth are arranged and partial denture try in is carried out in patients mouth. After try in, a putty impression is made of the waxed and occlusal surface, then the denture is dewaxed, after dewaxing the tooth are placed in the putty index self cure resin is packed into the dewaxed surface and kept in the pressure pot for 20 minutes.



Fig 5, 5.1: Teeth arrangement, putty indexed self cure resin.

CONCLUSION

Lab putty can be very useful and alternative to gypsum products in various indirect chair side procedures. The good mechanical properties of putty make it a choice of material in rebasing procedures. Denture repairing, denture duplication, recording of neutral zone and for immediate removable prosthesis.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Del'Acqua MA, Chávez AM, Compagnoni MA: Accuracy of impression techniques for an implant-supported prosthesis. *International Journal of Oral & Maxillofacial Implants* 2010, 25.
2. Culbertson BM, Kerby RE: *Dental Applications. Encyclopedia Of Polymer Science and Technology* 2010.
3. Von Fraunhofer JA: *Dental materials at a glance: John Wiley & Sons*, 2013.
4. Schwantes TA, Krzoska MC, Kulibert GS, Malofsky AG, Malofsky BM, Ward NM: *Adhesively securable stock materials. Google Patents*, 2010.
5. Sandrik JL, Vacco JL: Tensile and bond strength of putty-wash elastomeric impression materials. *The Journal of prosthetic dentistry* 1983, 50:358-61.
6. Blaes J: *Pearls for Your Practice: PennWell Books*, 2001.
7. Agarwal S, Gangadhar P, Ahmad N, Bhardwaj A: A simplified approach for recording neutral zone. *The Journal of Indian Prosthodontic Society* 2010, 10:102-4.
8. Jayaswal GP, Dange S, Khalikar A: *The Journal of Indian Prosthodontic Society*.
9. Lynch C, Allen P: Management of the flabby ridge: using contemporary materials to solve an old problem. *British Dental Journal* 2006, 200:258-61.
10. Al-Haddad A, Roudsari RV, Satterthwaite JD: Fracture toughness of heat cured denture base acrylic resin modified with Chlorhexidine and Fluconazole as bioactive compounds. *Journal of dentistry* 2014, 42:180-4.