

Dental Implant Impressions: The First Impression is the Last Impression: Short Communication

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Abstract

Dental implant is defined as a prosthetic device made of alloplastic material (s) implanted into the oral tissues beneath themucosal and/or periosteal layer and on or within the bone to provideretention and support for a fixed or removable dental prosthesis; a substance that is placed into and/or on the jaw bone tosupport a fixed or removable dental prosthesis [Glossary of Prosthodontic Terms (GPT 9)].Dental implants have been swiftly gaining popularity as a treatment modality of choice in prosthodontics i.e. both fixed and removable. Impression is defined as negative likeness or copy inreverse of the surface of an object; an imprint of the teeth andadjacent structures for use in dentistry (GPT 9). Impressions in implantology is a crucial step and involves a meticulous workflow in achieving the passive fit for the long-term success of the final implant prosthesis. This involves accurately relating and recording the exact replica of the implant analogue or the implant abutment to the other structures in the oral cavity. A plethora of factors determine the accuracy of the implant impressions namely the choice of impression tray, impression material, number of implants, depth, position and angulation of implants and most importantly the technique encountered for recording the impression. This short communication briefly portrays the armamentarium and components used along with the selection of a suitable impression tray, impression material and impression technique devised for the precise impression of the implant for the ultimate success of the final prosthesis.



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Introduction


Implant is defined as any object or material, such as an alloplastic substance or other tissue, which

is partially or completely inserted or grafted into the body for therapeutic, diagnostic, prosthetic, or experimental purposes (GPT 9).¹ In other terms,

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Implant means “to graft or insert a material such as an alloplastic substance, an encapsulated drug, or tissue into the body of a recipient.” The implants, as a prosthetic modality of rehabilitation has totally changed the whole landscape of today’s dentistry.

Due to the success of the final prosthesis, dental implants are rightly considered as a benchmark in the day-to-day clinical practices. Dental implants are truly termed as the “*therapeutic solution of choice*”. In comparison to the conventional fixed and removable prosthesis, dental implants have totally improved the OHRqoL (Oral Health-related Quality of Life) of the patients.² The most precise as well as the passive fit of the implant supra-structure to the implant abutment ensures the predictable outcome and long-term success of the implant restorations.³ This is indeed required to reduce the complications in the field of implant prosthodontics.

Impression making unlike the other impressions is a crucial step in the field of implantology. This can be very well connoted to the role of periodontal ligament (PDL) & its associated resilience acting as a natural compensator in conventional fixed dental prosthesis using natural tooth as abutment, unlike in implantology. In implant impressions, since the implant gets ankylosed/fixed in the bone and due to the absence of PDL & its resiliency, such compensatory mechanisms are absent. This means that even small hindrances are acceptable in impressions involving the fixed and removable prosthesis, unlike the implant impressions.⁴ Henceforth, recording the implant impressions with the utmost accuracy and precision ensures the final durability and outcome of the prosthesis.

In implantology, an impression is a three dimensional negative likeness of the final implant position in the patient’s mouth. Such a spatial orientation of the implant becomes an important factor while considering the final prosthesis. With the advent of the various innovative techniques and materials in impressions for implantology, it becomes imperative for the dental professionals to appropriately choose a proper impression material as well as impression technique using a rationalistic approach i.e. with strong level of evidence.⁵

Such techniques and materials for impression making in implantology have their own implications.

Selecting the most suitable technique and material requires proper knowledge, skill and expertise of the professional, indeed important for the success of the final implant prosthesis.⁶

Goals of Implant Impression

To achieve the major goals of implant impressions for the success of final prosthesis, a meticulous armamentarium is required to obtain the most accurate and hassle-free impressions.⁷ These include the proper knowledge of the various prosthetic components used in implantology, selection of the appropriate impression tray i.e. stock/custom tray, selection of the suitable impression material keeping in view the ideal requisites, selection of the screw/hex driver depending on the abutment system, healing abutment/caps, impression copings and the type of implant abutment used.⁸

The main goal/objective of the impression making is to accurately record and relate the exact copy of the implant analogue or the implant abutment with the associated soft and the hard tissues of the oral cavity. In addition to this, recording the emergence profile i.e. the minute details of the gingiva and occlusion of the adjacent tooth/teeth is of utmost importance in deciding the success of the final prosthesis.⁹

Classification

The classification of impressions in implantology¹⁰ or the various impression techniques in implantology is summarized (Figure 1):

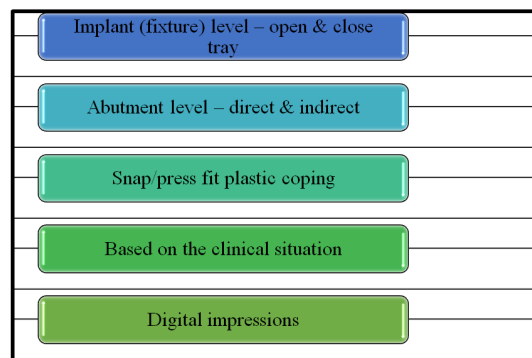


Fig. 1: Impression techniques in implantology

Based on the implant/fixture level, the impression can be classified as open tray (pick up/direct) technique or close tray (transfer/indirect) technique. This involves use of the square shaped impression copings i.e. open tray coping and tapered coping

i.e. close tray coping. The snap/press fit coping method involves the use plastic copings neither an open tray nor a close tray method. The open tray impression technique has been a gold standard impression approach to record the impressions in particular the full mouth rehabilitation with implants. The abutment level impressions may be dealt with using a direct/indirect technique. A number of techniques have also been devised based on the clinical situation i.e. subtractive/additive technique, temporary restoration as coping, customized impression coping, impressions for implant retained overdentures, deeply placed implants, implants in close proximity and full arch implant impression technique. In full mouth cases, a very important step known, as splinting is utmost needed. Splinting of the impression copings helps to prevent any distortion/micro-movement during impression making. A number of materials have been used in the past for the splinting procedure i.e. plaster, acrylic resins, composite resins, pattern resins etc. In such cases, open tray impression using splinted copings form the hallmark of the impression.

A new addition to the impression techniques involve the use of digital impressions. Such impressions in

implantology have superseded all the limitation associated with the conventional impressions. Few studies have also been documented on the role of ultrasonics in the field of implant impressions.

Conclusion

Impression making in implantology holds a pivotal factor in determining the success of the final implant prosthesis. Success of impression making in implantology is a multifactorial approach including the selection of an appropriate armamentarium, impression tray, material and most suitable technique based on the clinical situation. Although, each technique has its own repercussions, it finally depends on the skill and proficiency of the professional for the best outcome. Hence, it is true to say that "The First Impression Is The Last Impression", rather the best impression.

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Conflict of Interest

The authors do not have any conflict of interest.

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