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Clinical case-based problem-solving examination in periodontics

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1 | PROBLEM

One of the most important aspects in clinical competency in periodontics is the ability to think critically about diagnosis, prognosis, treatment planning, treatment, and maintenance of patients.

At the Marquette University School of Dentistry, among the many clinical competencies, fourth-year students (D4) must complete 3 periodontal cases, at least 1 of which is a surgical case. In order to obtain a case completion in nonsurgical therapy, the student must perform scaling and root planing, reevaluation, and maintenance therapy. For a case completion in surgical therapy, the student must be the case manager in a surgical case, assist during surgery, attend the postoperative visit, and perform a maintenance therapy. Due to the "stay in place order" brought about by the COVID-19 pandemic, some students were unable to obtain case completions. This brought about a situation where the students would have to be evaluated on their knowledge of both surgical and nonsurgical cases remotely.

2 | SOLUTION

The students were familiar with case-based learning (CBL) and examination from a third-year course. CBL is a form of inquiry-based learning and fits on the continuum between structured and guided learning. The goal of CBL is to prepare students for clinical practice using authentic clinical cases. It links theory to practice through the application of knowledge to the cases, using inquiry-based learning methods.[1,2] Therefore, it was decided to prepare 2

computer-based clinical scenarios, which allow assessment of students' knowledge and abilities related to diagnosis and treatment planning.[3] The cases included a complete background information, medical and dental history of the patient (Figure 1). This was followed by a full mouth series of intraoral photographs, radiographs, and pretreatment and post-re-evaluation charting (Figure 2). The surgical cases included surgical photographs and a complete series of postsurgical photographs and radiographs after 1 year of therapy. The questions were a mixture of single best answer and short answers. They were structured in a manner that examined the student's understanding of the case. These included questions on medical and social history, diagnosis, prognosis, treatment planning, treatment, and periodontal maintenance, which allowed faculty to assess theoretical and context-related knowledge.[4] The examination was given online. To meet Higher Learning Commission expectations and faculty instructional needs, the Marquette University COVID-19 Academic Planning Team uses Respondus LockDown Browser along with Respondus Monitor[5] as the tool to proctor online assessments in the e-learning management system Desire2Learn.

3 | RESULTS

The overall performance of the students was good, with a failure rate of 1 student in each category. The most common area in which the students underperformed was with the staging and grading of the cases. During unforeseen events graduation of students becomes difficult. In this experience, we learned that it is possible to conduct examinations remotely without compromising standards.

CASE HISTORY

CHIEF COMPLAINT: Currently asymptomatic and would like to have his mouth restored to good health.

VITAL STATISTICS: 42 year old Hispanic male. At initial examination, the patient was 5' 5" tall and weighed 130 lbs (BMI 21.6). His vital signs were BP (122/72), HR (66/min), and RR (16/min).

REVIEW OF SYSTEMS: Upon review of medical history, there were no significant findings. The patient denied all systemic and/or organ system diseases or abnormalities. The patient reports regular yearly physical examination. The patient currently does not take any medications and reports no drug allergies. The patient reported occasional consumption of alcohol on the weekends. He is a current smoker and smokes a pack a day for the last 12 years.

DENTAL HISTORY: The patient gives a history of sporadic dental visits. The patient presented with a full complement of dentition. Amalgam restorations were present on teeth #'s 12 & 19. The patient reported no history of prior periodontal therapy and at initial examination reported "I was told I have gum disease." The patient reported to be a nocturnal bruxer.

DENTAL EXAM: Carious lesions were present on the occlusal surface of #'s 1, 15, 16, 17, 18, & 32 and the lingual root trunks of #'s 2, 3 & 14. A bilateral Angle class III molar relationship and bilateral Angle class I canine relationship were present. There was a 1 mm overbite and a 1-2 mm overjet.

Please see the photographs, periodontal chart, radiographs and answer the questions below.
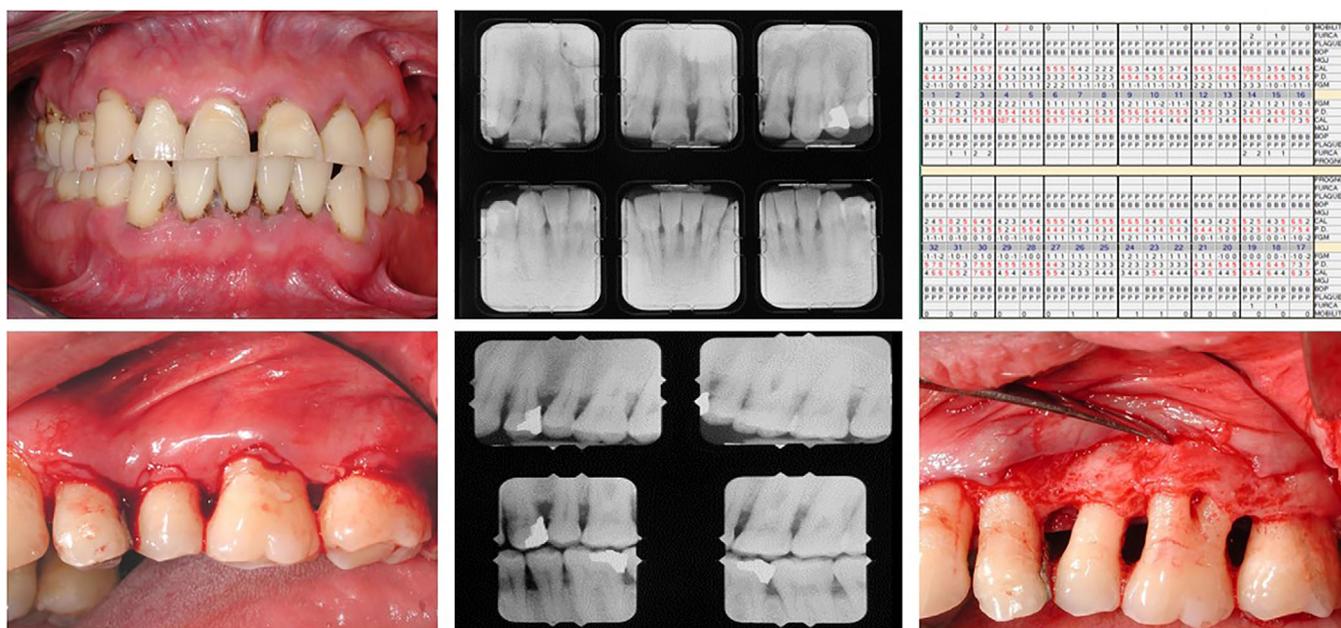
FIGURE 1 Case History

FIGURE 2 Example of photographs, radiographs, and periodontal charting

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