The Original

Comparison Of Conventional and Digital Impression Techniques for Implant Supported Prosthesis: A Narrative Review

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ABSTRACT

Background and Aims: Accurate impression making is essential for the success of implant supported prosthesis. With the evolution of digital technologies both traditional and digital impression are widely used. This narrative review aims to compare these methods in terms of overall prosthetic outcomes, patient comfort, clinical efficiency and accuracy.
Data Sources: Electronic databases such as PubMed/MEDLINE, Scopus, Web of Science, Google Scholar, and the Cochrane Library were used to perform a thorough literature search.
Study Selection: Based on predetermined inclusion and exclusion criteria clinical trials, comparative studies, systematic reviews and meta-analyses on implant-supported prosthetic impressions published between 2000 and 2026 were screened.
Data Synthesis: A total of 27 studies were included in the qualitative synthesis. Conventional techniques (open and closed tray) demonstrated reliable outcomes but were susceptible to material deformation. In full-arch and aesthetic cases, digital techniques such as intraoral scanning, photogrammetry and hybrid processes have demonstrated increased efficiency, improved patient comfort and equivalent or higher accuracy. However, results were affected by variables such as scanner constraints, clinical circumstances and operator skill.
Conclusion: Neither conventional nor digital impression techniques are universally superior. The choice of impression depends on clinical requirements, patient-specific considerations and available resources. An integrated approach combining both methods may provide optimal outcome in implant prosthodontics.

INTRODUCTION

Impression making serves as a fundamental pillar in prosthodontics, forming the basis for accurate diagnosis, treatment planning and fabrication of implant-supported prostheses.[1] A dental impression may be defined as a negative imprint or a positive digital image display of intraoral anatomy; used to cast or print a 3D replica of the anatomic structure that is to be used as a permanent record or in the production of a dental restoration and prosthesis.[2] The accuracy of this process is critical as it directly affects the fit, function and long-term success of the final prosthesis.[1]
Conventional impression techniques have long relied on elastomeric or hydrocolloid materials such as silicones and polyethers to capture the detailed morphology of oral tissues. While these materials have provided reliable outcomes over decades but they are often technique-sensitive and prone to dimensional distortion due to environmental factors, material instability and operator variability. Additionally, the patient's discomfort, extended chairside time and complex laboratory procedures present notable clinical limitations.[1,3]
The advent of digital technologies has transformed impression making in prosthodontics. Initial innovations such as laboratory scanners, facilitated the digitization of physical models and introduced computer-aided design and manufacturing (CAD/CAM) workflows. The development of intraoral scanners (IOS) has further advanced this evolution by enabling direct digital impressions and offering real-time high-resolution imaging that integrates seamlessly with digital design software. These advancements have improved the accuracy, reproducibility and efficiency while also enhancing patient comfort and reducing procedural time.[4,5,6]
This shift from conventional to digital workflows is not merely a technological progression but a paradigm changes in clinical practice. As digital tools continue to evolve and become more widely accessible, a thorough understanding of both traditional and modern impression techniques is vital for contemporary prosthodontic practice.[3] This review explores the evolution, current methodologies, and clinical implications of impression-making technologies, providing evidence-based insights to guide optimal clinical decision-making.

METHODOLOGY

A comprehensive narrative review was conducted to critically evaluate and compare conventional and digital impression techniques specifically for implant-supported prostheses. The methodology encompassed several key stages to ensure a comprehensive and evidence-based analysis of the data.

LITERATURE SEARCH

A detailed and systematic literature search was performed across multiple electronic databases- including PubMed/MEDLINE, Scopus, Google Scholar, Web of Science and the Cochrane Library. The search covered literature published between the years 2000 and 2026 to ensure inclusion of the most relevant advancements in impression-making techniques.

The review question was "In patients undergoing implant-supported prosthodontic treatment, how do conventional and digital impression techniques compare in terms of accuracy, clinical efficiency, patient comfort and long-term prosthetic outcomes?" was formulated using patient, intervention, comparator, outcome and the studies framework

Table 1: Systematic search strategy

Search Strategy	Protocol Followed
Focus question	**Population:** Patients requiring implant-supported prostheses for partial or complete edentulism. **Intervention:** Digital impression techniques (intraoral scanning, scan bodies, photogrammetry, coded healing abutments). **Comparison:** Conventional impression techniques (open tray, closed tray, splinted, abutment-level). **Outcome:** Accuracy, time efficiency, patient comfort, prosthetic fit, and long-term success.
Search combination	"Implant impression technique" AND "digital impression" AND "conventional impression", "intraoral scanner", "implant scan body", "photogrammetry in implantology" AND "implant-supported prosthesis"
Electronic databases searched	PubMed, Google Scholar, Scopus,Web of Science and Cochrane
Inclusion criteria	English-language articles published between 2000 and 2025; studies comparing conventional and digital implant impression techniques; studies on clinical outcomes, procedural protocols, and accuracy evaluations.
Exclusion criteria	Non-English articles, in vitro or animal-only studies without clinical extrapolation, isolated case reports, and studies with no comparative assessment.

followed by an assembled search strategy, specifying inclusion and exclusion criteria, identification and selection of studies, evaluation of the quality of the research, extraction of data and creation of an evidence table and interpretation.

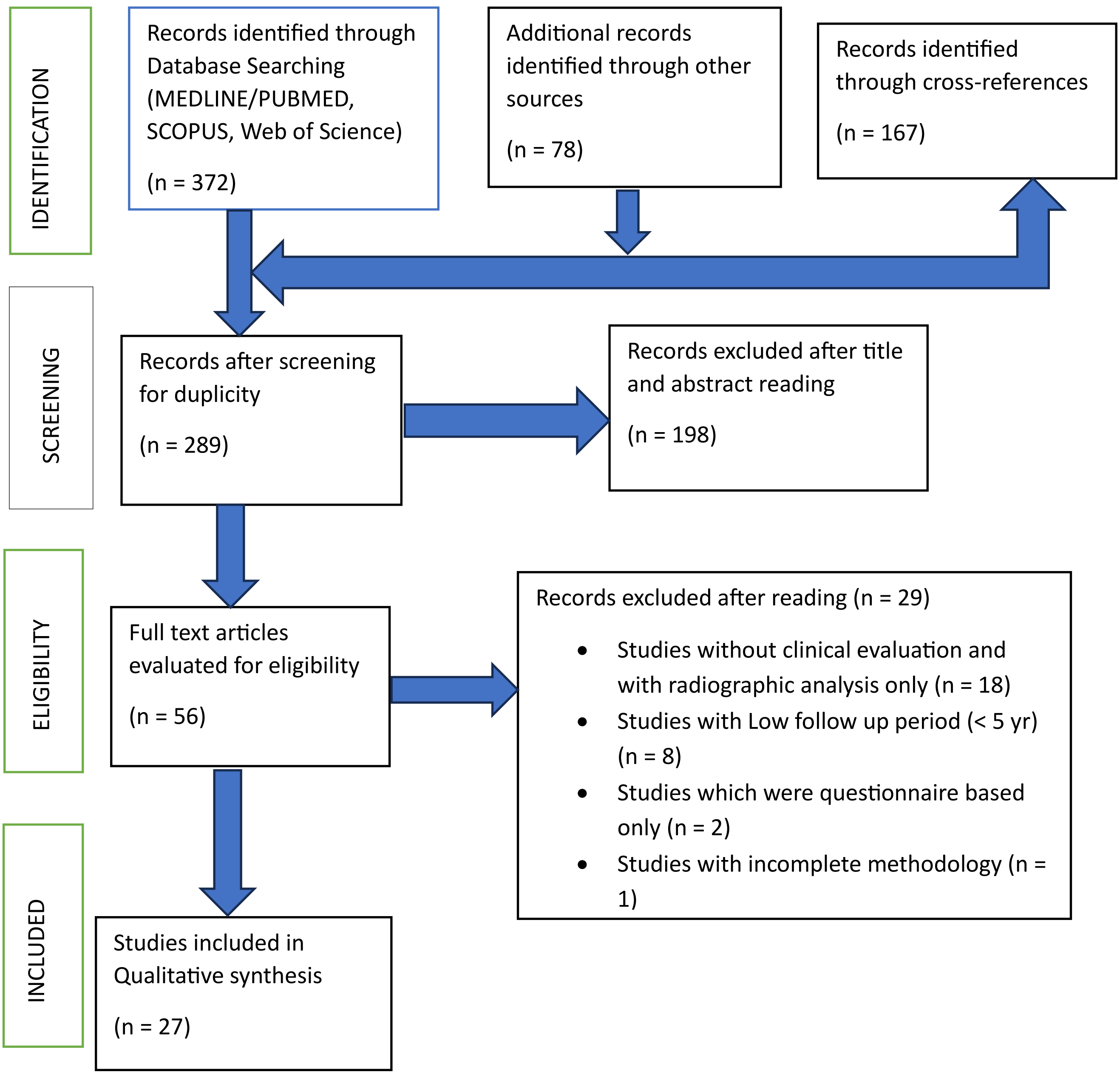
The electronic and manual searches included clinical trials, in vitro comparative studies, systematic reviews, meta-analyses, and significant cohort studies focusing on impression techniques for implant prostheses. The search specifically targeted techniques such as closed tray, open tray, splinted and non-splinted impressions (conventional), and intraoral scanning using scan bodies, photogrammetry, altered reverse impression, coded healing abutments, and hybrid digital workflows.

The inclusion criteria encompassed studies on human subjects that reported clinical outcomes, accuracy assessments or prosthodontic implications of different impression techniques with a minimum follow-up period of one year. The exclusion criteria included non-English articles, animal or in vitro-only studies not involving clinical translation, and isolated case reports without comparative or outcome-based analysis.

RESULT OF LITERATURE SEARCH

Systematic selection process for the review. A total of 617 records were initially identified—372 from electronic databases (MEDLINE/PUBMED, SCOPUS and Web of Science), 78 from other sources, and 167 through cross-references. After removing duplicates, 289 records remained for title and abstract screening. Of these, 198 articles were excluded for reasons including lack of relevance to implant prosthodontics, absence of comparative methodology, or focus on non-implant prosthetic cases. This resulted in 56 full-text articles being selected for detailed evaluation. After a detailed assessment, 29 studies were excluded due to insufficient follow-up, lack of clinical outcome data, or limited scope. Ultimately, 27 studies met the inclusion criteria and were included in the qualitative synthesis of this review.

Table 2: Search Strategy



RESULT OF INCLUDED ARTICLES

The methods and techniques involved in conventional and digital impression making for implant-supported prostheses that were included in this review were: Yuzbasioglu et al[1] compared digital and conventional techniques in terms of patient perception and clinical effectiveness. The definition and terminological standard were based on The Academy of Prosthodontics.[2] Su and Sun[3] compared repeatability between intraoral and extraoral scanners. Dalal et al[4] reviewed the advancements in digital impressions, while Mizumoto et al[5] and Gjelvold et al[6] evaluated accuracy and clinical outcomes of digital and conventional impressions. Bhakta et al[7] and Yasar et al[8] provided foundational insights into conventional open and closed tray techniques. Baghani et al[9] and Att et al[10] discussed the role of digital scanning methods including desktop workflows. Abduo and Elseyoufi[11] conducted a systematic review on factors influencing IOS accuracy. Mizumoto and Yilmaz[12] detailed scan body applications in digital workflows. Dohiem et al[13] performed a clinical trial on scan body accuracy in free-end saddle cases, while Shetty et al[14] analyzed splinted vs. non-splinted scan body techniques. Rosmaninho et al[15] introduced the altered reverse impression with extraoral jig scanning. Crockett et al[16] evaluated the OptiSplint technique for full-arch digital records. Ribeiro et al[17] assessed stereo-photogrammetry for full-arch prostheses. Pozzi et al[18] and Joensahakij et al[19] compared intraoral optical scans with photogrammetry in complete arch impressions. Clozza[20] presented a technique combining intraoral scanning and photogrammetry for enhanced accuracy. Talesara et al[21] and Lee[22] explored the use of coded healing abutments in digital workflows. Monaco et al[23] focused on digital impressions in the esthetic zone. D'Ambrosio et al[24] conducted an umbrella review comparing both techniques. Papaspyridakos et al[25] performed a meta-analysis highlighting clinical outcomes of conventional versus digital impressions. Tyagi et al[26] reported a case of implant-supported prosthetic rehabilitation in an immunocompromised patient with a maxillectomy defect secondary to mucormycosis. Agarwal et al[27] performed a 3D finite element analysis to assess stress distribution in peri-implant bone with various abutment materials under immediate and delayed loading conditions.

DISCUSSION

CONVENTIONAL IMPRESSION TECHNIQUES FOR IMPLANT SUPPORTED PROSTHESIS

Conventional impression techniques remain a cornerstone of implant-supported prosthodontics, enabling accurate replication of implant positions and surrounding soft tissues. This was achieved by utilizing impression copings and custom trays. These methods effectively transfer the spatial orientation of implants from the oral cavity to a working cast. Precision in this process is essential to achieve a passive fit of the final prosthesis and to avoid biological or mechanical complications. Despite advances in digital technologies, conventional techniques continue to be widely used because of their proven reliability, cost-effectiveness and adaptability across diverse clinical scenarios.

IMPLANT LEVEL IMPRESSION TECHNIQUE

A. Closed tray technique / indirect impression technique

The indirect (closed-tray) impression technique involves placing a coping on the implant, making an impression and then removing the tray while the coping remains in the mouth. The coping is later attached to an analog and manually repositioned into the impression which can cause inaccuracies. This method is quicker, simpler and more comfortable for patients with limited mouth opening or gag reflex but is less accurate for multiple or angled implants and may suffer from rotational distortion if not splinted. Nonetheless, it remains useful for cases with fewer implants and limited access.[7,8]

B. Open tray technique / direct impression technique

The direct (open-tray) impression technique uses a custom tray with an open window, allowing the coping screws to be accessed and unscrewed through the tray so that the copings come out embedded along the set impression, preserving their exact position. It offers greater accuracy, particularly in cases involving four or more implants or significant angulation. However, it may be less comfortable for patients with limited oral access or a strong gag reflex. A key advantage is that the implant analogue can be attached directly to the impression post without re-seating it, reducing the risk of repositioning errors. Accuracy is further enhanced by the splinted technique, where impression posts are connected using stabilizing materials to minimize movement and distortion during impression making. This method is especially recommended when four or more implants are present or when implants are angulated, as splinting significantly reduces deformation and rotational discrepancies.[7,8]

ABUTMENT-LEVEL IMPRESSION TECHNIQUE

This impression technique in implant prosthodontics is used when impressions are made over the implant abutments instead of the implant fixtures, often when final or prefabricated abutments are already placed. It records the abutment's contour, finish line and emergence profile, allowing the lab to fabricate the prosthesis with or without implant analogs or transfer copings. This method is suitable for single or multiple unit restorations in cases with good implant parallelism, typically using a closed-tray technique. It simplifies the procedure, reduces chair time and is ideal for straightforward cases, though it provides less flexibility for angulation correction than fixture-level impressions.[7]

DIGITAL IMPRESSION TECHNIQUES FOR IMPLANT SUPPORTED PROSTHESIS

Extraoral (lab/desktop) and intraoral scanners represent two pivotal technologies in the digital transformation of dental workflows, each serving distinct yet complementary roles. Extraoral scanners are widely used in dental laboratories to digitize stone casts, impressions and wax-ups under controlled conditions leveraging optical technologies such as laser scanning, structured light and particularly blue light projection for high-accuracy full-arch scans. These systems often feature dual cameras and multi-axis motion for precise STL generation, although scanning impressions may require sprays and can struggle with undercut regions.[9,10] In contrast, intraoral scanners (IOS) capture direct optical impressions intraorally, eliminating traditional materials and enhancing patient comfort. Using laser or visible light through methods such as confocal imaging, triangulation or wavefront sampling, IOS devices generate real-time, high-resolution 3D models. Innovations such as ultrafast optical sectioning and active wavefront sampling have further advanced IOS performance, making them indispensable in modern prosthodontic diagnostics, treatment planning and prosthesis fabrication.[11,10]

Intraoral Scan Bodies (ISBS)
Intraoral Scan Bodies (ISBs) are specialized components crucial to digital implant dentistry, designed to accurately capture the three-dimensional position and angulation of dental implants during intraoral scanning. Acting as intermediaries between the implant fixture and digital scanner, ISBs facilitate the precise transfer of implant data into computer-aided design and manufacturing (CAD-CAM) systems. Structurally, an ISB consists of three main parts: the scan region which features defined geometrical markers for scanner recognition; the body, which connects the scan region to the base and is typically made of biocompatible materials like PEEK or titanium; and the base, which ensures a secure fit with the implant. Once attached and scanned, the ISB's digital image is aligned with the implant manufacturer's digital library using algorithms such as the Iterative Closest Point (ICP), enabling accurate virtual replication of the implant's position. The scanner uses structured light or laser to create a point cloud of the ISB's geometry, allowing for sub-millimeter precision. The key factors influencing scanning accuracy include ISB design, surface characteristics, connection stability, scanner resolution, and intraoral conditions. When properly utilized, ISBs enhance the accuracy, efficiency, and patient comfort in digital implant workflows, making them indispensable in modern prosthodontics.[12]

INTRAORAL SCANNING USING SCAN BODY TECHNIQUE
Scan bodies are non-metallic, cylindrical components with a flattened side. They were torqued onto the implants intraorally with a torque of 20 Ncm. The intraoral scanner is used to capture the geometry and position of the scan bodies along with adjacent teeth and tissues. After scanning, CAD software (Exocad Dental CAD) is used to superimpose the scanned data with the digital library's scan body file using a best-fit algorithm. This allowed precise virtual determination of the implant position. Custom abutments, digitally identical to those used in other techniques, were then virtually placed.[13]

SPLINTED AND NON-SPLINTED INTRAORAL SCAN BODIES
Splinting intraoral scan bodies (ISBs) generally enhances the accuracy of digital implant impressions, especially in full-arch restorations, by providing stable reference points that aid in the stitching process during scanning. Various splinting techniques have been explored to improve scan accuracy. Among them, 3D-printed splinting bars with polyvinyl siloxane (PVS) have proven effective in enhancing trueness and reducing deviations, regardless of scanner type or implant spacing. In contrast, dental suture thread splinting floss and showed inferior results due to insufficient rigidity, with suture thread negatively impacting accuracy, particularly with Trios 3 scanners. CAD-CAM milled assistive devices and modular chains with light-cured resin significantly improved accuracy, especially in posterior implant areas. A combination of pattern resin and dental floss reduced scan time, although it had minimal effect on accuracy. **Bis-acrylic composite with orthodontic wire** showed selective improvement depending on the scanner used, and **custom-made acrylic splints** offered added stability. However, it is noted that while splinting generally improves mechanical stability and scan precision, it may slightly obstruct optimal surface data capture. The overall effectiveness of ISB splinting depends on several clinical factors, including the number and position of implants, scanner type, inter-implant distances, and the splinting technique employed.[14]

INTRAORAL SCANNING OF STOCK ABUTMENTS
Intraoral scanning of stock abutments involves the direct digital capture of abutment positions within the patient's mouth using an intraoral scanner. The stock abutments are torqued onto the implants at 20 Ncm as recommended by the manufacturer. To enhance scanning accuracy a uniform layer of optical scanning powder is applied to the abutment surfaces, minimizing reflectivity and enabling clearer data acquisition. Using an intraoral scanner, a highly detailed digital replica of the intraoral abutment and surrounding structures is created. As the abutment remains in place without repeated removal, potential errors due to repositioning are avoided. This technique not only simplifies the clinical workflow but also improves patient comfort, especially in cases where conventional impressions are challenging.[13]

ALTERED REVERSE IMPRESSION WITH EXTRAORAL JIG DIGITALIZATION Traditional implant impressions often encounter accuracy issues due to distortions in analog methods or challenges during intraoral scanning. Although verification jigs help ensure a passive fit, they are rarely integrated into digital workflows. A novel technique addresses this issue by using extraoral scanning of a rejoined resin verification jig with scan analogues, eliminating the need for intraoral scan bodies. Initially, a resin jig is fabricated intraorally to verify the passive fit of the future prosthesis. It is then sectioned and rejoined in the mouth to prevent distortion. Instead of capturing implant positions intraorally, the reassembled jig is scanned using a lab scanner, avoiding soft tissue interference and enhancing precision. A separate intraoral scan of the soft tissues and remaining dentition is taken and aligned with the extraoral scan using reference points.

This produces a comprehensive and accurate digital model combining precise implant positioning and detailed soft tissue anatomy. The final prosthesis is designed using CAD software and fabricated through CAM processes like milling or 3D printing. This fully digital workflow eliminates the discomfort and inaccuracy of traditional impressions, improves fit through digital jig verification and streamlines prosthesis production with greater efficiency and precision.[15]

OPTI-SPLINT TECHNIQUE

This technique utilizes a dual-purpose implant indexing device (OptiSplint; Digital Arches LLC) that serves as both an abutment-level scan body and a physical verification jig for capturing digital and analog records in full-arch fixed implant restorations. The workflow begins with an intraoral scan of the interim prosthesis, opposing arch and occlusion. After removing the interim prosthesis, Analog ScanCaps are placed and scanned to create a Biocopy Scan. OptiSplint scan bodies are then attached to abutments and secured with a rigid metal frame using resin materials which is scanned intraorally (IO OptiSplint Scan). A separate intraoral scan of the soft tissues with healing caps in place (IO Tissue Scan) is also captured. The OptiSplint assembly is then removed and used to fabricate a stone cast if Ti-bases are required and the device with alignment markers is scanned with a desktop scanner (OptiSplint Desktop Scan). Specialized software (DentalCAD) sequentially aligns all scans: the Biocopy Scan with the Pre-Op Scan, the Desktop Scan with the Biocopy Scan followed by the IO OptiSplint Scan and finally the IO Tissue Scan. This layered alignment enables precise digital design of the final prosthesis which is then 3D printed, characterized and finalized. Ti-bases are cemented with resin cement using appropriate primers and polymerized under glycerin to eliminate the oxygen inhibition layer. The prosthesis fit is verified both on the cast and intraorally using the Sheffield test and radiographs. This integrated workflow enhances accuracy, streamlines treatment by reducing appointments and combines the strengths of both digital and conventional techniques.[16]

STEREO-PHOTOGRAMMETRY

This impression technique offers a modern and highly accurate alternative to traditional and digital intraoral methods for full-arch implant prostheses by utilizing stereo photogrammetry (SPG) with the PiCdental® system. The process involves attaching uniquely coded PICabutments® to each implant, which are then captured by a stereo camera that takes up to 600 infrared images in under 60 seconds from various angles. Positioned 15–30 cm from the patient's mouth at an angle under 45°, the camera ensures optimal capture conditions. These images are processed by PICPro® software which calculates the precise spatial relationships between implants and generates a vector-based PICfile® for CAD/CAM use. This file can be merged with intraoral or plaster cast scans to include soft tissue and occlusal details, thereby creating a complete virtual model. A key advantage of this system is its tolerance to patient movement as the software filters out inaccurate data. Although it requires additional steps to record soft tissue, this hybrid technique ensures exceptional accuracy with minimal discomfort and operator dependency.[17] Compared to intraoral scanning (IOS), which uses handheld devices and confocal imaging but is prone to errors due to movement or complete edentulism; SPG provides superior trueness and reliability, making it ideal for full-arch implant cases where precision is critical.[18,19]

Combination of IOS and SPG: The combination of intraoral scanning (IOS) and dental photogrammetry (PG) offers a highly accurate, fully digital technique for full-arch implant prosthetic rehabilitation. After implant placement and connection of multiunit abutments (MUAs) and metal scan bodies, a soft tissue scan is performed using IOS. A pre-designed 3D-printed prototype denture is relined intraorally with indexing material to capture its spatial relationship with the scan bodies followed by a detailed IOS scan that records the prosthesis in situ, including anatomical landmarks, occlusal vertical dimension (OVD) and centric relation. The relined denture is also scanned extraorally for alignment purposes. To further refine implant positioning, photogrammetry is performed using optical markers such as icambodies attached to MUAs, capturing precise 3D coordinates without the need for image stitching. The PG data is then merged with IOS scans in specialized software, resulting in a highly accurate virtual model. This integrated approach improves precision, eliminates the need for verification jigs, and streamlines the digital workflow for full-arch implant restorations.[20]

CODED HEALING ABUTMENT

Coded healing abutments (CHAs) represent an innovative advancement in implant prosthodontics, integrating healing, impression-taking and digital scanning functions into a single component. Originally introduced by Zimmer Biomet in 2004, CHAs are designed to streamline the digital workflow in implant dentistry by enabling clinicians to capture implant position, angulation and depth without the need to remove the healing abutment. These abutments feature specific surface codes or markings that can be recognized by specialized software to virtually position implant analogues eliminating the need for conventional impression copings or scan bodies. CHAs can be used with either elastomeric impressions or more commonly with intraoral scanners (IOS), making them highly compatible with digital CAD/CAM workflows. Their use significantly reduces chairside time, enhances patient comfort by minimizing soft tissue disturbance, and lowers the risk of contamination especially valuable in post pandemic clinical settings.[21] Coded healing abutments help to shape the gingiva with a gradually rising emergence profile and reduce the need for bone profiling when implants are placed no deeper than 1 mm below the bone crest. The intraoral region including the H-Scan Body and adjacent teeth is scanned using a TRIOS Color Pod scanner. The scan data and implant details are sent to a lab, where CAD software (3Shape Dental System) aligns the scan with a reference image using a 3-point match.[22]

IMPLANT DIGITAL IMPRESSION IN THE ESTHETIC AREA

In the esthetic zone where implant-supported restorations must seamlessly blend with natural dentition, precision in capturing soft tissue contours and emergence profiles is crucial. There are two standardized digital impression techniques—direct and indirect techniques—that enable predictable, esthetic, and functional outcomes while reducing clinical chair time. Traditional methods of recording implant positions and peri-implant soft tissues involve personalized impression coping and physical impressions. Soft tissue collapses after removing the provisional restoration can lead to the loss of critical emergence profile data, affecting the final restoration. Digital impressions using intraoral scanners (IOS) overcome these challenges by providing precise 3D data and minimizing errors from conventional techniques.
A. Direct Technique It is used when the peri-implant soft tissues remain stable after removing the provisional crown, especially in cases with a conical emergence profile and implant depth ≤4mm. It involves three intraoral scans:
1. STL1 (1st scan): Captures provisional restoration with soft tissue.
2. STL2 (2nd scan): Captures sulcular tissue immediately after crown removal.
3. STL3 (3rd scan): Captures full arch with the scanbody to capture the implant position. The three digital files are superimposed using specialized software to create a comprehensive 3D master model.

B. Indirect Technique This modified scanning technique is used when the peri-implant soft tissues collapse quickly after removing the provisional crown, particularly in cases with deep implant platforms (>4mm) or narrow emergence profiles. It also involves three scans: STL1- Captures the provisional restoration in place with adjacent teeth; STL2 – Captures full-arch scan with the scanbody attached to the implant STL3- Captures provisional crown outside the mouth to capture the negative shape of the emergence profile. A technician then digitally reconstructs the soft tissue contour by aligning STL3 with the reference scans. The technician digitally reconstructs the peri-implant soft tissue shape by aligning the negative shape of STL3 with the reference scans.[23]
Digital impressions offer advantages in terms of time efficiency and patient comfort, however their accuracy for full-arch and partially edentulous implant cases remains inconclusive due to study heterogeneity and limited clinical evidence.[24] Conventional methods still hold greater accuracy in complex cases, highlighting the need for more high-quality clinical research before digital techniques can replace traditional approaches universally.[25,28]

LIMITATIONS OF THE STUDY

This narrative review has inherent limitations, including the possibility of selection bias and heterogeneity among the included studies, which limits direct comparisons. Additionally, some evidence is based on in vitro or short-term studies. However, efforts were made to include recent and clinically relevant literature to provide a balanced overview.

CONCLUSION

The transition from conventional to digital impression techniques represents a transformative shift in implant prosthodontics. Although reliable and well-documented, conventional methods are inherently technique-sensitive and susceptible to errors stemming from material distortion and operator variability. They remain valuable in specific clinical scenarios, especially where digital infrastructure is unavailable or cost-prohibitive. Whereas digital impression techniques including intraoral scanning, photogrammetry and hybrid workflows offer significant advantages in terms of accuracy, repeatability, patient comfort and efficiency. These methods also enhance communication between the clinician and laboratory through streamlined CAD/CAM integration. However, challenges such as high equipment costs, technical learning curves and limitations in full-arch edentulous cases must be acknowledged. For optimal outcomes in implant-supported prosthetic rehabilitation, digital technologies continue to evolve and become more accessible in everyday prosthodontic practice. Nevertheless, foundational knowledge and proficiency in conventional techniques remain essential for comprehensive clinical competence.

CLINICAL SIGNIFICANCE

Evidence suggests that neither technique is universally superior. Instead, the choice should be guided by the clinical context, patient-specific factors and available resources. An integrated approach combining both techniques can enhance accuracy and optimize treatment outcomes in routine clinical practice.

Declarations
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Patient consent – Not required, the manuscript submitted above is a **review article** based solely on analysis and synthesis of previously published literature.
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Data availability- All data generated or analysed during this study are included in this published article. No additional datasets were generated or analysed beyond the sources cited in the review
Authors contributions- Each author contributed to the study's design, conducted the literature search, gathered the data and drafted the manuscript. They also provided oversight, critical editing and intellectual contributions. The final draft of the manuscript was reviewed and approved by all authors.
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