

Today's Dentistry: an Invaluable Experience with CAD/CAM Knowledge



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Received date: October 16, 2015

Accepted date: October 17, 2015

Published date: October 19, 2015

Citation: Samantha, W., Today's Dentistry: An Invaluable Experience with CAD/CAM Knowledge. (2015) J Dent Oral Care 1(2): 84- 85.

Introduction

CAD/CAM technology has established itself in dentistry and is being utilized in many different platforms. Laboratory technicians use CAD/CAM technology to scan dies, send data to milling machines, and fabricate restorations, dentures, and implant restorations^[1,2]. In addition to their expanded use in the laboratory, (Figure 1) CAD/CAM is being used in academic settings in both a chair side and simulation setting to enhance a student's education^[2-4].

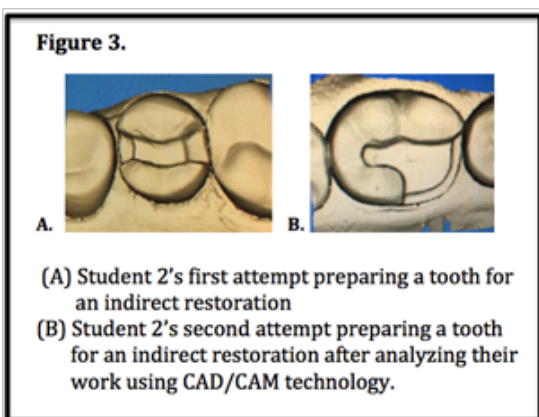
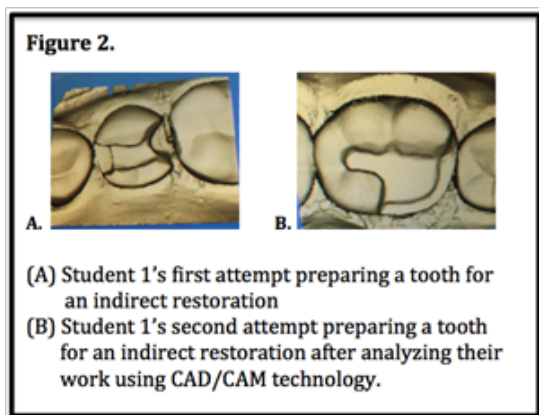


Figure 1: Second year students in simulation laboratory working on Typodonts

At NYU College of Dentistry CAD/CAM technology is introduced to students at various levels throughout their education^[5-7]. Students receive lectures in their second year detailing the procedures, indications, and technique required for CAD/CAM restorations. In addition to the didactic aspect, students are exposed to hands-on learning with CAD/CAM technology as part of their Esthetics Course by fabricating restorations for a tooth colored inlay and onlay in the simulation lab. As part of the course, students are asked to prepare a typodont tooth for an indirect tooth colored restoration. The student then assesses their preparation using a standardized grading rubric. Each student doctor then takes a digital impression of that tooth with the CAD/CAM technology software. Students are then able to project their preparation on the computer in the form of a virtual cast. The preparations can be magnified 12 to 20 times its actual size, modified to remove the adjacent contacts to view their preparations from the mesial or distal



aspect, and measured to see their pulpal and axial depths to a hundredth of a millimeter. The students then complete the same grading rubric they did previously, but this time with the aid of the digital impression and all the functions the software provides to evaluate their work. Figures 2 and 3 are examples of how the quality of student's preparations improved after analyzing their preparations with the aid of CAD/CAM technology. By adding the CAD/CAM technology to the curriculum students are able to learn how to fabricate restorations and how to use the technology to assess their work and learn from their mistakes. Feedback from the students following this exercise was over whelmingly positive.



To further aid student learning with CAD/CAM technology, both in the clinics and in the simulation lab, faculty are trained in how to use the CAD/CAM technology. Multiple courses are offered for faculty and they follow the same exercise as the students. This enables both the faculty and the student to become more comfortable using the technology and learning all the various benefits it can provide in evaluating preparations.

CAD/CAM technology can be used as an educational tool both in the classroom and in the simulation laboratory. It enables students to learn new techniques for restoring teeth as well as showing them where there are flaws in their work. This technology has become an integral part of the core curriculum. (Accepted at ADEA Boston 2016).

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