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Impression Materials and Techniques for Complete Denture

A project

Submitted to the Council of College of Dentistry, University of Baghdad at Department of Prosthodontics in Partial Fulfillment of The Requirement for B.D.S Degree

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CERTIFICATION OF THE SUPERVISOR

I certify that this project entitled "**Impression Materials and Techniques for Complete Denture**" Was prepared by **Mohammed Omran Rasheed** under my supervision at the College of Dentistry/University of Baghdad in partial fulfillment of the graduation requirements for the Bachelor Degree in Dentistry.

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صدق الله العظيم

سورة ط- 114

DEDICATION

Now I'm standing in front of 18 years from my life as a hard working student getting knowledge and be effective in my way, by the end of the first journey.

I dedicate this graduation project to my dear mother and father who supported me in every step of my life and be my backbone in my joys and sorrows, my companions on the path.

My sisters and my brother, thank you to be there always by my side, in my dark days and moments even

before happy days.

My friends, I will remember you always as my people who never let me alone, as a Wonderful journey partners.

We finished these steps together, Always remember our days that pass heavily on us but by the end, we did it together! wishing God to protect them and protect everyone from all evil.

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INTRODUCTION

A dental impression is a useful tool for dental procedures. It can be defined as a negative imprint or positive digital image used to cast or print a replica of a denture structure **(Jayaraman, 2018).**

These impressions are usually applied for dental restoration or prosthesis **(Hamed and Mously, 2019).** Over the years, many impression techniques have been developed, but the success of these impressions can be determined by the type of material used, the patient's needs, and the techniques used (**Alqattan, 2016).**

This makes it crucial for professionals to understand the existence of all these multiple options to choose the best option for each case. This represents a new challenge for the professionals, especially when a complete denture is needed because the patients are in a situation where basic needs such as eating become difficult. This becomes of great interest as prospective studies calcite an increase in the number of edentulous patients from 33.6 milion in 1991 to almost 38 million by 2020 **(Fang andJeong, 2018) .**

The manner in which the impression was made may be more important than the material. In the last decade, several investigators have recommended using newer elastomeric materials such as polyvinylsiloxane and polyether for final impressions to replace the older and more traditional materials **(Ivanhoe et al.; 2002). (McCord et al., 2005).**

AIM OF THE STUDY

The study aim is to review the selections concerning impression techniques and materials used for making complete denture.

CHAPTER ONE : REVIEW OF LITERATURE

1.1. History of Impression Materials:

Wax was the only impression material used in dentistry until the mid-19th century.. Then in 1857, Charles Stent created a thermoplastic modeling compound similar to today's impression compound. Still, the problem with this material was that it was rigid and could not reproduce undercut areas. All the impression materials used until that date became rigid after setting and could not copy the oral tissues accurately. Thus, there was always a need for an impression material that could remain elastic even after setting. That is when agar, a reversible hydrocolloid manufactured from algae, was introduced in dentistry. Although this jelly-like material was elastic, it required a complicated procedure to be used as an impression material **(Emmanouil et al, 2017).**

When the algae used to manufacture agar was unavailable during the second world war, Americans used local algae to manufacture another elastic impression material known as alginate, which has gained popularity since then.

Alginate and agar have disadvantages, like dimensional instability and low tear strength, which led to the manufacture of elastomeric (also known as rubber-based) impression materials. First came polysulfide, then condensation silicone followed by polyether, and then addition silicones **(Hamalian and Nasr et al, 2011).**

With the advancement in technology, digital dentistry is also making its way into the field **(McLaren, 2008)**. However, there is always a scope for new impression materials, as no impression material is 100% accurate until the date.

Table (1.1): The chronological development of dental impression materials.

years	Types of material
1756	Bees wax
1842	gutta-percha
1844	Plaster of Paris
1857	thermoplastic synthetic resins
1925	agar-agar
1930	zinc oxide eugenol sealer (ZnOE),
1935	sodium alginate
1955	Mercaptan
1965	polyethers
1975	addition - cured silicones
1985	CAD-CAM
1988	polyether urethane dimethacrylate(Light cured)
2009	vinyl polyether silicone

1.1 Impression materials used for complete denture are shown on Figure

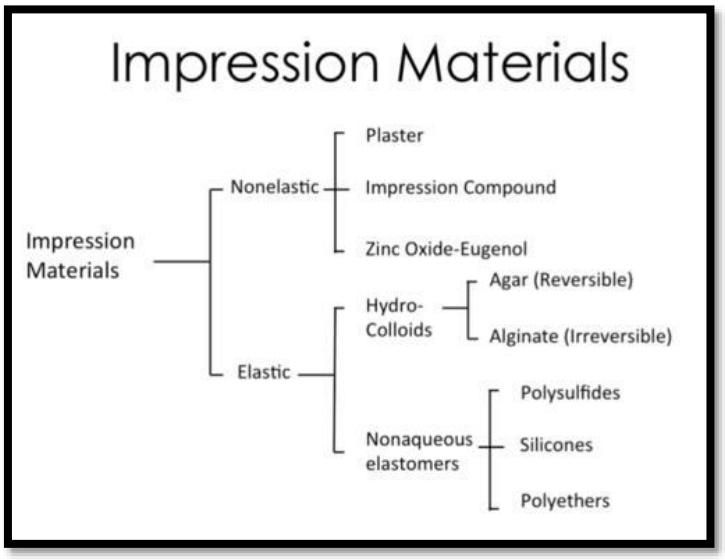

Figure 1.1: Classification of impression materials.

1.2. Classification of Impression Mater1ials:

1.2.1. Non Elastic impression material .

I. Impression Compound.

Impression compound is a thermoplastic material. It softens under heat and solidifies when it is cooled. It contains resins, waxes, fillers and plasticisers. These compound shave certain properties such as high viscosity suitable flow and plasticity **(Al-Ansari, 2019).**

There are two specifications forthe flow test, American with Disabilities Act (ADA) and Bachelor of science (BS) standard Based on temperature, dental compound may be divided into three groups **(Shopova and Slavchev, 2019).**

1- Low fusing: (softens at low temperatures) suc as green stick, which is used for border mouldingand impression with copper bands.

2- Medium fusing: (softens at medium temperatures) is used for primary impressions for edentulous patients.

3- High fusing: (softens at high temperatures) is used for making special trays, which are used common problems with primary materials are recording less tissue detail, inadequate flow, short working time, quick setting for the final impression

Properties:

Thermal properties

1- Thermal conductivity: has low thermal conductivity.

2- Coefficient of linear expansion. (CTE) high CTE , 0.3% acceptable.

3- Fusion Temp :

- It's the temperatures at which the impression compound becomes plastic.
- Its 43.5.C

4- Dimensional stability.

•Poor dimensional stability.

•To prevent distortion pour the cast within 1 hr.

5- Flow

•high fusing compounds – < 2% at 37 .C & < 70-85 % at 45.C

•low fusing compounds – < 3% at 37 C& < 80-85% at 45 C

Advantages:

• Cheap reusable.

• Does not produce irritation to the patient impression.

• Can be remodified & re-softned again till an accurate impression is obtained.

Disadvantages

• Difficult to record details accurately.

• Soft tissues are compressed due to pressure applied while taking the impression.

• Distortion.

• Difficult to remove undercuts.

• Does not have an pleasant taste.

• Can be uncomfortable in patients because of the rigidity. **(Qanungo and Aras, 2016).**

Figure 1.2: Maxillary and mandibular primary impression made in impression compound.

II. Impression plaster.

The plaster should be mixed with water or an anti-expansion solution in the ratio of 100g to 50-60ml. The mix should be a smooth paste, free of air bubbles, which may appear on the surface of the impression leading to inaccuracy. The tray should be loaded and "puddled" into position, and held in place until set. As the impression is removed from the mouth it is not uncommon for pieces of plaster around the periphery of the impression to fracture off. These pieces should be retrieved and glued back onto the impression before it is cast. Long narrow strips of wax are then fit around the periphery of the impression just below where it ends. This is called beading. The impression is then coated with a thin layer of separating medium and cast in fresh plaster. The beading provides a clear indication of where the impression ends; the creation of this level area prevents over-trimming and over-extension.

Properties of Impression Plaster

• Excellent at recording fine detail (because very fluid when inserted in mouth)

• Dimensionally stable if anti expansion solution used

• Fractures if undercuts present

• Mucostatic

• Needs to be treated with a separating medium (e.g. varnish or soap solution) before being cast in stone or plaster

• Exothermic setting reaction

• On storage dimensionally stable but a small amount of shrinkage may occur

• Non toxic but may be unpleasant due to dryness and heat evolved during setting

ADVANTAGES

1- Good surface detail

2- Excellent dimensional stability

3- Rate of the setting reaction can be controlled by the clinician

DISADVANTAGES

1- Cannot be used for mucocdisplacive impressions

2- Cannot be added to

3- Properties affected by operator handling technique

4- Taste and roughness may cause the patient to vomit **(Van Noort & Barbour, 2014).**

Figure 1.3: Final impression by impression plaster.

III. Zinc oxide–eugenol paste.

Zinc Oxide Eugenol Impression Material

It is an irreversible nonelastic material used as a final impression (wash impression) in complete denture fabrication. It records the tissues in the undistorted state **(Reddy, Mohan et al، 2013).**

Setting reaction:

It sets in two steps: first, by the hydrolysis of ZnO to form zinc hydroxide (water is required to initiate the reaction). The second stage is a typical acid-base reaction in which zinc hydroxide reacts with eugenolic acid to form zinc eugenolate, forming a chelate and water as a byproduct. The final set structure consists of ZnO particles embedded in the matrix of zinc eugenolate.

The impression paste's setting time can be altered in clinical set up according to need, either decreased by adding a drop of water during mixing or increased by adding vaseline during mixing. The material has a good flow, which records fine details.

ZOE impression has excellent dimensional stability for 24 hrs; therefore, it can be poured within this time. But the special impression tray underneath should not get deformed**.(Katna and Suresh، 2014).**

Composition: ZOE impression material is available in two collapsible tubes; one contains the base and the other the catalyst.

The base contains:

- ZnO 87%
- Vegetable or mineral oils 13%

The catalyst contains:

- Eugenol 12-15%
- Rosin 50%,
- Fillers 20%, resinous balsam 10%, accelerator, color pigments 5%

Properties:

- Rigid
- Low viscosity
- Good surface details in thin section (0.5mm)
- Dimensionally stable (0.1% contraction)
- Compatible with gypsum products **(Tejo and Kumar et al, 2012).**

Advantages:

- Economical and easy to use
- Good flow helps in recording fine details
- Dimensionally stable

Disadvantages:

- It cannot be used in stock trays; custom trays are mandatory.

• Fragile.

• Can produce burning sensation of the mucosa.

• Setting time varies with temperature and humidity.

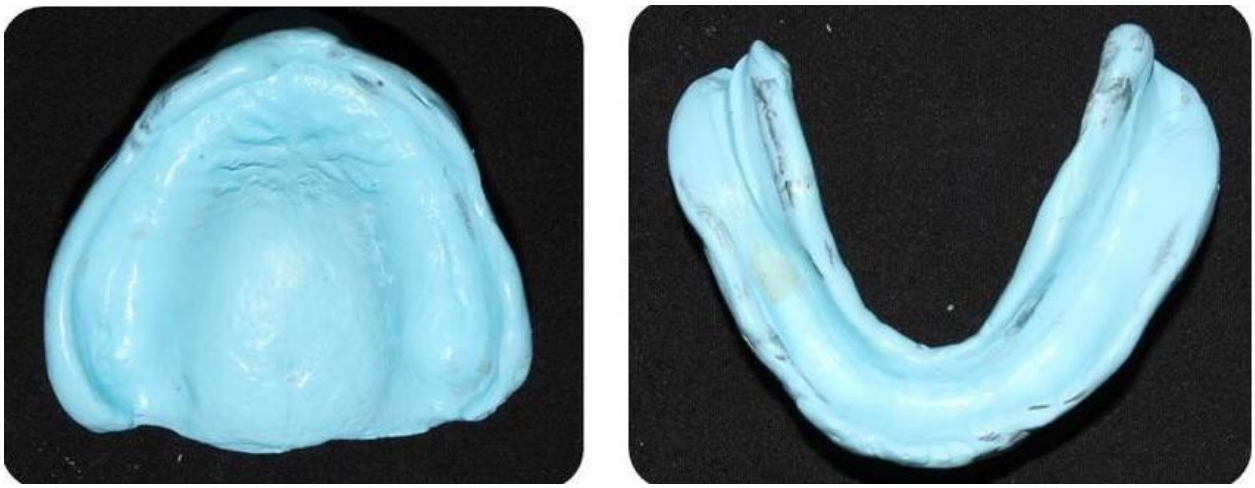

Figure 1.4: Final impression made in zinc oxide eugenol impression paste.

1.2.2. Elastic Impression Materials.

I. Irreversible Hydrocolloids (Alginate).

Alginate is a hydrocolloid widely used as an impression material in dentistry. It is derived from alginic acid, present in brown algae. It is an irreversible and elastic impression material**.(Ansari and Alsaidan et al, 2021).**

Composition:

• Sodium or potassium alginate (15%) - dissolves in water and forms a viscous sol.

• Calcium sulfate (16%) – reactor.

• Diatomaceous earth (60%) – filler.

• Zinc oxide (4%) – filler.

• Potassium titanium fluoride (3%) – accelerator.

• Sodium phosphate (2%) – retarder.

• Glycol (in dustfree alginates).

• Pigments and flavoring agents.

Indications:

• Diagnostic casts for treatment planning.

• Orthodontic study models.

• Impressions to fabricate partial and complete dentures, and temporomandibular disorders appliances.

• For duplicating models.

Manipulation:

The water is added first to the rubber bowl and then the powder; the manufacturer gives the proportions. The mixture is mixed vigorously against the walls of the bowl in a figure of eight motion. The mixing time is 45-60 seconds according to the type of alginate. Then the mixture is loaded into the selected impression tray (tray border should be a maximum of 3 mm short of vestibular depth) and placed into the patient's dental arch. After the alginate attains sufficient elasticity, the impression is removed. There should be a minimum of 3 mm thick material between the tray and tissues not to get torn. The impression should be removed swiftly, simultaneously breaking the seal by inserting fingers in the buccal vestibular region. The impression must be cast within half an hour as hydrocolloids tend to deform because of imbibition and syneresis **(Nassar and Aziz et al, 2011).**

The impression could be kept in 100% humidity and cast within 24 hours instead. But for optimum dimensional stability, an alginate impression should be poured immediately **(Hussain and Chaturvedi, 2020).**

Advantages:

• Affordable.

• Short manipulation time.

• Simple technique.

• Few armamentaria required.

• Good impression (even in the presence of undercuts) all in a single step **(Cervino, 2020).**

Disadvantages:

• Low tear strength.

• Dimensional instability.

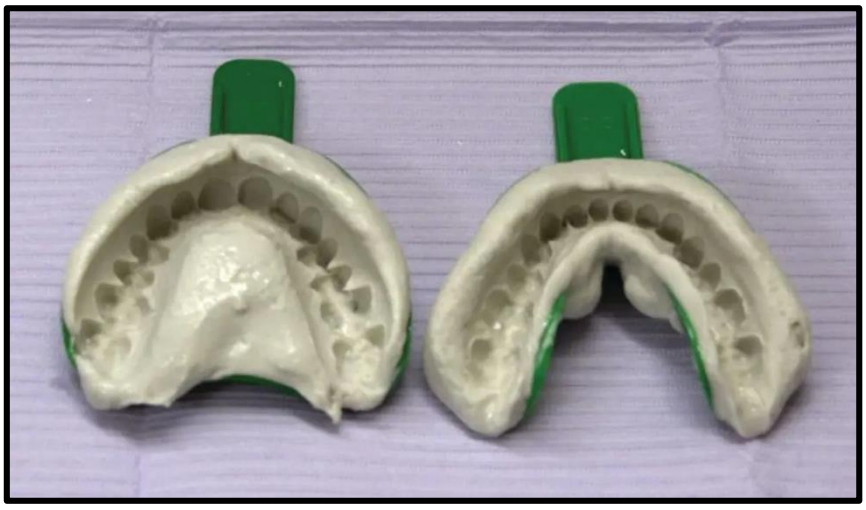

Figure 1.5: Primary impression by Irreversible hydrocolloid (Alginate).

II. Reversible Hydrocolloids (Agar).

Agar: Agar is another hydrophilic colloid impression material like alginate but reversible. It is the first elastic impression material to be used in dentistry **(Cervino and Fiorillo, 2018).**

Composition: Chemically, agar is a sulfuric ester of the galactan complex, and agar is available as a tray or syringe material.

- Agar (gelling agent).
- Borax (strengthener).
- Potassium sulfate (gypsum hardener).
- Alkyl benzoate (preservatives).
- Water (reaction medium > 80%).
- Fillers, flavoring, and coloring agents.

Manipulation:

It requires hydrocolloid conditioner equipment with three compartments to heat, store and temper the material and special impression trays that can circulate water.

First, the material is boiled in the first compartment and changed to sol from gel state. In the second compartment, the material is stored at 65 degrees Celsius and used when needed. The agar is brought to 45 degrees Celsius in the tempering section to impress oral tissues comfortably. The water circulates through the tubing and converts the sol into a gel state.

Indications:

The agar has been used in dentistry for cast duplication and impression making. Its use is now limited as it requires a complicated setup **(Reed, 1990).**

Properties:

- Hydrophilic, meaning better impressions in the presence of saliva. Agar has been used for making subgingival crown preparation impressions when it is not easy to keep the area dry.

- Dimensional stability: As this is a hydrocolloid (water-based), it may lead to deformation due to imbibition (absorption of water) or syneresis (exudation of fluids) if the impression is not poured immediately.

• It has an optimum flow to record fine details of hard and soft tissues.

• Compatibility issues with gypsum because borax interferes with gypsum setting, a gypsum hardener is added.

Advantages:

• Reversible.

• Affordable.

• Nontoxic, odorless, and nonstaining.

Disadvantages

• Requires purchasing a water bath.

• Low tear strength.

• Dimensional instability.

• Infection control unfriendly.

III. Polysulfide:

these are the first elastomers to be introduced. Although messy to manipulate, it is useful when a long working time is needed. Polysulfides are not recommended except for complete dentures **(Levartovsky and,Folkman et al, 2011).**

Consistencies:

• Light body.

• Heavy body.

Mode of supply:

It is available in a two-paste system: base and accelerator.

Composition:

The base contains:

- Polysulfide prepolymer.
- Filler for strength.
- Plasticizer for optimum consistency.
- Sulfur as an accelerator.

The catalyst contains:

- Lead oxide (gives characteristic brown color).
- Filler, plasticizers, and retarders.
- Setting reaction.

Advantages:

- Least rigid (most flexible of all the elastomers).
- Good tear strength.
- Most biocompatible.
- Excellent flow so good reproduction of details.
- Hydrophilic.

Disadvantages:

- Requires a custom tray.
- Long setting time.
- Must be poured within half an hour.
- Hydrophobic.
- Bad odor.
- Unpleasant taste.
- Stains the clothes.
- Messy to work.

Figure 1.6: Polysulfide impression material.

IV. Polyvinyl Siloxanes (Addition Silicone).

Addition Silicone: they are the most widely used impression materials in fixed prosthodontics **(Gomez-Polo and Celemin et al, 2012).**

Mode of supply: Available in all consistencies (extra-low, low, medium, heavy, and putty).

Composition: All the consistencies are supplied as base and accelerator.

The base contains:

• Hydroxy terminated polysiloxane polymer -undergoes crosslinking.

• Fillers - control viscosity.

Setting reaction:

The base paste containing hydrosilane-terminated molecules reacts with an accelerator paste containing siloxane oligomers with vinyl end groups and a

platinum catalyst. Although no by-product is formed, a secondary reaction leads to hydrogen gas production. That is why it is recommended to wait at least 30 minutes rather than have a pitted cast **(Kumar and Madihalli, 2011).**

Advantages:

• Excellent dimensional stability - impressions can be stored or posted before casting.

• Elastic recovery.

• Great accuracy.

• Short setting time.

• Good tear resistance.

• Automix available.

• Hydrophilized addition silicone has good compatibility with gypsum.

• The impression can be cast multiple times without jeopardizing the details **(Walker and Petrie et al, 2005).**

Disadvantages:

• Hydrophobic - the impression area must be dry to prevent inaccuracies in the impression.

• The sulfur present in the latex gloves and rubber dam may interfere with the polymerization of the base and catalyst.

• Hydrogen gas may lead to pitting in the cast.

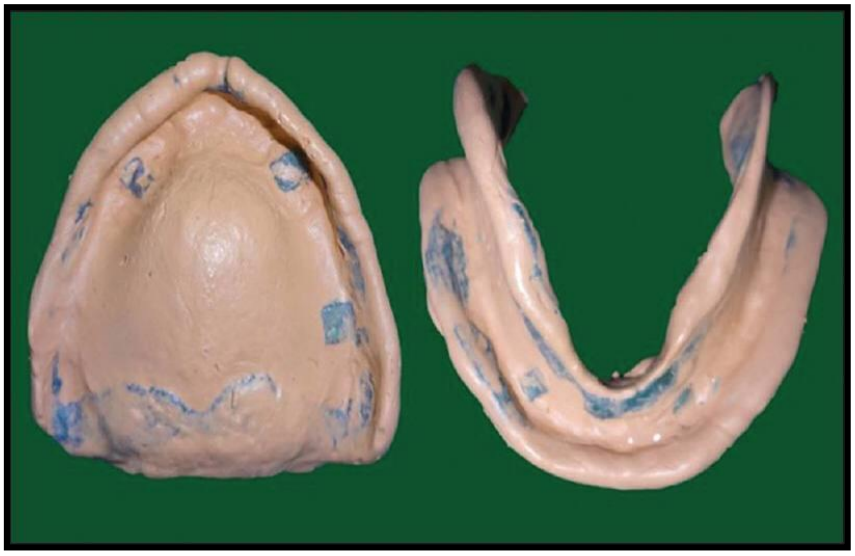

Figure 1.7: Final impression taking using light body Addition Silicone.

V. Vinyl Polyether Siloxane.

This material has been reported to combine the ease of removal of PVS with the hydrophilicity (wetting properties) of polyether making it a promising material for difficult situations in which moisture control issues are present, such as narrow, deep gingival crevices **(Walker, 2013).**

Figure 1.8: Impressions of polyether and vinyl polyether siloxane.

VI. Polyether: it has become popular because it only requires a stock tray and a single mix**.(Yilmaz and Aydin et al, 2007).**

Mode of supply: Available as light, medium, and heavy body consistencies.

Composition:

The base contains:

- Polyether
- Fillers
- Plasticizers

The accelerator contains:

- Alkyl aromatic sulfonates
- Inert oils
- Plasticizers

Setting reaction:

When base and accelerator are mixed in equal proportions, polyether rubber is formed.

Advantages:

- Hydrophilic
- Accurate and high dimensional stability - makes it possible to delay casting and allow multiple pouring.
- Good elastic recovery
- Good compatibility with gypsum
- Good shelf life
- It can be used as a single-phase material or with a syringe tray technique

Disadvantage:

• Most rigid of all the elastomers makes it hard to remove (newer polyethers are slightly more flexible)

• May cause allergy due to sulfonate acid esters **(Khatri and Mantri, et al, 2020).**

Figure 1.9 : Polyether impression material

1.3 Digital Impressions

The advantages of intraoral scanning are too many: the material and armamentarium used in analog impressions are avoided (e.g., impression trays, impression material, gypsum); the communication between the clinician and laboratory technician is improved since the image can be modified, recaptured, a soft copy can be stored; and the cross infections can be minimized due to absence of physically stored casts **(Zimmermann and Mehl, 2015).**

However, digital impressions require an expensive setup, images of completely edentulous arches are less accurate, the presence of blood and saliva

obscures subgingival finish lines, and they do not record complete occlusal information for comprehensive prosthodontic treatments **(Fasbinder, 2010).**

But, for single units and segmental dentistry, the intraoral scanners are highly accurate. **(Ender and Attin et al, 2016)**.

The Advantages of Digital Impressions

• Digital impressions provider greater detail.

• The digital process is a lot more comfortable.

• Digital impressions are easier to share.

• Fewer resources means it's the eco-friendly choice

Drawbacks of Digital Impression

High investment costs: Making digital impressions tends to be more expensive than using traditional methods. Both the equipment and training costs are higher. Lower accuracy for a full arch: Certain impressions have less accuracy than conventional impressions, especially the full arch.

1.3.1 Factors effect on Impression Accuracy.

The purpose of dental impression is to copy the patient's intraoral situation, transforming it in a model. Obtaining a model of good quality and true to the original is extremely important for the success of the treatment. So different types of materials and impression techniques have been used over the years to achieve this desired accuracy **(Thaise Ferreira Carvalho et al, 2018).**

There are several factors that affecting on the precision of conventional impression, they include; Patient's oral health, saliva (quantity & quality), mouth opening, impression material manipulation, thermal changes after removal, kind of impression material, tray impression retention, tray deformation, impression tray design, impression material thickness, impression

technique and impression removal **(Arash Shisheyan et al, 2016).** While the factors that affecting on the precision of digital impression are; Healthy gums, Excessive saliva secretion, type of intraoral scanning, the size of jaw, using cement and operator experience. Therefore, any defect in these factors will negatively affect the accuracy of the conventional and digital impression and thus not reach the desired results **(D'Arienzo, 2020). Jing-Huan Fang et al, 2017).**

1.3.2 Methods for Measuring Impression Accuracy.

The accuracy is considered as the main parameter to evaluate the performance of a measurement method **(D'Arienzo, 2020)**. The quality of a dental impression is determined by two factors: Trueness and precision. Where the trueness, which describes the deviation of the impression geometry from the original geometry, while precision, which describes the deviation between repeated impressions rather than to the original geometry. So Precision reflects the degree of deviation between impressions within a test group **(Thomas Attin et al, 2016).**

For this a new approach to both 3- dimensional (3D) trueness and precision is necessary to assess the accuracy of intraoral digital impressions and compare them to conventionally acquired impressions. A steel reference dentate model was fabricated and measured with a reference scanner (digital reference model). Conventional impressions were made from the reference model, poured with Type IV dental stone, scanned with the reference scanner, and exported as digital models. Additionally, digital impressions of the reference model were made and the digital models were exported. Precision was measured by superimposing the digital models within each group. Superimposing the digital models on the digital reference model assessed the trueness of each impression method**. (Andreas Ender et al, 2013).**

1.3.3Digital versus Conventional Impression in Dentistry.

The conventional clinical protocol in complete denture (CD) rehabilitation provides different steps as follows:

(1)- Preliminary impression, generally taken in hydrocolloid-based material.

(2)- Functional impression, registered with individual impression tray, edging it with thermoplastic paste.

(3)- Intermaxillary registration, determining the centric relationship and the vertical dimension.

(4)- Teeth arrangement try-in, in order to verify aesthetic, phonetic and occlusal function.

(5)- Delivery of the prosthesis, Therefore, taking a conventional dental impression requires multiple materials and sometimes more steps due to the fact that the process is accurate and requires high skill, and therefore it is easy to make mistakes in any of the many steps involved: a human element (the dentist or dental technician), physical defects (voids, air bubbles, or preparation Inappropriate or distorted) **(D'Arienzo et al, 2020).**

While we find that digital impressions eliminate many of the steps work and guesswork associated with conventional impressions and the need to put impression materials in the mouth, which causes some patients to become alienated due to its unpleasant taste or gag reflex. It also facilitates taking the impression by using a specialized scanning retractor to withdraw the moving tissues of the lips, cheeks and vestibule while taking a digital impression, especially in people who have a narrow mouth opening, in addition to saving time both during the impression taking or the delivery of dental prostheses **(Amit Punj and Francois Fisselier, 2020).**

When taking digital impressions, dentists rely on visual assessments, usually using magnifying lenses, to determine whether the impression is ready to be sent to the laboratory or not. In conventional impressions, identifying errors is more difficult, and if errors are identified, the dentist will need to take another impression, which means that patients have to undergo the procedure again, which leads to more inconvenience to the patient and longer appointments in addition to lost time and additional cost and consumption of more materials, On the other hand, dentists can see the digital impression by means of the scanner, amplify it and evaluate it carefully, as errors can be corrected immediately before sending it to the laboratory. In addition to the possibility of re-scanning part of the missing area using the digital system instead of restoring the entire impression as in conventional impression, and therefore it gives high accuracy and ease in digital scanning in addition to the absence of the need to sterilize the digital edition **(Amit and Francois, 2020). (Sachin and Chandran et al, 2019).**

The digital dental print can be stored electronically and referenced at any time, which contributes to efficient record keeping and is therefore considered environmentally friendly by not needing plastic trays and traditional dental materials, whose disposal leads to an increase in the area of the landfill, while in the case of using digital prints it is done Get rid of the patient's digital data using the "Delete" button. Digital impressions are the most expensive compared to conventional impressions due to the cost of equipment and training programs **(Sachin and Chandran et al, 2019).**

1.4Theories of Impression Technique.

Depending on the pressure exerted on the tissues during the registration of the impression, the theories of impression techniques can be classified into:

1- Muco-compression or Functional impression technique (pressure or closed mouth technique).

Mucocompressive theory claims to record the tissues in their functional / supporting form so as to achieve stability in occlusal function. This concept is not very encouraging since it seeks to subject the tissues to a continuous pressure which is conducive to resorptive changes in basal tissues. In addition to this, displaced tissues tend to displace the denture in their attempt to return to their original form **(collett, 1965).**

Advantage

• Good retention during function.

Disadvantages

1. The pressure applied during the procedure may overstress the tissues and eventually cause bone resorption.

2. The gradual resorption of the bone will hinder retention of the denture over a period of time.

3. The closed-mouth technique will not enable accurate recording of the border tissues.

4. Tissues held under pressure rebound to their original form at rest.

5. This technique does not respect the principle of tissue biology.

2- Mucostatic impression technique (non- pressure technique).

Based on Pascal's law sets out to record the mucosa in its static (supported by underlying basal bone), undisturbed form. This is possible only if the impression material is watery and virtually requires no pressure to place it against tissues. Such an impression will not cover enough area to afford retention, stability and esthetics of a denture **(Boucher, 1951).**

Advantage

• Tissue health is preserved and maintained.

Limitations:

1. Since the borders of the impression are not extended to the functional depth of the sulcus, the tissue fluid can easily escape through the borders of the denture and thus Pascal's law is not applicable.

2. Mucosal topography is not stable over 24-hour period and hence the stress on the mucosa will vary.

3. This technique considers interfacial surface tension as the only retentive mechanism and is not optimal.

4. Presence of short flanges of the denture affects the retention and stability.

3-Selective pressure impression technique.

Carl O Boucher, in 1950, combined the principles of both mucocompressive and mucostatic theories and adopted the mucoselective theory. Here, the pressure is applied to the stress bearing areas and the areas that cannot bear the stress are relieved. The stress relief areas in the maxillary foundation are the mid palatine raphe and the incisive papilla. In the mandibular foundation, it is the crest of the alveolar ridge. These areas are relieved in the diagnostic casts while fabricating the custom tray. Border molding is done with low fusing impression compound and a wash impression is made with zinc

oxide eugenol impression paste or Impression plaster. This technique is used in patients with well-formed healthy ridges **(Tripathi et al, 2019).**

CHAPTER TWO

CONCLUSION

CHAPTER TWO: CONCLUSION

(1) Distinct trends for increasing use of polyvinylsiloxane and polyether for border molding procedures and impressions of edentulous arches were observed. They are well suited for making complete denture impressions.

(2) The manner in which the impression was made may be more important than the material.

(3) Greater accuracy was obtained in custom trays than with impressions made in stock trays.

(4) The material can be easily and evenly applied on the tray borders with one insertion of the tray. They demonstrate excellent accuracy, and the fewest dimensional changes after multiple pours.

(5) Polyether and hydrophilic addition silicone produced casts with more soft tissue details than low-viscosity polysulfide or ZOE.

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