

## Euro Dentistry & Dental Science 2019: Use of CAD/CAM milling technique and attitudes towards 3D printing technique for dental restorations among Finnish dentist: Pirkko-Liisa Tarvonen - University of Eastern Finland

**Pirkko-Liisa Tarvonen**

University of Eastern Finland, Finland

**Statement of the Problem:** Dental caries remains as one of the main health problems globally. Direct filling technique with composite has several shortcomings. Especially large fillings in lower posterior teeth are challenging. Accuracy of the additive CAD/CAM (computer-aided design and computer-aided manufacturing) technique called 3D printing makes it suitable for manufacturing of several dental applications, like surgical guides, aligners as well as dental and facial implants. The Rayo 3D Tooth Fill is a novel technique developed by Finnish professors and experts for dental restorations by digital imaging and 3D printing on a single visit to a clinic. Based on an *in vitro* study carried out in University of Eastern Finland, Kuopio, Finland, the accuracy of 3D printing technique overcomes that of milling technique in the fabrication of dental inlay and on lay fillings. Other major advantages compared to current solutions include lower cost, possibility to layering and tailoring properties, suitability for existing filling materials and material use efficiency. Additional clinical investigations are planned to carry out during 2019 to confirm the findings.

**Methodology & Theoretical Orientation:** A questionnaire was sent to 3,777 Finnish dentists in 2018 to study the use of chair side dental CAD/CAM milling technology and to evaluate the attitudes towards 3D printing-based applications for fabrication of dental restorations among Finnish dentists. Findings: More than a third of the respondents reported using dental chair side CAD/CAM milling technique, most of them on a weekly basis. The respondents with former experience of chair side CAD/CAM technique reported that they would consider using 3D printing for filling manufacture if a better survival rate could be achieved, even though the price of the filling would be higher than traditional direct filling.

**Conclusion & Significance:** The results indicate that 3D printing-based applications for fabrication of dental restorations attract interest among Finnish dentists. Technology has played an important role in the evolution of dentistry by bettering work conditions both in dental offices and in dental laboratories. And one notable advancement is CAD/CAM dentistry. This simply refers to the construction of veneers, implant abutments, crowns, and inlays, on lays, fixed partial dentures and full-mouth reconstruction. Also, we can use CAD/CAM in orthodontics. But in dentistry specifically CAD/CAM restorations is high and they have a natural appearance because the ceramic blocks emulate enamel.

The measurements and fabrication are precise of life measures are getting increasingly significant; scans are faster and easier than conventional impressions because wax-ups, casting, firing, and investing are eliminated. Hence, clinician-based measures of treatment need don't account for patient perceptions or opinions.

CAD/CAM is a major technological advancement, it is important that the dentists' technique is suited to CAD/CAM milling. This includes: correct Though CAD/CAM is a major technological advancement, it is important that the dentists' technique is suited to CAD/CAM milling. This includes: digitizing or scanning, a contact probe reads the anatomy of the model by following the contour of the physical structure. In non-contact scanning, with a continuous preparation margin generally, advantages of CAD CAM restorations over the conventional one, we will definitely place CAD CAM restorations on top.

They provide us quality restorations with quick and easy fabrication. Scanning of intra oral tissues takes less time than conventional impression, charged -coupled devices are also used. In addition to the specialized clinic management software, inventory control, etc., or hardware such as the use of lasers in cosmetic dentistry or intraoral scanning, recently the importance is given to the apart from laser light, optics and charged -coupled devices correct tooth preparation with a continuous preparation margin tooth preparation application of CAD / CAM technology in the field of prosthetic. After the removal of pathologically altered tooth structure, it is necessary to achieve restoration that will be most similar to the anatomy of a natural tooth. Applying CAD / CAM technology on applicable ceramic blocks obviously, this technique doesn't require any physical contact with the model, but precision in recording the details is required and if the chair side system is available, the patients can get their restorations in one appointment. Quality of these restorations has been demonstrated in so many studies.