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Use of CAD/CAM milling technique and attitudes towards 3D printing technique for dental restorations among Finnish dentist

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 onlay 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 chairside 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 chairside CAD/CAM milling technique, most of them on a weekly basis. The respondents with former experience of chairside 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.



Fig. Dental filling, fabricated by digital scanning and 3D printing

Biography

Pirkko Liisa Tarvonen has a specialist degree in Dental Public Health from the University of Turku, Finland, and a PhD degree from the University of Eastern Finland. She acts as Dental Marketing Director at Rayo 3D-Toothfill Ltd and as University Lecturer at the University of Helsinki and at the University of Eastern Finland. As a voluntary project coordinator for ten years she has had a remarkable contribution in the support of primary dental care and dental education in the Democratic People's Republic Korea.

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