All retinal surgeons have their own technique or process for surgery. Even if the surgeons use the same machine and instrument, and even if they have received the same education, their surgical techniques may not necessarily be identical. Therefore, it would be interesting and important to learn how other surgeons perform the surgeries and their opinion regarding retinal diseases. In this morning seminar, I have invited three Japanese high-volume retinal surgeons to discuss their approaches to and ideas for retinal surgery. Prof. Yamamoto, who is a physiologist as well as a surgeon, will talk about retinal function and retinal surgery. That is, he will discuss ways to surgically improve retinal functions. Prof. Kitaoka, who is an endoscopy specialist, will present how a small-gauge endoscopic surgery is performed. Prof. Oshima, who has developed many new techniques and instruments, will demonstrate how to use the wide-angle view system and discuss his preferred instruments. Finally, I shall talk about the techniques I use for closing the incisions in 25-G vitrectomy.
Prof. Shuichi Yamamoto  Chiba University

Love for retina

Retina is not just a membrane. Retina is a sophisticated organ densely packed with neurons and glial cells, forming the complexity of neural circuit and playing a major role in the visual information processing. The ultimate goal of vitreoretinal surgery is the preservation or restoration of visual function, and this goal can be reached only by the protection of neural cells and the restoration of neural circuit. Until recently, vitreoretinal surgeons had been struggling to restore the retinal macro-structure, and we were not able to know the condition of neural cells in the retina what we manipulated during surgery. However, recent development of examination methods, such as OCT, adaptive optics SLO, fundus autofluorescence, and microperimetry, enabled us to analyze morphological and functional changes of retina at the level of neural cells. And these results may also change surgical methods to obtain better visual function. Love for retina, and love for retinal neurons will unquestionably make our surgeries more sophisticated and give patients better function.

Prof. Takashi Kitaoka  Nagasaki University

Advantage of the Intraocular endoscope in MIVS

Microincision vitrectomy surgery (MIVS) has become very popular in recent years. In this surgery system, 23, 25, or 27 small gauge devices are employed but there are some problems or disadvantages. First, the observation light is dim, because the light fiber is thin and fragile. MIVS is originally a transconjunctival system and it is difficult to do scleral indentation without conjunctival incision, especially at lower side because lower conjunctival fornix is shallow.

To overcome the disadvantages of this thin fiber and dim light, Xenon or Mercury vapor light source is introduced. About the fragility of small gauge, materials are getting harder and in near future, this problem will be dissolved.

The difficulty of scleral indentation restricts the observation of peripheral retina, ora serrata and ciliary body. Even if wide field viewing system is used, it is difficult to observe most peripheral area. To overcome this problem, 25 gauge intracocular endoscope has been introduced. In this seminar, several introduced techniques of the intracocular endoscope in MIVS are presented.

Prof. Yusuke Oshima  Nishikasai Inouye Eye Hospital

Choices of Wide-angle Viewing Systems for Modern Vitreous Surgery

Wide-angle viewing system (WAV) is a useful fundus observation device for vitreous surgery, which has improved the safety and efficiency of the surgical procedures. Surgeons can easily evaluate the fundus status and the location of retinal pathologies through the panoramic view, and engage the peripheral retina without requiring excessive scleral indentation. The use of WAVs in conjunction with chandelier lighting allows easier bimanual maneuvers because they provide a clear view of the peripheral region without globe rotation, thus eliminating concerns regarding fragility of small-gauge instruments. These tools may have played a part in expanding the surgical indications for microincisional vitreoretinal surgery (MIVS) to more challenging cases. At the same time, a variety of WAVs has been developed and upgraded rapidly along with the recent widespread use of MIVS. Although the standard specification of each WAV such as the field angle of view is usually demonstrated in the brochures, the definition is often not identical among the manufacturers. In addition, the imaging quality (distortion) of the fundus view is not easy to quantitatively evaluate. Therefore, the differences of the viewing performances (field angle and imaging quality) have never been compared among the WAVs objectively. In the current presentation, we are reporting a brief laboratory investigation for semi-quantitatively assessing the field angle of view and imaging quality of a grating target in a human model eye viewed through a variety of commercially available WAVs. The latest information and surgical tips for using WAVs in conjunction with MIVS to treat challenging cases will be provided also.

Prof. Masayuki Horiguchi  Fujita Health University

My technique for sutureless vitrectomy

The micro-incisional vitrectomy system(MIVS) was first reported as transconjunctival sutureless vitrectomy. However, a 25G or 23G scleral incision is at times leaky towards the end of the surgery, which may induce hypotony or endophthalmitis. To prevent these complications, some surgeons suture the conjunctiva and sclera together in MIVS; however, this practice leads to post-operative conjunctival injection and pain. Although angled incision reduces the leakage, all sclerotomies are not necessarily closed by this technique. In this seminar, I will talk about my techniques for the opening and closing of sclerotomy in 25G sutureless vitrectomy.