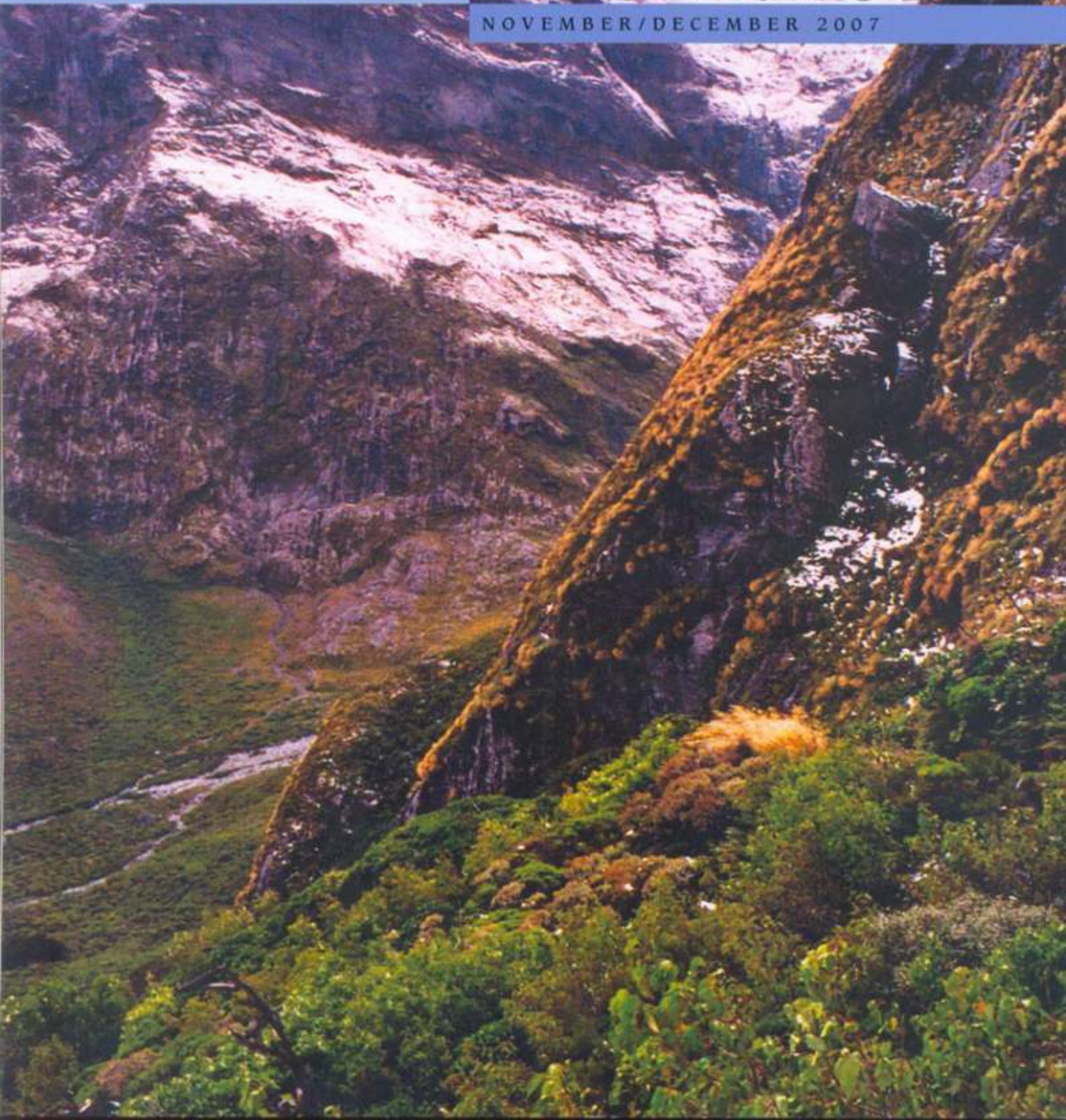


DENTAL ABSTRACTS

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you attempt to express in fresh words the patient's expressed or implied feelings. With this technique, you can reinforce the patient's emotional state, clarify vaguely expressed feelings, and help the patient assess and take ownership of his or her feelings. Even though dentists usually focus on content, feelings often color the content and can be used to clarify what is being communicated. By approaching these feelings, a better working relationship can be established.

In leading the patient, you should establish the purpose for the communication while giving the patient freedom to follow your lead. Indirect leading is a technique to help the patient begin a conversation and to convey that he or she is responsible for maintaining the communication. You can ask simply, "Tell me about that." With direct leading the topic is the focus. You may directly lead the patient by asking "Would you share with me some of your ideas on that subject?" or "Can you give me an example?" Throughout the communication process, use open-ended questions that give patients the freedom to take a conversation where they want it to go.

Discussion.—The art of listening is essential to establishing a good working relationship between dentist and patient. Most patients want not only a dentist who is skilled in dentistry but one who will be compassionate, concerned, and understanding. Listening skills can be a key part of conveying your interest and care for the patient.

Clinical Significance.—There's a saying in diagnosis that if we listen, the patient will tell us what's wrong. As dentists, listening may not be our long suit. We seem more adept at *doing things, taking action*. It's hard to fix something if you don't know what's broken, and listening to the patient tell you what's wrong is where it starts.

Pruett HL: Listening to patients. *J Calif Dent Assoc* 35:183-185, 2007

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Devices

Pulse oximetry to assess pulp vitality

Background.—The medical profession uses pulse oximeters to monitor blood oxygen saturation levels noninvasively when intravenous anesthesia is being used. Finger, foot, or ear probes may be used. This completely objective test requires no subjective response from the patient and measures blood oxygen saturation levels directly. Whether pulse oximetry may be useful for measuring the pulp vitality status of traumatized permanent teeth was investigated.

Methods.—The pulse oximeter sensor is composed of 2 light-emitting diodes with a photodetector on the opposite of the vascular bed. One diode transmits red light at 640 nm and the other transmits infrared light at 940 nm. Oxygenated hemoglobin absorbs different amounts of red infrared light than deoxygenated hemoglobin. The pulsing of the blood volume produces periodic changes in the amount of red infrared light absorbed by the vascular bed before coming to the photodetector. The pulse oximeter analyzes the relationship between the pulsing changes of red light absorption and those of infrared light absorption to yield arterial blood oxygen saturation levels.

For the purposes of this assessment, a customized pulse oximeter dental probe (PODP) was placed on the teeth so that the light traveled from the facial to the lingual surfaces,

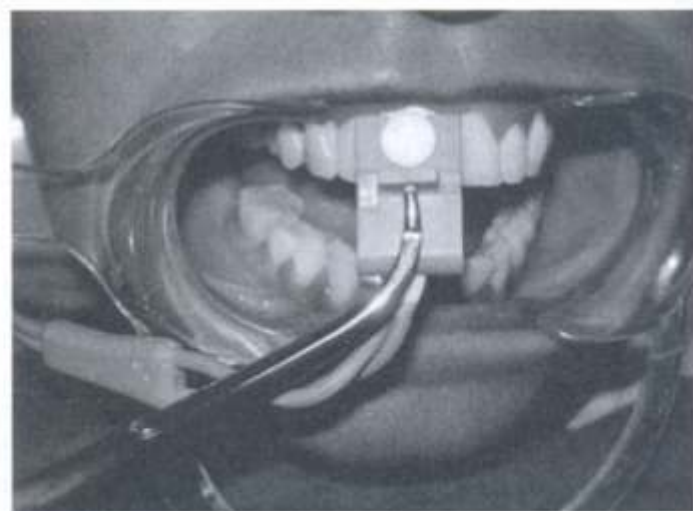


Fig 1.—Pulse oximeter dental probe placed on patient's tooth. (This article was published in *J Endod*, 33, Gopikrishna V, Tinagupta K, Kandawamy D, Comparison of electrical, thermal, and pulse oximetry methods for assessing pulp vitality in recently traumatized teeth, 531-535, Copyright American Society of Endodontics (2007).)

passing through the middle of the crown (Fig 1). Values were recorded after the tooth was monitored for 30 seconds. Positive responses were those between 75% to 85% oxygen saturation; negative responses were less than 75% saturation.

Over a period of 6 months, the PODP was used to assess 17 recently traumatized teeth. These teeth were also tested using an electric pulp device (group 2) and thermal testing (group 3). Thirty endodontically treated teeth served as negative controls and 30 normal teeth as positive controls. Evaluations were done on the day the patient first reported as well as days 2, 4, 7, 14, 21, and 28, and after 2, 3, and 6 months. First the electric tester was used, then the pulse oximeter, then a cold test; a 30-minute break was taken between each test. Each tooth's vitality status was assessed by 3 blinded operators using 1 of the pulp vitality testing devices.

Results.—The thermal and electric pulp tests yielded "no response" and the pulse oximeter yielded a "0" response for the negative controls. The results for the positive controls were normal vital responses and 75% to 85% oxygen saturation. For the 17 test teeth, the thermal and electric pulp tests showed no significant difference in results from day 0 to 6 months. The proportion of traumatized teeth that were vital on both thermal and electric pulp testing increased from 0 on day 0 to 29.4% on day 28, 82.35% after 2 months, and 94.11% after 3 months. The vitality readings obtained with the PODP were consistent over the 6-month period in all patients. The results of the thermal and electric pulp tests differed significantly from the first through the 28th day. No significant difference was found after 2, 3, or 6 months between the 3 types of tests.

Education

The road ahead

Background.—Changes are inevitable, even in the science foundational to the clinical practice of dentistry. Increased diversity and sophistication are developing in the areas of molecular biology, basic science, and clinical and sociologic concerns. These will transform our traditional approaches to oral and dental disease management.

Changes in Training.—Ideally, the dentist of the future will be able to delegate to other team members the performance of routine and minimally invasive procedures. This should include cosmetic enhancement procedures. To prepare for this, dental education must expose students to experts in new and emerging treatment modalities, critical thinking, scholarship, and scientific rigor as well as cutting-edge research. Such changes will foster novel approaches to patient assessment and diagnosis, lifelong treatment planning, and the provision of advanced forms of treatment. Dental education must focus on more than making graduates able to meet present demands. It must extend beyond an emphasis on acquiring the knowledge, skills, and competencies to maintain the status quo and provide scientific enrichment for the delivery of evidence-based care.

Discussion.—The PODP proved to be effective and objective in measuring pulp vitality. The temporary paresthesia of nerves occurring in recently traumatized teeth can diminish the effectiveness and reliability of thermal and electric pulp tests. The consistent pulse oximeter readings obtained indicate that dental pulp circulation and blood oxygen saturation can be detected using pulse oximetry.

Clinical Significance.—Pulse oximetry is a noninvasive technology that uses a beam of light to measure the degree of oxygenation of blood in a vascular bed. While still in the developmental stage, the concept seems to overcome the shortcomings of traditional methods of assessing pulp vitality, namely, thermal and electrical, which depend on neural conductance.

Gopikrishna V, Tinagupta K, Kandaswamy D: Comparison of electrical, thermal, and pulse oximetry methods for assessing pulp vitality in recently traumatized teeth. *J Endod* 33:531-535, 2007

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Discussion.—To preserve the legacy of dentistry as a profession in which persons with foresight and determination fought to establish the profession's academic worth, dental education must be willing to change. This includes adapting to the expected exponential growth in new science, which will mean a metamorphosis in clinical practice. Dental educators must provide the training needed to address the coming challenges.

Clinical Significance.—Science, in general, and dentistry, in particular, are evolving at an ever-increasing rate. As such, preparing dental students to practice in today's world is not enough. 2008 grads will practice until 2050 and probably beyond. They must be groomed to deal with the changes inevitable in that time span.

Wilson N: Science in dental education. *Br Dent J* 202:297, 2007

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