Pulp Biology and Endodontics

1. Staffs and Students (April 2009)

Professor	Hideaki SUDA	
Associate Professor	Chihiro KOBAYASHI,	Mitsuhiro SUNAKAWA
Junior Associate Professor	Atsushi TAKEDA,	Hideharu IKEDA
Assistant Professor	Arata EBIHARA,	Nobuyuki KAWASHIMA,
	Hiroyuki MATSUMOTO,	Takatomo YOSHIOKA,
	Reiko WADACHI,	Noriyuki SUZUKI
Hospital Staff	Tomoatsu KANEKO,	Hitomi ISHIMURA,
	Kiwako NAKANO,	Takahiro HANADA,
	Sachio YAHATA,	Satoshi WATANABE
Graduate Student	Carlos Gabriel ADORNO-QUEVEDO,	
	Jing XU,	Jun KAWAMURA,
	Yu KOIZUMI,	Chizuko KOKUZAWA,
	Hitoshi SAKAUE,	Toshihiko YOSHIOKA,
	Bolortuya GOMB,	Uraiwan CHOKECHANACHAISAKUL,
	Kouyou TAKIMOTO,	Mengyu ZHOU,
	Ying LI	

2. Purpose of Education

The aim of the course is to train and educate graduate dental students so that they can act as leading clinical scientists, researchers or practitioners of endodontics in the world. Since recent progress of pulp biology and endodontics is remarkable, the students are educated to acquire the newest knowledge on modern endodontology and its related subjects, such as pulp biology, neuroscience, bacteriology, immunology and material sciences, and are trained to master the newest technology of endodontics. All the students are asked to add new findings to the field of endodontics based on their own original research. The graduates from this course are expected to popularize new principles and techniques on endodontics among general dental practitioners and endodontic specialists.

3. Research Subjects

1) Defense systems in the dental pulp tissues
2) Elucidation of periapical pathosis and regulation of periapical bone destruction
3) Developmental mechanisms of dentin/pulp complex and horizon of its regeneration
4) Root canal irrigation
5) Development of the new apex locator
6) Strain of the root canal dentin
7) Application of medicine to endodontics
8) Safety control in dentistry
9) Application of laser to endodontics
10) Engineering analysis of nickel-titanium endodontic instruments
11) Electrophysiological approach to cell-to-cell couplings between odontoblasts
12) Diffusion through enamel and dentin
13) Neuro-scientific research for the toothache
14) Logistic regression equation to screen for vertical root fractures using cone-beam CT (3DX)
15) Global Center of Excellence (GCOE) Program
"International Research Center for Molecular Science in Tooth and Bone Diseases"

4. Clinical Services

Pulp Biology and Endodontics is in charge of the Endodontic Clinic in our Dental Hospital, and offers the global standard of endodontics to our patients. The representative treatments provided in our clinic are as follows:

・Diagnosis and treatment of pulpal and periapical diseases
・Protective procedures for the dental pulp
・Nonsurgical endodontic treatment

・Surgical endodontic treatment
・Bleaching discolored teeth
・Restoration of endodontically treated teeth

The latest development of endodontics is amazing as seen in root canal instrumentation by super-elastic NiTi rotary files, root canal length measurement with newly developed electronic apex locators, diagnosis by cone beam computed tomography, and microendodontics by using a surgical microscope. Especially, microendodontics has dramatically changed conventional "blind" endodontics into more predictable endodontics by efficient and reliable procedures under a lightened and magnified view. Also, we seek to provide evidence-based endodontic treatment based on our clinical research.

5. Publications

Original articles

1. Kawashima N, Wadachi R, Suda H, Yeng T, Parashos P: Root canal medicaments. Int Dent J 59(1); 5-11, 2009.
2. Adorno CG, Yoshioka T, Suda H: The effect of root preparation technique and instrumentation length on the development of apical root cracks. J Endod 35(3); 389–392, 2009.
3. Kaneko T, Okiji T, Kaneko R, Suda H: Gene expression analysis of immunostained endothelial cells isolated from formaldehyde-fixated paraffin embedded tumors using laser capture microdissection-A technical report. Microsc Res Tech 72(12); 908-912, 2009.
4. Yahata Y, Yoneyama T, Hayashi Y, Ebihara A, Doi H, Hanawa T, Suda H: Effect of heat treatment on transformation temperatures and bending properties of nickel-titanium endodontic instruments. Int Endod J 42(7); 621-626, 2009.
5. Higa RA, Adorno CG, Ebrahim AK, Suda H: Distance from file tip to the major apical foramen in relation to the numeric meter reading on the display of three different electronic apex locators. Int Endod J 42(12); 1065-1070, 2009.