

# THE IDEAL TRAINING OF A HEAD AND NECK (ONCOLOGIC) SURGEON

*Treinamento ideal do cirurgião (oncológico) de cabeça e pescoço*

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*As this century comes to a close, it is a wonderful opportunity to reflect back and look at the history of head and neck surgery and to prepare ourselves for the future. The latter half of this century has witnessed tremendous strides in various facets of our complex specialty. How should we then integrate the rapidly changing character of our specialty with the training process of head and neck surgeons to enable them to conduct their professional activities for the next century?*

*Since the mid-seventeenth century many surgeons have laid the foundations for development of the specialty of head and neck surgery with specific contributions in various aspects of management of cancer of the head and neck. Included amongst these pioneers were Wiseman, Marchetti, Regnoli, Billroth, Kocher, Butlin and Crile. However, the words 'surgery of the head and neck' were first used in 1888 by Lane in his textbook of that name, covering the fields of neurosurgery, otolaryngology and ophthalmology. Henry Butlin of England has been identified as the first head and neck surgeon by Dr. William Nelson in his presidential address to the Society of Head and Neck Surgeons in 1987. The first head and neck service was established at Memorial Hospital for Cancer and Allied Diseases in New York in 1914 with Henry Janeway as the first chief of that Service. The term head and neck surgery however had little meaning until the 1940's when Hayes Martin used the term in one of his initial publications. In 1948 Grant Ward defined the parameters of this new surgical specialty. Although the specialty was developing in a sporadic fashion in the hands of leaders like Martin and Ward, no organized programs were available for training of surgeons in this newly established surgical field of specialization.*

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## **Training of head and neck surgeons in the USA**

The founding of the Society of Head and Neck Surgeons in 1954, spearheaded by Martin and Ward, established an identity and credibility for this new specialty. The explicit reason for establishing the Society was to promote advances in head and neck surgery. The growth of the specialty in early years was largely as a result of contributions from graduates of the training programs of Memorial Hospital and their trainees in the United States. Martin and Ward were pioneers in training surgeons to perform head and neck oncologic surgery and providing comprehensive care to patients with cancer of the head and neck. Four years later, the American Society for Head and Neck Surgery, with the similar objectives, was established by prominent otolaryngologists with a significant interest and involvement in head and neck oncologic surgery. Dr. John J. Conley served as its founding president.

Although no organized training programs in head and neck oncologic surgery were available at the time, several leaders and teachers in the field of head and neck oncologic surgery made significant

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contributions by individually training the next generation of head and neck surgeons. Limitations of space does not permit me to mention the entire list of major contributors, teachers and leaders of the 1950's, 60's and 70's in the training of head and neck surgeons. However, I would like to mention a few, amongst which Dr. William McComb, the first chief of the Head and Neck Service at M.D. Anderson Hospital and Dr. John Conley of New York were responsible for training generations of head and neck surgeons in addition to Dr. Hayes Martin and his successors on the Head and Neck Service at Memorial Sloan-Kettering Cancer Center. Dr. George Sisson of Chicago and Joseph Ogura of St. Louis systematically trained otolaryngologists to develop expertise in the field of head and neck surgery. Drs. Milton Edgerton and Yahram Bakamjian from the discipline of plastic surgery were training yet another group of surgeons in this fascinating specialty with the added facet of reconstructive surgery following ablation of cancer. The chiefs of the head and neck services at the three major cancer centers led the way for training the next generation for head and neck surgeons in the United States. These were Drs. Donald Shedd of Roswell Park Memorial Institute in Buffalo, Elliot Strong of Memorial Hospital in New York, and the late Richard Jesse of M.D. Anderson Hospital in Houston. The pursuit of excellence in the development of training programs in head and neck oncologic surgery initiated by Martin and McComb in New York and Houston respectively, and continued by Strong and Jesse, are currently perpetuated by Jatin Shah in New York and Helmuth Goepfert in Houston.

Establishment of the Society of Head and Neck Surgeons and the American Society of Head and Neck Surgery led to increasing visibility of head and neck surgery as a subspecialty. The need for development of training programs with uniform standards established by national bodies to train and prepare the subsequent generations of head and neck surgeons in the United States soon became apparent. Consonant with this were efforts in other parts of the world in the training of head and neck surgeons, although no established formal training programs in head and neck surgery were developed as yet in any part of the world. The Society of Head and Neck Surgeons and the American Society for Head and Neck Surgery took leadership and established training committees in 1968, eventually culminating in a joint training committee which was to be subsequently known as the Joint Council for Approval of Advanced Training in Head and Neck Oncologic Surgery, chaired by Dr. John Lore. This initial committee developed the course curriculum for a fellowship training program and implemented the approval process for fellowship programs in advanced training in head and neck oncologic surgery. The Joint Training Council in the United States has set the standards for the training process of a head and neck oncologic surgeon and developed and refined a course curriculum as well as training requirements for an approved fellowship program. Leadership of the Joint Training Council has been provided, following Dr. Lore, by Dr. Helmut Goepfert of Houston and Dr. Jatin Shah of New York, who currently serves as Chairman of the Council. At present eighteen programs are approved in the United States for advanced training in head and

neck oncologic surgery. The course of study and scope of training required currently are described here.

### **Course of study and scope of training**

A) Academic: 1) Programs must develop a structured curriculum with defined educational goals and objectives. Clinical, basic science, and research conferences, as well as seminars and critical literature review activities pertaining to the subspecialty, must be conducted regularly and as scheduled. It is essential that trainees participate in planning and in conducting conferences. Both the faculty and trainees must attend and participate in multidisciplinary conferences. 2) Trainees must have the appropriate supervised opportunities to develop skills in providing consultation and in communicating with colleagues and referring physicians. The program must provide trainees with the opportunity to teach medical students, physicians, and other health care professionals. 3) The fellowship training must involve increasing responsibility in both inpatient and outpatient environments and should culminate in significant patient management responsibilities spent within the institution(s) approved as part of the program. 4) Because head and neck surgical oncology is multidisciplinary in nature, it is mandatory that the fellowship program make available educational experiences and faculty interaction with related disciplines such as general surgery, otolaryngology, plastic surgery, dentistry and maxillofacial prosthetics, medical oncology, radiation therapy, pathology, nuclear medicine, diagnostic imaging, neurosurgery, preventive medicine, rehabilitation, speech pathology, and biostatistics.

B) Clinical: 1) Programs must provide structured clinical opportunities for trainees to develop advanced skills in head and neck oncologic surgery. 2) A sufficient number and variety of cases must be available for each trainee to assure adequate inpatient and outpatient exposure to the broad range of conditions associated with the management of head and neck tumors, without diluting the experiences of residents in the core program nor interfering with the experience of other existing fellowship programs. 3) At the end of the clinical fellowship in advanced head and neck oncologic surgery, the fellow must have had a cumulative experience as operating or teaching surgeon on major cases involving at least 150 patients. The distribution of operative procedures should represent the broad spectrum of head and neck oncologic surgery. 4) Lines of responsibility must be clearly delineated for trainees and other residents as related to areas of training, clinical duties, and duration of training. Such information must be supplied to the Joint Training Council with the program information forms.

C) Research: An active research component should be encouraged within each program to enhance the educational experience. Although the clinical experience is essential, there must be meaningful supervised research experience for the trainee while maintaining clinical excellence. If basic science laboratory training is offered, the necessary facilities must be available on campus under the supervision of a mentor who has demonstrated at least a national reputation in basic science research

evidenced by national grant support, publications in peer-reviewed journals, and membership in prestigious societies. The opportunities for clinical and basic science research available during the fellowship and the expectations and requirements should be stipulated. Trainees should be advised and supervised by qualified staff members on the conduct of both clinical and basic science research.

D) Specific Program Content: The curriculum must include the following areas: 1) Physiology, pathophysiology, diagnosis, and therapy of head and neck oncologic disorders, including thorough clinical evaluation of the head and neck and indications for and interpretation of modern imaging techniques. 2) Performance of advanced surgical procedures for tumours of the head and neck and cranial base. 3) Identification of reconstructive alternatives and participation in surgical reconstruction. 4) Principles of pathologic evaluation of surgical specimens. 5) Principles of and indications for radiotherapy. 6) Rehabilitation of patients undergoing treatment for head and neck tumors, including prosthodontics and speech therapy. 7) Principles and indications for chemotherapy, biologic therapy, and related subjects. 8) Nutrition. 9) Principles of cancer prevention and intervention in the process of carcinogenesis. 10) Participation in research: principles of research including experimental design and statistical analysis. 11) Participation and responsibility at weekly multidisciplinary head and neck tumor conferences. 12) Participation in courses or discussions on ethical issues in the management of head and neck cancer patients.

### **Problems with the training programs in the USA**

Despite the implementation of stringent standards for the approval process, problems exist in the equality of training. The clinical case load in several fellowship training programs was not adequate to develop proficiency and expertise. In the past decade the problem has been further complicated by requirements of the respective Boards of General Surgery, Otolaryngology, and Plastic Surgery for mandatory exposure to and involvement in head and neck oncologic procedures as an essential component of their case load for qualification and certification. Clearly this requirement narrows the already limited patient base available for training of head and neck surgeons. It is well known that only 25% of surgical cases in the United States are performed in institutions with training programs. The projection of the Graduate Medical Education National Advisory Committee for the year 1990 was that of the 11,200 residents in the general surgery, otolaryngology and plastic surgery, approximately 1,800 candidates would be completing their chief residency that year. It is estimated that nearly 35,000 patients with tumors in the head and neck require surgical treatment annually. Of these, approximately 9,000 are being treated at institutions with training programs. This works out to an average of 5 patients per candidate, a majority of whom will not pursue head and neck oncologic surgery following their chief residency. This,

then, is a tremendous misuse of the precious patient base that is so essential for training of fellows in head and neck oncologic surgery. In fact, in many institutions fellows and chief residents compete for surgical cases. The Joint Training Council requires that residents be exposed to 50 cases during their surgical training before they can apply for a head and neck fellowship. In the past, the Joint Council did not require a minimum number of surgical cases to be performed by the fellow during the Head and Neck fellowship. However, with increasing awareness regarding the need for such an essential requirement, the Joint Training Council now requires that at least 150 surgical oncologic patients be operated upon by the fellow prior to completion of his fellowship program. In the United States, the number of head and neck surgeons required at any given time ranges from approximately 500-1,000. Assuming an average of 25 years of active clinical practice in the specialty, the number of newly trained head and neck surgeons in the workforce needed to replace those retiring or dying each year would be no more than 20-25 graduate fellows each year. The approved 18 head and neck fellowship programs would clearly provide the necessary workforce of optimally trained head and neck surgeons who can maintain high standards of care for patients with head and neck malignancies provided a majority of these patients treated in tertiary care referral centers or "centers of excellence" for head and neck oncologic surgery, including major cancer centers. Unfortunately, however, in the United States, nearly all the Diplomates of the American Board of Otolaryngology, even without specialized training in head and neck oncology consider themselves to be head and neck oncologic surgeons and dabble in the specialty, resulting in poor patient care. Fortunately, Diplomates of the American Board of Surgery and American Board of Plastic Surgery do not claim such "instant recognition" as head and neck oncologic surgeons on completion of their basic board certification. Some general surgeons and plastic surgeons also dabble in head and neck oncologic surgery without adequate training. Needless to say there are some otolaryngology training programs in the United States with emphasis in head and neck oncologic surgery which provide adequate training to their residents to perform basic head and neck surgical oncologic procedures for tumors in the head and neck. Each year approximately 2,000 board certified surgeons including otolaryngologists, general surgeons and plastic surgeons, join the work force in the medical marketplace of the United States and share the limited volume of head and neck oncologic surgery regardless of the level of their training or expertise. The outcome of the performance of many untrained "dabblers" in head and neck surgery is increasingly becoming manifest at many major centers of excellence in head and neck surgery, where an increasing number of mismanaged and recurrent cases are seen.

Those of us who have dedicated our lives and careers to the treatment of patients with head and neck cancer and to the training of head and neck oncologic surgeons have to come to grips with the issue and make some hard decisions. We clearly do not have a sufficient patient base to train residents in the three basic specialties to meet

with their respective board requirements and we do not have enough cases to adequately train all head and neck fellows. Perhaps the changing health care scene with increasing penetration of HMOs, PPOs, and third party health providers will change the scenario by necessity. The third party payors and controllers of health care delivery will impose restrictions for specialty care case referrals to only adequately trained specialists and to centers of excellence for cost effective care. It would then be up to us, the specialty trained head and neck surgeons, to develop treatment plans, algorithms and treatment pathways to deliver optimal care in a cost effective manner. If we are able to do so, then the untrained non-specialist may be denied payment for services rendered to a complex medical problem such as head and neck cancer. Such a scenario will undoubtedly increase patient flow to fellowship training programs.

There is another problem in the USA which will further endanger the viability of fellowship training programs and that is the lack of provision of any funding for training and research in the third party payor system. The fiscal support for salaries of fellows is likely to evaporate in the not too distant future. How are we, the directors of training programs, then to find funding for fellowship training. It is a difficult problem. With decreasing patient care revenues, we can no longer afford to pay the fellows from clinical income. One possible solution is establishment of philanthropic endowments from charitable contributions and industry to generate perpetual income to support fellowship programs and research laboratories. Another avenue is to seek federal government support for training grants.

***The international scene***

The scenario in other parts of the world is even worse. In those parts of the world where the incidence of head and neck cancer is amongst the highest in the world (India, Southeast Asia, Brazil and other Latin American countries), no formal or organized programs with structured curriculum for training in head and neck oncologic surgery exist. In these parts of the world there is a clear and present need for urgently developing training programs in head and neck oncologic surgery to meet with the huge demand for specialty trained surgeons to adequately treat a large number of patients afflicted with cancer of the head and neck. Perhaps the International Federation of Head and Neck Oncologic Societies should be involved in establishing worldwide standards for development of such programs with regional and national variances, depending upon respective needs. Clearly, world cooperation for this urgent demand is vital to the quality of care necessary for patients with cancer of the head and neck, who otherwise do not receive adequate treatment in time or never reach a well trained head and neck surgeon to receive the appropriate care in time. Development of training programs in various parts of the world and establishing standards should be a high priority item for discussion and debate at all scientific programs for future international conferences on head and neck cancer.

***The ideal training program***

As I see it, some immediate actions are essential to address this issue worldwide. The appropriate accrediting organizations in every nation for basic training in general surgery should make the necessary requirement for their trainees limited to only “basic exposure to head and neck surgery” (Table I). This basic training will provide sufficient exposure to head and neck surgery the graduates of these basic specialties (general surgery, otolaryngology, and plastic surgery) to be prepared to embark upon a fellowship training program in head and neck oncologic surgery. By the time the chief residents in these three specialties complete their respective board requirements, they should have had sufficient exposure and adequate experience in clinical examination of the head and neck area, endoscopic evaluation, tracheostomy, care of head and neck trauma, simple surgical management of oral cancer, neck dissections, and management of salivary tumors. The requirement should be uniform for all the three basic specialties. In addition on this, the general surgical trainee should have added experience in surgery of the thyroid and parathyroid glands, the trainees in otolaryngology should have additional training in routine surgical procedures on the larynx, nasal cavity and paranasal sinuses, and residents in plastic surgery should have additional experience in the surgical management of cancer of the skin, exposure and experience with local, regional, myocutaneous and microvascular free flaps (Table II). This limited approach to head and neck surgical exposure will then retain the bulk of major head and neck oncologic surgery for fellowship training (Table III). These complex surgical procedures include craniofacial resections, temporal bone resections, radical maxillectomies and composite resections, pharyngolaryngectomies, partial laryngectomies, esophagectomies, gastric pull-ups, and mediastinal resections, various modifications in neck dissections, soft tissue bone and neurovascular tumors, as well as regional cutaneous, myocutaneous, and free flaps, mandible reconstructions, major surgery for salivary glands and thyroid cancer, prosthodontics, brachytherapy and endoscopic laser surgery. In addition to the advanced surgical oncologic experience, the head and neck fellow is expected to have exposure to various allied specialties, including radiation oncology, medical oncology, pathology, maxillofacial reconstruction, prosthodontics, nuclear medicine and diagnostic radiology,

***Table I - Basic requirements for exposure to head and neck surgery for all chief residents***

• <i>Head and neck examination</i>
• <i>Endoscopy</i>
• <i>Tracheotomy</i>
• <i>Trauma</i>
• <i>Early staged oral cancer</i>
• <i>Neck dissection</i>
• <i>Salivary tumors</i>



rehabilitation and biostatistics, as well as basic and clinical research.

If such a balanced distribution of the clinical case load is achieved between basic surgical training in the three specialties and advanced surgical experience in head and neck fellowship programs, then we need to further improve the fellowship training program by developing a more specific core curriculum to meet the needs of a modern day head and neck surgeon. This would require a cooperative effort between the accrediting organization for the fellowship program and the program directors. A minimum of two years of fellowship training would be desirable for advanced training in head and neck oncologic surgery. This two year program require mandatory rotation in laboratory research and elective time to meet the academic pursuits of the individual in head and neck oncology. Rotations through radiation oncology, medical oncology and pathology are vital components of the overall training program. In addition to this, exposure to biostatics and participation in scientific publications is essential to keep the individual current in understanding, interpreting and participating in contemporary literature. A minimum exposure of six months to basic clinical research is vital for not only the growth of the individual, but the specialty for the future. Such an enriched two year program would then train a well-rounded head and neck oncologic surgeon. On the other hand, those wishing to partake only clinical experience with the ultimate goal of community practice in head and neck oncologic surgery may emphasize the clinical and technical aspects of head and neck oncologic surgery and may choose to subspecialize within head and neck oncologic surgery to narrow fields such as surgery of the skull base, microsurgical free flap reconstructions, or be involved in administrative aspects of multidisciplinary treatment programs to eventually provide leadership in multidisciplinary head and neck oncologic teams in community cancer centers. For all training programs a minimum of 100 patients with major head and neck oncologic procedures should be considered a mandatory requirement for completion of the fellowship. Similarly, at least two publications in peer-reviewed journals should be a minimum requirement for successful completion of the fellowship training program.

Whether the fellowship training should be augmented by a written and/or oral examination for certification is another issue which demands some discussion. While Certificate of Added Qualifications (CAQ) is desirable, it also produces further fragmentation of the basic surgical disciplines, particularly in the United States. On the other hand, those

**Table II - Additional requirements for exposure to head and neck surgery for chief residents in the three basic specialties**

<i>Surgery</i>	<i>Otolaryngology</i>	<i>Plastic Surgery</i>
<i>Thyroid and parathyroid</i>	<i>Larynx and paranasal</i>	<i>Skin cancer, local, regional, myocutaneous and free flaps</i>

parts of the world where head and neck cancer is quite prevalent, such a certification is desirable to identify individuals with special expertise for appointments and practices in centers of excellence. The development of such a certification process will have to be addressed by each individual nation and/or geographic area, depending upon their local requirements. I must remind the reader, however, that development of specialty certification examination, its implementation and its quality assurance are formidable tasks with significant consumption of manpower, effort and resources. Will we ever be able to develop worldwide standards of head and neck oncologic surgery is indeed a goal which is nearly impossible to achieve. Perhaps the International Federation can again be an instrument through the resources of which one way attempt to establish minimum international standards of head and neck oncologic surgery with regional variances depending upon the need for a such in a given situation. Whether international standards are developed or not, the leadership in head and neck surgery in each of the nations of the world should strive hard to develop training programs along the guidelines stated above with the ultimate goal of training the next generation of head and neck surgeons with internal consistency in their training process and improved quality in the delivery of health care to patients with cancer of the head and neck. Candidates trained in this fashion will then be prepared to meet the challenges of head and neck surgery in the twenty-first century. New directions and future challenges will undoubtedly bring about progress, excellence and professionalism that will characterize the specialty of head and neck surgery. We will have to train head and neck surgeon to develop an inquiring mind with the ability to understand the need and the role of clinical research and the ability to conduct such research for progress to be made. A balanced training program between research and clinical care will be the ideal, and forget not that we must train specialists who will not only treat that disease, but also the patient affected by the disease.

**Table III - Surgical experience for fellows in head and neck oncologic surgery**

• <i>Craniofacial surgery</i>
• <i>Temporal bone resection</i>
• <i>Radical maxillectomy</i>
• <i>Composite resection</i>
• <i>Pharyngolaryngectomy</i>
• <i>Partial laryngectomy</i>
• <i>Esophagectomy-gastric transposition</i>
• <i>Mediastinal dissection</i>
• <i>Modified neck dissection</i>
• <i>Soft tissue, bone, and neurovascular tumors</i>
• <i>Regional, myocutaneous, and free flaps</i>
• <i>Mandible reconstruction</i>
• <i>Brachytherapy</i>
• <i>Laser surgery</i>