

Table 1: The comparison between 3 scanner systems.

Features	3 M LAVA C.O.S	S. CEREC AC	CADENT ITERO
Visual Technique	Wave front sampling techniques (3D in motion)	LED/Laser collection	Parallel confocal/telecentric
Focal Depth	Extent from 5 mm to 15 mm	Extent from 5 mm to 15 mm	13.5 mm 1:1 exact focus
Powder Required	Yes	Yes/opti spray	No
Models	Added ingredient/SLA in blue resin. One solid model and one working model	Added ingredient/SLA; not tissue	Milled/Polyurethane. Soft tissue profile,Removable dies
Indications	Upto 4UB, and singles	All	All
Export for Digital Interface	LAVA	CEREC Connect	Major CAD front end systems-Dental wings, CEREC In-Lab, 3 Shape, Standard STL binary file.
Articulator	Articulated; Centric and lateral excursions	Hinge-Only	All directions, attachment system to whip mix full articulator for complex cases



Figure 2: 3 M LAVA chairside scanner with computer and handheld software.



Figure 3: Cadentitero system.



Figure 4: CEREC AC system by sirona.

Impression taking method: As compared to traditional impression techniques, the method for recording the impression is quite simple. The following steps that must be followed-

- First, make sure that the system’s software is up to date and that hold with the camera is ready for scanning.
- Second, the prepared tooth must be dehydrated and separated, and the tissue retracted with a gingival cord. Retraction is necessary for taking digital impressions because the scanner may not be able to scan the profile margin if they are not visible. After the tooth has dried, it is lightly coated with titanium dioxide to give contrasting points for scanning, increase recording speed, and improve 3D picture recording.
- Third, a scanner, synonymous to an intraoral camera, is available to scan the images. The prepared tooth and its nearby teeth are scanned from various angles, and its neighbours are created in software. The patient is then instructed to seal their mouth in maximum interception while an image of the occlusion is taken.
- Fourth, the image data is then transferred to the suitable laboratory or milling machine in the office, together with the patient’s information for the prosthesis.

Traditional vs. digital impressions

Conventional impression: Abutment-proper tray selection-recantation of gingiva-impression taking-sterilization-transporting lab equipment-cast filling-fabrication of restoration [27].

Digital impression: Abutment-recantation of gingiva-examines-digital transfer of impression to laboratory-classical design-fabrication of restoration [27].

The conventional impressions-advantages and disadvantages

The conventional impression, even while prevalent in most circumstances, has a number of drawbacks. Despite advancements in the quality of impression materials, the drawbacks have not been resolved, and yet there is no ideal impression material available in specialist market [28].

Many studies have found that numbers of dentist have forced variety of issues when it comes to creating the ideal impression, particularly when it comes to restorations. Problems such as fractures, bubbles, or poorly delimited preparation margins were discovered after examining the impression outside of the mouth cavity; in overall, there are a number of potential concerns with making dental impressions [28].

Other issues expressed by dentists include the fact that a variety of conventional impression materials can occupy space, have a difficult mixing method, or induce allergic reactions or reflux during the impression-taking process. Classical impression-taking may require various materials and, on sometimes, additional stages. From the time it is taken until the restoration is completed, an impression can deform or break under specific conditions. The lab or the dentist sometimes goes undetected by all of these mistakes. As a result, the steps must be repeated, costing time and money.

The Traditional impressions also have a number of benefits, they are:

- Most doctors are unwilling to learn innovative techniques because they are habituated to the traditional ones.
- The price ranges from very low to very high.
- The practitioner is knowledgeable and adopts the technique.
- Long history and familiar use.
- Precise and predictable.
- The equipment is minimal. The procedure is straightforward and simple to learn.
- The precision of silicone and polyether impressions are widely recognized.

The disadvantages of the traditional impression are

- Discomfort for the patients (for some, vomiting is accentuated)
- Taking a traditional impression leaves lots of "dust" remnants of material can be all over the cabinet, on

the gloves, on the ground, on the equipment, and so on.

- Model pouring is needed.
- Multiple steps required often 4 to 6 visits.
- More laborious technique
- Discrepancies in the model can be caused by errors produced by the integration of air bubbles.

Digital Impressions-Advantages and Disadvantages

Classical optical imprints increase productivity, creativity, and correctness by allowing practitioners to e-mail a digital imprint to the labs instead of sending a conventional impression or stone replica through ordinary mailing. Computerized impressions could also be utilized to manufacture identical dental restorations, minimizing the need for several office visits and speeding up treatment for patients [29].

The advantages of digital impression includes

- Less chair time.
- Patient and dental team will have more comfortable and stress-free experience.
- Using inserting impression materials and trays with in patient's mouth, digitized impressions by IOS reduces temporary pain [30].
- The screening of the participant's hard and soft tissues reduces chair side duration. Steps that take time, such as filling the casts, are omitted [31]
- Improve the impression quality for better fitting restorations.
- Reduce possibility of impression-taking errors.
- There's no need to buy spoons or imprint materials, and there's no need to store them.
- Air bubbles are not a concern with this procedure [28].
- The elimination of the "unclean" cabinet, as well as patient distress.
- The interaction between the physician and the patient has increased since the introduction of IOS, and the individual is much more integrated in the process and also has a significantly better treatment efficacy [30-36].

The disadvantages of digital impressions are

- The main drawback is lack of knowledge among dentists [28].
- The identification of deeply positioned gingival margins is a difficulty, and IOS scanning is especially problematic in cases of haemorrhage, as it might hide the prosthetic edges and cause the scan to be imprecise [1].
- IOS unable to of dislodging soft tissue edges or registering fluid tissue interactions.
- The machinery is complicated, though it has recently been considerably simplified, and mastering the skill requires training and experience.

- It's also not a well-known idea which everybody understands.
- The initial cost of the system is expensive, but after devaluation, becomes much less expensive than the traditional method.
- It needs long-term clinical trials.
- For senior clinicians who have less willingness and familiarity with internet and software, adapting the Learning Curve for IOS is tough.

DISCUSSION

This review article is elaborating us about uses of digital impression in dentistry. The entire way of taking classical impression has been excluded along the evolution of classical impressions, and the act of collecting smart impressions is much faster and uncomplicated. With the arrival of computers and associated improvements, dentistry has progressed to a new level. Digital impressions particularly resulted in substantial advancements in impression production. In the last decades, digital devices have become increasingly common in dental practise. 'CAD/CAM' technology enabled the production of fixed prosthesis restorations using the workflow. There are many systems available to create digital impressions. The method for recording digital impressions is quite simple as compared to traditional impression technique. It is a virtual scan that creates map of your teeth. This article will be elaborating us about advantages and disadvantages of digital impression over traditional impression taking technique in dentistry

CONCLUSION

Intra Oral Scanners (IOS) has several benefits over traditional imprint techniques: it enhances treatment and technician conveniences, minimizes the frequency of appointments, and increases the operator's practice capacity. In relation to traditional imprints, intraoral imaging devices can always be employed for diagnosis reasons with narrow screening with confidence. Computerized intraoral imprint techniques are still in the early stages of development. Digitized imprints appear to be such a precise process in restorative dentistry, according to studies. The results of the various intraoral scanners were found to be diverse with in investigations. Whereas the precision of IOS techniques looks to be prospective as well as similar to traditional approaches, these are not without drawbacks. Throughout the term, dentistry procedures will require use of such new methods and techniques. In the area of dental implant treatment, the digital technology for obtaining tooth imprints results to a quicker therapy as well as healing period.

REFERENCES

1. Priyanka G, Sujesh M, Kumar R, et al. Digital impressions in prosthodontics—past, present and future trends. *IP Annals of Prosthodontics and Restorative Dentistry* 2020; 6:66-70.
2. Patzelt SB, Lamprinos C, Stampf S, et al. The time efficiency of intraoral scanners: an in vitro comparative study. *J Am Dent Assoc* 2014; 145:542-551.
3. Joda T, Bragger U. Complete digital workflow for the production of implant-supported single-unit monolithic crowns. *Clin Oral Implants Res* 2014; 25:1304-1306.
4. Commer P, Bourauel C, Maier K, et al. Construction and testing of a computer-based intraoral laser scanner for determining tooth positions. *Med Eng Phys* 2000; 22:625-635.
5. Joda T, Wittneben JG, Bragger U. Digital implant impressions with the "Individualized Scanbody Technique" for emergence profile support. *Clin Oral Implants Res* 2014; 25:395-397.
6. Stimmelmayer M, Guth JF, Erdelt K, et al. Digital evaluation of the reproducibility of implant scanbody fit an in vitro study. *Clin Oral Investig* 2012; 16:851-856.
7. Kravitz ND, Groth CH, Jones PE, et al. Intraoral digital scanners. *J Clin Orthod* 2014; 48:337-347.
8. Ting-shu S, Jian S. Intraoral digital impression technique: a review. *J Prosthodont* 2015; 24:313-321.
9. Abduo J, Lyons K, Bennamoun M. Trends in computer-aided manufacturing in prosthodontics: a review of the available streams. *Int J Dent* 2014.
10. Nejatidanesh F, Amjadi M, Akouchekian M, et al. Clinical performance of CEREC AC Bluecam conservative ceramic restorations after five years. A retrospective study. *J Dent* 2015; 43:1076-1082.
11. Yuzbasioglu E, Kurt H, Turunc R, et al. Comparison of digital and conventional impression techniques: evaluation of patients' perception, treatment comfort, effectiveness and clinical outcomes. *BMC oral health* 2014; 14:1-7.
12. Burhardt L, Livas C, Kerdijk W, et al. Treatment comfort, time perception, and preference for conventional and digital impression techniques: A comparative study in young patients. *Am J Orthod Dentofacial Orthop* 2016; 150:261-267.
13. Joda T, Bragger U. Digital vs. conventional implant prosthetic workflows: a cost/time analysis. *Clin Oral Implants Res* 2015; 26:1430-1435.
14. Mejía JB, Wakabayashi K, Nakamura T, et al. Influence of abutment tooth geometry on the accuracy of conventional and digital methods of obtaining dental impressions. *J Prosthet Dent* 2017; 118:392-399.
15. Imburgia M, Logozzo S, Hauschild U, et al. Accuracy of four intraoral scanners in oral implantology: a comparative in vitro study. *BMC oral health* 2017; 17:1-3.
16. Zimmermann M, Mehl A, Mormann WH, et al. Intraoral scanning systems—a current overview. *Int J Comput Dent* 2015; 18:101-129.

17. Keul C, Stawarczyk B, Erdelt KJ, et al. Fit of 4-unit FDPs made of zirconia and CoCr-alloy after chairside and labside digitalization—a laboratory study. *Dental Materials* 2014; 30:400-407.
18. Svanborg P, Skjervén H, Carlsson P, et al. Marginal and internal fit of cobalt-chromium fixed dental prostheses generated from digital and conventional impressions. *Int J Dent* 2014.
19. Ueda K, Beuer F, Stimmelmayer M, et al. Fit of 4-unit FDPs from CoCr and zirconia after conventional and digital impressions. *Clin Oral Investig* 2016; 20:283-289.
20. e Silva JS, Erdelt K, Edelhoff D, et al. Marginal and internal fit of four-unit zirconia fixed dental prostheses based on digital and conventional impression techniques. *Clin Oral Investig* 2014; 18:515-523.
21. Mizumoto RM, Yilmaz B. Intraoral scan bodies in implant dentistry: A systematic review. *J Prosthet Dent* 2018; 120:343-352.
22. Guerini V. A history of dentistry from the most ancient times until the end of the eighteenth century. *Lea and Febiger* 1909.
23. Bremner MD. The story of Dentistry. New York. *Dental Items of Interest Pub. Co.* 1958; 284.
24. Baheti MJ, Soni UN, Gharat NV, et al. Intra-oral scanners: a new eye in dentistry. *Austin J orthop rheumatol* 2015; 2:1023.
25. Bonek S, Yakas M, Brown L. Digitalizing Dental Impressions. *The Dental Advisor*. 2014.
26. Patel IB, Patel BB, Patel R. Digital Impressions-A Review of Latest Technology in Dentistry. *Indian J Dent Adv* 2015; 7:142-146.
27. Taneva E, Kusnoto B, Evans CA. 3D scanning, imaging, and printing in orthodontics. *Issues in contemporary orthodontics* 2015; 148.
28. Negruțiu CS. Digital dentistry—digital impression and CAD/CAM system applications. *J Interdisciplinary Med* 2017; 2:54-57.
29. Bratu D, Nussbaum R. Bazele clinice și tehnice ale protezării fixe. *Editura Signata* 2001.
30. Imburgia M, Logozzo S, Hauschild U, et al. Accuracy of four intraoral scanners in oral implantology: a comparative in vitro study. *BMC oral health* 2017; 17:1-3.
31. Burhardt L, Livas C, Kerdijk W, et al. Treatment comfort, time perception, and preference for conventional and digital impression techniques: A comparative study in young patients. *Am J Orthod Dentofac Orthop* 2016; 150:261-267.
32. Aswani K, Wankhade S, Khalikar A, et al. Accuracy of an intraoral digital impression: A review. *J Indian Prosthodont Soc* 2020; 20:27.
33. Balwani TR, Godbole SD, Sathe S, et al. Prosthodontic Complications Associated with Immediately Loaded Fixed Implant-Supported Prostheses-A Review. *J Evo Med Dent Sci* 2020; 9:3394-3399.
34. Belkhode Vm, Nimonkar Sv, Agarwal A, et al. Prosthodontic Rehabilitation of Patient with Mandibular Resection using Overlay Prosthesis: A Case Report. *J Clin Diagnostic Res* 2019; 13.
35. Sathe S, Pisulkar S, Nimonkar SV, et al. Positioning of iris in an ocular prosthesis: A systematic review. *J Indian Prosthodont Soc* 2020; 20:345.
36. Parlani S, Tripathi S, Bhojar A. A cross-sectional study to explore the reasons to visit a quack for prosthodontic solutions. *J Indian Prosthodont Soc* 2018; 18:231.