1. Problems and Suggestions from the United States

—U. S. Surgical Residency Training—

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INTRODUCTION

The U. S. training system is often considered as a role model of surgical residency training. For Improvements of Japanese surgical training for the 21st century, it will be valuable to understand the U. S. general surgery residency training, which is basis of this article. First, status of U. S. surgical residency is described. The work and life of surgical residents are introduced to Japanese readers. The goal of surgical residency training in the United States is defined. The advantages of U. S. residency training are described in detail. Particularly, clinical patient care through which the training is performed is emphasized. The disadvantages and problems of current U. S. residency are described. The essentials for training in residency are summarized, and this will help recognize several key points for improvement of the training in Japan. Based on my personal impression of the current Japanese training system, the problems of Japanese surgical training are pointed out. Comparing the system of the United States and that of Japan and on the basis of my experiences, several suggestions for improvement of the Japanese surgical training for the 21st century are discussed.

THE STATUS OF U. S. SURGICAL RESIDENCY

Surgical residencies include core surgical residencies and advanced residencies as shown in Table 1 (1). Advanced surgery such as plastic surgery, vascular surgery or pediatric surgery requires the completion of general surgery residency training. General surgery residency is a five-year training program. One to three years of general surgery training are required in order to enter other surgical subspecialties such as orthopedic surgery, neurological surgery, or urology. Although surgical residency training

Table 1 Surgical Residencies of the United States

Core Surgical Residencies

General surgery

Obstetrics and gynecology

Orthopedic surgery, Ophthalmology,

Otolaryngology, Neurological surgery :

1 prerequisite year

Urology : 2 prerequisite years

Plastic surgery : 3 prerequisite years

Advanced Surgical Residencies : after completion of general surgery residency

Thoracic surgery

Vascular surgery

Colon and rectal surgery

Surgical critical care

Pediatric surgery

somewhat differs depending on each subspecialties, the discussion from now is focused on the training in "General Surgery".

In order to enter into the general surgical residency, there is a competition in the United States. All medical graduates, including international medical graduates, must apply for so-called "National Matching Program", which is a nation-wide computerized program. Medical students must send their applications, have interviews, and select the surgical residency program where he/she wants to go. On the other hand, each residency training program, after having interviews, selects the applicants whom they want to take in their program. Through this computerized matching system, the position of each medical student or applicant is determined every year in March. Because available positions for general surgical residency training in the United States is limited, not every medical student who wants to be a surgeon can enter the surgical residency. For example, at the University of Hawaii, we receive approximately three hundred applications each year. Of these, about thirty applicants are selected for interview. Of these, three "categorical" surgical residents, two or three "preliminary undesignated" residents, and about six "preliminary designated" residents are selected each year. At the University of Hawaii, we are allowed to have three surgical chief residents. Three categorical residents are those who can usually complete the surgical residency, namely to become chief residents unless they have specific problems during training. Preliminary residents cannot become chief residents. Preliminary undesignated residents need to find out the position for next year. Preliminarily designated residents are those who need prerequisite years of general surgery training in order to get into other surgical subspecialties such as orthopedic surgery, neur-

osurgery, or urology. Therefore, these residents will become subspecialty surgeons and not general surgeons. The number of surgical residents, particularly chief residents, is determined based on the capability of each program to train residents. It depends on the size of facility, the number of surgical cases, the number of operation cases, the number of attendings, and the quality of each.

In the United States, approximately one thousand chief residents complete the surgical training each year, and this number has not been changing more than twenty years (1). On the other hand, approximately two thousand general surgical residents begin their training each year. Of these, fifty percent are categorical residents and fifty percent are preliminary undesignated residents (preliminary designated residents who are going to enter subspecialties later are not included in this number). More than fifteen years ago, there was a so-called pyramid system, in which each resident competes for the next year's position every year. The pyramid system caused some adverse effect in training between each resident. Currently, we don't have such a system anymore. However, as mentioned above, there is a competition to get into the categorical resident in the surgical training in the United States. Therefore, medical students, who really want to be a surgeon, work hard during the medical education in medical school. Preliminary undesignated residents also work hard to try to obtain the categorical position each year.

THE WORK AND LIFE OF A SURGICAL RESIDENT

How is the work and life of a general surgical resident? In a single word, it is hard. Because surgical residents are supposed to become independent surgeons in five years, they have to experience not only the large number but also a

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wide variety of cases and operations. Residents work as a surgical team. Each team consists of four or five residents (and medical students), led by a chief resident. Usually, their work starts at 5:00-6:00 o'clock in the morning or even earlier, depending on the number of patients they are taking care of. Because operations start about 7:30 a. m. in each hospital, they have to see all the patients of their surgical team before that, make a plan, and write orders for these patients. From 7:30 a. m., most residents scrub in the operations, and some residents stay on the floor to take care of the pre- and postoperative patients. Between 6:00-8:00 p. m., all residents in the team get together, and discuss about their patients. At that time, they "sign-out" to residents on-call, who will take care of all the patients of the team overnight. All other residents can leave the hospital for rest. During the daytime, all residents carry the pager (beeper) by which they can be reached by anyone, anytime. However, after signing out, residents can turn off the pager except for the on-call residents and chief residents. Since the chief residents supervise the residents on-call, they keep their pagers on all the time. Each resident takes night calls usually every third night. During the on-call night, they may not be able to sleep at all or may have less than a few hours of sleep. They have to work the next day, all day, before signing out. Generally, residents do not have weekends. They have to come to the hospital on Saturdays, Sundays, and holidays to take care of the hospital patients, although they can sign out earlier during the weekends. Each resident has two-three weeks of vacation per year.

The first and second year residents (junior residents) do most of the floor work, which include preoperative and postoperative patient care. They are also exposed to the operating

room experiences as an assistant for major surgery or as a surgeon for minor surgery. The third and fourth year residents (senior residents) perform operations more, in addition to patient management. They also teach junior residents or medical students. Chief residents spend most of the time in the operating room during the daytime and perform major surgery as a surgeon with an assistant of attending physicians. Chief residents supervise and teach all other residents and medical students. They also conduct administrative work for all residents. The salary of surgical residents varies depending on the program and also on the postgraduate year (PGY) of each resident. Usually it ranges from \$30,000 to \$50,000 per year. Moonlighting is usually not allowed for surgical residents, in reality, it is very difficult for surgical residents to do moonlighting because of their hard daily lives.

THE GOAL OF SURGICAL RESIDENT TRAINING

The American Board of Surgery states, "the purpose of graduate education in surgery is to provide the opportunity to acquire a broad understanding of human biology as it relates to disorders of a surgical nature and the technical knowledge and skills appropriate to be applied by a specialist in surgery"(2). The General Surgeon is one who has specialized knowledge and skills relating to the diagnosis, preoperative, operative, and postoperative management in the following areas of primary responsibility: alimentary tract, abdomen and its contents, breast, skin and soft tissue, head and neck, vascular system, endocrine system, surgical oncology, trauma, and surgical critical care. In addition, the General Surgeon is expected to have significant experience in pediatric, plastic, thoracic, and transplant surgery. Also, the General Surgeon must have understanding of

the management of common problems in cardiac, gynecologic, neurologic, orthopedic, and urologic surgery and anesthesiology. The General Surgeon should also have the opportunity to become familiar with other or evolving diagnostic and therapeutic methods such as various laparoscopic procedures, laser applications, sterotactic procedures, non-invasive diagnostic vascular studies, and various fields of ultrasound examinations.

The surgical resident needs to be trained to become such a general surgeon. Not only knowledge and technical skills, it is important to learn how to make sound decisions using critical thinking based on knowledge. Additionally, ethical and legal judgments, appropriate collaboration with colleagues, nurses, and other health professionals, sharing knowledge with colleagues, residents, and students, teaching of patients and their families about the patient's health needs, the value of lifelong learning as a surgeon, conduction and evaluation of research, development of leadership, communication, and administrative skills, and provision of cost-effect care to surgical patients are among the important issues to be taught to each resident during surgical training. On the basis of these goals for general surgical residency, each program set up specific objectives according to the postgraduate year one to five.

In summary, the goal of surgical residency training is to train a resident to become an independent surgeon who is competent and proficient to provide safe and standard surgical practice and patient satisfaction. The safety is obviously essential whenever performing surgical interventions. The standard is also important in practicing surgery; this will be discussed in the following section. The patient's satisfaction is often not so emphasized; however, this is a remarkable subject to learn during training. The patient confidentiality or the issue of

informed consent is related to the patient satisfaction.

ADVANTAGES OF U. S. RESIDENCY

There are several advantages of residency training system of the United States, which are summarized in Table 2. The five-year residency training system has been established well, and there are no significant differences in this system among programs all over the United States. As aforementioned, the goals and objectives for each year during the five-year training are established, and training is conducted to achieve these objectives. For example, minimal requirement for the number of major surgical operation cases that are performed by each resident as a surgeon (not as an assistant) is set at about five hundred operations during five years. Usually, each resident performs about nine hundred to one thousand major surgeries during the five-year period. Although the training system per se is important, actual training is carried out on an individual basis between attendings and residents. There is a traditional teaching method through patient management, surgical operations, or conferences. Not only attendings but also residents participate in teaching. Attending surgeons teach residents, while chief residents

Table 2 Advantages of U. S. Residency

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1. Well-established training system in 5 years :
Goals and objectives for each PGY
 2. Traditional teaching method :
Attendings → Residents → Students
 3. Clinical patient-care oriented
 4. Mutual evaluation :
Program, facility, attendings-vs-residents, students
 5. Outside evaluation and supervision :
Residency Review Committee (RRC)
 6. Supporting organization : ACS, ABS, etc.
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teach senior or junior residents, and all residents teach medical students. Residents learn things in an active manner rather than a passive manner. Teaching is an effective way for learning. For example, through the teaching of medical students, residents themselves learn by self-study, active discussions, or answering questions from medical students. To learn how to teach is one of the objectives for surgical residents during the training period.

This surgical training or education is basically conducted through clinical patient care or management. The patient-oriented and problem-based training is discussed in detail in the next section.

There are mutual evaluation and assessment among the program, attendings, residents, or students. This is not a one-way from the attendings to the residents. After each rotation to a certain hospital or specialty, the attending surgeons evaluate each resident, and there are special evaluation forms to be completed. Vice versa, residents or students evaluate each hospital of facility and each attending surgeon. These evaluations are valuable sources for changes or improvements of the program curriculum, hospital education system, and each attending surgeon as well as each resident or student.

The evaluation is not just within the program but also from outside. This outside evaluation and supervision is mainly for the teaching program and teaching facility. For this purpose, the particular important organization is the Residency Review Committee (RRC). The RRC visits and evaluates all residency training programs in the United States, every two-three years. They assess the quality and quantity of each training program, including the hospital, surgical operative cases, attendings, conferences, etc. They make comments and suggestions to improve the program after their evalua-

tion. By supervising residency training programs nation-wide, the RRC contributes to maintain the quality of all training programs of the United States at a certain level.

There are several other supporting organizations for improvement and maintenance of surgical residency training in the United States. The American College of Surgeons (ACS) is the largest organization for surgeons. They provide a variety of educational materials and numerous postgraduate courses at the time of congresses. They also maintain a database for residency training. The American Board of Surgery (ABS) is another organization important for surgical training. They have established the basic goals and objectives of surgical training. There is a unique examination for all surgical residents provided by the ABS. This is called the "America Board of Surgery In-Training Examination" (ABSITE). Every year, January, all surgical residents in the United States must take this examination. This is about a five-hour examination consisting of approximately two hundred fifty questions. The results of this test are returned to the training program as well as residents themselves. The results show not only the number of correct and incorrect answers but also the subjects each resident have made mistakes. Therefore, the results point out the weakness of each resident, which helps improve their knowledge and judgment during subsequent training. The ABS also provides the qualifying (written) examination and certifying (oral) examination for general surgeons after completion of residency training to obtain the "board certification" of surgery.

CLINICAL PATIENT CARE IN THE TRAINING

Surgical conferences such as morbidity and mortality conferences are indispensable for the

education of residents. However, the main training is carried out through problem-based patient care. Through preoperative, intraoperative, and postoperative management of various surgical patients, residents learn directly from attending surgeons on an individual basis. In addition, there are rounds of residents together with attendings such as teaching rounds, in which cases are discussed at the bedside. Usually, discussions focus on various types of problems of the patient, including chief complaints, complication of diseases, intraoperative problems, and postoperative complications such as morbidity and mortality. How to manage each problem and how to avoid each complication are discussed. It is not a one-way teaching from the attending surgeons; residents participate in discussion actively, and actually they are the main persons to describe opinions. Attending surgeons often ask a variety of question to the residents, and residents answer these questions. If there are any unanswered questions left, residents search for answers by themselves until the next meeting of the next round.

A wide variety of surgical diseases and problems are discussed. Particularly, common diseases or problems that surgeons often encounter are emphasized. For example, in the alimentary tract or abdomen, biliary stones, appendicitis, hernias, pancreatitis, peptic ulcer diseases, bowel obstruction, gastrointestinal, hepatobiliary and pancreatic cancers are among the common diseases. Complications of the diseases themselves and complications of operations are discussed particularly in morbidity and mortality conferences. Emergency and critical care are also emphasized. Residents frequently take care of patients coming to the Emergency Room and take care of critical patients in Intensive Care Unit.

It is essential for surgical residents to learn and practice "standard" care for surgical

patients. The standard care or standard operation is based on evidence, so-called evidence-based medicine or surgery. It is the consensus on the basis of clear evidences that are proven in well designed and performed clinical researches. Of course, not all diseases or problems can be treated by one standard method. There are many controversies for certain diseases or problems. For example, the initial management of trauma patients is performed through the "standard" treatment method of Advanced Trauma Life Supports (ATLS) established by ACS, which is repeatedly taught to the surgical residents during training period. On the other hand, there are many controversial issues in the management of cancer patients. Even the standard treatment has been changing for treatment of certain cancer diseases based on new findings in clinical researches. In areas of controversy, treatment can be performed under "protocol". There are many nation-wide protocols provided by institutes or programs such as the National Cancer Institute (NIH) or National Surgical Adjuvant Breast and Bowel Project (NSABP). Any surgeons or hospitals in the United States can participate in these protocols. Surgical residents need to learn what is the standard and what is the controversy and is under investigation protocol for each surgical disease. Although personal experience is at times usable for managing patients, attending surgeons should update and teach the standard care, but not a care based only on their personal experiences.

Particularly recently, the importance of basic science has been emphasized in the training of surgical residents. This basic science is also related to the evidence-based medicine. Especially, pathophysiology of various diseases or complications is taught to the surgical residents. Using the knowledge of the pathophysiology of diseases, residents can gain in-

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sight into disease processes, which will lead to sound decision-making.

Ethical and legal issues are sensitive, important subjects need to be learned by residents during training. Residents learn how to maintain a good patient-physician relationship. Obtaining appropriate informed consent, explaining the disease or operation to the patients and family, especially honest explanation of intraoperative or postoperative complications if encountered, discussing the code status with family members, care for terminal-ill patients, management at that time of patient's death are among the subjects relating to ethical and legal issues. Although the rate of litigation is high in the United States, an appropriate relationship with the patient and family through sufficient communication will clearly decrease such a problem. Surgical residents need to learn these ethical and legal issues through clinical patient care during training.

DISADVANTAGES OF U. S. RESIDENCY

There are a few disadvantages or problems in the surgical training in the United States as summarized in Table 3. General surgical residents do not have much time to conduct research or to learn about research, although they are supposed to do clinical research in a short period of time with presentation or publication of articles. This is a weakness of residency training, particularly for residents who

are interested in academic surgery or subspecialty fellowship. During subspecialty fellowship after completion of general surgical training, there are one or two years of research period.

The majority of training for surgical residents has been performed in the hospital settings. Ambulatory and office patient management is also critical for general surgeons to practice surgery. Therefore, recently office-based education or training has been emphasized, and residents have been gaining more opportunities to go to physician offices or clinics to see outpatients.

There may be an adverse effect due to competition among surgical residents during training, although this is thought to be rare presently. Because surgery in training is carried out through the team care of all residents, any adverse effect among residents should be eliminated.

Because of their hard work, surgical residents must more or less sacrifice their individual and family life. They do not have much time to spend with their families. Residents and their families understand the situation as surgical residents commit themselves to surgical resident work for five years. Because of their hard work and life, at the completion of their training, graduating chief residents and their families are so happy and excited.

For the last several years, U. S. residency training has been suffering from reduced supports for training of residents. It is mainly a financial support from the government, hospital, or other resources. Although this may not directly affect individual training of residents by attending surgeons, sufficient supports should be maintained in the future.

Table 3 Disadvantages of U. S. Residency

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1. Less training for research
2. Hospital-based > Ambulatory or office-based
3. Adverse effect of competition
4. Sacrifice individual-family life
5. Problems: reduced financial and other supports
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ESSENTIALS FOR U. S. RESIDENCY TRAINING

What are the essentials for continuation and improvement of U. S. residency training? There are several, as shown in Table 4. Some of them are already discussed above but are repeated here because of their importance. One of the most essential factors is the willingness and enthusiasm of the attending teaching surgeons who are capable of training residents. Although the training system of the program is important to effectively carry out education, the actual teaching is performed between the attending surgeons and residents on an individual basis. Therefore, no matter how good the system itself is, the training cannot work without capable and enthusiastic attending surgeons. The attending surgeons are required to be competent in teaching or training. For example, they have to update the knowledge of the standard and the protocol of management of various surgical diseases. In general, American people are willing to and are proud of doing teaching through active discussions or debates. Surgical residents are also encouraged to participate in teaching other residents or medical students. Actually, most of the chief residents or senior residents spend lots of time for teaching junior residents or students. During rounds, conferences or in the operating room, they ask questions about the disease of patient or operation they are actually perform-

ing.

It is necessary to recognize that residents have a privilege of learning during the training period. They are not doing residency just to provide inexpensive work force. In lieu of providing manpower, surgical residents are supposed to be educated during residency. Therefore, any work that has nothing to do with education or training should not be asked of the residents to do. This concept of privilege of learning of residents is sometimes overlooked by the attending surgeons or the teaching hospitals.

Mutual evaluation among the program, attendings, and residents are essential for continuous improvement of the training system as well as individual attendings and residents. Each evaluation should be critical; however, it should be always followed by positive feedback. One-way criticism without feedback is not constructive. For example, surgical resident evaluation by the attending faculty include assessment in terms of preoperative management, performance in the operating room, postoperative management, participation in rounds and conferences, and relationship with peers, attendings, and other house staff. The resident's strengths and weaknesses are pointed out along with resident's overall performance, attitude, and deportment. On the other hand, attending faculty evaluation by residents includes assessment for professional modeling, interpersonal relationship with residents, and clinical teaching skills. They can also make comments on the strengths and weaknesses of each attending with suggestions for his/her improvement. Surgical services or teaching hospitals where residents rotate are also evaluated by residents.

Appropriate competition is necessary for the surgical residents to improve their performance. Medical students compete for surgical resident positions, preliminary undesignated

Table 4 Essential for U. S. Residency Training

1. Willingness and enthusiasm of attendings and residents for teaching
2. Privilege of learning of residents
3. Critical evaluation—positive feedback
4. Appropriate competition
5. Communication
6. Established goals and objectives

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residents compete for categorical positions, and categorical residents compete for better positions after graduation of residency training. Although two-thirds of chief residents start private practice as general surgeons after residency training, many residents continue on to surgical subspecialty training (fellowship) or start working at the academic institutes. For these residents, evaluation and recommendation during general surgery training is critical. When evaluating surgical residents, it is natural for the attending surgeons to compare each resident's performance. Surgical residents work harder to obtain better evaluation by the attendings as well to achieve objectives and goals. A letter of recommendation is always required to seek for better positions. A good recommendation can be obtained through good performance evaluated by the attendings or professors. Appropriately competitive circumstances produce better surgical residents, which in turn improve the surgical training program.

Sufficient and adequate communication is essential for surgical residents for the purpose of training and patient care. Residents need to communicate well with other residents, attending surgeons, medical students, other paramedical staffs, and of course, patients and their families. To establish adequate communication skills is one of the objectives of residency training. Surgical residents frequently need to talk with and explain surgical problems to physicians of other specialties as consultants. During rounds or conferences, residents have to communicate well for discussions or presentations. Knowledge or decisions cannot be utilized without appropriate communication with each other.

As repeatedly mentioned, the goals and objectives of training are essential to maintain and improve residency training. Without goals and objective, it is not easy for residents to improve

their performance. The objectives of each postgraduate-year resident need to be assessed and revised as needed. If some residents cannot achieve certain objectives, they need to discuss these issues with the program director in order to complete their objectives in the future.

PROBLEMS OF JAPANESE SURGICAL TRAINING

Based on my personal impression of current Japanese training system, I would point out problems of the Japanese surgical training. The present status of Japanese surgical training is summarized in Table 5.

In Japan, the period of training is not well defined. The periods for clinical training and research training are not clear, however, the majority of residents are involved in research work for one to two years in order to obtain a degree ("Gakui"). The value of this degree is unclear, particularly for residents-surgeons who are interested in starting or doing private practice but not in academic surgery.

There are significant variation in surgical training depending on the training programs or hospitals. Some programs provide an excellent postgraduate education to surgical residents, while others provide insufficient training. This difference exists mainly due to the lack of outside evaluation or supervision for each program. Such variations among the programs obviously create different degrees of the quality of trained surgical residents. Therefore, some residents will become good independent surgeons after the completion of the training, whereas others may not become competent

Table 5 Japanese Surgical Training

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1. More training for research
 2. Program or hospital variation in training
 3. Less competition, less evaluation
 4. Trainees (residents): hard-workers
-

enough to practice surgery independently.

In the Japanese surgery training system, there are much less competitions and much less evaluations. Almost all medical students graduating from medical school who wants to be surgeons can enter surgical departments without any competitive examinations or evaluations. No appropriate competition exists during the surgical residency training period, either. There may be evaluations of the surgical residents by attending physicians or professors; however, the presence of positive feedback is questionable. Residents usually do not make any evaluations for the attending surgeons, professors, or the training system in a formal fashion. The internal evaluation within the program, between attending and professors, is probably very minimal.

The Japanese surgical trainees of residents, I believe, are hard-workers. They work hard and stay in the hospital until late in the evening. They are diligent; however, generally their working attitude is more in a passive manner, doing whatever they are told or asked to do. Japanese surgical residents are less likely to express their thinking or decisions, and almost never criticize the mistakes of the attendings or professors during rounds or conferences.

SUGGESTIONS FOR IMPROVEMENTS OF JAPANESE SURGICAL TRAINING

What needs to be done to improve the Japanese surgical training in 21st century? My answers to these questions are listed in Table 6. Certain changes are necessary for surgical residents, teaching staffs, training programs, and supporting organizations.

Reasonable competition is helpful for improvement of the quality of each surgical resident. Such a competition will provide a positive incentive for each resident. The appro-

Table 6 Suggestions for Improvements of Japanese Surgical Training.

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1. Residents :	reasonable competition
appropriate evaluation
communication
2. Teaching staffs :	proficiency and willingness in teaching mutual evaluation
3. Program :	open to outside, outside evaluation, standardization of training; goals, periods, etc.
4. Organization :	assessment and supervision of programs nation-wide
-

appropriate evaluation with positive feedback is continuously required for the improvement of residents during their training. It is difficult to improve themselves without such an evaluation or feedback from supervising attendings or professors. Residents need to communicate appropriately in patient management, teaching rounds or conferences. They should describe their opinions or decisions and criticize mistakes, on the basis of evidences (evidence-based surgery). The higher-level residents are encouraged to teach lower-level residents or medical students actively.

The teaching staffs (attendings or professors) must be proficient and be willing to teach surgical residents. Without active and enthusiastic teaching attendings, the training system cannot function. To be proficient and competent in teaching, the teaching staff must commit themselves to spend sufficient time for teaching and education. Evidence-based surgery (and not personal experiences alone) should be taught. The mutual evaluation for the teaching attendings is also necessary to improve their teaching skills or performance. They should accept the criticisms, if any, by residents or by other staffs in a positive manner, and improve themselves based on these evaluations.

Each training program needs to be open to

outside, particularly outside evaluation or criticism. The so-called “Ikyoku” training system of Japan is a very closed system, as I understand. This “Ikyoku” system may have some advantages in patient management in Japanese society, but also inadvertently may cause adverse effects in training for surgical residents. This system functions by itself, but does not allow outside evaluation or criticism generally, thus making changes (improvements) difficult. The Japanese surgical training should be more standardized in terms of goals, objectives, and training periods. The program directors must get together, and discuss the standardization of training all over Japan. Without such standardization, the quality of graduating surgical residents cannot be well maintained in certain levels.

For the standardization of surgical training in Japan, the role of outside organizations is also valuable. The Japanese organizations, like ACS or ABS of the United States, need to effectively function for the assessment and supervision all surgical training programs nationwide in Japan. They can help to establish the goals, objectives, and periods of training. The quality and quantity of surgical residents can be better controlled with the assistance of such organizations. For the evaluation of residents in each training program, in-training examinations similar to the ABSITE of the United States can be prepared and provided by these organizations.

CONCLUSIONS

The status, goals advantages disadvantages, and essential factors in surgical residency training in the United States are described. The problems and suggestions for the Japanese surgical training are discussed. Because of the differences between Japan and the United

States in terms of educational, social, economical, political, ethical, and legal backgrounds, I understand that not all the training systems and essential factors of the United States can be introduced into the Japanese surgical training. I believe Japanese surgical residents are diligent workers in general. The main problem in training seems to remain in the training system itself. Each training program needs to be open to outside and accept outside evaluation or supervision by other programs or outside organizations. Such evaluation and supervision will help to improve the program itself and also the quality of teaching attendings in the program. Currently, the influence of outside organizations to the training programs (surgical departments) is not effective or productive. There will be lots of works required for the organizations to function effectively and directly in the surgical residency training. However, I believe that the organizations such as the Japanese College of Surgeons (JCS) can play an important role in surgical training in the future. I realize that remarkable changes for improvements of surgical or medical training cannot occur in a short period of time in Japan because Japanese surgical education or training is depending highly on political, economical, or social factors. However, improvements should be made increasingly at individual (residents vs attendings), program and national levels. I hope that this present article will help for such improvements of Japanese surgical training for the 21st century.

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