外賓演講

G01

Prosthodontic treatments for the elderly: Experiences of Japan as the leading country of ultra-aged society

Prof. Yuji Sato
OFFICE: 2018- President of Japanese Society of Gerodontology
Professor and Chairman
Department of Geriatric Dentistry, School of Dentistry
Showa University, Tokyo, Japan

The ratio of elderly (65 and over) has been increasing rapidly, reached to 27% in Japan, which is the top of all countries. Japan is the leading country of ultra-aged society. The reason will be revealed. In such situation, missing teeth number of the elderly has been decreasing dramatically, and percentage of denture wearers is decreasing. On the other hand, social aging has increased the number of the elderly, which may cause increase in absolute denture wearers' number. Removable partial denture wearers decreased a little, but aged. On the other hand, complete denture wearers decrease.

However, aged 85 and over increased. Increase of denture wearers aged 85 and over might increase the difficulty of denture treatment. In Japan, conventional dental treatments for everyone are covered by national insurance. I will also present new technologies for denture treatment in Japan covered by national insurance; a mastication test, a jaw movement test, tongue pressure test, and soft lining. In addition, new CAD/CAM technologies for dentures will be presented. Although the number of new denture treatments has been decreasing in 18 years in Japan, cases involving repairs and relining have been increasing. I will show you efficient techniques for denture adjustments and repair for compromised denture patients. Elderly patients with dentures have root caries, dry mouth, oral candidiasis, denture calculus, and weak denture bearing mucosa. Highlight of new clinical researches to overcome these poor conditions will be presented. Implant patients in elderly is now 3% and increasing in Japan. These patients will be hospitalized or admitted soon or later. The next problem is management of implant for home-visit treatment. I will show you thestatus and problems of implant in home-visit dentistry.

G02

Caring strategies for elders with neurocognitive disorders

Janet A Yellowitz, DMD, MPH, FASGD, DABSCD

The development of neurocognitive disorders (ND) in older adults is challenging to the dental community. These conditions are some of the most common disabling and costly conditions for mankind. Although the etiology of most neurocognitive disorders is unknown, several factors have been associated with their development. Neurocognitive disorders developing in a diverse aging cohort present with a wide range of symptoms, functional abilities, behavior and cognition, further complicating treatment planning and care. The presentation will focus primarily on caring for older adults with Alzheimer's disease, Parkinson's disease, stroke and cognitive impairments common

Dental professionals will be caring for more patients with neurocognitive disorders in the future due to increased longevity and improved survivorship resulting from advanced medical diagnosis and treatment. Due to the progressive nature of these diseases/disorders, health care providers need to address the patient's ability to tolerate dental care as well as to maintain good oral health in the future. Utilizing current restorative and preventive protocols can benefit the longevity of services provided.

In order to develop appropriate oral treatment plans and services that meet the needs of their patients, practitioners need to be aware of the conditions associated with these ailments to ensure the development of rational treatment plans that address the current and future comprehensive needs of the patient. Providing appropriate comprehensive care provides the individual with an optimal environment for maintaining their health in the future.

The lack of cognitive health can have profound implications for a person's health and well-being. Poor cognitive health leads to increased vulnerability to disease, injury, malnutrition, crime, abuse and loss of independence. Although relatively uncommon, obtaining an early diagnosis of a cognitive impairment can make a significant difference in the lives of patients and the management of their oral health.

G03

Dental hygienists in Japan- The role and future of dental hygienists in Japan's super-aging society, 70 years after passage of major medical care legislation

Noriko Kanazawa
Former President, Japan Dental Hygienists Association

The History of Dental Hygienist Legislation in Japan

Following the end of World War II in 1945, Japan embarked on the reviews and revisions in its approach to providing effective medical care. Enacted and promulgated in 1948 were the Medical Practitioners' Act; the Dental Practitioners Act; the Act on Public Health Nurses, Midwives and Nurses; and the Dental Hygienists Act in order to formulate platforms for the qualification systems of specific health care professions.

In the case of the Dental Hygienists Act, because the definition of dental hygienists did not exist in Japan at the time, the law effectively created a new profession under that name. The purpose of this Act is "to prevent dental disease and improve oral hygiene," and the actual services provided under this designation are "preventative treatments for dental and oral diseases."

In 1950, after completing a one-year training course, Japan's first dental hygienists went on to primarily work at public health centers. In those days, however, much of the Japanese population struggled in their daily lifestyles, with the practical needs for such dental disease prevention services remaining low. In view of these factors, employment of dental hygienists at public health centers was not promoted, with the hiring of such personnel at hospitals and clinics increasing instead.

Revision of the Dental Hygienists Act and Evolving of Duties

At the time the Dental Hygienists Act was originally enacted, so-called "assistance of medical treatment" services were consigned to the duties of nurses. The legal definition of this "assistance of medical treatment" consisted of "medical treatment" and "dental treatment" received under the instructions of medical doctors and dental practitioners. With the first revision of the Act in 1955, one portion of the assistance services performed by nurses was removed, with "assistance of dental treatment" added to the duties of dental hygienists.

The actual range of such "assistance of dental treatment" is considered to fluctuate by the levels of dental care needs, education and training, with the details of the services and duties extending over a broad sphere. Today, services related to periodontal disease are the most numerous, while steady increases are also being seen in areas such as "visit-based dental hygienic guidance" provided to patients at home and "professional oral hygiene treatment" in oral function management furnished to hospitalized patients.

Further revisions effectively added the category of "dental health guidance" under the name of "Dental Hygienists" in 1989, and adjustments in the phrasing of placing dental and oral disease preventative treatment "under the direct guidance" of dental practitioners to read merely "under the guidance" of such practitioners in 2014. Meanwhile, the period of the education for dental hygienists was extended to three years or longer, with programs also now offered at four-year universities.

The Role and Future of Dental Hygienists

Recently, the actual numbers of dental hygienists have been growing steadily in Japan. In 2016, a total of 123,831 persons were employed as dental hygienists. In addition to dental clinics, these professionals are also active at public health centers, local (municipal) health centers, nursing care insurance facilities etc. Supporting this trend are positive evaluations of the services offered by dental hygienists within Japan's public health insurance and nursing care systems, together with the growing roles played by them in the providing of dental treatment and dental and oral care through collaboration with medical treatment and nursing care programs.

Today, with Japan emerging as an unprecedented super-aging society, it is clear that firm steps must be devised and implemented to further develop and expand the roles and functions of dental hygienists, in the interest of contributing to extensions in the healthy life expectancy of the general public.

G04

Dental nurse educational system and services in Thailand

Supatra Watthanasaen
Department of Dental Public Health,
Sirindhorn College of Public Health Khon Kaen Province, Thailand

Universal Health Coverage (UHC) has been implemented in health care system in Thailand in order to provide people with healthcare accessibility and equality, thus improving their health as well as oral health. Despite such attempt, so far three decades (1989-2017), those health problems remain a potential challenges with slowly decreasing level of prevalence. To illustrate, according to the national surveys in 1-8 times (conducted every five years) of oral health among 12- year – groups, the results showed 45.8 %, 49.2 %, 53.9%, 57.3%, 56.9%, 52.3% and 52.0%, respectively. The case is even worse in five- year – groups, accounting for 74.4 %, 83.1 %, 85.1%, 87.4%, 80.6%, 78.5% and 75.6%, respectively. Given this oral problems, it is imperative to address these challenges to prevent the consequent effects.

Indeed, several factors have contributed to the oral health problems, one of which is the lack of manpower particularly both dentists and dental personnel. Thus, Thailand initiated to produce the dental nurses to assist the mainstream resources in improving oral health problems for general population particularly in child groups. The dental nurse production started in 1968. The first dental nurse curriculum required the students to study two years; later in 2009, the course was extended to be a four-year- curriculum with the purpose of increasing their understanding of dental public health, oral health promotion, and professional competence in planning and implementation as well as encouraging behavioral change of oral health care relevant to Thai context. The core contents of curriculum involve the relevant theories, laboratory, and field work in hospital, school and community. In respect of student recruitment, the candidates are required to finish the secondary school level 6 (equivalent to high school grade 12), majoring in mathematics and science program.

The essential services of Thai dental nurses include 1) oral health promotion, 2) prevention of dentistry, 3) basic treatment, and 4) other services: first aids, universal precaution in dental services. There are several target groups for whom the dental nurses work, including pregnancy, nursing mothers, children, teachers, their parents, adolescents, adults, the elderly, and other groups. Regarding dental public health in communities, their essential responsibilities are to determine the objective, make plans and to implement dental public health in respond to community needs.

In conclusion, dental nurses are important one of dental personnel to oral health promotion and prevention. Particularly, given sustainability, the dental nurses are encouraged to actively collaborate with local organizations and related agencies.

G05

Biomimetic concept for composite restorations

Pisol Senawongse
Department of Operative Dentistry and Endodontics, Faculty of Dentistry,
Mahidol University, Bangkok, Thailand

Biomimetic restoration is a current approach for reconstruction of teeth to emulate their natural biomechanics and esthetic. The biomimetic restoration uses modern materials to replicate the tooth's biologic and mechanical functions that simulate a natural tooth.

In order to achieve this, the direct composite restorations are done with the use of materials that function as close to natural tooth structure as possible, should be considered.

This biomimetic technique with composite resin treats weak, fractured, and decayed teeth in a way that restores their strength and seals them. Thus, these techniques strengthen the dentine/resin adhesion and prevent stress and strain within the restoration. This technique involves using dental adhesives and sometimes fiber reinforcement to reproduce the tooth’ s natural hard tissues to facilitate a secure bond. These biomimetic restorations work harmoniously with the tooth substrate so that normal occlusal forces are less likely to disrupt the tooth/restorative bond. The natural esthetic will be created with the use of materials that have the esthetic properties close to dental structures. Since the composites are available in different shades, translucency and opacity, it is important for the clinicians to select and use them properly.

There are various techniques in applying composite resins, one of which is called the "Mulit-layering Technique". This layering technique makes use of appropriate tints that enhances and gives optimum esthetics for the restoration. As a result, the restoration mimics the natural tooth.

The combination of a nanofilled composite with a microhybrid composite substituting the same quantity of lost enamel and dentin better mimics both physical and optical characteristics of the natural tooth.

The biomimetic restoration with composite resin may be considered an interesting alternative to ceramics, minimizing invasiveness, chair time, and costs for patients.

G06

Paradigm shift of prosthodontics in the ultra-aged society

Tetsuo Ichikawa, DDS, PhD
Department of Prosthodontics and Oral rehabilitation
Tokushima University, Graduate School of Oral Sciences

With remarkable increasing numbers of the elderly and elderly requiring care in Japan, the cost of medical and nursing care service is also increasing and has become a critical issue. Thus, countermeasures and prevention strategies with regard to the need for nursing care are required. Furthermore, prosthetic dentistry should also keep pace with the current situation flexibly. Herein, the social situation and the response of dentistry, especially the prosthodontic field in Japan is introduced.

One of the responses is to clarify the relation between systemic health and dental issues such as that between periodontal disease and diabetes mellitus. The concept of "frailty," which indicates the losses of physiologic reserve that increase the risk of disability, was addressed in the Japan Geriatrics Society 2014 report." Sarcopenia," which is defined as an age-related decline in lean body mass, muscle mass, and function, has been often demonstrated as a similar idea. Moreover, the importance of "taking-meal," including nutrition management and food intake has been noted for the prevention of "frailty" and "sarcopenia" in the elderly. Oral frailty, which is the decline of oral function and deterioration of oral function, has been proposed in the dental field regarding frailty and sarcopenia. Consequently, the assessment of oral function is gaining importance and developing.

The other issue is the goal of prosthodontic treatment in the terminal period of life. Thus far, the goal was functional and aesthetic improvements of the dental arch at a high level. Structural improvement in terms of ease of care and repair in conventional dental prosthesis and implant superstructure will be required for use in individuals at the terminal stage of life. This concept may be expressed as "Back off strategy" and "revised success criteria." Digital technology is spreading rapidly, and is also an advantage in prosthodontic treatment approaches for the elderly and in elderly nursing care.

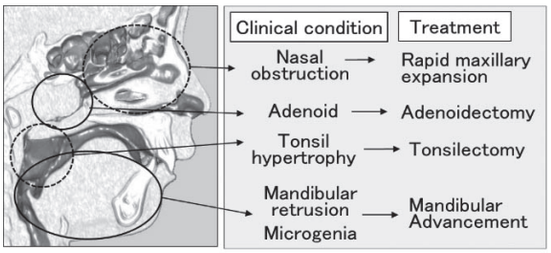
In this lecture, I would like to present the social situation and responses to the ultra-aged society in Japan.

G07

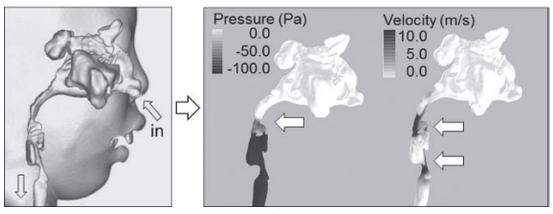
Indication of the dental treatment for pediatric OSAS using computer fluid dynamics

Tomonori Iwasaki, Hokuto Suga, Ayaka Yanagisawa-Minami,
and Youichi Yamasaki
Department Pediatric Dentistry, Kagoshima University
School of Medical and Dental Sciences, Kagoshima, Japan

Pediatric obstructive sleep apnea syndrome (OSAS) is caused by adenoidal and palatine tonsillar hypertrophy, nasal disease, and with respect to dental conditions, constricted maxilla and mandibular retrusion. The syndrome involves airway obstruction during sleep, which leads to repetitive apnea and hypopnea, thus causing hypoxemia and sleep disorder with various associated complications. Its prevalence is approximately 2%. Adenoidectomy and/or palatine tonsillectomy is the first-line treatment for patients with pediatric OSAS. However, recent reports have suggested good efficacy of dental treatments such as rapid maxillary expansion (Pirelli et al., Prog. Orthod., 2005), and myofunctional therapy (Guilleminault et al., Sleep Med., 2013) in patients with pediatric OSAS. We have previously shown that rapid maxillary expansion improved the nasal ventilation (AJODO 2012), alleviated the low tongue position and caused expansion of the pharyngeal airway (AJODO 2013), and reduced excessive negative pressure that causes pharyngeal airway contraction during inhalation (IJPOTO 2014), and the use of the Herbst appliance effectively expanded the pharyngeal airway (AJODO 2014) and improved the nasal ventilation (Angle Orthod., 2017). These findings suggest that dental treatment is effective for pediatric OSAS. However, although it is essential to choose a treatment method that targets the causative site of pediatric OSAS, which has potentially different loci in the upper airway, there is no established method to identify the site; therefore, using dental treatment in patients with OSAS is considered premature.



Cause site and treatment of pediatric OSAS



Upper-airway flow simulation

We have developed the upper-airway flow simulation, which is the intellectual property of Kagoshima University (AJODO 2011). It involves constructing a three-dimensional model of the upper airway on the basis of computed tomography data, reproducing respiratory movements similar to those with inhalation and exhalation in the actual human body, and functional evaluation under upper-airway ventilation condition; therefore, it has the potential for use as an effective method to define the site and severity of the upper-airway ventilation disorder. Moreover, effective use of the upper-airway flow simulation will enable identification of patients with indication for adenoidectomy and/or palatine tonsillectomy, maxillary expansion, or both treatments and thereby facilitate the application of dental treatment to patients with pediatric OSAS through a collaborative treatment approach involving teams from both the medical and dental department.

G08

Successful periodontal regenerative approach and aesthetic treatment using an Er:YAG laser

Koji Mizutani, DDS, PhD
Assistant Professor, Department of Periodontology,
Tokyo Medical and Dental University (TMDU), Tokyo, Japan

Nowadays, lasers are being increasingly incorporated into periodontal and peri-implant therapy, and favorable wound healing has been demonstrated. Statement on lasers in the non-surgical treatment by American Academy of Periodontology (2011) mentioned that erbium lasers showed the greatest potential for effective root debridement in commercially available laser apparatus. Several controlled clinical studies using an Er:YAG laser obtained equivalent or better results compared with conventional mechanical therapy. Er:YAG laser has an unique "photo-mechanical" tissue ablation capability due to its 2,940nm wavelength. It is able to ablate both hard and soft tissues without thermal side effects. Thus Er:YAG laser can be used for calculus and granulation tissue removal during periodontal and peri-implant therapy in a non-surgical or surgical approach. Er:YAG is also easily applicable for esthetic plastic surgery such as crown lengthening, gingival depigmentation and metal tattoo removal. Especially, the adjunctive use of microscope dramatically improves the therapeutic outcomes since the fine laser tip can provide precise procedures.

This session covers an introduction of the novel periodontal therapy using a Er:YAG laser. "Laser-assisted Comprehensive Pocket Therapy (LCPT)" was proposed the main concept of combination therapy of laser and mechanical debridement in 2007 and published as with successful clinical outcomes in 2015 by Aoki et al. The "LCPT" technique is considered as a minimally invasive and the most promising approach for the treatment of moderate to deep periodontal pockets.

In this lecture, application of the Er:YAG laser for periodontal therapy will be reviewed based on scientific evidence from currently available basic and clinical studies with my clinical case experiences.

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G09

How to achieve disabled people's quality of life from view point of dentistry

Tadashi Ogasawara
Department of Special Needs Dentistry, Matsumoto Dental University
at Shiojiri, Nagano, Japan

It is important for us to support disabled people so that they can realize a rich life that is physically, mentally, socially and culturally satisfying. That is the viewpoint of the quality of life for people with disabilities. It is also important for disabled persons to decide the activities of their daily life so that they can make their life goals and lifestyle better.

The Convention on the Rights of Persons with Disabilities was adopted at the United Nations General Assembly in 2006 and came into effect in 2008. The Taiwanese government made domestic enforcement laws against human rights treaties and formulated the Act on Implementing the Convention on the Rights of Persons with Disabilities in 2014. Japan ratified it in 2014. The Convention on the Rights of Persons with Disabilities is the prohibition of discrimination for the reason of disability, the provision of rational consideration, the emphasis on self determination power, and the prohibition of discrimination in all situations of life including medical treatment opportunities. Japan and Taiwan respect the dignity and rights of persons with disabilities and are concerned about their quality of life.

Dentists are also required to do dental care that takes into consideration the quality of life for people with disabilities. Since people with disabilities cannot tell others about pain due to dental diseases, quality of life. We also do not want disabled people to feel uncomfortable during dental treatment. An unpleasant feeling during dental treatment causes trauma. If a person with autistic spectrum disorder suffers an unpleasant feeling at the time of dental treatment, it causes self-injury after treatment, causes a flashback at the dental scene, and will cause the refusal of dental treatment or oral examination. They will not be able to receive periodic dental checkups, leading to a decrease in quality of life from the onset of dental desease. In addition, it is important to not only treat the dental caries, but also to take care of processes. There is an important process that involves judgment, method for anxiety mitigation, and decision support. It goes without saying that special consideration is required as a process of dental treatment for people with disabilities.

I will explain the process of dental care to contribute to the quality of life of people with disabilities. It is ① judgment (a. Readiness, b. Understanding), ② choice for anxiety mitigation, and ③ decision support. In particular, I would like to outline information on intellectual disability and autism spectrum disorder.

G10

Recent development in Japanese dental education

Ikuko Morio
Department of Dental Education Development
Graduate School of Medical and Dental Sciences
Tokyo Medical and Dental University (TMDU), Tokyo, JAPAN

Is there a national standard for the undergraduate dental program in Japan? Yes, there were many in the past, and yes, there is one called "The Model Core Curriculum for Dental Education (MCCDE)," which was initially issued in March 2001. Since then its revision has been led by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). The latest major revision was implemented in March 2017, with its English translation completed in March 2018. The MCCDE serves as the common denominator for the Japanese undergraduate dental education. Each dental school is expected to decide on its own set of competencies at the time of graduation based on the MCCDE.

The Common Achievement Test (CAT) for evaluating dental student's knowledge, skills and attitude before starting patient care was also established based on the MCCDE. The CAT consists of Computer-Based Testing (CBT) and Objective Structured Clinical Examination (OSCE). The contents of the CAT are based on the items included in the MCCDE. Higher the consciousness and demand on the part of patients, more difficult it has become to recruit patients in student clinics. Conferring the status of "Student Dentist" on those students who successfully passed the CAT is expected to solicit understanding and cooperation from patients.

At TMDU Dental School, active learning is promoted as its teaching/learning strategy with more emphasis on inter-professional approach.

Though the accreditation of the whole educational institution by external evaluators is well embedded because of the law enacted in 2004, subject-based evaluation in dental education is still in the process of formation. The subject-based accreditation system combining a self-study report and a site visit based on "accreditation standards" by external evaluators has become a norm in dental education around the world. Under the aegis of MEXT, a working group for the Research on the Establishment of Dental Accreditation System in Japan was set up and, its activities (FY2012-2016) contributed greatly to lay the basis for a new dental accreditation system in Japan.

Japanese dental schools ill afford to ignore globalization. The recent survey for "The White Paper on Japanese Dental Education 2017" indicated the number of international students both in undergraduate and postgraduate programs was on the rise.

In this presentation, changes and challenges in various aspects of dental education in Japan and possible measures thereof will be discussed.

G11

What's new and what works in modern endodontic therapy

林嘉賢（Jarshen Lin DDS）
Department of Restorative Dentistry and Biomaterials Sciences,
Harvard School of Dental Medicine, Harvard University

This course will focus on the broad overview of the conceptual understanding of modern principals of endodontic therapy and on the recent advancements in the areas of materials and technologies. Modern concepts of bioceramic materials will be reviewed and specific use of various modern techniques like Sonendo (GentleWave) will be discussed. The participants will get a chance to be familiar with the most current literatures about the endodontic advancements. At the end of this course, the participants will have reviewed the changes that have taken place in endodontic care over the past five years. They will be familiar with the concepts of care in modern endodontic therapy and will have an introduction to the research and the use of the newest instruments, equipment, and materials for the most consistent outcomes.

G12

控制根管感染的當代與未來手段
Contemporary and futuristic approaches for the control of root canal infections

Gary Shun-pan CHEUNG
Discipline of Endodontology, Faculty of Dentistry,
The University of Hong Kong, HKSAR

Oral microbial pathogens are present in the form of biofilms, aggregating and attaching on the surface of dental hard tissues or filling materials. The same occurs in the infected root canal system, where bacteria are present in the form of a biofilm, rather similar to the architecture of dental plaque but with somewhat different bacterial compositions.

Bacteria are surrounded by an extracellular matrix in the biofilm structure. That polymeric extracellular matrix provides physical shelter and a diffusion barrier against antimicrobial agents, hence providing protection for the biofilm bacteria. In addition, there is the presence of persister cells within the biofilm, which are a resistant form of bacteria that can withstand stressful conditions for an extended period of time, allowing them to survive the killing actions of most antibacterial agents. They can revive after the challenge is over, to re-establish the colonies. Antibiotic resistance may be passed on from one bacterial species to another, through the transfer of genetic materials within the biofilm community. All these would make the control of root canal biofilm a challenge target in clinical endodontic treatment.

Controlling the microbial biofilms in the infected root canals is typically by means of mechanical debridement or chemical disinfection.

The literature is replete with reports of the efficacy of various instrumentation methods to rid the canal walls of the adherent bacteria and biofilm, but all with limitations. Mostly importantly, the complex internal anatomy of the root canal system would limit the ability of any instruments to reach every aspect of the canal that may harbor microorganisms. The more recent methods involve the use of aqueous solution (typically, of sodium hypochlorite) and means to activating or agitating the fluid in situ. Latest innovations work by sending shockwaves into this irrigant fluid to enhance its ability to reach every corner of the root canal system.

Despite all those, some persister microbes may still survive and a means to control them from spreading and re-establishing the colony would be necessary. A biomimetic approach appears to work in this regard and may prove useful as a futuristic way to confine the bacteria in situ.

This lecture will discuss the shockwave approach of cleaning the infected root canals and suggest a biomimetic surface that can limit bacterial colonization.

G13

Dental hygienists act enforced in Japan

Katsumi Hidaka
School of Oral Health Sciences, Faculty of Dentistry, Kyushu Dental University,
at Kitakyushu, Fukuoka, Japan

外賓演講

The health care system in Japan changed greatly after the Second World War. The Japanese Government amended the Public Health Center Act in 1947 and established matters concerning dental hygiene as the work of public health centers. As a result of this amendment, it became necessary to place a specialist in public health center to prevent dental diseases, and the dental hygienist qualification was subsequently created.

The Japanese Dental Hygienists Act was enacted in 1948, and their initial work was limited to preventive measures for dental diseases. At that time, dental hygienists were supposed to work at the public health centers. However, in order to respond to the demand of dental treatments, the law was amended to make it possible to expand work area to the dental clinics in 1955. As a result of this amendment, dental hygienists were able to perform dental assistance which was originally regarded as the work of nurses. Also, due to the amendment in 1989, dental health guidance was added, and it became the current form of dental hygienist works.

Along with the addition of such two dental hygienist works, the education period has been extended from one year or more to over three years.

The Japanese Dental Hygienists Act celebrated its 70th anniversary since enactment. In the past 70 years, the social situation in Japan has greatly changed such as the remarkable increase in the elderly population. Currently, various dental hygienist services are evaluated for dental insurance fee and nursing care fee which are operated as social insurance. Therefore, the existence of dental hygienists is indispensable also in the management of dental clinics.

Today, in Japan, the provision of health care services by cooperation between medical department and dental department is promoted. Therefore, the activities of some dental hygienists are spreading to visiting dental hygiene guidance, oral function management before and after surgery of cancer patients. The social expectation for dental hygienists in Japan is rising, and with the expansion of activity area, the number of job seekers for dental hygienists is quite large.

In this presentation, I will report the history of Japanese dental hygienist system along with the law amendments based on the change of social situation and the outline of current Dental Hygienists Act.

G14

Training of female implantologists with an eye to the future

Chie Yanai, DDS. PhD. FIBCSOMS
Division of Oral Implant, Nippon Dental University Hospital, Tokyo Japan

The number of female dental university students has been increasing year by year in Japan. In fact, the number has now reached almost over 40%. In addition, the number of female dentists in Japan also has been growing significantly in recent years. This means that women are playing an increasingly important role in the field of dental care, which is one of the most valued aspects of society in general. However, the number of those reaching the highest and most qualified positions remains relatively low. Reasons for this include the difficulty of maintaining a work / life balance when faced with many years of study to achieve this goal.

Dental implants are a common prosthetic treatment used to replace missing teeth. In order to provide appropriate implant treatment to patients, it is necessary to learn expert knowledge and clinical skills. However, the number of female dentists doing oral implant as specialists is small. Therefore, it's important to provide an environment that encourages women to learn, as well as co-creating educational and training programs and academic lectures to support women through their life events, career paths, and work / life balance. It is also important to nurture leaders who can carry the next generation.

For this purpose, the Women Dental Academy for Implantology was established in 2016. It aims to support all female dental specialists (dentists, dental hygienists, and dental technicians) in their pursuit of training and employment regardless of the stage of their career – whether starting, interrupted, or continuous. The aim is to improve human oral function and oral health related quality of life by dental care.

In this presentation, the current state of Japanese female implantologists and possible solutions to this issue will be addressed.

G15

A tale of two slots: Classic mechanics in orthodonticstherapy

Chin Yu Lin
Department of Orthodontics, NOVA Southeastern University, USA

In modern orthodontics, teeth are moved to specific positions to achieve goals in oral function, facial esthetics, long-term stability, and oral health. Orthodontic tooth movements can be accomplished by delivering forces and moments through a wire-and-bracket system. Controlled delivery of appropriate forces and moments is the key of moving teeth to the desired positions. Therefore, it is paramount to understand the classic mechanics of forces and moments by orthodontic wires and brackets.

Based on the types of wire bending between two neighboring slots of orthodontic brackets, there are five basic mechanic systems: a centered V-bend system, three types of off-centered V-bend systems, and a Z-bend system. With static equilibrium of actions and reactions, each wire bending system delivers its unique forces and moments on brackets and, thus, creates distinctive orthodontic tooth movements on two neighboring teeth. The general process of finding forces and moments in static equilibrium includes five steps: locating centers of resistance in the force system, finding action moments on slots created by wire bending, finding the total action moment in the force system, finding the total reaction moment in the force system, and finding the reaction forces on slots.

G16

Unfolding the pathogenesis and mechanisms of malignant transformation of oral submucous fibrosis

WM Tilakaratne
Professor of Oral Pathology, University of Peradeniya, Sri Lan

Oral submucous fibrosis (OSF) was first described by Schwartz in 1952 among five Indian females living in Kenya and he coined the term Atrophia idiopathica (tropica) mucosae oris. Several other descriptive terms have been given subsequently. OSF has evolved as a clinico-pathological entity over many decades, with the current clinical significance being accepted worldwide following extensive research by many. Although the disease was described in 1950s, its pathogenesis has not been clear until recently. This lecture updates the research findings mostly from our group. Several mechanisms and biological pathways have been proposed for the pathogenesis of the disorder, all based on the constituents of areca nut and genetic susceptibility to the disease. The flow chart has been developed using the possible biochemical and molecular events known in the pathogenesis of OSF. It is characterized by the accumulation of excessive extracellular matrix in the lamina propria, predominantly type 1 collagen and other collagens. Recruitment and differentiation of fibroblasts from the mesenchymal stem cell compartment through progenitor cells to functioning fibrocytes to lay down collagen are events influenced by external mediators. In this disease areca nut and probably continuous mechanical irritation act as mediators. Growth factors and cytokines (eg TGFb) are key pro-fibrotic factors. We present here a complex sequence of mechanisms that promote fibrosis of the oral mucosa using our work and research from others. Researches focusing on various aspects of carcinogenesis in the background of fibrosis have advanced significantly in the recent past allowing us to understand the mechanisms involved in malignant transformation of OSF, the most prevalent oral potentially malignant disorder in South Asia. Role of arecanut as a carcinogen is proven beyond doubt with a large number of animal studies demonstrating its carcinogenicity, mutagenicity and genotoxicity. Studies involved in many molecules implicated in cell cycle regulation, hypoxia, processes leading to DNA double strand breaks, senescence and many other pathways related to carcinogenesis have shown ample evidence for the arecanut induced malignant transformation in OSF. More importantly, the understanding of mechanisms of malignant transformation may lead to early diagnosis of oral squamous cell carcinoma (OSCC) arising in the background of OSF which is now considered to constitute a clinic-pathologically distinct disease and the differences are believed to arise from differential mechanisms of arecanut carcinogenesis.

G17

Regeneration of lost alveolar bone. Translational researches of the noble materials

Tatsuya Akizuki
Periodontics, Dental Hospital, Tokyo Medical and Dental University, Tokyo, Japan

Periodontitis is an infectious disease caused by periodontopathic bacteria, which stimulate the breakdown of periodontal tissue, resulting in tooth loss via inflammatory reactions. Tooth loss caused by the advancement of periodontitis often makes it difficult to place dental implants at proper sites due to the extremely reduced bone height and width.

Regeneration of the lost alveolar bone is important not only for periodontal regeneration, but also for implant treatment. Augmentation of lost alveolar bone is often required to place implants in suitable positions. Several materials are used for periodontal regeneration and ridge augmentation procedures, including autografts, allografts, xenografts, and artificial bone grafts. Among them, autografts are regarded as the gold standard for their osteoinductive, osteoconductive, and osteogenic properties. However, other bone grafts are used with or without autografts because of the lack of availability and donor-site morbidity. New materials for ridge augmentation procedures have been examined to obtain better results.

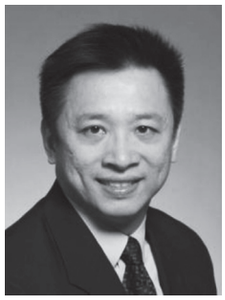
Among them, beta-tricalcium phosphate (TCP) is one of the commonly used materials, which is resorbable and replaced by newly formed bone. Usually, beta-TCP is supplied as particles and are applied with a membrane to be positioned in the desired place. This procedure is complicated, and we fabricated a newly designed beta-TCP block that is suitable for regeneration of the new bone inside the block. This material, "random tunnel beta-TCP block: RT beta-TCP," showed favorable results in the periodontal defect, ridge preservation after extraction, and vertical alveolar ridge augmentation in the canine model.

Recently, bioactive agents have been introduced, such as recombinant human fibroblast growth factor 2, which is commercially available in Japan. This material was designed for periodontal regeneration. From the results of in vitro and in vivo studies, it was suggested that the material induces new blood vessel formation and stimulates the proliferation of stem cells. It was also suggested that it stimulates new bone formation and is thought to be a potential agent for alveolar ridge augmentation.

In this presentation, some of the noble materials will be introduced, including the beta-TCP-based bone graft and recombinant human basic fibroblast growth factor. Results of translational research using these materials will be discussed.

G18

Solution to simplify SHAPING and CLEANING: Improving quality of root canal treatment



Dr. Alex W. K. Chan
Specialist in Endodontics, Hong Kong SAR Honorary Clinical Associate Professor,
Faculty of Dentistry, the University of Hong Kong, Hong Kong.

The goal of root canal preparation is to provide adequate but conservative access for disinfecting solutions without making major preparation errors. The introduction of nickel-titanium (NiTi) rotary instruments to endodontics in the last decades has changed the way root canal preparations are performed, and resulted in dramatic improvement for successful preparation, not just for specialists but also general dentists.

Nowadays, there are more than 50 root canal preparation systems; however, not every system is suitable for every clinician and not all cases lend themselves to rotary preparation, due to varying degrees of clinician skill and case complexity. Furthermore, rotary files may fracture rather unexpectedly or create procedural errors. Therefore, knowledge of basic understanding of metallurgical properties of nickel-titanium files and several important factors are critical for successful use.

This presentation is intended to give clinicians a knowledge base for nickel-titanium rotary use and further aims at enabling them to select a system that is most suitable for their needs. It will further discuss on how to use the rotary nickel-titanium instruments efficiently, effectively and prevent the iatrogenic events.

A new rotary, Controlled Memory nickel-titanium system– 'BassiLogic' will be introduced. This nickel-titanium system and its associated techniques are simple, efficient, predictable and readily applicable to a clinical setting, and it will help us to achieve the biological goals for optimal success.

G19

Evidence of the clinical complete denture prosthetics

佐藤幸司（Sato Koji）
明倫短期大 專攻科生体技工 臨床教授

迎向超高齡的齒科醫療居家牙科醫療已有增加的傾向，為了加強高齡者在治療中的進食與吞嚥，假牙的精密化是必須的，另外牙科醫療的技術也相對的進步，對於無齒顎患者的疾病構造也在近年有了顯著的變化。義齒的製作從簡便和客觀的根據這兩點來出發尋求有效率的＜人工臟器義齒＞的製作系統是一種潮流趨勢。這次的課程，在無齒顎臨床中最重要的幾項要素，包括「印象採得」，「咬合採得」，「咬合器裝著」，從這裡獲得垂直與水平的咬合位和下顎位，另外在無齒顎人工齒排列方面，在齒冠修復和植牙補綴上非常有用，無齒顎的假想咬合平面的設定基準及咬合樣式也將一一介紹。團隊醫療最重要的要素是，牙醫師的診斷和治療設計，以此為基礎和牙技師與牙科衛生 (牙助) 共同進行治療，循序漸進慎重進行，在印象採得方面，有概略印象和機能印象採得，我們需要非常熟知模型上表現出來的組織，並加以分析，這是非常重要的，我還會解剖學，發生學，生理學所產生的不同臨床案例，來設定咬平面並賦予咬合彎曲，並考量生理學和力學施予人工齒排列，最後在口腔內調整咬合給與咬合樣式，這些都是我預定的演講內容，在時間的許可之內，我希望可以和各位在內容上進行討論，很榮幸有這個機會和大家一起研討。

G20

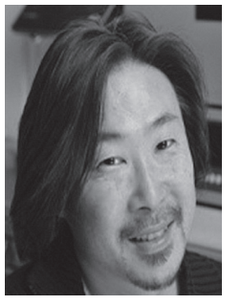
全鋯冠臨床應用與氧化鋯染色技巧

NA Kyoung Chae
Daejoen Health University- Department of Dental Laboratory Technology
DENACAMEMY- Provisional Crown

1.surface texture of zirconia
2.property of zirconia
3.light & color
4.coloring
5.Sintering
6.Stain & Glazing

G21

層次之顛不堆瓷美學系列課程 - 談仿真全瓷染色
全氧化鋯美學 × 一次堆築技法



可児章人（AkitoKani）
東京齒科學會兼任講師
Roland DG 專業顧問
Organ Dental Technology Hamburg 負責人
Asami Tanaka Dental Enterprises Europe 總經理
2011 年起德國 QZ-QuintessenzZahntechnik 牙科期刊投稿作者

可児章人老師 10 月來台灣！講習現場，將會展示如何使用 ZirC olor coloringliquid 系統極大化展示多層次 Multi-5 材料的潛力，讓仿真全瓷效果躍然紙上。

Tanaka 一次堆築技巧跟 Z.E.P. 概念都可以有效降低全瓷處理時間，可児章人老師將會使用最少的瓷粉堆築技法，完成美學且仿真度最高的贋復體。