

# Report for Intracranial Stent Meeting 2009 (ICS09)

Makoto OHTA, Institute of Fluid Science, Tohoku University

## Introduction of ICS

ICS Meeting (Intracranial Stent Meeting) was established on 2004 by Prof. Prof. Daniel A. Rüfenacht together with Prof. Pedro Lylyk and Dr. Makoto Ohta. We, then, opened it every year. ICS05 was held in Buenos Aires by Prof. Pedro Lylyk. ICS06 was held in Geneva again. ICS07, the 4<sup>th</sup> International Intracranial Stent Meeting was held in Kyoto by Prof. Waro Taki. And ICS08 was held in Ankara organized by Prof. Saruhan Cekirge Satci.

As you may know, a stent is useful for expanding stenosis for keeping blood flow. This meeting tries to develop a stent to reduce blood flow in cerebral aneurysm as a flow diverter or flow controller.

In order to develop the stent, we encourage including not only people from medical fields but also people from engineering fields such as numerical simulation, biological response or regulation. Then, in this year, Prof. A. Takahashi, professor of department of biomedical engineering, Tohoku University and I was a co-chair.

## Topics of ICS

ICS involves the following topics for promoting safer, more accurate and definitive, more effective treatment of cerebral aneurysms.

1. Hemodynamics in cerebral aneurysm with or without stent.
2. Risk assessments of rupture of aneurysm.
3. Update or the state of the art for a. diagnosis of aneurysm, b. device and method of endovascular treatment, c. image analysis.
4. Development of medical devices for treatment of aneurysms such as stent or coil as flow diverter.
5. Engineering techniques and methods for quantitative investigations related to hemodynamics or lesion and/or thrombus formation.
6. Materials for medical device of endovascular treatment.

All topics are linked together and we hope that we find the optimized way to treat aneurysm using the best stent.

## The Theme and results of ICS09

The 7<sup>th</sup> International Intracranial Stent Meeting (ICS09) was held in Sendai on August 5-7, 2009 chaired by Prof. Akira Takahashi and Prof. Makoto Ohta. In this year, we set following as a theme “Tidal wave from coil to prosthesis, from embolization to reconstruction”, as these seems well the situation in clinical and investigational direction and these were taken as a slogan of ICS09. We got 247 attendances (175 Japanese) from 14 countries. This number is the biggest one as a particular meeting.

In this year, we have seen the integration of ICT(Information and Communication Technology), especially computational fluid dynamics into treatments. We will get a new computer assisted diagnosis, and may see the control of blood flow to avoid rupture or find the formation of an aneurysm near future.

Such as clinical and engineering investigations to develop new effective, accurate and definitive devices including flow diverting stents (Pipeline (trademark)), we have also observed several new ideas to develop new design and/or production of stents.

The mechanism of relation between arterial wall and blood flow is gradually clear.

### **VISC09**

Virtual Intracranial Stent Challenge (VISC) was started three years ago as one of the most important sessions in ICS. The encouragement of increasing technologies for computational simulation through a competition is the principal purpose of VISC. At VISC09, participants competed for branch selection based on the results of computational simulation for the stent placement and through many discussions with medical doctors.

### **Acknowledgment**

We are thankful for GCOE for supporting the following invited speakers. These speakers are one of the highest levels in their fields.

K. Srinivas(Sydney University, Australia, optimization of stent)

H. Zakaria(Institute Technology Bandung, Indonesia, grow of aneurysm)

A. Frangi(Universitat Pompeu Fabra, Spain, The leader of European Project(FP6) “aneurIST”)

J. Cebal(George Mason University, USA, CFD of cerebral aneurysm)

A. Qiao(Beijing University of Technology, China, Blood flow of aneurysm with stent)

