Study: IPS e.max lithium disilicate material the most durable ceramic tested to date

NYU College of Dentistry

NEW YORK, NY, USA: Researchers in the Department of Biomaterials and Biomimetics at New York University College of Dentistry recently determined through mechanical mouth-motion simulator testing that IPS e.max CAD lithium disilicate ceramic is the most robust all-ceramic material tested to date. The study results were presented by P.C. Guess, R. Zavanelli, N. Silva, and V.P. Thompson.

The researchers used the mouth-motion simulator test to compare the durability of IPS e.max CAD lithium disilicate full-ceramic crowns to veneered zirconia crowns. By simulating actual forces exerted in the human mouth, this test provided a more realistic assessment of how ceramic materials hold up to the forces of chewing.

In particular, unlike previous laboratory tests that only assess a material’s physical properties to meet minimal standards, the mechanical mouth simulator stressed the restorations using clinically relevant directed loads over thousands of cycles (similar to how people chew) until failure occurred.

Failure was considered to be chip-off fractures of the veneering ceramic in the case of the zirconia crowns or fracture/chip through the lithium disilicate crowns. The research found that none of the IPS e.max CAD lithium disilicate crowns failed below 1,000 N and 1 million cycles.

In comparison, the veneered zirconia crowns tested demonstrated limited reliability, with approximately 50 percent of the crowns tested failing from veneer chip-off fractures by 100 K cycles at 200 N, which is similar to previous research findings. Also, 90 percent of the veneered zirconia crowns tested failed by 100 K cycles at 550 N.

Overall, in comparison to the veneered zirconia systems that were tested, the IPS e.max CAD lithium disilicate full-ceramic crowns can be expected to demonstrate excellent clinical performance relative to chip-off or fracture based on the findings of the NYU College of Dentistry mouth motion simulator testing. The failures reported in this study mimic those reported in clinical studies, suggesting that IPS e.max lithium disilicate is the most robust all-ceramic system tested to date.

(Edited by Fred Michmerhuizen, DT1.1)

Union health ministry look into dental council decision

Isha Goel

The Union health ministry has set up a four-member technical committee — director general of health services Dr R K Srivastava, Dr Naam Shah, Dr O P Kharbanda from the department of dentistry at AIIMS, and Dr Ashok Atriya from PGI Chandigarh — to investigate the decision taken by Dental Council of India (DCI), to decline the permission given to around 45 new dental colleges on ground of not having necessary faculty to run a dental college and enough clinical material to teach student, according to a report published in newspaper the Times of India. Besides, DCI has not renewed the registration of nearly 42 existing dental colleges as well.

Presently, the country has near about 280 dental colleges, producing roughly 15,000-20,000 dentists each year. According to the Council’s senior members, dental education has become a productive business that is diluting quality dental schooling in India.

The DCI chief Dr Anil Kohli told in an interview to TOI, “India does not require new dental colleges”. “There is hardly any employment opportunity for dentists in India. We must not open new dental colleges any more but accredit the old ones under three categories — doing well, can improve, and bad. Colleges coming under the last category should be shut down.”

The DCI has now made it obligatory for professors teaching at the UG level to stay in the same college for at least one year, while those teaching in the PG level must do so for three years. It has also made continuing medical education mandatory for 20 hours a year and 100 hours for five years.