International College of Prosthodontists
19th Biennial Scientific Session - VIRTUAL - September 22 – 25, 2021

Program Speaker – Limor Avivi-Arber

Title

Can Healthy Teeth and Chewing Function Protect Brain Health? The Answers May Surprise You

Abstract

Brain health refers to several brain functions including cognitive, sensory, motor, and emotional functions. These functions can impact each other and have been shown to be affected by aging, general health, systemic diseases, and injury. An increasing number of studies have suggested a relation between healthy teeth and chewing and cognitive functions. This presentation will suggest possible causal processes that may underlie cognitive decline in association with tooth loss. A main cause of tooth loss is periodontal disease. Periodontal disease is common in patients with cognitive decline and dementia (e.g., forgetting brushing teeth). A main bacterium causing periodontal disease is Porphyromonas Gingivalis (P.G) that secretes the protease gingipains, and both have recently been implicated in causing Alzheimer's disease (AD). A main consequence of tooth loss is bone loss. Tooth loss may also impact diet and nutrition intake. Malnutrition can impact bone remodelling and even contribute to osteoporosis which is more prevalent in older age and can also impact the jaw bones. Osteocalcin is a bone hormone produced by osteoblasts. Under normal conditions, osteocalcin can travel through the blood to the brain where it can bind to neurons and strengthens their function. Osteocalcin levels decrease with aging and with reduced bone mass and therefore bone loss following tooth loss along with aging may also be a contributing factor to cognitive decline. However, more studies are needed to better understand the complex processes involved in cognitive functions in humans.

Biography

Dr. Limor Avivi-Arber BSc (Med &Pharm) 1986 & DMD 1989, Hebrew University, Jerusalem; MSc & Diploma in Prosthodontics 1994 & PhD (Neuroscience) 2009, University of Toronto. Dr. Avivi-Arber is currently a full-time Associate Professor, Faculty of Dentistry, University of Toronto. She teaches clinical prosthodontics to graduate and undergraduate students, and she is the director of the Graduate Oral Neurophysiology and Dental Occlusion courses. Her basic neuroscience research activities have been supported by the Canadian Institutes of Health Research, the U.S. National Institutes of Health and University of Toronto internal funds. Her basic research focuses on mechanisms underlying the remarkable capacity of the brain to undergo neuroplastic changes following tooth loss and dental implant treatment; such mechanism can determine if and how patients functionally adapt (or not) and recover following injury and dental treatments.