Study on Impression Techniques and Materials for Implant among Dentists in Erbil city: A Survey study.

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Background and Objectives: The Success and longevity of implant prosthesis is affected by an accurate fit which can be achieved through a proper impression technique and material, the techniques of impression taking can be made by either a closed or open tray impression procedures or by implant level impression technique. The main objective of the presented research was to investigate the most preferable impression material and technique for dental implant placement.

Materials and methods: This research's focus is on impression materials and the various impression techniques that can be used in implant restoration with a note on the recent advancements,with the help of a questionnaire given to dental professionals and postgraduate students who perform implants in Erbil City. Around 72 dentists were chosen, 24 of them were inside our teaching hospital, and 48 of them were chosen by random sampling.

Results: The information gathered in this study sample group shows that the highest rate was for open tray technique about 54.2% , 37.5% responded closed tray and 8.3% responded abutment level. Regarding the most preferable material 75% responded for addition silicone, 23.6% responded for condensation silicone and 1.4% responded for alginate. According to most preferable type of tray 93.1% answered perforated stock tray and 6.9% answered special tray. 56.9% of the practitioners chose One step (heavy-light), 22.2% chose two step spaced putty wash, 13.9 % chose one step (monophase single viscosity) and 6.9% answered two-step unspaced putty wash.

Conclusion: In conclusion open tray technique , stock tray , addition type of silicon and one step (heavy-light) impression technique is the most preferable in this study.

Key words: Implant, Impression, open tray, closed tray, abutment, materials.

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INTRODUCTION

Dental implant is a surgical procedure utilized to support complete or partially edentulous arch in which the implant is packed inside the bone to support crown or bridge and denture [1].

The history of the dental implant goes back to 3000 B.C, to the period when the Ancient Egyptian civilization prospered. In 1687 according to Times of Allen's report in 1800s period there was mention of dental replantation and transplantation and it was where surgery was started in this era. [2]The concept of Osseointegration, which was introduced in Europe in 1950 by Branemark who said that titanium can be integrated with bone, revolutionized the dental implant history. The Branemark technique utilized biocompatible titanium-alloy implants that were atraumatically inserted into the alveolar process. This has come to be known as Branemark's theory and the concept of Osseo-integration flourished rapidly in the 1980s, which brought about a defining moment in the clinical field of implants [3]. The main goal of an implant impression is to precisely relate an implant or the abutment of the

implant to other structures within the dental arch. Duplicating the oral cavity and transferring to a laboratory setting for implant fabrication is technique sensitive but it is basic for the success of an implant. In an implant-impression, impression copings are utilized which are attached to the abutment or the implant. Various procedures have been suggested to attain a precise master cast. Open or transfer sort and closed plate or pick up sort are the foremost common procedures [4]. Despite that there is a range of implant impression techniques, each one of them has it is own drawback, that is why selecting a specific technique which affects the outcome of the treatment is a sensitive task [5].

The open tray method of impression or closed tray method is the foremost commonly utilized forms of impression strategy, when different implant impression copings or a full arch recovery is performed. In the direct impression technique, the impression post is attached to the dental implant and it is important that the impression post is longer than the body of the screw when making the impression, after the impression material? Incomplete sentence the screw is loosened in order to remove the impression post from the impression material. The implant analog is then fixed onto the impression post using the same screw. Then the impression is ready to be poured. The indirect impression technique, or the closed tray technique, uses a tapered impression post that is screwed onto the implant for impressions, After the impression material is polymerized, the tray is removed from the mouth, while the impression post remains fixed to the implant [6].

MATERIALS AND METHODS

A standard questionnaire was distributed to dental practitioners and post graduate students who practice implant surgery in Erbil city, around 72 dentists were chosen 24 of them were inside the current teaching hospital and 48 of them were chosen by random sampling and given to those who were willing to participate the questionnaires were recorded in two months. This research focused on impression materials and the various impression techniques that can be used for implant retained prosthesis with note on the recent advances in implant impression.

RESULTS

The first question was which implant impression technique do you prefer for taking your patients impression? This was answered by an overwhelming percentage of 54.2% who responded open tray , 37.5%

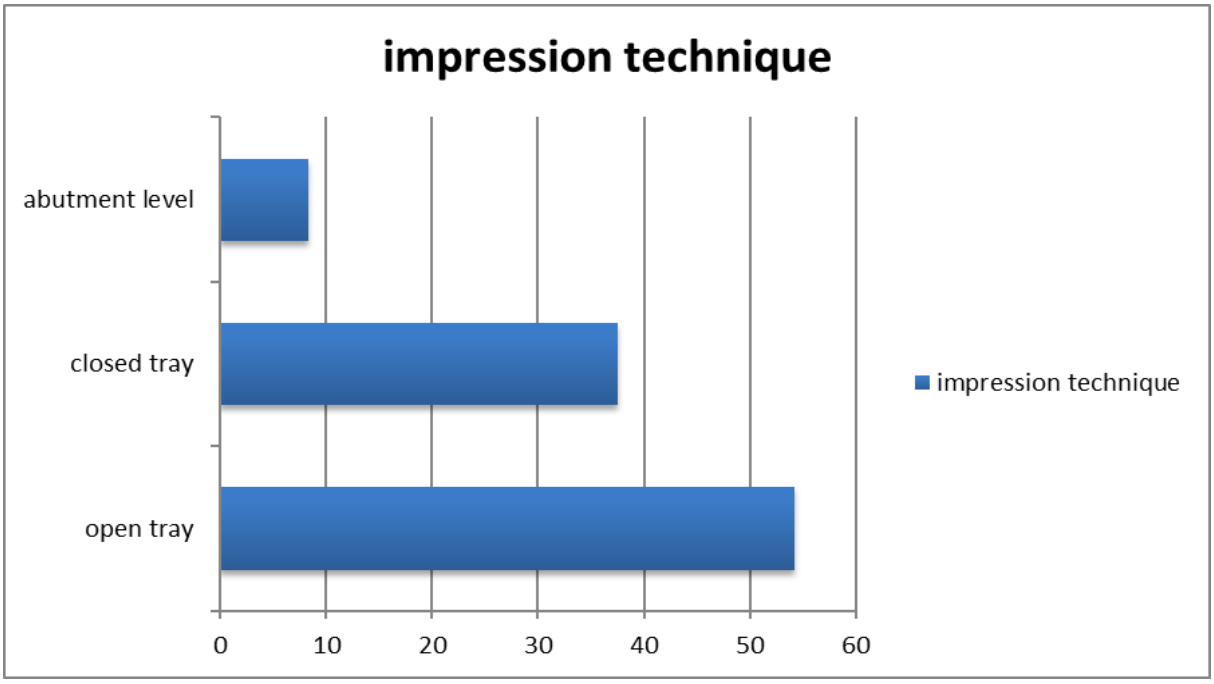

Figure 1: Impression technique.

responded closed tray and 8.3% responded abutment level (Figure 1).

The second question was which tray you use for taking your impressions? 93.1%

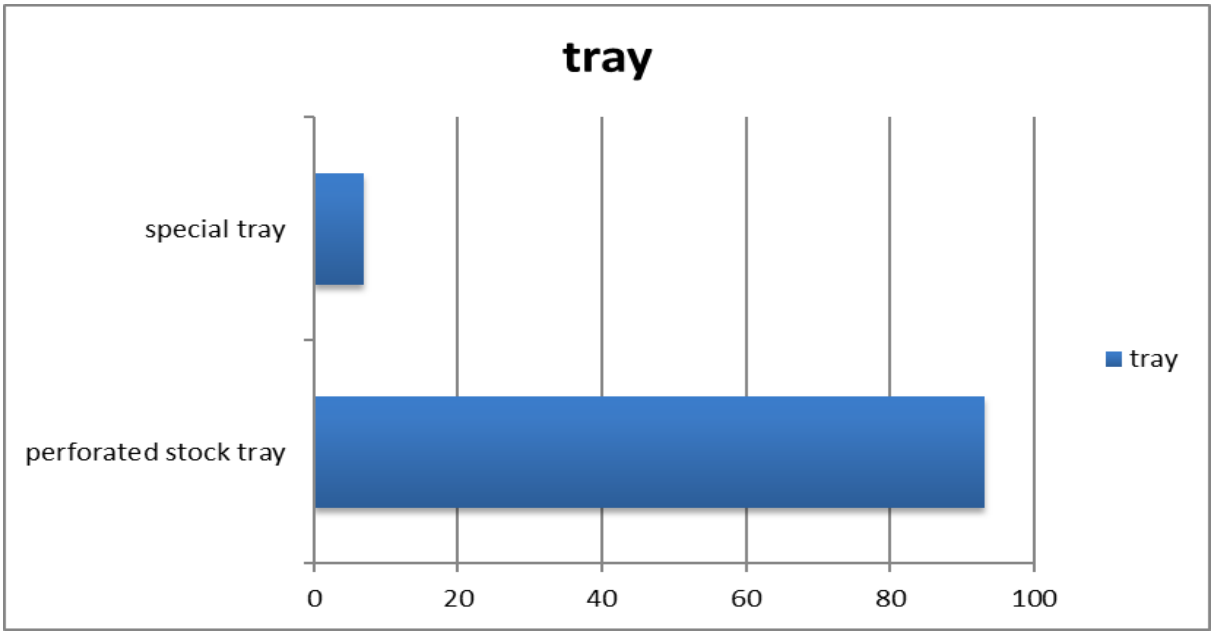

Figure 2. Types of impression tray.

The third question was , which type of material you prefer for implant impression? 75% responded with addition silicone, 23.6% responded with condensation silicone and 1.4% responded with alginate (Figure 3).

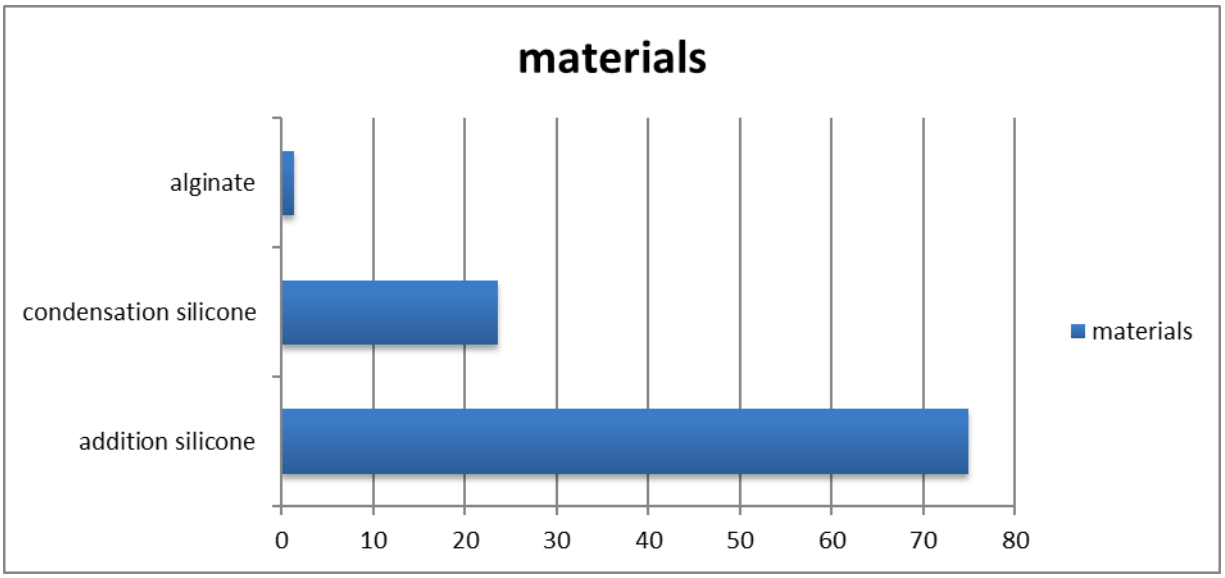

Figure 3. Types of impression material.

The fourth question was, If you use silicone which technique, do you use? 56.9% answered One step (heavy-light), 22.2% answered two step spaced putty wash, 13.9 % answered one step (monophase single viscosity) and 6.9% answered twostep un-spaced putty wash (Figure 4).

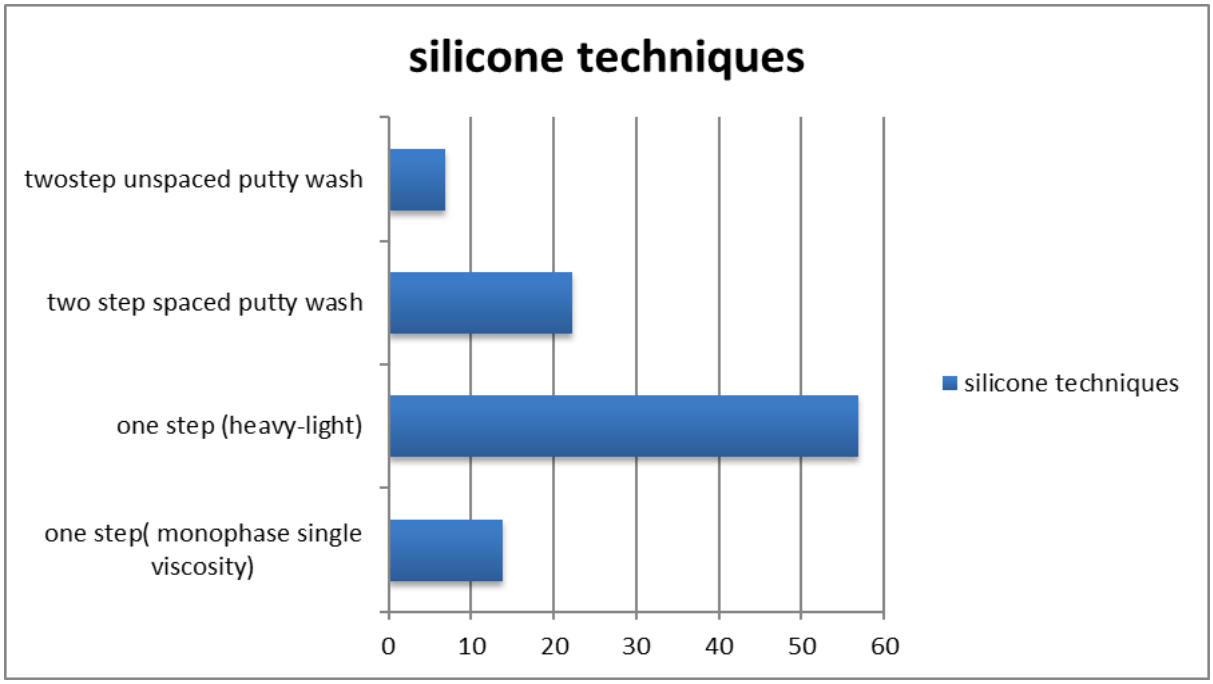

Figure 4. Types of impression material.

DISCUSSION

Oral rehabilitation with an implant-supported prosthesis has been well documented in the dental literature. The change in technology and material advancement has tremendous commercial impact for the patients and dentists. This survey was carried out to analyze the most preferred techniques and materials and trays used by the dentists for an implant retained prosthesis across Erbil city. The most preferable impression technique in this study was open tray impression technique by %54.2 of the dentists. While in another study, the technique that gave the most reliable results among the implant impression techniques and provided superiority in accuracy was the open tray technique with splinting [6]. However, a study at ahmedabad region disagrees with this study, as abutment level was the technique of choice for making implant impressions by most of the dentists, whereas abutment level was the third preferred impression technique by 8.3% of dentists in the current study. ; Additionally, in the same study closed tray was more preferable than open tray by %24.2 of the practitioners [7]. Poly-vinyl siloxane was the material of choice for making implant impressions by most of the dentists across Erbil city, this is in agreement with a study at Ahmedabad region where polyvinyl siloxane was the material of choice. Condensation silicone (putty and light body) was the material mostly used in obtaining good and accurate impression according to study in India [1].In this study on the other hand, addition silicone was the most commonly used material for implant impression because of their accuracy and dimensional stability. Accurate impression taking is a must for the fabrication of dental implant prosthesis. Inaccurate or insufficient details recorded in the impression often results in prosthetic misfit. Most participants used prefabricated plastic trays for impression taking (%93.1) due to ease of use, no extra appointment for the patient, but plastic trays are generally less rigid than prefabricated metal tray and custom fabricated acrylic trays. Custom trays permit the impression material to be used in optimal thickness. This is in agreement with a study at Ahmedabad region that concluded %62.1 preferred stock tray over custom tray in a total of 307 responses [7]. Another study concluded that it is possible to make accurate stock tray impressions, although the accuracy is not as consistent compared with custom trays. Provided an accurate impression material and desirable impression protocol are used,

a rigid stock tray can be a legitimate opportunity to custom trays for implant fixture-level impressions [11]. According to impression techniques used with a silicon material we concluded that the highest percentage of practitioners about %56,9 preferred one step heavy-light, while only % 6,9 of them preferred two step unspaced putty wash technique which~~'s~~ was the lowest rate. In 2018 a study conducted in Baghdad region showed that the best accuracy was obtained by using monophase A-silicone type impression material compared to other materials, this may be due to the fact that heavier consistency materials tend to push lighter material from the critical areas and the light body may ends up either in a lingual or Buccal areas, this in agreement with (Hoods-Moonsammy *et al*, 2014) who found similar results when using (Aquasil Monophase and Aquasil putty with light-body wash) [8 & 9], a polyether and impression plaster~~,~~ . Another study found that accurate manipulation of any materials will give the same results with the same accuracy and reproduction of details.[10]

CONCLUSIONS

The open tray technique is preferred by the highest percentage of the dentists, so it's the most preferable- impression technique. Regarding the type of the tray used for taking the impression ~~we~~ found that the stock tray is the most-preferable rather than the special tray. The most preferable impression material by %75 of dentists in the current study was addition silicon, and most of them preferred to use one step (heavy-light) technique.

Appendix:

Questions:-

1. Which implant impression technique do you prefer for takingyour patients impression?

O Closed tray

O Open tray

O Abutment level

2. Which type of material you prefer for implant impression?

O Addition silicone

O Condensation silicone

O Alginate

3. If you use silicone which technique do you use?

O One step (monophase single viscosity)

O One step (heavy -light)

O Two step spaced putty wash

O Two step un spaced putty wash

4. Which tray you use for taking your impressions?

O Special tray

O Perforated stock tray

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