

# Program and Abstracts

## The 15th Annual Meeting

Japan Association of Microscopic Dentistry

Period : April 20(Fri) · 21(Sat) · 22(Sun), 2018

Venue : Osaka University Convention Center

President : Kinomoto Yoshifumi

(Osaka Univ. Grad Sch of Dentistry, Kinomoto Dental Office)

Executive Committee Chair : Inamoto Takeshi

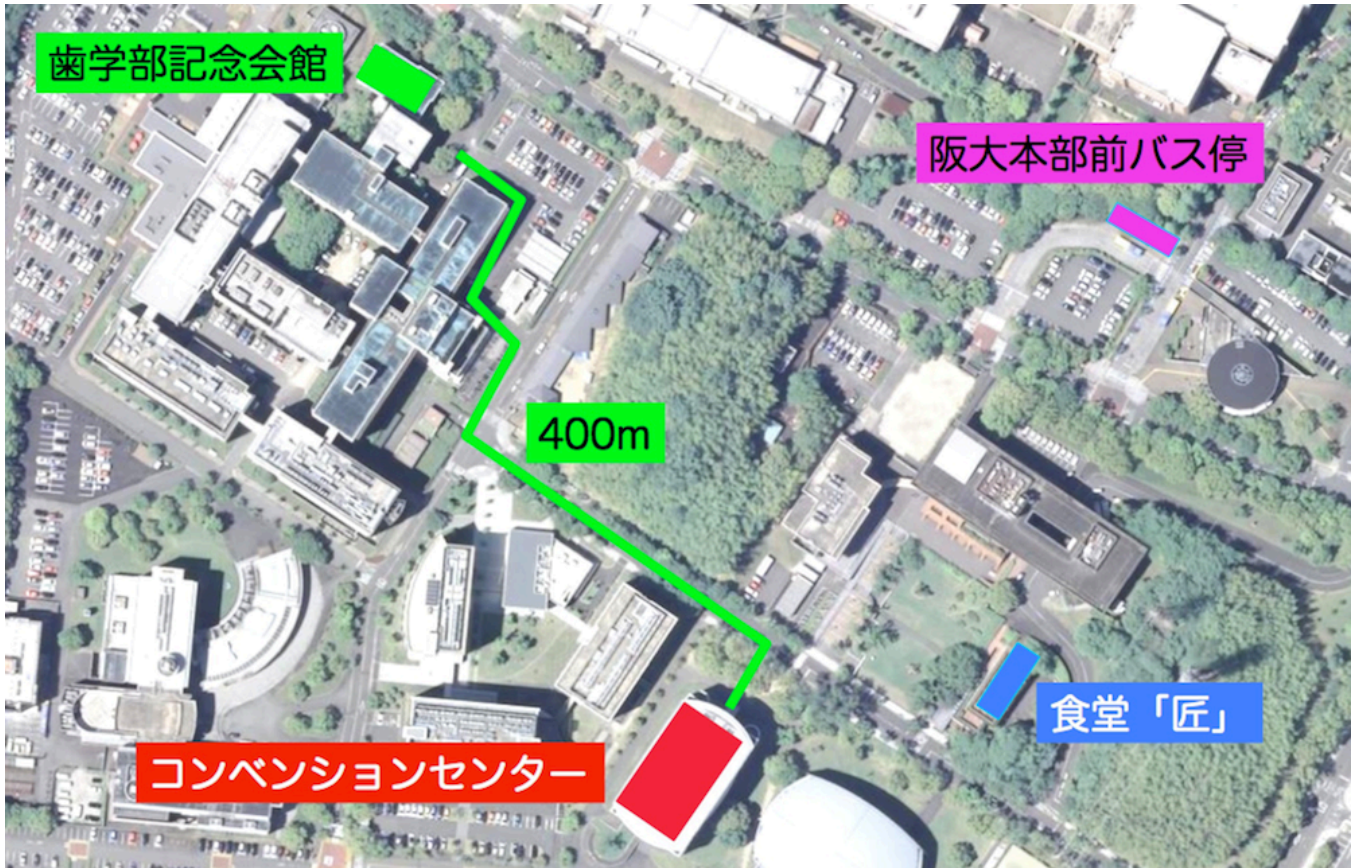
(Osaka Dental Univ.)

# Venue

## Osaka University Convention Center

### Osaka University Suita Campus





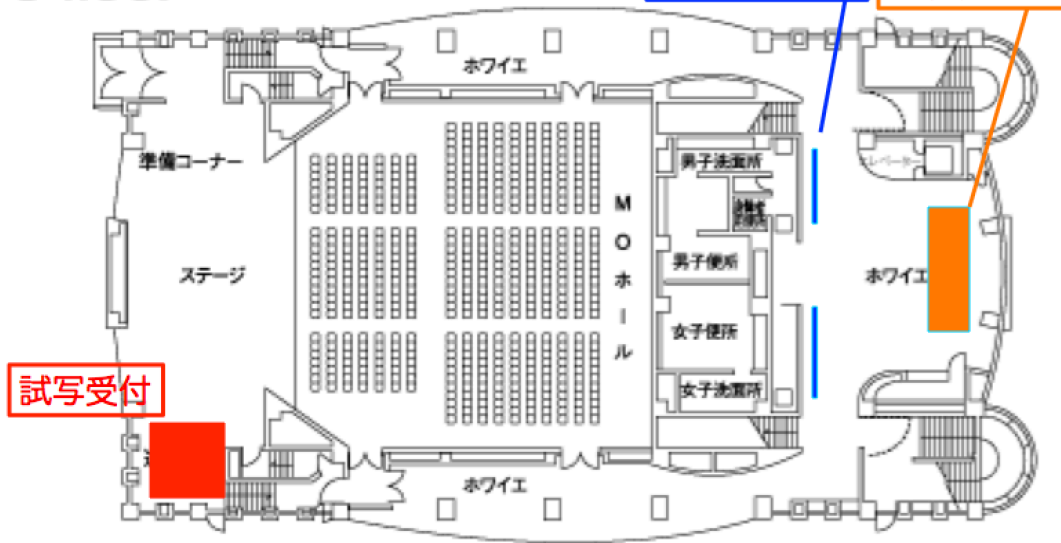
# Osaka University Convention Center

## 3 floor

3階は飲食禁止

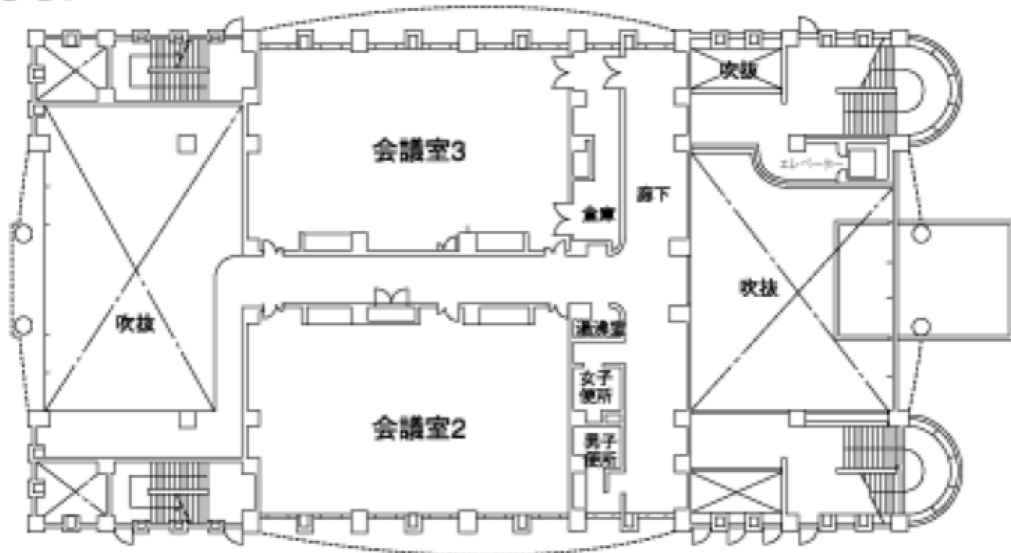
ポスター発表

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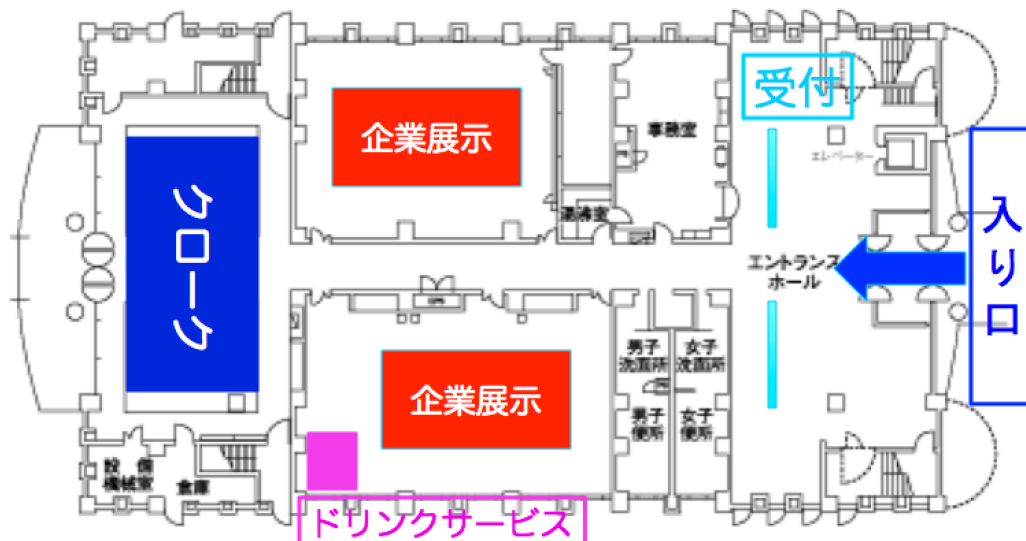


## 2 floor

サテライト会場・ランチョンセミナー・DHシンポジウム



## 1 floor



JAMD Osaka Time Table				April 21, 2018 (Sat)			
Time	Registration counter (4F Hall)	Main hall (3F MO hall)	B Room (2F Room2)	C Room (2F Room3)	Poster (3F Foyer)	1st Floor	1st Floor
8:30	Registration Desk Open						
9:00		Opening Ceremony			9:00~10:00 Poster Set-up		
		Keynote lecture					
10:00		9:50~10:50 Special Lecture Dr. Masaki Shimono 「Pathology of Wound Healing」	Satellite venue  Simultaneous broadcast video of MO Hall	Satellite venue  Simultaneous broadcast video of MO Hall			
11:00		11:00~12:00 Oral Presentation OP: 1~4 Presentation: 12min Discussion: 3min					
12:00							
			12:20~13:20 Luncheon Seminar1 Dr. Nobuyuki Ishii Dentsply Sirona	12:20~13:20 Luncheon Seminar2 Dr. Jun Kistuhashi & Dr. Yoshiaki Sakurai Carl Zeiss Meditec	10:00~16:30 Poster Display & Book fair	9:30~17:30 Commercial exhibition & Free Beverage service	9:30~17:30 Commercial exhibition
13:00							
14:00		13:30~16:30 Symposium 1 「Practical uses of microscopes during general dental treatment」	Satellite venue  Simultaneous broadcast video of MO Hall	Satellite venue  Simultaneous broadcast video of MO Hall			
15:00		CR restoration Vital pulp therapy non-surgical Endo surgical Endo Prosthodontics					
16:00							
17:00			16:30~17:30 Video editing consultation seminar		16:30~17:30 Poster Presentations & Book fair		

Complementary bus service from Convention Center to Senri Hankyu Hotel

Banquet Senri Hankyu Hotel 2F Senju-Room 19:00-20:30
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Simultaneous interpretation will be provided for presentations in the main hall.  
Japanese → English

JAMD Osaka Time Table				April 22, 2018 (Sun)			
Time	Registration counter (3F MO Hall)	Main hall (3F MO hall)	B Room (2F Room2)	C Room (2F Room3)	Poster (3F Foyer)	1st Floor	1st Floor
8:30	Registration Desk Open						
9:00		9:00~9:30 President Award Lecture					
10:00		9:30~11:30 Oral Presentation OP: 5~11 Presentation: 12min Discussion: 3min (OP 9~11: Presenters from Taiwan)	9:30~11:30 Hygienist Session [Cutting Edge of Hygiene Work with Dental Microscope]	Satellite venue Simultaneous broadcast video of MO Hall	9:00~12:00 Poster Display & Book fair		
11:00							
	School of Dentistry						
12:00	11:50~12:50 Luncheon Seminar5 Dr. Kanichi Nakagawa JAMD		11:50~12:50 Luncheon Seminar3 Dr. Tai Gega Morita	11:50~12:50 Luncheon Seminar4 Dr. Kotaro Nakata Mokuda Dental		9:00~15:00 Commercial exhibition & Free Beverage service	9:00~15:00 Commercial exhibition
13:00							
14:00		13:00~16:00 Symposium 2 [Practical uses of microscopes during general dental treatment 2]	Satellite venue Simultaneous broadcast video of MO Hall	Satellite venue Simultaneous broadcast video of MO Hall	9:00~15:00 Book fair		
	Registration Desk Close	non-surgical Perio surgical Perio Plastic Perio surgery Implant Oral surgery					
15:00							
16:00		16:00~ General Assembly & Award Ceremony & Closing Ceremony					
17:00							

Simultaneous interpretation will be provided for presentations in the main hall.  
Japanese → English

# Day 1 April 21 (Sat)

8:30 Reception Open (1<sup>st</sup> Floor)

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9:20~9:30 Opening Ceremony: (3<sup>rd</sup> MO Hall)

Yasuhisa Tsujimoto (President, JAMD)

Takeshi Inamoto (Executive Committee Chair)

9:30~9:50 Keynote lecture: (3<sup>rd</sup> MO Hall)

Yoshifumi Kinomoto (Congress President, Osaka)

9:50~10:50 Special Lecture: "Pathology of Wound Healing"

Masaki Shimono (Professor Emeritus at Ōkyo Dental College)

10:50~11:00 Break

11:00~12:00 Oral Presentation (3<sup>rd</sup> MO Hall)

11:00~11:15

OP-01 A study of microscope illumination system by spectral color illuminometer

Mitsuhiko Takata, Noriko Takahashi

Takata Dental Clinic

11:15~11:30

OP-02 Communication on pulp treatment

Daichi Miyajima<sup>1</sup>, Takenori Uto<sup>2</sup>, Takuro Fujino<sup>2</sup>

Diamond Dental clinic<sup>1</sup>, Yagasaki dental clinic<sup>2</sup>

11:30~11:45

OP-03 A case of apicoectomy using endodontic Microsurgery

Daisuke Yasuoka<sup>1</sup>, Ryosuke Fuchigami<sup>2</sup>

Yasuoka Dental Clinic<sup>1</sup>, Nishikita Fuchigami Dental Clinic<sup>2</sup>

11:45~12:00

OP-04 Management of the tissue bordering the implant

Akihiro Yamazaki

Yamazaki Dental Clinic

.....  
12:00~12:20 Break  
.....

12:20~13:20 Luncheon Seminar (2<sup>nd</sup> Room 2・3)

Luncheon Seminar 1 (Room 2)

Dentsply Sirona

"Next Generation Medical Device and Application of Big Data for Endodontics"

Nobuyuki Ishii (Kanagawa Dental University)

Luncheon Seminar 2 (Room 3)

Carl Zeiss Meditec

"If you purchase a dental microscope now, which do you select OPMI PROergo or EXTARO?"

Jun Mitsuhashi (Tokyo) , Yoshiaki Sakurai (Tokyo)

.....

13:20~13:30 Break

.....

13:30~16:30 Symposium 1 (3<sup>rd</sup> MO Hall)

「Practical uses of microscopes during general dental treatment 1」

Chair : Yasuhisa Tsujimoto, Jun Mitsuhashi

13:30~14:00 Composite Restoration :

"Direct Composite Resin Restorations using the Microscope"

Yoshihiro Sugawara (The Nippon Dental University, Niigata)

14:00~14:30 Vital Pulp Therapy:

"Pulp diagnosis by direct visual inspection under high magnification"

Hideyuki Izumi (Shiga)

14:30~15:00 Endodontics:

"Let's Like Micro-Endodontics"

Kenji Matsunaga (Ishikawa)

.....

15:00~15:15 Break

.....

15:15~15:45 Surgical Endodontics:

"Apical Microsurgery -start with anterior cases-"

Toshinori Tanaka (Tokyo)

15:45~16:15 Prosthodontics:

"Precision prosthetic treatment"

Minoru Kobayashi (Osaka)

16:15~16:30 Discussion



16:30~17:30 Poster Presentation (3<sup>rd</sup> Floor)

- PP-1 Outcomes of endodontic microsurgery for persistent apical periodontitis  
Takahiro Yamaguchi, Ogawa Masaru, Osumi Makiko, Suzuki Keisuke, Ike Yoshiko,  
Yokoo Satoshi  
Department of Oral and Maxillofacial Surgery, Plastic surgery, Gunma University Graduate  
School of Medicine
- PP-2 Analysis of Root and Root Canal Morphology of Mandibular Incisors in a Japanese  
Population  
Nakazawa Hiroataka<sup>1</sup>, Ken Wada<sup>1</sup>, Takahiro Watanabe<sup>1</sup>, Ryoko Fukuta<sup>1</sup>, Masato Izawa<sup>1</sup>,  
Chiaki Komine<sup>3</sup>, Yasuhisa Tsujimoto<sup>1,2</sup>  
Department of Endodontics, Nihon University School of Dentistry at Matsudo<sup>1</sup>,  
Research Institute of Oral Science, Nihon University School of Dentistry at Matsudo<sup>2</sup>,  
Department of Laboratory Medicine for Dentistry<sup>3</sup>
- PP-03 Minimally invasive tooth extraction using a microscope for post-TCPC/jaw bone radiation  
therapy (60 Gy) patients  
Keiichi Arimura, Yoshihiro Yamashita  
Division of Oral and Maxillofacial Surgery, Department of Medicine of Sensory and  
Motor Organs, Faculty of Medicine, University of Miyazaki
- PP-04 Effect of the microscope's blue light on the eyes  
Noriko Muto, Nobuyuki Tani-Ishii  
Department of Oral Interdisciplinary Medicine, Division of Pulp Biology, Kanagawa  
Dental University
- PP-05 Examination of access cavity using guide stents created with 3D printers  
Takenori Uto<sup>1</sup>, Takuro Fujino<sup>2</sup>, Daichi Miyajima<sup>3</sup>  
Med. Corp. Koumeikai Yagasaki Dental Clinic<sup>1</sup>, Hiro yokohama Dental<sup>2</sup>, Med. Corp.  
Diamond Dental Clinic<sup>3</sup>
- PP-06 The questionnaire for use of rubber dam to the member of Japan Association of Microscopic  
Dentistry  
Yoko Wada-Yoshida<sup>1</sup>, Makoto Suzuki<sup>1</sup>, Hiroshi Uemura<sup>2</sup>, Akira Mitsunashi<sup>3</sup>, Masahiro  
Koduka<sup>1</sup>, Masana Suzuki<sup>4</sup>, Takashi Ishii<sup>5</sup>, Itaru Yoshida<sup>6</sup>, Kazuo Kitamura<sup>5</sup>, Jun  
Mitsunashi<sup>7</sup>, Yasuhisa Tsujimoto<sup>1</sup>  
Department of Endodontics Nihon University School of Dentistry at Matsudo<sup>1</sup>, FirstTime  
Corp.<sup>2</sup>, KAMAKURA DENTAL CLINIC<sup>3</sup>, Suzuki Dental Office<sup>4</sup>, Division of General  
Dentistry, The Nippon Dental University Hospital at Tokyo<sup>5</sup>, Yoshida Dental Clinic. Dental

Maintenance Clinic<sup>6</sup>, Dental Mitsuhashi<sup>7</sup>

16:30~17:30 Book fair (3<sup>rd</sup> Floor)

16:30~17:30 Video Editing Seminar (2<sup>nd</sup> Room 2)

18:30~20:30 Welcome Party at Senri Hankyu Hotel

# Day 2 April 22 (Sun)

8:30 Reception Open (1<sup>st</sup> Floor)

9:00~9:30 The 14th Annual Meeting President's Award Lecture (3<sup>rd</sup> MO Hall)

**Picking up a broken file from root canal with magnetic force**

Takeshi Inamoto (Department of Endodontics, Osaka Dental University)

.....

9:30~11:30 Oral Presentation (3<sup>rd</sup> MO Hall)

Chair : Takashi Ishii (Division of General Dentistry, The Nippon Dental University Hospital at Tokyo)

9:30~9:45

OP-5 Caries removal using a novel sonic wave chip

Yasunobu Ino

E E Dental

9:45~10:00

OP-6 A study to minimize access cavity in endodontic treatment

Hiroki Isozaki

Isozaki Dental Clinic

10:00~10:15

OP-7 Analysis of root fracture and structure of root

Chiaki Miura <sup>1</sup>, Taira Kobayashi <sup>1</sup>, Takashi Miura <sup>2, 3</sup>, Satoshi Horihata <sup>4</sup>,

Yasuhisa Tsujimoto <sup>3</sup>

Department of Crown Bridge Prosthodontics ,Nihon University School of Dentistry at Matsudo <sup>1</sup>, Miura Dental Clinic <sup>2</sup>

Department of Endodontics, Nihon University School of Dentistry at Matsudo <sup>3</sup>,

Mathematical Sciences notation ,Nihon University School of Dentistry at Matsudo

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10:15~10:30 Break

Chair : Taira Kobayashi (Nihon University School of Dentistry at Matsudo)

10:30 ~10:45

OP-8 Fire in the hole! Root perforation treatment.

Dr. Yen Un Chen (Taiwan)

10:45 ~11:00

OP-9 Sinus lifting - mini window approach

Dr. Eason Chen (Taiwan)

11:00 ~11:30

OP-10 Microscope-assisted minimally invasive porcelain veneers, to match the color and shape of the full ceramic crowns, in smile designs.

Dr. Jung-Zen Syu (Taiwan)

9:30~11:30 Dental Hygienists Symposium (2<sup>nd</sup> Room 2)

「Cutting Edge of Hygiene Work with Dental Microscope」

Chair : Kan-ichi Nakagawa (White Dental Group Kumamoto), Masahiko Koduka (Nihon University School of Dentistry at Matsudo)

9:30-10:00 Highly Compelling Chair side Presentation Enabled by the Microscope in the Case of Early Periodontal Treatment

Noriko Takahashi (Takata Dental Clinic)

10:00-10:30 Strengthen trusted relationships between Patients and Dental hygienists through Dental Microscope Maintenance

Mami Ono (Kagami Dental Clinic)

.....

10:30-10:45 Break

.....

10:45-11:15 An inflammation which can be seen around implant through a microscope

Nami Katayama (Nakata Dental Clinic)

11:15-11:30 Discussion

.....

11:30~11:50 Break

.....

11:50~12:50 Luncheon Seminar (2nd Room 2・3)

Luncheon Seminar 3 (Room 2)

Morita

Brilliantly simple story about TriAutoZX2

Tai Gega (KIX DENTAL OFFICE)

Luncheon Seminar 4 (Room 3)

Mokuda Dental

Periodontal plastic Surgery in Extended field of vision

Kotaro Nakata (Nakata Dental Clinic)

Luncheon Seminar 5 (Osaka Univ. Dental School)

JAMD

Kan-ichi Nakagawa (White Dental Group Kumamoto)

.....  
12:50~13:00 Break  
.....

13:00~16:00 Symposium 2 (3<sup>rd</sup> MO Hall)

「Practical uses of microscopes during general dental treatment 2」

Chair : Masana Suzuki (Suzuki Dental Office), Itaru Yoshida (Yoshida Dental Clinic.  
Dental Maintenance Clinic)

13:00~13:30 Is operating microscope required for non-surgical periodontal treatment?  
As of 2018

Shu Abe (Heiwa Dental Clinic)

13:30~14:00 Efficacy of microsurgery in regenerative therapy  
Yoshikaki Katsube (Katsube Dental Clinic)

14:00~14:30 Reality of Periodontal Microsurgery  
Toshihisa Matsukawa (Matsukawa Dental Clinic)

.....  
14:30~14:45 Break  
.....

14:45~15:15 Microscope is Enhancing Implant Dentistry, Anytime, Anywhere, Anyone !  
Kiyotaka Shibahara (Shibahara Dental Clinic)

15:15~15:45 Introduction of endodontic microsurgery and treatment strategy for  
periapical lesions in Gunma University

Masaru Ogawa, Satoshi Yokoo

(Department of Oral and Maxillofacial Surgery, Plasticsurgery, Gunma  
University Graduate School of Medicine)

15:45~16:00 Discussion

.....  
16:00~16:45 Assembly Meeting, Closing Ceremony (3<sup>rd</sup> MO Hall)  
.....

# Keynote lecture

**Seeing is believing -百聞不如一見-**

**Yoshifumi Kinomoto**

Osaka Univ. Grad Sch of Dentistry, Kinomoto Dental Office

# Special Lecture

## “Pathology of Wound Healing”

Masaki Shimono

(Professor Emeritus at Tokyo Dental College)

Healing mechanisms after treatments of endodontics, periodontics and dental implant will be explained. The following clinical queries will be discussed; (1)Healing capability of dental pulp; (2)Relation between aggressive stimuli and reactionary dentinogenesis; (3)Possibility of regenerative endodontics (revascularization); (4)Significance of intended bleeding in revascularization; (5)Mechanism of hypersensitivity due to bruxism; (6)Domino theory; (7)Granulation tissue; (8)Epithelial attachment replacing into connective tissue attachment; (9)Clinical significance of long junctional epithelium; (10)Difference between wound healing (repair) and regeneration; (11)Destruction factors in periodontal tissue, trauma from occlusion or inflammation; (12) Application of 4-META resin in periodontal surgery; (13) Role of materials for bone defect replacement; (14)Difference between peri-implant tissue and periodontal tissue; (15)Bone defect of peri-implantitis; (16)Radiopacity in peri-implant bone.

D.D.S. degree, Tokyo Dental College (1970) : Research Fellow, Univ. Milan, Italy (1974) : Professor, Dept. Pathology, Tokyo Dental College (1991) : President, Pulp Biology Group, IADR (2000) : Councilor, FDI (2005) : Professor Emeritus, Tokyo Dental College (2011) : Awarded, Japanese Association for Dental Science (2012)

## Symposium

21 (Sat) : Symposium 1

22 (Sun) : Symposium 2  
DH Symposium



# Symposium 1-1 (Composite Restoration)

## "Direct Composite Resin Restorations using the Microscope"

**Yoshihiro Sugawara**  
**(The Nippon Dental University, Niigata)**

Microscopes have been widely used not only in endodontic and periodontal treatments but also in general dental treatments. Direct composite resin restorations are especially excellent for MI (minimal intervention) and esthetics. However, this restoration method highly depends on an operator's technique due to its difficulties. Thus, usage of the microscope is critical for magnification of visual fields. For instance, regarding anterior teeth, images can be accurately reproduced showing depth and surface appearances in addition to express the natural features of the teeth through microscopy. Moreover, the posterior teeth images can be produced with detailed pit fissure grooves and provide recovery of natural sensation and occlusion. In addition, the longevity of materials can be anticipated by restorative adaptation of the margin and reliable adjacent proximal contact. This presentation will introduce useful techniques for general clinical practices such as multilayered technique, cervical fillings, restoration of adjacent contacts, correspondence to subgingival caries and large cavities under microscopy. Also, this presentation will show the usefulness of microscopy for composite resin restorations.

Yoshihiro Sugawara DDS PhD

1991 Entered the Nippon Dental University, School of Dentistry at Niigata

1997 Graduated from the Nippon Dental University, School of Dentistry at Niigata

1997 Passed the National License of D.D.S (Japan).

2001 Received the Ph.D. (The Nippon Dental University)

2001 Assistant Professor of The Nippon Dental University Niigata Hospital

2004 Senior Assistant Professor of The Nippon Dental University Niigata Hospital

2014 Associate Professor of The Nippon Dental University Niigata Hospital

# Symposium 1-2 (Vital Pulp Therapy)

## **Pulp diagnosis by direct visual inspection under high magnification**

Hideyuki Izumi

Nishimoto Dental Clinic (Shiga)

The principle of pulp preservation is to diagnose reversible pulpitis and to prevent microleakage. To prevent microleakage, the operator's skill is the critical factor and using microscope also improves its accuracy. Although the difference in pulp capping materials makes less difference, the MTA would minimize technique sensitivity. With this background, pulp preservation has become accepted as a highly predictive way than ever. On the other hand, there seems to be no consensus on the diagnosis of exposed pulp. Although there are various opinions such as the hemostasis, the amount and time of bleeding, etc., these are based on low level of evidence. As far as my clinical experience, based on these criteria, the success rate of pulp preservation was 90% or more, but pulp necrosis could not be reduced to zero percent. However, several years ago, I noticed that the accuracy of diagnosis could be improved with a microscope, it can close to 100% success. Probably, cases that considered as pulp necrosis and could not be preserved had been diagnosed accurately.

Though the presentation time is limited, as much as possible, I will show you my diagnosis criteria for exposed pulp preservation under high magnification by microscope. Although this presentation will be based on the case report and evidence level is low, I hope that it will help to increase your success rate of pulp preservation.

2000-2004 Nihon University School of Dentistry at Matsudo Department of Prosthodontics

2004- Private Practice Nishimoto Dental Clinic

Co-author: Composite resin and Esthetic restorations (quintessence publishing). Initial treatment (Hyoron).

Author: Vital pulp therapy (In press) (quintessence publishing)

# Symposium 1-3 (Endodontics)

## Let's Like Micro-Endodontics

Kenji Matsunaga  
Ken Dental Clinic (Ishikawa)

Dental operating microscope as a part of treatment has become widely popular in Japan. For around 20 years this piece of equipment has been necessary in many dental treatment fields.

Today, microscopes are considered as an invaluable piece of equipment when starting a new dental business as evidenced by the increasing number of young dentists using it. However, just like in other forms of dental treatment, if the fundamental principles and rules of treatment under microscope are disregarded, it can bring about harmful consequences. In this symposium I would like to talk about the proper way to use a microscope which I have learned during the past 20 years as a dentist.

Some of the areas I will cover including; Key points before using the microscope, Key points while using the microscope, Training methods from a GP's perspective, Key points for the smooth introduction to general dentistry and Clinical advice.

Graduated from Osaka Dental University

# Symposium 1-4 (Surgical Endodontics)

## Apical Microsurgery -start with anterior cases-

Toshinori Tanaka  
Kawakatsu Dental Clinic (Tokyo)

Numbers of research and article revealed that bacteria and by-products cause apical periodontitis. To get rid of them, endodontic treatment is usually performed using chemomechanical preparation. Even though clinician uses current techniques and instruments/materials, intraradicular infection might remain at anatomical irregularity such as isthmus, fin, apical delta and ramification. Also, extraradicular infection will develop as a biofilm and cause a persistent condition, which does not heal with usual orthograde root canal treatment. According to the complexity of root canal and histopathological evaluation, it is clear that apical periodontitis have to deal with non-surgical and/or surgical intervention.

Surgical root canal treatment is also called as "apicoectomy", which is sometimes thought that is performed by oral surgeons and not as an endodontic field. This term might cause misunderstanding as "only resect the root and remove with granulation tissue or cyst, following the meaning of apico-ectomy", lacking of retrograde approach. Currently, surgical root canal treatment is called as "root-end surgery", including "root-end resection" to remove apical 3mm of the root perpendicularly, "root-end preparation" with ultrasonic to remove gutta-percha and remaining infected area, and "root-end filling" with biocompatible or bioactive material. Each step has biological meaning. Since persistent apical periodontitis do have a reason for unhealed, and periapical radiolucency in such case is showing not as focal infection but as lesion, endodontic knowledge and care is necessary when you consider surgical intervention.

This presentation will focus on root-end surgery under the microscope in anterior case. Because of the accessibility, anterior case is good to build up clinician's skill. At conclusion, participants will be able to:

- Describe anatomical and histopathological aspects of apical periodontitis.
- Discuss treatment procedure of root-end surgery in anterior teeth.
- Discuss armamentarium for apical microsurgery and consideration during root-end surgery.

If the patient accepts tooth extraction, we can remove infected area clearly. But in anterior case, following prosthodontic treatment sometimes has difficulty to achieve patient's esthetic satisfaction. Surgical root canal treatment with microscope can create higher value in dentistry.

2001: Tohoku University School of Dentistry, 2010: Division of Endodontics, Columbia University College of Dental Medicine

# Symposium 1-5 (Prosthodontics)

## Precision prosthetic treatment

Minoru Kobayashi

Kobayashi Dental Clinic (Osaka)

In prosthetic treatments, the finish line must be set below the gingival margin for aesthetic procedures, which requires extreme precision. In abutment tooth preparation, a smooth finish line below the gingival margin needs to be created to prevent damage to the periodontium. When making an impression, the material must be injected so bubbles do not enter the gingival sulcus. During setting, excess cement remaining below the gingival margin must be completely removed without damaging the periodontium. There are major advantages to being able to magnify this series of procedures, and using a microscope for this is beneficial. However, when preparing abutment teeth, if the principles and basic techniques are not followed, the desired result will not be obtained. If excessive precedence is given to removing the microscope, and treatment is performed with the wrong positioning, grip, or rest, microscopic treatment could instead be a considerable burden. I would like to discuss areas to be careful of, equipment, and other pointers for prosthetic therapy, which may serve as a reference when introducing the microscope in clinical practice.

Graduated from Osaka Dental University

## Symposium 2-1 (Periodontics Non-surgical)

Is operating microscope required for non-surgical periodontal treatment?  
As of 2018

Shu Abe  
Heiwa Dental Clinic (Tokyo)

The operating microscope in the endodontics is already recognized as required therapeutic apparatus. However, how is it in the periodontics?

Periodontics and the relations to the operating microscope, there were some reports about periodontal plastic surgery in the latter half of 1990's, but they were not research papers. Many of them were the case reports which showed the effect of precise periodontal surgical operation by the magnification.

There are few articles on non-surgical periodontal treatment. Some dentists reported the effectiveness of the operating microscope to the dental treatment of all fields including the periodontics, and they commented that the use of it enhances the capability in determining anatomical structures and enables precise manipulation of the scaler tip. But there were hardly exist as research papers, and it was not discussed as well.

The popularity of the operating microscope is increasing, and it is thought that many dentists and dental hygienists seem to realize the efficacy of the operating microscope in the non-surgical periodontal treatment now. In fact, there are some of the periodontists who utilize the operating microscope to periodontics, but a lot of specialists who regard it unnecessary still remain high. Will this recognition change from now on?

Today, it passed approximately 20 years from the initial report that showed the efficacy of the operating microscope to surgical periodontal treatment. As of 2018, how clear would the operating microscope and the relations of the periodontal treatment? I try to think about how non-surgical periodontal treatment and the use of the operating microscope are recognized in dentistry at this moment by based on evidence currently available.

Tokyo Dental College, Tokyo, Japan 1995 Apr - 2000 Mar DDS

Graduate School, Tokyo Dental College, Tokyo, Japan 2002 Apr - 2006 Mar Ph.D in Microbiology

The Institute of Medical Science, The University of Tokyo, Tokyo, Japan 2006 Apr – 2008 Mar

Visiting Researcher in Division of Stem Cell Engineering

Heiwa Dental Clinic, Tokyo, Japan 2008 - Private Practice

## Symposium 2-2 (Periodontics Surgical)

### **Efficacy of microsurgery in regenerative therapy**

Yoshiaki Katsube  
Katsube Dental Clinic (Osaka)

Recently, the use of dental microscopes in periodontal plastic surgery has been reported to reduce invasiveness and improve aesthetics. However, everyday clinical practice usually does not stop at removing undesirable surrounding tissue, but involves resective therapies that remove everything, including healthy periodontal tissue. Regenerative therapy is still seen by patients as a highly invasive form of surgery; therefore, the key to success in regenerative therapy is to perform precise and minimally invasive dissections, as well as thoroughly remove inferior tissue. Microsurgery, which uses a microscope to enlarge the field of view, can be an effective means of achieving these goals. I would like to report the results of minimally invasive periodontal surgery using a dental microscope and discuss the efficacy of therapies for periodontal disease that use dental microscopes, based on cases in which positive outcomes were achieved.

1997.3 Graduated from Meikai Dental College



# Symposium 2-3 (Plastic Perio-surgery)

## Reality of Periodontal Microsurgery

Toshihisa Matsukawa  
Matsukawa Dental Clinic (Nara)

Recently, as periodontal therapy has demanded increased levels of precision, attention has been given to therapies performed under a microscope. Microscopic procedures, such as collection of palatal side connective tissue or suturing, may cause less pain and heal faster. The prognoses of such treatments are good and less surgically invasive. Here, I discuss plastic surgery cases, mainly those involving connective tissue grafts (CTG).

1990 年 Graduated from Osaka Dental University

## Symposium 2-4 (Implant)

### Microscope is Enhancing Implant Dentistry, Anytime, Anywhere,

Kiyotaka Shibahara  
Shibahara Dental Clinic (Fukuoka)

Operative microscope have been utilized in endodontic treatment in the field of dentistry. However, few reports of the microscope in implant dentistry have been published. My daily dental practices have been occupied by dental implant treatment, and operative microscope was utilized based on the following concept:

“ANYTIME”; From the diagnosis to the surgery and prosthesis, maintenance and trouble shooting, all the procedure of implant treatment have been performed under microscopic working view, not the magnifying view of loupes. With the two concepts of bone argumentation technique in implant dentistry, smart implant concept and from the bottle concept, the accuracies of procedure for autogenous bone harvesting and membrane setting and the clinical success may have been possibly enhanced by microscope. Furthermore, the crestal approach and the lateral approach in maxillary sinus bone augmentation, which have been necessary in treatment of the posterior maxilla, could be also performed in microscopic view. However, the usefulness of microscope in the crestal approach have been a common knowledge because of the reports by several clinician, the minimal invasive lateral approach case was reported in the journal of MICRO by my idea of the very usefulness of microscope. The selection of armamentarium utilized easily by surgeon in microscopic implant treatment have the significant importance.

“ANYWHERE”; The environment of surgery has a huge effect on clinical result by surgeons. When the same type of their microscope could be available under the situation that only the diopter correction, interpupillary adjustment, joint fitting were performed, we could performed the same operation with the same quality as their operation room in other dental chair, or in other dental office. This factor is a significant merit in implant treatment. The Documentation of the microscopic sight and the contents of treatment without the operator’s hands might have been proved useful, and this ability could be the primary evidence that the microscope is the essential medical device. Paying a great attention for the patients’ individual data, the microscopic documentation could be browsed effectively in anywhere for not only self-searching but also education of young doctors. It might be said that the operative microscope can be the cockpit provoking faraway us to anywhere the unseen clinical skill.

“ANYONE”: The positioning of the microscopic could be a great wall when microscopes have been utilized in daily dental practices, and that could be consider to be a great clinical

merit later. When the ideal posture was constructed, anyone can use the microscope with working view all the procedure in daily practice, if they could break through “the microscopic wall”. However the educations of clinical usage of microscope have been said to be Hundred Schools of Thought, the all students was able to use the microscope without exception.

I hope my lecture bring the all audience the passion to use the microscope in all daily dental practices.

2000 Graduated School of Dentistry, Nagasaki University. 2000-2002 Resident of Oral & Maxillofacial Surgery, Saga Medical School. 2006 Graduated Nagasaki University Graduate School of Biomedical Science. 2009 Tateyama Dental Clinic. 2010 Kato Dental Clinic. 2014 Director of Shibahara Dental Clinic and Dazaifu Institute of Clinical Implantology.

# Symposium 2-5 (Oral Surgery)

## Introduction of endodontic microsurgery and treatment strategy for periapical lesions in Gunma University

Masaru Ogawa, Satoshi Yokoo

Department of Oral and Maxillofacial Surgery, Plastic surgery,  
Gunma University Graduate School of Medicine

When treating radicular cysts or intractable apical periodontitis, it is important to completely remove the lesion and securely treat the causative tooth. In surgical therapy for radicular cysts, the Parnis II method is generally used, which involves completely removing the cyst and closing the surgical wound. Depending on the case, other options may include the Parnis I method, which involves fenestration of the cyst, creating an accessory cavity in the oral cavity, and unifying the cyst epithelium and oral mucosal epithelium, or the modified Parnis method (packed open method), which involves leaving the wound open after completely removing the cyst. Apicoectomy is often combined to treat the causative tooth; therefore, improving the outcomes of this is extremely important. Recently, endodontic microsurgery using a microscope has dramatically improved outcomes of apicoectomy. However, many university hospital oral surgery departments and hospital dental-oral surgery departments have still not introduced microsurgeries and continue to perform macroscopic apicoectomy.

Since 2007, the department of dental-oral-mandibulofacial surgery at Gunma University Hospital has used microscopes in all apicoectomy cases. We have performed endodontic microsurgery on 240 cases so far. Based on an overall assessment that combines clinical and radiographic assessments, we have achieved an extremely good success rate of 92.2%. At this symposium, I would like to describe the process our university hospital oral surgery department went through to introduce microscopes, our preparations and modifications to ensure the use of microscopes goes smoothly in the operating room, and our treatment strategies and outcomes.

Efficacy of microsurgery in regenerative therapy: Dr. Katsube

Recently, the use of dental microscopes in periodontal plastic surgery has been reported to reduce invasiveness and improve aesthetics. However, everyday clinical practice usually does not stop at removing undesirable surrounding tissue, but involves resective therapies that remove everything, including healthy periodontal tissue. Regenerative therapy is still

seen by patients as a highly invasive form of surgery; therefore, the key to success in regenerative therapy is to perform precise and minimally invasive dissections, as well as thoroughly remove inferior tissue. Microsurgery, which uses a microscope to enlarge the field of view, can be an effective means of achieving these goals. I would like to report the results of minimally invasive periodontal surgery using a dental microscope and discuss the efficacy of therapies for periodontal disease that use dental microscopes, based on cases in which positive outcomes were achieved.

# DH Symposium 1

## Highly Compelling Chair side Presentation Enabled by the Microscope in the Case of Early Periodontal Treatment

Noriko Takahashi  
Takata Dental Clinic (Hyogo)

Sales of microscopes in Japan are continuing to increase year after year. In addition to dentists implementing them, more dental hygienists are using microscopes as well. A case in point, our clinic adopted a microscope for dental hygienists about two years ago, they use it for their daily practice.

A major advantage of microscopy is that the technique allows recordings of magnified views seen by the surgeon, which can then be shared in the form of image data with patients and other dentists. Microscopy differs greatly from the conventional approach to early periodontal treatment, the theme of this study, because it offers the ability to demonstrate information on the periodontal pocket that could not be displayed without microscope.

Generally speaking, in early periodontal treatment, patients are often given an explanation of periodontitis using models, illustrations, photos of the oral cavity, and radiography images before undergoing procedures. After procedures, patients are shown calculus fragments that were removed and briefed about the content of the treatment. Therefore, because the amount of information that could be imparted in conventional practice was limited, patients were unable to thoroughly understand treatment and, in our experience, some even ceased visiting the dentist altogether during the treatment period.

However, microscopy enables an approach that differs from conventional practice. With microscopy, features such as calculus in periodontal pockets, cementum abrasion, fractures, and plaque can be viewed at a maximum magnification of 20 $\times$  and recorded in their actual condition within the oral cavity. This information can then be given to patients to increase their motivation before procedures and describe changes after procedures. In the case of refractory periodontal pockets left untreated due to unavoidable circumstances, image data can be shared among patients and dentists to discuss causes and transition smoothly to risk management.

As such, early periodontal treatment that employs image data obtained through microscopy can reduce the time spent on verbal explanations by enhancing the level of comprehension among patients. Our clinic has witnessed how realistic visual information irreproducible by illustrations or models resonates in the minds of patients and generates positive reactions. The present study describes important points to be considered when applying an understanding of the unique perspective of microscopy to early periodontal treatment, methods for pre- and post-procedure inspections, ways for producing high-quality

recordings during tests and procedures that use various instruments, and methods for presenting images to patients.

## DH Symposium 2

### **Strengthen trusted relationships between Patients and Dental hygienists through Dental Microscope Maintenance**

Mami Ono

Kagami Dental Clinic (Osaka)

Maintenance using microscope gives various advantages to both dental hygienists and patients. Especially, the periodontal pocket irrigation with ultrasonic scaler under microscope has brought a great success to long-term maintenance of periodical disease patients.

In this presentation, I am going to introduce the way of building trust with patients using microscope data as well.

March,1992

Graduation from Taisei Gakuin University Dental hygienist College October, 2000

Entry to Kagami Dental Clinic, June,2015

Taking out a license for Dental hygienist Instructor in the Academy of Clinical Dentistry, February ,2016

Establishment of study group 『MDH』 for Dental Hygienists using microscope, January,2017

Taking out a license for Certified Dental Hygienist in Japan Association of Microscopic Dentistry



## DH Symposium 3

### **An inflammation which can be seen around implant through a microscope**

Nami Katayama  
Nakata Dental Clinic (Kyoto)

Implant therapy has become widespread in recent years, and the number of implants to be implanted in Japan is also steadily increasing. Implant maintenance is very important due to its close-up, we are working with day-to-day trial and error to introduce a new field of dental research. Unfortunately, the inflammation of the surrounding tissue of the implant is on the upward trend. In implant maintenance, it is necessary to find a trouble at the stage of the recurrent lesion, the circumferential mucositis, and treat before progresses. By using the microscope, it is possible to visually check the lesion areas not only by the sense of the fingertip. I hope this presentation tells everyone the usefulness of the microscope in implant maintenance.

# The 14th Annual Meeting President's Award Lecture

## Picking up a broken file from root canal with magnetic force

Takeshi Inamoto

Department of Endodontics, Osaka Dental University

It is well known that the combined usage of microscope and ultrasonic equipment is effective to remove separated files from root canals. Furthermore, the use of loop or instant adhesive are effective, too. On the other hand, many dentists may use tweezers to pick up a separated file from the floor of pulp chamber. But the gripping force of tweezers is a little weak, so that additional retention power is needed. Therefore we have used the magnetic force for picking up the separated files on the floor of pulp chamber. We are pleasant to use this magnetic force technique which is very simple and easy.

1992 Osaka Dental University

1998 Graduate School of Osaka Dental Univ.

Japan Association of Microscopic Dentistry

Japan Endodontic Association

The Japanese Society of Conservative Dentistry

## Luncheon Seminar

21 (Sat) : 1, 2

22 (Sun) : 3, 4, 5

# Luncheon Seminar 1

Dentsply Sirona

## Next Generation Medical Device and Application of Big Data for Endodontics

Nobuyuki Tani-Ishii

Department of Pulp Biology and Endodontics, Kanagawa Dental University

The development of dental equipment for Endodontics is remarkable, 3D ENDO released in Europe in 2017 imported the CT image of the tooth to be treated into the PC, and from the preoperative image information. It is software that can finish Endodontic therapy according to a program corresponding to root canal formation on the PC screen after root canal length measurement and selection of an appropriate Ni - Ti file. Meanwhile, in 2017, the X-Smart IQ released in Japan was positioned as a next-generation platform for endodontic therapy with a cordless hand piece using iPad mini, which has the function of forming Ni - Ti file root canal. Both dentist and patients of X-Smart IQ will share diagnostic information on treatment target teeth, selection of treatment policy, and dental information as big data, and establish a system that enables smooth progress of endodontic therapy from the establishment of informed consent I am getting. X - Smart iQ can also be applied as an educational effect by digitizing the load burden of Ni - Ti file by digitizing the file durability and treatment precision. In this presentation, I will introduce the features and developments of the Ni - Ti file system connected to iPad mini.

1983 Graduated from Kanagawa Dental University

1992 Dept. of Immunology , Forsythe Dental Center, Boston

2007 Professor ,Kanagawa Dental University

Vice Chairman of Japan Microscopic Dental Society,

Vice Chairman of Japan Endodontic Society Association

Director of DUBOIS Dental Laboratory

# Luncheon Seminar 2

Carl Zeiss Meditec

**If you purchase a dental microscope now,  
which do you select OPMI PROergo or EXTARO?**

Jun Mitsuhashi<sup>1</sup>, Yoshiaki Sakurai<sup>2</sup>

DENTAL Mitsuhashi<sup>1</sup>, NEXT DENTAL<sup>2</sup>

Carl Zeiss Meditec currently has 3 types of dental microscopes, OPMI pico as a basic model, OPMI PROergo as a high-end, and EXTARO 300 as a new model recently launched.

OPMI pico is recognized as the benchmark of dental microscopes and widely used not only in Japan but also worldwide. OPMI PROergo reigns as top-level microscopes for many years. EXTARO 300 appeared last year and was joined the product lineup as a standard model of next generation microscope. In fact, the advent of EXTARO 300 attracted tremendous interest among dentists.

EXTARO 300 is designed by the concept of single-hand operation fully utilizing MORA interface and varioscope for uninterrupted workflow. Moreover it is the world's first dental microscope applied the latest technologies such as Light-boost LED, True Light Mode&No Glare Mode, Fluorescence Mode, and integrated HD camera with WiFi connection. EXTARO 300 represents the next generation microscope advancing what is possible in modern dental treatment.

In this seminar we will show you the ability of both microscopes through our presentation and hands-on. Then our question is, which do you select EXTARO 300, next generation standard model or OPMI PROergo, long-standing flagship model?

Jun Mitsuhashi

Graduated from Niigata University, Faculty of Dentistry in 1989

Started to work in Mitsuhashi Dental clinic in Niigata-city from 1992

Started to work in Araki Dental clinic in Tokyo from 1998

Has run private practice in Setagaya, Tokyo since 2000

Vice-president of Japan Association of Microscopic Dentistry (JAMD) since 2008

Certified specialist and instructor of JAMD

Authorized instructor for dental microscope of Carl Zeiss Meditec Japan

# Luncheon Seminar 3

**Morita**

## **Brilliantly simple story about TriAutoZX2**

Tai Gega

KIX DENTAL OFFICE

Good things come to those who wait: Last year, Morita presented new TriAuto ZX2 in a modern and innovative design. As successor of the cordless endodontic motor with integrated apex locator, TriAuto ZX, it continues to be the only endodontic system on the market which combines both functions in one handpiece.

With its easy, intuitive operation and automatic functions, it is a guarantee at all times for absolutely reliable and safe results. The safety functions Optimum Torque Reverse (OTR) and Optimum Glide Path (OGP) are new features. OGP simplifies glide path creation for the practitioner. And OTR protects against file breakage and microcracks by automatically reversing the rotational direction when the torque level is exceeded. This is how TriAuto ZX2 protects the natural tooth substance and makes the treatment even more efficient.

2004 Graduated from Osaka Dental University

2016 KIX DENTAL OFFICE

# Luncheon Seminar 4

**Mokuda Dental**

## **Periodontal plastic Surgery in Extended field of vision**

Kotaro Nakata

Nakata Dental Clinic

A beautiful smile has become a significant element of dental esthetics in many western countries. The Japanese market soon follows and demand for dental beauty increases. Dental esthetics are recognized as one of the essential elements of a beautiful smile. As a result, dental clinicians have started developing new techniques to provide even better esthetic results for their clients. Especially, one of these innovative techniques makes it possible to not only restore the teeth but also surrounding soft tissue. This has positively influenced the developments of periodontal plastic surgery which is currently a hot topic. Also, periodontal plastic surgery provides massive improvements on morphological and anatomical environments which enhance the possibility of long lasting natural teeth and implants.

Moreover, periodontal plastic microsurgery is attracted much attention lately. The detailed handling by using a microscope affords higher success rates and gratifying results. To achieve so, we need a microscope, thinner sutures, and dedicated micro instruments.

In this lecture, I will present how the periodontal plastic surgery contribute the better prognosis and esthetic results on natural teeth and implants. Also, this lecture shows the differences between the latest periodontal plastic surgery under a magnified view and ordinally surgery under naked eyes according to my clinical cases. Additionally, I would like to introduce innovative instruments which I selected for periodontal plastic microsurgery and I recommend to everyone who is thinking to work on a full-scale in this filed.

1984-1990 Kyushu Dental University, Fukuoka, Japan, D. D. S

2005 ITI Member

2011- Okayama University Hospital, Okayama, Japan, Senior Instructor in Clinical Fellowship Program of Oral Implantology

2013- Board Certified Specialist/Instructor of Japan Association of Microscopic Dentistry

2014- Board Certified Specialist of Japanese Academy of Clinical Periodontology

2017 ITI Fellow

# Luncheon Seminar 5

JAMD

Kan-ishi Nakagawa

JAMD



# Oral Presentation

OP 1 – 10

21 (Sat) : 1 – 4

22 (Sun) : 5 – 10

**A study of microscope illumination system by spectral color illuminometer**

**Mitsuhiko Takata, Noriko Takahashi**

**Takata Dental Clinic**

It is well known that colors of objects look different depending on different types of microscope illumination systems. If the microscope has a halogen illumination system, objects appear yellow, and in a xenon illumination system objects appear blue colored. The colors vary according to different color temperatures of the light source. Today, we would like to discuss the property of illumination systems other than color temperature. When you use a LED illumination system, you may feel something does not look right. Although LED illumination is brighter than halogen and its color temperature is similar to sunlight, dentinal transparent degree or pulp color can look unnatural. Color rendering index explains this situation. It is generally known that illuminance and color rendering indexes are used in addition to the color temperature when evaluating, for example, indoor lighting equipment. We measured the color temperature, illuminance, and color rendering index of the illumination systems used in the surgical microscope from various manufacturers with the spectral color illuminometer (Spectro-Master C-700 Sekonik). Here we would like to report the results of these measurements.

**Communication on pulp treatment**

**Daichi Miyajima 1 , Takenori Uto 2 , Takuro Fujino 2**

**Diamond Dental clinic 1 , Yagasaki dental clinic 2**

We had some cases where our treatment was unsatisfactory due to lack of experience. I would like to introduce our cases of vital pulp therapy with Mineral Trioxide Aggregate (MTA) where the therapy did not work reliably. Is it still possible for MTA to be a perfect material for preserving a patient's nerve?

Vital pulp therapy with MTA was performed in 107 vital permanent teeth with pulpal exposure during removal of tooth decay. The three failed cases resulted from a preoperative misdiagnosis and an incomplete removal of infection. In this session, by analyzing the three failed cases, appropriate and safe indication for MTA use will be reviewed.

**A case of apicoectomy using endodontic Microsurgery**

**Daisuke Yasuoka 1 , Ryosuke Fuchigami 2**

**Yasuoka Dental Clinic 1 , Nishikita Fuchigami Dental Clinic 2**

When root canal therapy cannot be performed from the coronal side, it is performed from the apical side, which is an indication for endodontic surgical therapy. When performing an apicoectomy, endodontic microsurgery using a dental stereomicroscope can be a more predictable treatment than conventional methods. Moreover, there have been reports of lesions outside the apical foramen, overflow of root canal filling, and bacteria or biofilms on tooth surfaces and other areas. Therefore, sources of infection that root canal therapy cannot remove are also indicated for endodontic surgical therapy. This case involved a 20-year-old man examined for discomfort at our hospital. He presented with 2 affected teeth on the upper-left, with an apical lesion that spread to the maxillary premolar area. Preoperative root canal therapy was performed, but because of an immature root, the root canal filling overflowed from the root apex. Postoperatively, his symptoms did not improve, which we believe was due to a biofilm on the surface of the root canal filling. Therefore, an apicoectomy was performed for the apical lesion.

## Management of the tissue bordering the implant

Akihiro Yamazaki

Yamazaki Dental Clinic

**【Introduction】** Microsurgery is often performed to improve the aesthetics during restorative treatment of natural teeth. Even for natural teeth, periodontal plastic surgery to improve the appearance in the esthetically-important area is not easy. However, it is even more difficult to improve the aesthetics and increase the soft tissue surrounding the implant. Natural teeth receive blood supply from the gingiva, and the alveolar bone and periodontal ligament are present; in contrast, the periodontal ligament is missing at the implant site and blood flow is insufficient. Guided bone regeneration (GBR) is an indispensable procedure for implant treatment in cases of severe bone defects; soft tissue management in the implant area is also necessary to obtain satisfactory aesthetic results. Moreover, thickness of gingiva is essential to increase the vertical height of soft tissue around implants. To accomplish these goals, a strategic plan for treatment is needed. In this case, we report gradually increasing hard tissues and soft tissues around the implant to achieve a satisfactory functional and aesthetic outcome.

**【Case summary】** The patient was a 45-year-old woman who had lost the maxillary anterior teeth due to trauma in the past. She was using a partial denture for a long time. A hinge tooth was fractured. The alveolar bone in the area of the defect showed large absorption, both horizontally and vertically. The patient was hoping to repair the defect using an implant and additionally wanted an aesthetic restoration of the area. The implant was inserted in the alveolar bone using GBR with bone prosthetic material and nonabsorbent membrane to increase alveolar bone horizontally. At the time of the second operation, connective tissues collected from the palate were positioned on the labial side of implants while keeping blood supply by the pedicle flap, and the soft tissue was horizontally increased. After the condition of the area improved, connective tissues collected from the palate were transplanted around the implant using a microscope, and the soft tissue was vertically increased. Soft tissue completely healed after 3 months and the final restoration of the implants was accomplished.

**【Consideration】** It is difficult to aesthetically complete anterior implant treatment in the presence of severe bone resorption. It is particularly difficult to increase the soft tissue vertically. In this case, we were able to perform step-up increases of hard and soft tissue and obtain satisfactory results. This patient was using partial denture for many years and she feel in the complex; however, she was very satisfied both with the functional and aesthetic outcome of the treatment.

**Caries removal using a novel sonic wave chip**

**Yasunobu Ino**

**E E Dental**

Introduction: MI therapy is now possible with microscopic therapy. However, rotating cutting devices cannot reach some places, resulting in the sacrifice of large amounts of dentin. Distal molar surfaces in particular are often difficult to treat. In 2015, The Japan Association of Microscopic Dentistry published a report on a therapy for caries removal on distal molar surfaces using a sonic wave chip. However, KaVo Dental Systems Japan stopped selling this chip. In April 2018, Nishikibe released the EENO Flat (Air Scaler) with a chip shape that resembles KaVo's product. Here, we present 2 cases of caries we surmised would be difficult to treat using a rotating cutting device, in which we used the EENO Flat with a microscope.

Summary: Even if a field of view can be secured with a microscope, conventional rotating cutting devices are limited in the directions that they can cut. A more convenient shape was thought to be needed, but MI therapy is now possible using a back-action type of sonic chip.

**A study to minimize access cavity in endodontic treatment**

**Hiroki Isozaki**

**Isozaki Dental Clinic**

Microscopes have been used for root canal treatments for more than 20 years. This greatly contributed to the dramatic improvement in healing rate, but it is not yet perfect. Tooth fracture is the biggest problem following root canal treatment. The surplus elimination of the tissue is the overwhelming cause of this problem. The root canal treatment done with minimal tissue elimination is desirable to avoid teeth fracture.

I would like to show an example of cavity opening that kept tissue elimination at the minimum in root canal treatment performed at my clinic and to consider effective root canal treatment in prevention of teeth fracture.

## **Analysis of root fracture and structure of root**

Chiaki Miura 1, Taira Kobayashi 1, Takashi Miura 2, 3, Satoshi Horihata 4,  
Yasuhisa Tsujimoto 3

**Department of Crown Bridge Prothodontics ,Nihon University School of Dentistry at Matsudo 1, Miura Dental Clinic 2, Department of Endodontics, Nihon University School of Dentistry at Matsudo 3, Mathematical Sciencesnotation ,Nihon University School of Dentistry at Matsudo**

Dental fractures are commonly encountered in everyday clinical surgeries. Each type of fracture displays a particular tendency in its direction. For instance, in case of root fractures, bicuspid fractures are observed towards buccal lingual side, while molar teeth crack in the mid-distal direction. Microscopic examination of fractures is one of the reliable sources in dental treatment.

The main causes of root fractures are thought to be iatrogenic invasion while in treatment, harmful occlusion and congenital genetic reasons. Ellis classification categorizes the fractures by their depth; however, we lack a system to classify fractures by their direction. Therefore, directional tendencies of root fractures we mentioned are empirical and based on our own experimental and clinical experiences. We report here the results of our studies and our conclusions, based on the hypothesis that directional tendencies of root fractures could be stochastically explained based on their anatomical locations.

We established the existence of two patterns: one pattern where two root canals are separated by isthmus and another pattern where the absence of isthmus results in one root canal. We calculated the direction of stress for root canals in both patterns. Our results demonstrate that the pattern with absent isthmus results in higher embrittlement compared to the pattern with two root canals separated by isthmus.

We consider extending this model to other teeth types.



OP-8

**Fire in the hole! Root perforation treatment**

**Yen Un Chen**

**Ortho Jason Dental Clinic (Taiwan)**

During our dental career, we will have to face the thorny situation where the tooth in question has some kind of iatrogenic connection from the root canal to the periodontal ligament. I will be showing two cases of how I treated root perforation to prolong the longevity of the teeth.

Chung Shan Medical University, DDS. 2008

Former dentist at LiZhi Dental Clinic 2008-2010

Former dentist at Enjoy For Dental Clinic 2010-2017

Currently dentist at Ortho Jason Dental Clinic 2016-Present date.

OP-9

**Sinus lifting - mini window approach**

**Eason Chen**

**(Taiwan)**

To see is to believe. Details-control plays an important role in modern dentistry. I would like to share some advantages of using dental microscope in prosthodontics, periodontics and communications. In addition, a mini window sinus lifting technique will also be introduced.

National Yang-Ming University, Dentistry 1998-2004

University of California, Los Angeles, Periodontics Preceptorship 2011-2012

OP-10 (11:00 – 11:30)

**Microscope-assisted minimally invasive porcelain veneers, to match the color and shape of the full ceramic crowns, in smile designs.**

**Jung-Zen Syu**

**Taipei Smile (Taiwan)**

In many occasions, we provide the minimally invasive porcelain veneers to modify the undesired color or shape of virgin teeth to match the existing full ceramic crowns that an ultimate smile design can be achieved. Thanks to the high power magnification of the operating microscope, the porcelain veneers can be made very thin, having supra- or qui-gingival margin, and fit excellently.

However, the combined light effects of the thin porcelain layer, resin cement and the underlying enamel and dentin are very different from those of the adjacent full ceramic crowns. Which are made of a much thicker layer of porcelain and the underlying opaque copings. To match the color and shape between them becomes a very challenging tasks for both doctors and dental technicians.

In my presentation, the comprehensive procedures including smile designs, leading to the needs of porcelain veneers, the microscope-assisted tooth preparation, provisional phases, color matching, and the final results will be presented.

Former President, The Chinese Academy of Prosthetic Dentistry

Former President, The Taiwan Academy of Aesthetic Dentistry

Fellow, the International College of Dentists (ICD)

# Poster Presentation

PP 1 - 6

## Outcomes of endodontic microsurgery for persistent apical periodontitis

Yamaguchi Takahiro, Ogawa Masaru, Osumi Makiko, Suzuki Keisuke  
Ike Yoshiko, Yokoo Satoshi

Department of Oral and Maxillofacial Surgery, Plastic surgery,  
Gunma University Graduate School of Medicine

**Introduction:** Macroscopic apicoectomy has conventionally been used to treat causative teeth in intractable apical periodontitis and radicular cysts. Recently, positive outcomes have been reported with endodontic microsurgery for intractable apical periodontitis, based on a report by Kim et al. (*J Endod* 32: 601-623. 200). At our department, we have obtained positive results by performing endodontic microsurgery on causative teeth in all cases of intractable apical periodontitis and radicular cysts. Here, we report our treatment outcomes and our investigation of factors related to poor prognosis.

**Subjects:** The subjects were 252 patients with intractable apical periodontitis or radicular cysts who underwent endodontic microsurgery at the department of dental-oral-mandibulofacial surgery at Gunma University Hospital from February 2007 to March 2017 and could be followed up for at least 1 year.

**Treatment outcomes:** Treatment outcomes were assessed based on the presence or absence of clinical symptoms and criteria by Molven et al for healing after endodontic surgery (*Int J Oral Maxillofac Surg.* 16:4, 1987). Surgery was considered successful when no clinical symptoms were observed, and radiographic findings indicated complete healing or incomplete healing. **Factors impacting treatment outcomes:** Of the cases that were examined for treatment outcomes, clinical factors could be examined in 231 cases. We performed a statistical analysis of the relationships between treatment outcomes and clinical factors in these cases.

**Results:** We calculated a 92.5% success rate. The presence or absence of periodontal pockets  $\geq 4$  mm and the presence or absence of apicomarginal bone defects were factors that were related to poor prognosis. We obtained positive outcomes performing endodontic microsurgery for causative teeth in intractable apical periodontitis.

## **Analysis of Root and Root Canal Morphology of Mandibular Incisors in a Japanese Population**

**Nakazawa Hirotaka<sup>1</sup>, Ken Wada<sup>1</sup>, Takahiro Watanabe<sup>1</sup>, Ryoko Fukuta<sup>1</sup>,  
Masato Izawa<sup>1</sup>, Chiaki Komine<sup>3</sup>, Yasuhisa Tsujimoto<sup>1, 2</sup>**

**Department of Endodontics, Nihon University School of Dentistry at Matsudo<sup>1</sup>,  
Research Institute of Oral Science, Nihon University School of Dentistry  
at Matsudo<sup>2</sup>, Department of Laboratory Medicine for Dentistry<sup>3</sup>**

For successful endodontic therapy, three-dimensional shaping of the root canal, root canal cleaning, and root canal filling are required. It is important to have a clear understanding of human teeth anatomy. The root portion of the mandibular incisor tooth is compressed. Root canal is also compressed, and there are many teeth with two root canals. High quality of access cavity preparation greatly influences the success of root canal treatment. This study aimed to describe the root and root canal morphology of mandibular incisors in Japanese patients using computed tomography (CT).

Multi-detector CT (MDCT) was used to obtain images of mandibular first (I1) and second (I2) incisors in 50 Japanese subjects (25 men and 25 women), 20 to 29 years of age, who visited Nihon University Matsudo Hospital.

The roots of I1 · I2 teeth appeared as a plate-like or conical shape which was mesiodistally compressed. On cross section, the morphology, in relation to the buccolingual width, was nearly oblong. The cross section of the root canal was also oblong at the cervical level, and became circular from the root center to its apex. Compression of the root can be seen especially in I2, with root surface groove found on the distal surface of the root. We observed one root canal in as many as 96% of I1 teeth. The frequency of two root canals was as low as 4%, and both males and females conformed to Vertucci classification, type III. For I2 teeth, one root canal was observed in 74% and two root canals were observed in 26% of cases. Out of 26%, the teeth with two root canals also conformed to the classification of Vertucci: type II, 4%; type III, 20%; type IV, 2%. Bifurcation of the root canal was observed in nearly 1/3 of the roots. We did not observe fused or conrescent teeth.

This study demonstrates that non-invasive CT imaging can be used to provide a better understanding of the complex root canal anatomy. This information with respect to root fusion and root canal morphology should improve the success rate of endodontic therapy.

**Minimally invasive tooth extraction using a microscope for post-TCPC/jaw bone radiation therapy (60 Gy) patients**

**Keiichi Arimura, Yoshihiro Yamashita**

**Division of Oral and Maxillofacial Surgery, Department of Medicine of Sensory and Motor Organs, Faculty of Medicine, University of Miyazaki**

Introduction: Recently in the field of dentistry, a variety of therapies using microscopes have been performed. In the field of oral surgery, we have also been investigating the usefulness of microscopes in microsurgery for therapies besides anastomosis. As part of this, postoperative bleeding in patients taking anticoagulants or antiplatelet agents who undergo tooth extraction is something that deserves the utmost attention in everyday clinical practice. Moreover, in radiation therapy for cancers of the head and neck, the radiation field often includes the jaw. Many case reports have described how careless tooth extraction in such cases can lead to progressive necrosis of the jaw and severe osteomyelitis.

Here, I would like to describe my experience with 2 such cases. In these cases, tooth extraction was performed using a microscope based on diagnostic imaging with CBCT, and neither exhibited any postoperative complications.

## Effect of the microscope's blue light on the eyes

Noriko Muto, Nobuyuki Tani-Ishii

Department of Oral Interdisciplinary Medicine, Division of Pulp Biology,  
Kanagawa Dental University

### Purpose

The light source used in dental microscopes produces short-wave blue light. Dental treatment often requires using microscope for precision work in a limited visual field for a long time. The effect on the operator's visual function during clinical practice is expected to result in eye fatigue and long-term eye damage. In order to analyze the influence of the microscope light on visual function in detail, a questionnaire survey was conducted on light's impact as perceived by the operator. Based on the results of this survey, a vision test was conducted and analyzed.

### Materials and methods

Kanagawa Dental University Division of Pulp Biology enrolled volunteers in their 20s and 30s. Corrected visual acuity of the subjects was 1.0 or greater, refraction  $\pm 4$  D or less, and it was assumed that the subjects had no ophthalmologic disease other than refraction abnormality. The treatment contents under the microscope were the endodontic treatment with a model and a study model examination. Vision analysis included the questionnaire and BUT (Break Up Time, a tear layer disintegration time) before and after the root canal treatment of natural extracted teeth. This study was approved by the Kanagawa Dental University Research Ethics Review Committee (approval number: 383).

### Results and Discussion

In this study, effects were found to be particularly significant in subjects after the age of 30. All subjects in their 30s and beyond continuously used a microscope for 3 to 5 years for medical examinations. A trend for different fatigue levels and subjective symptoms was observed when using either a halogen light source or an LED light source for the same time. There is a possibility that different effects on vision we observed depend on the amount of blue light.



## Examination of access cavity using guide stents created with 3D printers

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### 【Introduction】

There is a need to understand the root canal morphology in order to perform the appropriate root canal treatment in endodontic therapy. We need to take into account various potential problems such as: the inclination of the tooth axis, different directions of the root and the crown, flat roots, curved strong tooth roots and narrow stenosis. The knowledge of the root canal morphology allows us to avoid the risks of excessive cutting, drilling and tooth root fracture. Assisted by a microscope, necessary information, and appropriate access to the pulp cavity, we aimed to reduce the root canal treatment errors by using a 3D model and guide stent.

### [Method]

We used a wisdom tooth that needed cone beam-computed tomography (CBCT) done for tooth extraction. We matched the lengths of wisdom teeth and 3D models. Digital Imaging and Communications in Medicine (DICOM) data obtained by CBCT were segmented by free software "ITK-SNAP". Simulation and guide stent development was performed based on the segmented image using free software "Meshmixer". The prepared guide stent was set on the extracted teeth, and access cavity preparation was performed using the microscope. The evaluation of the preparation was carried out by cutting in the central part.

### [Result]

By performing access cavity preparations using guide stent and a microscope for ten extracted teeth, it was possible to achieve safe access of cavities, without a need for excessive cutting and perforation.

### [Discussion]

The reproducibility of the newly developed tooth model and guide stent approach used in this study is sufficiently accurate for their use in chamber opening for root canal treatment. In addition, it is expected that the methods developed in this study will result in the shorter duration of treatment.

The questionnaire for use of rubber dam to the member of Japan Association of Microscopic Dentistry

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