

Pressure Indicating Paste:A Aid In Identifying Pressure Points In Dentures

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Abstract :-

Pressure indicating pastes are the materials/aids that is used to recognize the pressure areas in denture that may be partial or complete, fixed or cast partial denture. This are available as pastes, sprays, creams or waxes. The various types of pressure indicating pastes and methods of using these material is described in this article. A solicitation through this article is made to utilize the pressure indicating pastes (PIP) in every stage of denture construction be it partial or full to maintain a strategic distance from patient inconvenience and mucosal injury.

Keywords:- Pressure Indicators, High Point Indicators, Denture Pressure Area Indicators, PIP.

Introduction:-

Pressure-indicating paste is used to recognize and find the areas in dentures, partial or complete, that exert excessive pressure on the mucosa and potentially causing discomfort or injury to the patient. It can be applied to the denture flanges during the fabrication process to check for any interferences. Its Routine application during fabrication of crowns or dentures is crucial for preventing discomfort and mucosal injury issues, thus ensuring proper and comfort fit of the prosthesis. The approach of its use by the clinician varies according to the choice, when some use it in every step of construction of the prosthesis, while others prefer to use it in the follow-up visits after the prosthesis has been delivered.

Types of Pressure Indicating Pastes:-

- 1) Setting PIPs-These include Zinc Oxide Eugenol Impression Paste and Elastomeric Impression Paste, which undergo chemical reaction when applied to the dentures or crown and bridges, and thereby start of setting reaction. Example :- ZNOE Paste, Elastomeric Impression Material, Silicone Paste, Waxes.
- 2) Non Setting Pastes-It includes calcium hydroxide pastes, Zinc oxide powder when mixed with vegetable oil (Gronas) which doesnot set and can be applied to the borders or surfaces of denture and crown & bridges by using brush.

Evolution of Pressure indicating pastes:-

Neil and Naim in 1975 used disclosing wax as pressure indicating paste to detect areas of pressure or contact on the mucosa.

In the year 1977, Gronas made a pressure indicating paste using vegetable shortening (CRISCO).

In a ratio of 1:1 crisco and zinc oxide powder was mixed and a paste form was obtained. It was stored for 24 hours so that zinc oxide powder will absorb all the oil and then used it in chair side for denture adjustment.

In 1980 Johnson and Stratton formulated a paste using zinc ointment, petrolatum, mineral oil, wax and flavouring agents.

Elastomeric impression material came into existence in 1950 for the use of making of impression of oral cavity however it was used as a pressure indicating paste in early 1980s by Dr George Zarb.

Loney and Knetchel described the use of indelible pencil as a pressure indicating tool however approaching and marking posterior irritated area with a straight pencil is difficult.

Ju Hyoung Lee in 2015 described the use of calcium hydroxide pastes which allows accurate transfer of yellow mark from the irritated area in the mucosa to the denture base.

The newer products such as silicone based pressure indicators are easy to use and also provides a high accuracy of pressure points.

Method of Application:-

Before application of PIP to any borders or overextended flanges, the fit of the denture is checked, the occlusion of the denture is checked, and any occlusal adjustment, if necessary, has to be done. Occlusal contact or occlusal discrepancy can alter the pressure or source for detection. Before application of PIP, it has to be ensured that the denture is dried so that the material adheres to the denture.

However, the mucosa should be left moist to prevent adherence of PIP to it. The paste should be applied with a stiff bristle brush so that streaks will be left on the denture surface while setting elastomer is applied directly on the denture area. Zinc oxide will provide enough working time as curing will not happen, whereas in elastomers, after mixing, curing starts. Thus, working time will be reduced. If brush streaks remain intact, it indicates intimate tissue contact between the mucosa and the denture has not happened. If streaks are smudged and leaving a thin layer of PIP, which indicates contact has happened, if the area in denture is denuded of the paste, it indicates pressure points suggesting of excessive pressure or impeachment. Once the area is identified, modification is made in the denture, full or partial crown and ridges using brush.

The spray offers somewhat decision as they are apportioned as pressurized canned products yet simple to utilize. The pastes can be applied in various manners. With a firm brush, the paste is coated in a uniform pattern and unidirectional way. Delicate brush for the stiffer paste is used. “E.g. zinc ointment B.P, although these are adequate for other pastes like Kerr pressure-relief cream yet the use of this paste may prompt an impasto like surface and leads to distortion”. Other strategy is utilization of thin opaque layer applied with a bit of polyurethane wipe held with a tweezer and use of petrolatum is typically important to bestow the right level of tenacity to the paste³.

Minor salivary glands which are widely present all through the mouth se, except in the gingiva and the anterior regions of the hard palate secrete saliva which influences the plasticity of the paste. Saliva if get in contact of the paste then can get dissolved and the high point marked areas may not get located. So it is prudent to wipe off the area in the mucosa before the use of pressure indicating paste³.



Fig:- 1.Silicone Elastomeric Impression Material as Pressure indicator Pastes



Fig:-2 ZOE Impression paste as Pressure indicator pastes

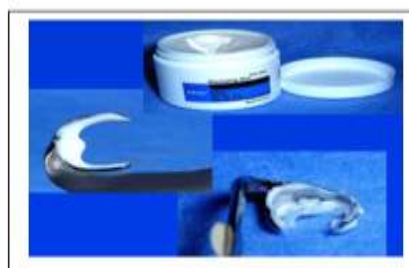


Fig:- 3.Disclosing Wax as Pressure indicating Pastes



Fig:-4 Commercially Available Pressure Indicating Pastes in Spray form



Fig:-5 Zinc oxide Powder mixed in Normal saline



Fig:- 6 ZNOE Paste Pressure Indicating Pastes



Fig:- 7 Zinc oxide Powder in Vegetable Oil



Fig:-8 Elastomeric Impression Material As Pressure Indicating Material

Indications:-

- Indicated for The Initial Fitting of Removable Partial Denture, Partially or Fully Tissue-Borne Prosthesis.
- For The Subsequent Identification of Excessive Pressure Areas in FPD AND RPD.
- Pre-Cementation to check the Fit of Fixed Partial Dentures.
- Using as indicating medium in non-denture bearing surfaces to disclose pressure areas such as impingement of “coronoid process” during lateral excursions. Interferences not also cause pain and discomfort to the patient most importantly there is a greater chance of loosening of dentures^{3,4,5}.
- Using as indicating medium for adjustment near “hamular notch areas” which is very much critical, as removal of acrylic resin in other than pressure areas can result in breach of posterior palatal seal which will result in decreased retention from which is generally achieved from hamular notch^{3,4,5}.
- Undercut areas will cause paste to be wiped off from that area giving a sign of need of adjustment in these areas however these areas need to be adjusted with great caution because sometimes favorable undercuts may be trimmed of if careful adjustment is not done^{3,4,5}.

Conclusion:-

Cost effective pastes can be made by the clinician as suggested by gronas where vegetable shortenings were used. This is cost effective and can be employed on regular basis and during various steps of denture construction⁶.

Of all available agents used to recognize the pressure areas none of the “pastes, sprays or waxes” is ideal. It is even not clear that a pressure indicator should be used as a routine before delivery of a complete or partial denture to a patient or during the time of denture insertion⁶.

Keeping all the facts in mind it is perhaps one of the best methods of distinguishing pressure areas and is clearly an obvious option better than relying on either clinical judgment or on the patient’s pain receptors as indicators of future problems⁶.

The most important criterion is the critical period of time-lapse between master impressions and the finished denture. There occur changes in mucosal contour and tooth even though clinical and laboratory techniques are made with free from error, there is much chance that tissue change will occur which makes me to define my concluding statement that it is important to distinguish pressure point and relief point during final insertion of prosthesis so that at the end the mucosa is not ulcerated or final denture does not cause any tissue injury to the patient^{6, 7}

Summary:-

Use of an indicating medium is one of the important step and clinicians can employ its use for improving diagnosis and correction of denture-related problems. Denture adjustment is more accurate and effective when corrections is made using an indicating medium. The authors recommend that the use of pressure-indicating media for adjusting dentures and cast partial denture and sometimes fixed partial denture should become a routine practice.

The choice of Material to use as a pressure indicating material depends judiciously on the pupose of use,surface to be examined and accuracy required.The selection of material is based on clinical accuracy for each material and precision required in mapping the pressure spots in prosthesis.

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