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Brief summaries of current topics
relevant to everyday dental practice.

clinical

Clinical Abstracts



Using Saliva to Detect Disease

Salivary Diagnostics

The ability to diagnose serious human diseases by **testing saliva** may prove to be ideal. Nearly everything that can be measured **in the blood can also be measured in saliva**. Saliva can be collected non-invasively, stored and shipped at low cost, does not clot, and poses less risk of HIV and hepatitis exposure for professionals. Advances have been made in micro-electromechanical (MEMS) diagnostics. MEMS integrate mechanical elements, sensors, actuators and electronics on a common silicon substrate. MEMS require small samples and are currently available to analyze DNA, proteins, electrolytes and small molecules in saliva and can give an overall profile for specific disease states such as cardiovascular disease.

The Human Salivary Proteome is being developed as a resource to determine disease pathogenesis and assess effects of medications. The goal is to compile computational methods for maintaining a **stable, comprehensive, fully classified, and accurately annotated protein sequence base of knowledge**. The University of California Los Angeles (UCLA) School of Dentistry is developing a platform for using nanotechnology and microtechnology to detect salivary proteins and genomic biomarkers for point of care applications of high-impact human diseases.

Though more research is needed, **salivary diagnostics** will likely become an important tool for all health care practitioners in the very near future.

Orthod Craniofac Res 12:206-211, 2009

Glass Fiber Versus Metal Posts

This study compared and analyzed the **stress values in roots restored with metal and fiber posts**. A three-dimensional finite element of a premolar restored with a metal or fiber post was analyzed for stress concentrations. The model simulated both bonded and non-bonded post and/or cement interface conditions, and the results showed:

- The greatest stress levels were at the **buccal-palatal plane**.
- Stress levels were **higher** with **metal posts** compared with glass fiber posts, regardless of shape used. The **circumlar** and **anatomic** glass fiber posts had similar stress plots.
- At the roots of bonded models, stress distribution was similar to intact tooth models.

- At the roots of non-bonded models the risk of fracture index was higher than for bonded models, especially for glass fiber posts.
- **Non-bonded fiber posts** had the **highest root fracture index, but** their post and composite **core indices were three to five times greater** than other models. Fiber post restoration had lower stresses along the interface and higher stresses in the root as compared with metal post restorations. However, **root fracture was less likely with the fiber posts because the core and post fracture indices were higher**. When a post becomes completely debonded, the **metal posts** will likely **stay in place longer** in the root canal **than fiber posts**. Root stresses are higher in fiber post restorations but the composite core and post have higher fracture indices, so the root fracture is less likely with glass fiber as compared with metal posts.

J Dent Res 89:587-591, 2011

Tea and Too Much Fluoride?

Dr. Gary Whitford of the Medical College of Georgia identified four patients with **advanced fluorosis** who drank **one to two gallons** of black tea daily for the previous 10 to 30 years. Black tea comes from the *Camellia sinensis* plant, which accumulates large **concentrations of fluoride** and aluminum **in its leaves**, (up to 1000mg/kg). Traditional methods of measuring fluoride concentrations miss fluoride-aluminum combinations. Using a **diffusion method** that breaks the aluminum-fluoride bond, Whitford identified fluoride levels 1.4 to 3.3 times higher than those measured using the standard techniques.

Normal tea drinkers ingest **only one to five mg/L of fluoride in black tea** and between two and three mg though fluoridated drinking water, toothpaste and food. Adverse effects on bone may only occur with fluoride intakes of greater than 20mg/day for 10 or more years.

Medical News Today, July 15, 2010

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