

Reflective Learning log
JASSO (Japan Student Services Organization)

Thitapa Potiket

at Niigata university during 12-22 march 2024

13 march

Bio-prostodontics Lecture

1. The variation in prosthodontics patient :

- Tooth shape : Geometric theory: The form of the central incisors should be in harmony with the outline form of the face
Tooth mold: Inverted version of these shape

2. Evaluate teeth function and esthetics

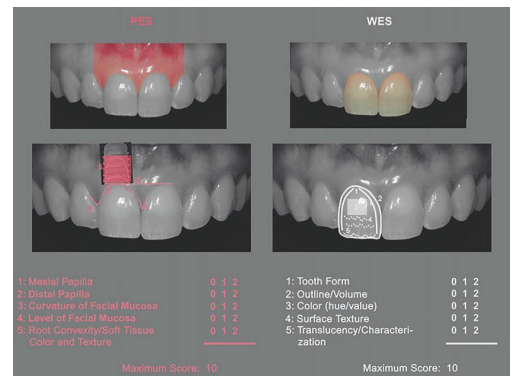
Evaluate implants esthetics

1. PES : Pink esthetic score

Pink esthetic score (PES from 0 to 14) comprises seven factors: mesial papilla, distal papilla, curvature of the facial mucosa, level of the facial mucosa, root convexity, soft tissue color, and texture at the facial aspect of the implant site

2. WES : White esthetic score

A - E comprises five factors: Tooth form, Tooth outline , Color (hue/value), Surface texture, Translucency



From research

1. Extracellular Matrix in the Maintenance and Regeneration of Periodontal ligament research

Summary :

- PDL tissue contains various types of non collagenous ECM.
- PDL cell sheet has a potential of tissue regeneration owing to its active ECM turnover.
- oriented proteomic analysis will be useful for evaluating tissue status in health and disease.

2. Research "Periostin"

- Postn-KO results in alterations in ECM-Cell interaction and accelerated ECM degradation in PDL cells.
- Severe occlusal trauma on Postn-Ko mice could be due to the accelerated ECM degradation caused by the loss of Postn.

Oral and Maxillofacial Surgery Lecture

- Case Refractory aphthous stomatitis: 15 year olds girl recent weight loss with frequent diarrhea, allergy to egg, many fruits, salmon roe and soba noodle
Crohn's disease is an immune-mediated disorder of gastrointestinal tract, along with ulcerative colitis, comprising the two major subsets of the inflammatory bowel disease and Aphthous stomatitis may be an initial sign of Crohn's disease.
- Case extensive oral mucositis with extreme fatigue : A 83 years old woman. Fever up 38 celcius, fatigue.
Medical history 1) dementia 2) Rheumatoid arthritis
Severe stomatitis, pancytopenia and sepsis induced by misuse of MTX. She had mistakenly used MTX everyday for one month, rather than twice per week as prescribed

14 march

Operation room : observed Orthognathic surgery

- The dentist and assistant have to wear green scrub inside and outside they wear disposable PPE.
- They have to scrub their hands before going into the operation room with betadine surgical scrubs.
- There are TV monitor inside the operation room
- Position in OR : Anesthesia, Specialist Dentist, Assistant, 1 people count
- gauze pack



Oral Health and Welfare LEC

A degree in dental hygiene is required, in addition to the successful completion of the National Dental Hygienist Examination and licensure from the Minister of Health, Labour and Welfare.

4-year curriculum: 1 year of general education

3 years of dental & welfare education

The international survey included questions on 4 categories of clinical dental hygiene services in the legally defined scope of DH:

1. Client assessment: 8 procedures

- Taking medical history
- Performing an extra-oral examination
- Performing a soft tissue examination
- Performing a hard tissue examination

- Making dental impressions
- Taking vital signs
- Exposure and use of radiographs
- Performing diagnostic tests

2. Planning dental hygiene : 6 procedures

- Identification of dental hygiene care needs
- Informing the client of assessment findings
- Informing the client of dental hygiene treatment options
- Deciding the dental hygiene services to provide
- Deciding the sequence in which to perform them
- Deciding the overall appointment schedule

3. Preventive services : 6 procedures

- Oral hygiene
- Diet counselling
- Smoking cessation counseling
- Application of topical fluorides
- Application of sealants
- Deciding the self-care procedures to recommend

4. Therapeutic services : 8 procedures

- Administration of local anesthesia (n=14)
- Placement & fitting of orthodontic bands (n=8)
- Placement & finishing of restorations (n=6)
- Cavity preparation

Outpatient Clinic Pedodontics

Flat dental chair: it easy for young patient to lay down and it safer than traditional dental chair to fall from the dental chair

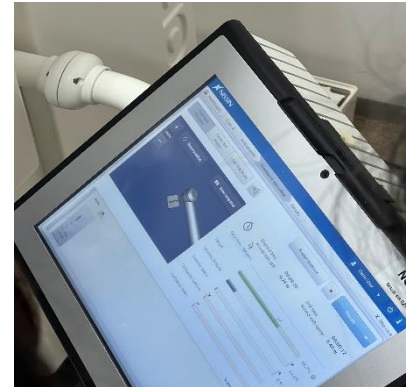


Papoose board: They use papoose boards like in Thailand. It has 2 size, small and big papoose board.

Dental Trainer Practice : Nissin company MOOG simulation

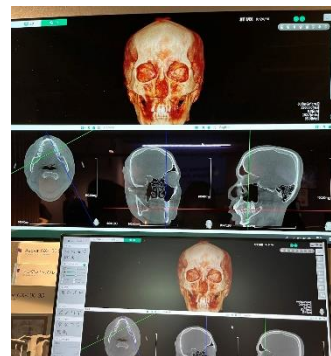


There is a simulation room for practicing the preparation of the tooth. AI generates tactile and sensation like when preparation in a patient. There are many types of preparation such as removing caries, crown and bridge preparation.



GC company visit

GC manufactures about 600 types of products and sells them in more than 100 countries around the world. Due to differing requirements in the various overseas markets, GC has very deliberately localized its European, US, and Asian operations. GC has lost no time in optimizing its on-site activities, while at the same time fulfilling its obligation as a local enterprise to actively participate in each country's dental industry associations.



We went to Sekiyama beach after the class had finished

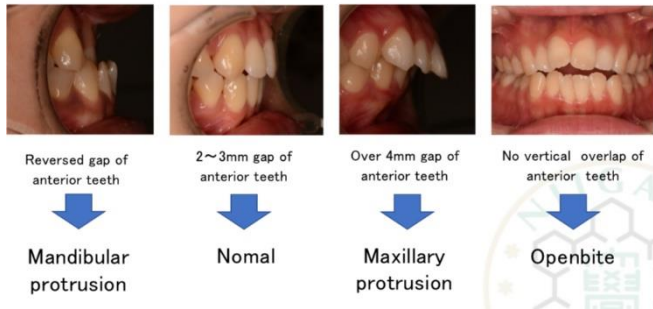


15 march

Orthodontics

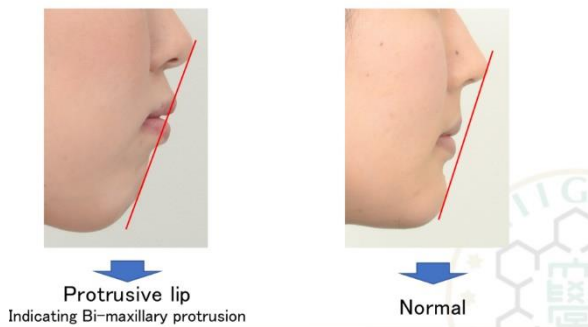
Check point① (anterior teeth)

- Check the amount of gap on anterior region



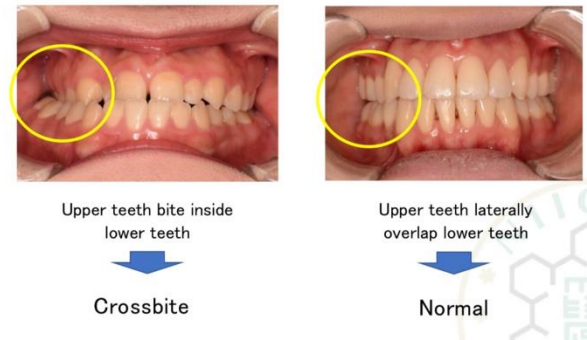
Check point③ (Soft tissue profile)

- Profile following Esthetic line(E-line)

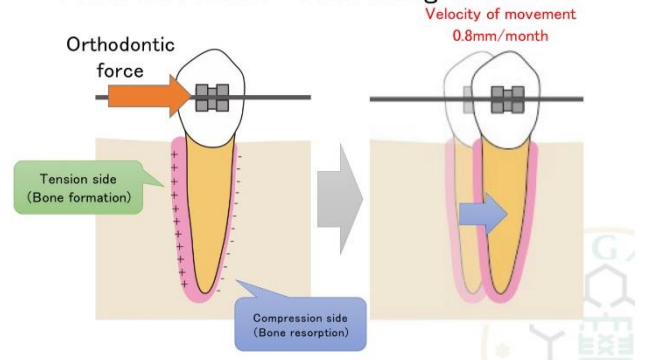


Check point② (Posterior teeth)

- Check of gap on anterior region



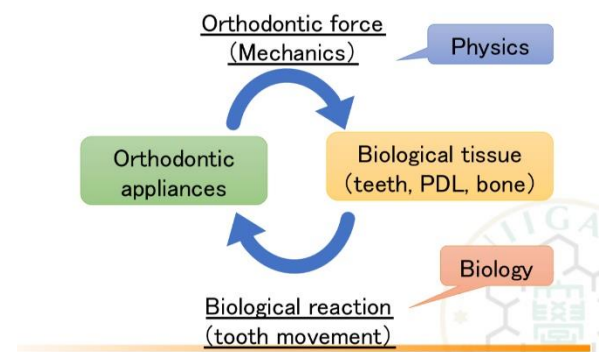
Tooth movement = remodeling of bone



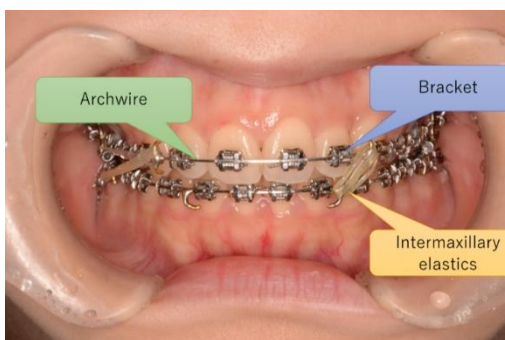
Malocclusion, which is an abnormality in the alignment of teeth and bite, is caused by irregularities in the teeth.

- We also take into account the overlap and position of the anterior and posterior teeth, as well as the balance of the profile
- Orthodontic treatment is required to improve malocclusions.
- Tooth movement through orthodontic treatment involves the application of force and biological reactions.

What is Orthodontic Treatment?



Orthodontic brackets



Oral anatomy

- Most of mother who lacks of Folic Acid cause Spinal meningocele of embryo, Anencephalic baby (Neural tube defects)

- When DNA damage, cause abnormalities for example TCOF1 damage leads to treacher collins syndrome

- What cause DNA damage

Cellular Metabolism, UV light exposure, Ionizing radiation, chemical, exposure, Replication errors

- Things happen after DNA damage - Cell cycle checkpoint activation, Transcriptional Program

Activation, DNA repair (Direct reversal, Base excision repair, Nucleotide excision repair, Mismatch repair, Double strand break repair) Apoptosis.

- Oxygen have a role to be ROS We can delete ROS in body with Antioxidants

- Tcof 1 gene could help repair the DNA damage of (face DNA) so, Lack of Tcof 1 gene = Teacher Collin syndroms

Outpatient clinic- Prosthodontics

Phantom head for Niigata dental student



16 march

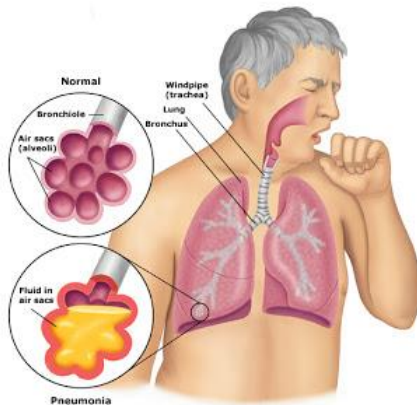
Excursion at Ninox snow park with sensei



18march

Dysphagia and Oral Rehabilitation

- population aging is a worldwide trend, especially in Asia
- Long-term care needs are increasing in terms of more elderly requiring long term care
- Aspiration pneumonia is a common disease that frequently occurs in elderly patients and most patients with aspiration pneumonia have swallowing impairment, so called dysphagia. Ratio of aspiration pneumonia to total cases increased with age.
- Dysphagia: swallowing difficulties , some people with dysphagia have problems swallowing certain foods or liquids, while others can't swallow at all

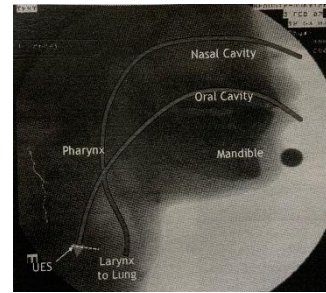


Dysphagia

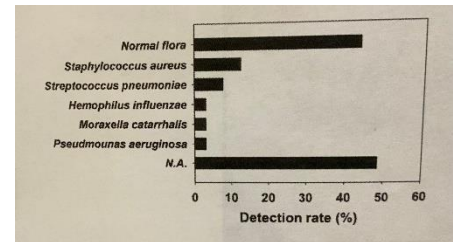
- Direct symptom
 - Choking/coughing when eating or drinking
 - A sensation that food is stuck in your throat or chest
 - Persistent drooling of saliva
- Other symptom
 - Prolonged duration of swallowing
 - Changes in posture/eating habits
 - Spitting of foods/Regurgitation
- Indirect symptom
 - Weight loss
 - Frequent fevers
 - Bronchitis/pneumonia with unknown reason
 - Changes in voice or speech

Medical diseases causing dysphagia

- Structural disorder : H/N cancer, esophageal cancer etc
 - Functional disorder: impairment of swallowing initiation or incoordination or weakness of related muscle contractions
 - Central disorders (Stroke, ALS etc)
 - Peripheral disorders (neuro-muscular disease etc)
- Unknown: Aging, medication-induced dysphagia



- oral flora is major bacteria causing pneumonia in elderly



Endoscopy

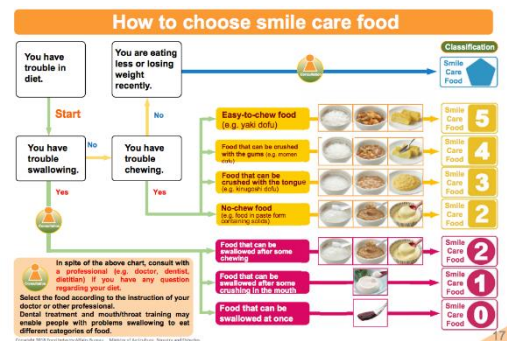


Radioscopy : Food with barium



Food for patients with dysphagia

- Texture modification is one of the most common forms of intervention for dysphagia
- Ways to modify may vary from the use of commercial agents for thickening liquids to the softening or blending of solid food



Center for Advanced Oral Science LEC

According to the research : Osteoimmunology in Periodontitis: Local Proteins and Compounds to Alleviate Periodontitis

- Periodontitis is one of the most common oral diseases resulting in gingival inflammation and tooth loss.

Growing evidence indicates that it results from dysbiosis of the oral microbiome, which interferes with the host immune system, leading to bone destruction. Immune cells activate periodontal ligament cells to express the receptor activator of nuclear factor kappa-B (NF- κ B) ligand (RANKL) and promote osteoclast activity. Osteocytes have active roles in periodontitis progression in the bone matrix. Local proteins are involved in bone regeneration through functional immunological plasticity.

Periodontal pocket

P. gingivalis Impaired innate immunity \rightarrow leads to inflammation \rightarrow Periodontal tissue destruction and bone loss \rightarrow Tissue breakdown products (nutrients) \rightarrow Dysbiotic community \rightarrow C3 activation \rightarrow So on as circle

Roles of Interleukin 6 and Its Receptors in the Development of Periodontitis

- interleukin (IL)-6 promotes the cascade of destructive tissue processes

- IL-6 is involved in the pathogenesis of periodontitis

- IL-6 binds directly to the transmembrane receptor (mIL-6R) found in monocytes, lymphocytes, etc.

- The binding of IL-6 and its receptor, IL-6R, enables the dimerization of GP-130, triggering the Janus kinase (JAK)/signal transducer and activator of transcription (STAT) and MAPK signaling pathways

- The IL-6 174G/C polymorphism increases the risk of developing periodontitis

- an in vivo study on non-human primates, IL-6 expression was increased during the early phase of periodontitis.

Macrolides and Bone Regeneration

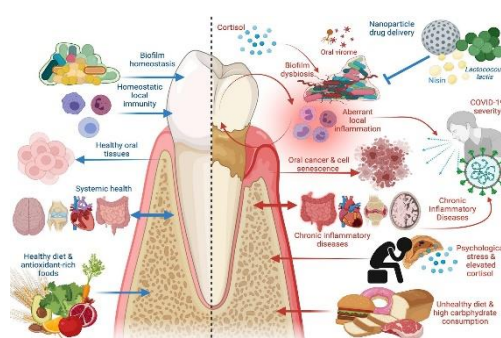
1. Erythromycin (ERM) : ERM decreases periodontal inflammation and bone loss in a Del-1-dependent manner.

2. Clarithromycin (CLR) : TCP and clarithromycin-loaded microspheres could enhance bone formation in bone defects.

3. Azithromycin (AZM) : AZ suppresses human osteoclast differentiation and bone resorption.

AZ promotes osteogenic differentiation from human PDL stem cells in inflammation.

Adjunctive AZ used in SRP treatment resulted in alveolar bone growth



Outpatient clinic- Cariology

In every dental unit for endodontics department have microscope

- They use microscope help to find the canal
- Using rotary and conventional file

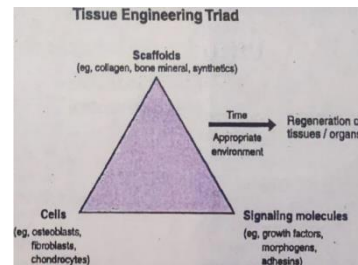


19march

Tissue engineering

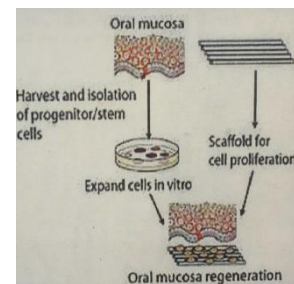
Basic Rules for Tissue Engineering

- Optimal regulatory signals (growth factors)
- Responsive cells to regulatory signals
- Instructive scaffolds (interactive): Geometry, Surface coating, Cell Attachment

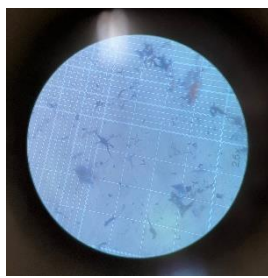
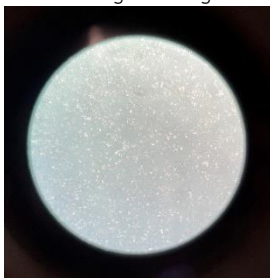


Approaches to Tissue Engineering of Oral Mucosa Equivalents

1. In vitro culture autologous keratinocytes (sheets)
2. In vitro tissue engineering of dermis composed of allogeneic, acellular, or artificial (collagen, GAG, PLA/PGA)3. Bilayer: keratinocytes + dermis



Lab tissue engineering



Oral pathology Lecture

Oral cancer progresses from precancerous lesions

- normal squamous epithelium → oral epithelial dysplasia (OED) → carcinoma in-situ (CIS) → squamous cell carcinoma (SCC)

- normal squamous epithelium → squamous cell carcinoma (SCC)

OED

- Defined as a group of structural and cytologic changes in the epithelium caused by an accumulation of genetic mutations and is associated with an increased risk of progression to squamous cell carcinoma.

- Defined as a regional, well-defined neoplastic lesion as oral epithelial dysplasia (OED).

Oral Carcinoma in situ (CIS): representative organizations

- full-layer replacement type: Basaloid type → •WHO classification concepts proliferation of mainly basal cell-like cells, drop-shaped rete ridges

- differentiated type: verrucous type → •stratified differentiation as squamous epithelium, Keratinization, round type, keratinous plugs

- differentiated type: acanthotic type → stratified differentiation as squamous epithelium keratinization, Long leg type, box type

Summary

- Objective histopathological diagnosis of oral epithelial dysplasia.

- Oral epithelial dysplasia : From the perspective of future progression to cancer

two phase dysplasia : proliferative zones

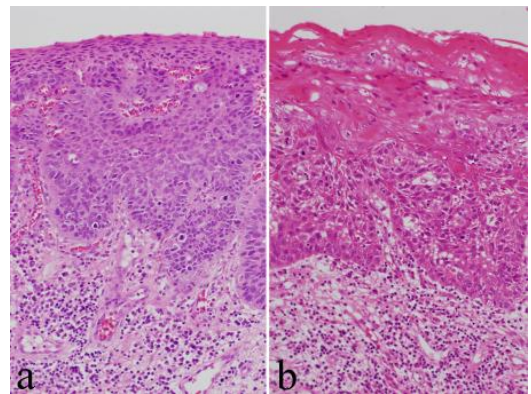
orthokeratotic dysplasia : adjacent to carcinoma

Clinical tumor character of recurrence

P53 gene mutations and protein expression patterns

- As oral epithelial dysplasia precisely define the neoplastic lesion unit

Beyond differentiation type carcinoma in situ



Outpatient Clinic - Periodontics

- There are the chart to record patient PD, BOP every 3 months for recall patient, x-ray every 6 months
- There are separate room for periodontics surgery

Dental Pharmacology LEC

1. Sake could decrease psychological distress like anxiety and depression.
2. Sake reduces stress-induced pain resp.

Conclusion

For > 2000 years, Japanese believed Sake is a medicine. Sake reduces stress-induced pain.

But looking at the recent data, you have to be careful, when enjoying alcohol drinks.

20march

Excursion to Yahiko village with Niigata student but unfortunately the weather is bad 😞



21march

Global oral health A Basic Direction for Comprehensive Implementation of National Health Promotion
Basic Direction of Health Promotion

- (1) Extension of healthy life expectancy and reduction of health disparities
 - (2) Prevention of onset and progression of life-style related diseases (prevention of non-communicable diseases (NCD))
 - (3) Maintenance and improvement of functions necessary for engaging in social life
 - (4) Establishment of a social environment to support and protect health such as environment to promote tobacco-free is less shop to buy tobacco
 - (5) Improvement of everyday habits and social environment relating to nutrition and dietary habits, physical activity and exercise, rest, alcohol, smoking, and dental and oral health
 - (6) Dental and Oral Health
- [a:Improved]
- Prevention of tooth loss

- Increase in number of infants and schoolchildren without dental caries

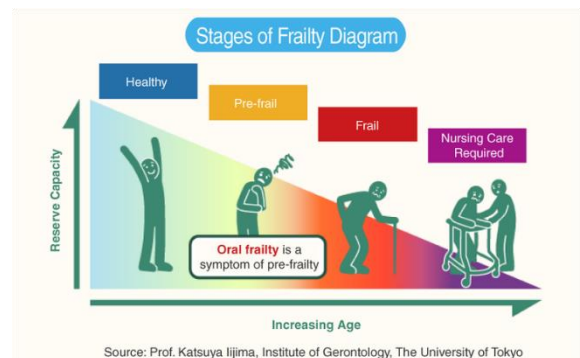
ease in percentage of individuals who participated in dental examination dur
year

[b:Unchanged]

- Maintenance and improvement of oral function
- [c:Worsened]
- Decrease in percentage of individuals with periodontal disease

Oral Frailty:

- experience poor nutrition as a result of the deterioration of overall muscle mass
- interference in daily living due to decline of the musculoskeletal system.
- become self-conscious about oral condition, which may ultimately inhibit ability to participate proactively in society.



Fluoride and oral health

In Japan there are fluoride mouthrinsing program

225 -450,900 ppm

- In low-fluoride communities, school-based brushing or fluoride mouthrinsing programmes can be recommended, but their adoption should be based on the cost of implementation and the caries status of the community. Fluoride



mouthrinsing is not recommended in young children (if children could not spill out properly)

The method of S-FMR in Japan

- S-FMR has been practiced since the age of 4-5 years when the permanent teeth would start erupting
- S-FMR has been continued until graduating from junior high school when the permanent dentition would be completed
- Nursery/Preschool children train by rinsing solution with tap water for a month before start practicing S-FMR
- Fluoride concentration and amount of rinsing solution according to school

and frequency a week of rinsing day nursery & preschool 5/week 0.05 % sodium fluoride (NaF) solution 7 ml

primary school & junior high school 1/week 0.2% NaF solution 10ml

Oral biochemistry

Leptin-deficient

If leptin not working the mice continue to eat food and become overweight

-Obesity can become depressed easily

Microbiome can produce gaba change in the ratio can change your habit

Such as drink yogurt and milk can also change

microbiome in your body

Link protein diet associate with dementia

Too much amino acid cannot store in the body and

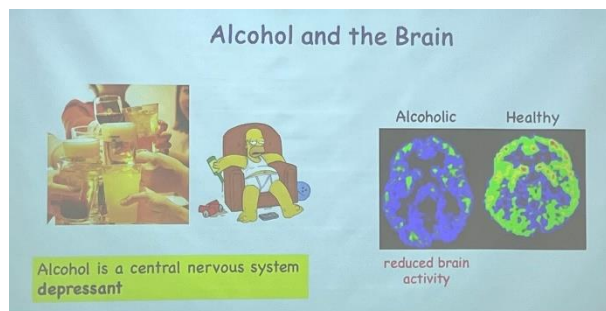
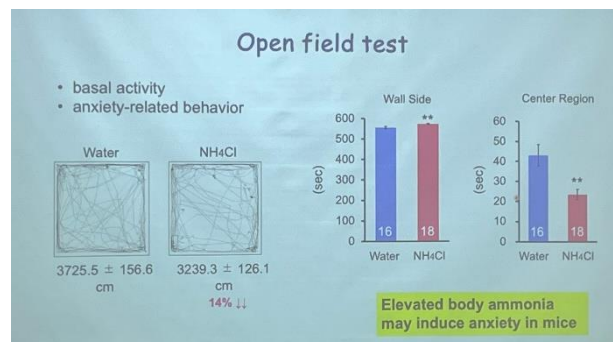
then become ammonia and finally urea. If you have

to much, it will affect your brain

From the open field test

Alcohol and the brain

Alcohol effect the brain by slowing down movement and speech



Dental radiology: Application of ultrasonography and ultrasound elastography in dental practice

Diagnostic imaging

What is the diagnostic imaging?

Diagnostic imaging is a means to take pictures of the structure and processes in the body and make them visible or "accessible" to the human eye. It encompasses the use of so-called ionizing radiation (i.e. X-ray based examinations including computed tomography or nuclear medicine procedures), ultrasonography, magnetic resonance imaging and a few other highly sophisticated procedures.

Application of ultrasonography in dentistry

- Extraoral examination
 - Major salivary glands
 - Cervical lymph nodes
 - Tongue and buccal mucosa
 - Temporomandibular joint
 - Masticator muscles and surrounding spaces
 - Periapical region
- Intraoral examination
 - Minor salivary glands
 - Tongue and buccal mucosa
 - Periodontal tissue

Advantages and disadvantages of ultrasonography

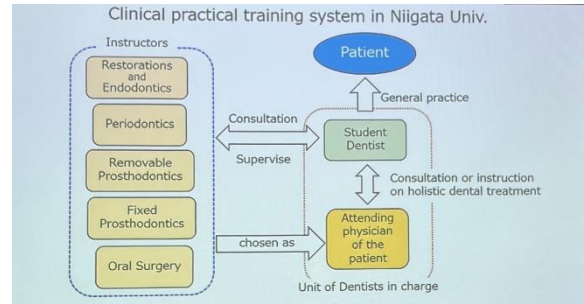
- Advantages
 - safe, non-invasive, relatively inexpensive, quick and convenient, real-time visualization, good spatial resolution
- Disadvantages
 - limited field of view, difficulty in visualization of hard tissue, lack of objectivity, highly operator- dependent (require skills and experiences)



22March

General Practice Dentistry and Student Practice

- Faculty members belonging to the clinical specialty departments will take turns serving as supervisors (instructor) within each department. The attending physician will be the instructor most closely related patient's chief complaint.



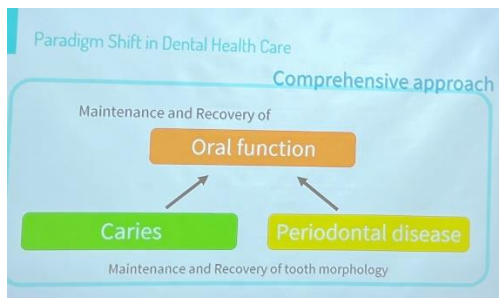
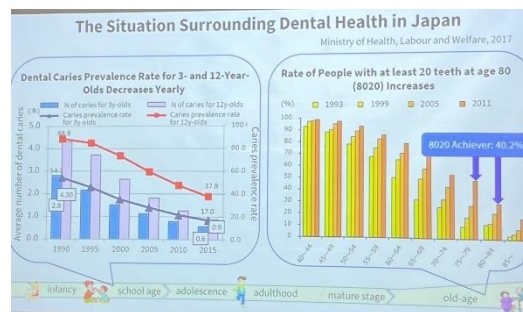
- A holistic dental treatment plan is formulated by the unit of the dentist in charge, and treatment proceeds with the cooperation of instructors in each department
- The treatment cost between clinical practice training and specialized department is the same

Dental student unit in Japan



Pedodontics

Dental caries decreasing, remaining number of teeth increasing



"Developmental disorder of oral function"

- Check the problems for patients
 - eating : Mastication, Swallowing, Eating behavior
 - speaking: Pronunciation, Oral habits, Incompetent lip seal, Ankyloglossia
- Other functions: Thin, Obese, Mouth breathing, Snoring etc.

To avoid long-term habit, using bitter nail coat

12 "Developmental disorder of oral function"

- ✓ Oral habits

Finger-sucking habituation ↔ Malocclusion

Prolonged pacifier (nipple) use

Malocclusion

- ✓ Maxillary protrusion
- ✓ Open bite

"Developmental disorder of oral function"

- ✓ Pronunciation
- ✓ Ankyloglossia

2. Surgical resection

Completion of language functional development: preschool age 5-6 years

- ✓ Resection of the lingual frenulum using surgical scalpels, CO2 lasers, electrocautery
- ✓ Tongue training

8 "Developmental disorder of oral function"

- ✓ Pronunciation
- ✓ Ankyloglossia

- ✓ Heart-shaped tongue when protruding forward
- ✓ Range of tongue motion
- ✓ Pronunciation
- ✓ Position of lingual frenulum attachment

1. ✓ Check the points

"Developmental disorder of oral function"

- ✓ Oral habits
- ✓ Swallowing

abnormal swallowing habits (Infantile swallowing)

protrusion of the tongue from the mouth during swallowing

Improved with devices to prevent tongue thrust and training.

6y 10m	6y 10m	7y 11m

20 "Developmental disorder of oral function"

- ✓ Incompetent lip seal

Oral habits ↔ Incompetent lip seal ↔ allergic rhinitis

Mouth breathing ↔ Incompetent lip seal ↔ sleep apnea syndrome

abnormal swallowing habit ↔ Incompetent lip seal

Incompetent lip seal and related factors

Oral habits, Mouth breathing, abnormal swallowing habit → Incompetent lip seal → allergic rhinitis, sleep apnea syndrome

Incompetent lip seal → Imbalance in lip closure and tongue pressure → Abnormalities of facial soft tissue morphology and dental occlusion (Open bite, Maxillary protrusion)

Incompetent lip seal → oral dryness → Caries, Periodontal disease

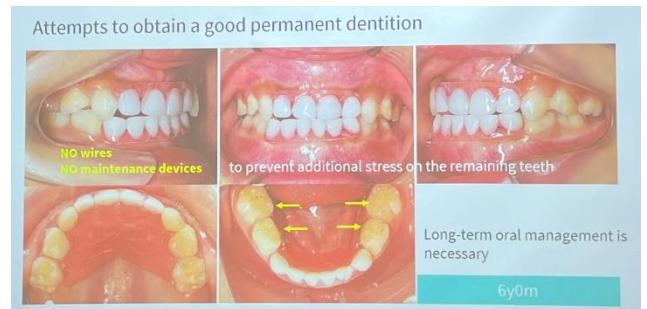
Oral management for children with special needs

1. Systemic disease: Hypophosphatasia

- A metabolic disease characterized by impaired bone mineralization and early exfoliation of primary teeth caused by low levels of alkaline phosphatase (ALP) activity.

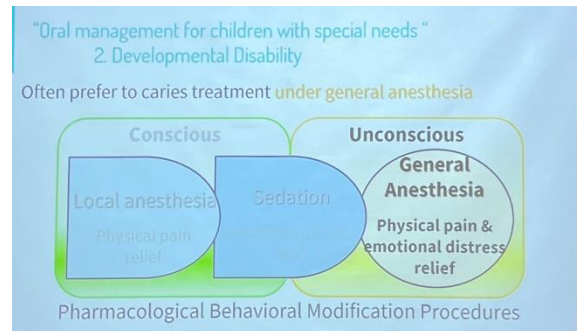
(1) Perinatal type, (2) Prenatal benign type, (3) Infantile type,

(4) Childhood type, (5) Adult type, (6) Odonto type



2. Developmental Disorder : Typical developmental disorders

- Autism Spectrum Disorder (ASD)
- Attention Deficit Hyperactivity Disorder (ADHD)
- Learning Disabilities (LD)



Definition of Child Abuse

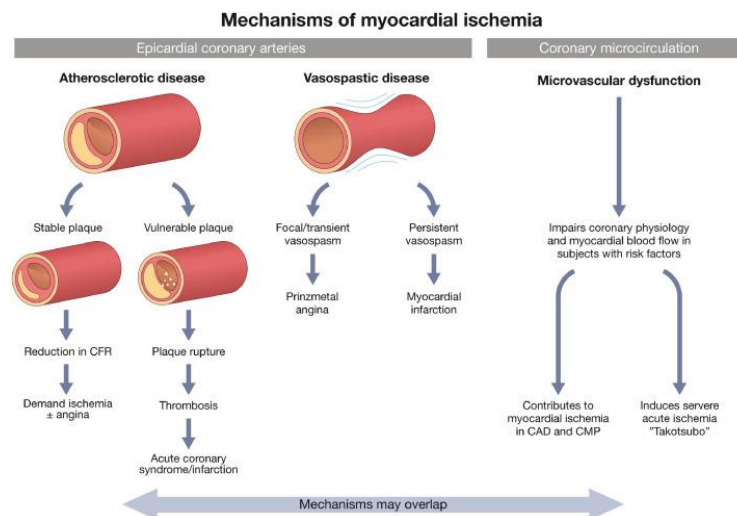
Four main types of child abuse

1. Physical Abuse
2. Sexual Abuse
3. Neglect : Maltreatment in which the caregiver fails to provide adequate care to child
4. Psychological Abuse

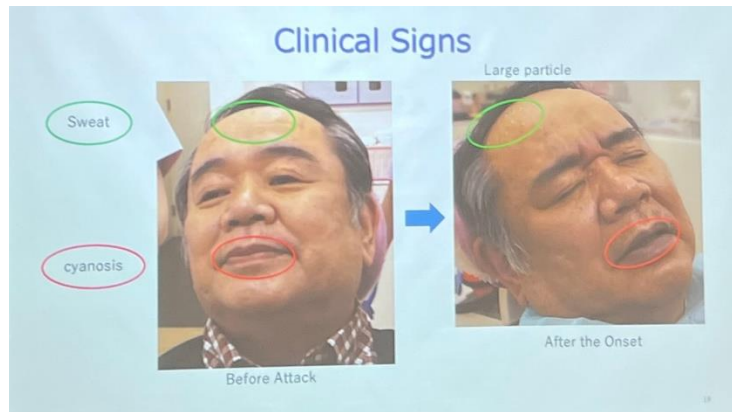
In the role of dentist, we should aware child abuse sign and symptoms.

Dental Anesthesiology- Educating Japanese dentist on medical emergencies

1. Ischemic heart disease



Clinical signs of ischemic heart disease



2. Acute local anesthetic toxicity

- Severe type: A convulsion attack occurs with tonic or clonic seizures repeated for alteration
- Mild type: The main symptoms are talking a lot, increased anxiety, facial spasms, an increase in heart rate and blood pressure, and tachypnea

3. Chocking:

- Give thrusts slightly above the belly button

Object is forced out or Person can breathe and make sounds or Person becomes unresponsive

- If the person stops responding
 - Shout for help
 - Phone to someone else phone 9-1-1 and get an AED. Put the phone on speaker mode so that you can talk to the dispatcher.
 - Provide CPR if needed, starting with compressions.
 - Look in the mouth. If you see an object in the mouth, take it out. Give 2 breath and then repeat 30 compressions.
 - Continue CPR until the person moves, blinks, or otherwise reacts

Someone with more advanced training arrives and takes over

4. Reproduce many histamine relating symptoms

After the local anesthetic injection, Many signs appear in sequence

1. Diarrhea
2. Itching
3. Soar throat
4. Cough
5. Rhinorrhea
6. Hypotension
7. Itching and flare of the whole body

5. Special advices in Cardio Pulmonary resuscitation: Phone calling and following the advice of EMT