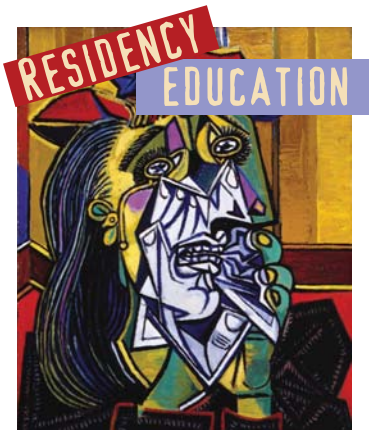

Oral and Maxillofacial Surgery Residency Education

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ABSTRACT

Oral and maxillofacial surgery is the recognized specialty of dentistry that is responsible for the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects involving both the functional and esthetic aspects of the bone and soft tissues of the oral and maxillofacial region.[1] This article will present a review of the educational process for residents in oral and maxillofacial surgery as it has evolved and current training standards.

To understand the need for the comprehensive and detailed education of residents, a brief review of the patient care areas provided by oral and maxillofacial surgeons is indicated. Since the earliest days of the specialty, the scope of practice has evolved to include surgery of the entire maxillofacial complex. The knowledge and skills of oral and maxillofacial surgeons make them proficient in the management of bony and soft tissue management of the entire maxillofacial skeleton.[2]

OMS Procedures

Dentoalveolar Surgery

The basis of most clinical practices includes the extraction of diseased or impacted teeth, as well as the surgical exposure of impacted teeth to enable their orthodontic-assisted eruption into a functional and esthetic position. Other traditional office procedures include preparation of the mouth for dentures, including alveoloplasty, soft and hard tissue grafts, and vestibuloplasty procedures. Oral infections and biopsy of suspicious lesions of the hard and soft tissues are also treated.

Anesthesia

The oral and maxillofacial surgeon is an expert in all aspects of pain and anxiety control, including general anesthesia or deep sedation, and conscious sedation. A substantial portion of their training focuses on ambulatory anesthesia and patient management, preparing them to administer safe and effective anesthesia services in their offices for the performance of surgical procedures.

Dental Implants

A second significant area of modern oral and maxillofacial surgery practice is the planning and placement of dental implants. Patients can be diagnosed and treated for the full range of implant dentistry. Evaluation, prophylactic extraction, site development including bone and soft tissue reconstruction of the oral tissues as well as maintenance are part of the training received and services offered to patients and restorative dentists.

Dentofacial Deformities and Congenital Defects

Surgeons can reconstruct and realign the upper and lower jaws to provide improved function and facial

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appearance as they work as a team with orthodontists to align the maxillofacial structures. Many are trained to correct congenital and acquired defects of the maxillofacial region including cleft lip and palate.

Maxillofacial Trauma

Oral and maxillofacial surgeons have extensive experience in repairing simple and complex facial lacerations, setting fractured jaw and facial bones, reconnecting severed nerves and ducts, and treating other hard and soft tissue injuries of the face and neck region. They are active participants in the emergency department management of the maxillofacial trauma patient.

Pathologic Conditions

The diagnosis and management of patients with diseases of the oral and maxillofacial region, including cysts, benign and malignant tumors, soft tissue, and severe infections of the oral cavity and salivary glands is a service offered to patients by the oral and maxillofacial surgeon.

Reconstructive and Cosmetic Surgery

Surgeons are well trained to correct jaw, facial bone and facial soft tissue problems that occur because of trauma or pathology. This surgery to restore form and function often includes transferring skin, bone, nerves, and other tissues from other parts of the body to reconstruct the jaws and face. These same skills are also used when oral and maxillofacial surgeons perform cosmetic procedures for improvement of problems due to unwanted facial features or aging.

Temporomandibular Joint Disorders

Training includes the diagnosis and management of temporomandibular joint disorders as well as differential diagnosis of head, neck, and facial pain. Surgeons are educated in multiple treatment options including nonsurgical treatment of TMJ disorders. The surgical management of TMJ abnormalities includes arthrocentesis, arthroplasty and open joint procedures as well as total joint replacement or reconstruction.

Evolution of Education

Given the complexity and extensive range of surgery, the education program for residents needs to be comprehensive and by definition is quite rigorous. To complement the intensive growth in the depth and range of surgical procedures performed by modern surgeons, the educational process has evolved accordingly. A brief history of how teaching has changed will bring better understanding to the education that is received by residents today.[3]

The earliest recorded notes relative to specialty scientific education for surgery was in 1918 when the American Society of Exodontists, limited to the practice of oral and maxillofacial surgery, and initiated scientific meetings and publications. During the next decade, oral surgery became the first official specialty the American Dental Association recognized, and the name of the organization was changed to the American Society of Oral Surgeons and Exodontists. By 1946, with the establishment of American Board of Oral Surgery, major problems and wide differences in the training and education of the specialty were brought to light. Some programs were university affiliated and were three years in duration. Many however, were one-year programs isolated in hospitals where they lacked full-time directors. All programs were clinically oriented in a "preceptor" type of educational process.

Carl Waldron and Henry Clark at the University of Minnesota designed a correspondence course in oral surgery. John Gunther began a one-year basic science program for oral surgeons at the University of Pennsylvania in 1949 to provide a consistency in the conceptual aspects of surgical training. The quality of educational experiences was beginning to be considered. Evaluation of advanced education programs was superficially conducted by the Council on Hospital Dental Service of the ADA for its Council on Dental Education, with the main concern being space and facilities for oral surgery clinics.

In 1956, the American Society of Oral Surgeons Committee on Graduate Training provided the first description of minimal requirements in the categories of didactic education and clinical training during a three-year period. Standards of education were offered for hospitals that conducted oral surgery internships and residencies. Also in 1956, the ADA House of Delegates passed a resolution transferring responsibility for the accreditation of internships and residencies in hospitals to the Council on Dental Education.

From 1958 to 1964, six conferences were conducted by the ASOS Committee on Graduate Training. The first planning conference on graduate training took place in 1958 and resulted in the publication of *The Essentials on an Adequate Training Program in Oral Surgery*. In 1964, the Council on Dental Education approved the establishment of the Review Commission on Advanced Education in Oral Surgery. The newly constructed review commission held its first official meeting in January 1965. One of the purposes of the commission was to conduct site visits to evaluate training programs.

In May 1965, a second meeting of the review commission was held, and the backlog of site visit evaluations was considered. One of the first efforts of the review commission was to require that all one-year programs

affiliate for a continuous, graduated three-year sequence rather than offer an isolated clinical-only exposure for trainees.

The Essentials of an Adequate Training Program in Oral Surgery, used as the blueprint for oral and maxillofacial surgery residency training since 1958, was revised from time to time before a major revision was made in 1982 and 1983. The reworked document was adopted by the Commission on Dental Accreditation in May 1985 and became effective in 1986 as the yardstick for evaluation of oral and maxillofacial surgery training.

In the early 1980s, the length of oral and maxillofacial surgery residency programs was increased from three to four years. This was done to accommodate the increasing amount of educational requirements for surgeons. A blueprint for the curriculum for the four-year training programs was designed by the American Association of Oral and Maxillofacial Surgeons Committee on Residency Education and Training and representatives of the Section on Education.

The Standards for Advanced Specialty Education Programs in Oral and Maxillofacial Surgery, which serve as the basic structure of all training programs, were approved for implementation by the Commission on Dental Accreditation on July 1, 1988. These standards are under continuous review and revision by the American Association of Oral and Maxillofacial Surgeons to reflect changes in the education required for modern oral and maxillofacial surgery residents.

Education of Surgeons

There are 102 accredited surgery residency programs in the United States with approximately 170 open positions available annually. About 850 individuals are in residency programs with half being in MD-integrated training. As in all areas of dentistry and medicine, oral and maxillofacial surgery education has been significantly enhanced during the past 20 years. Training time has been lengthened and a wider range of proce-

dures have been incorporated into the curriculum

The advent of accreditation has assured minimal yet high standards that programs must fulfill to adequately educate surgeons in the profession.[4] The Commission on Dental Accreditation, a nationally recognized accrediting body, is responsible for approving and administering the standards for accreditation. It is an independent group of individuals who are appointed by the ADA as well as the nine recognized specialties, and other dental agencies. Recognition as the ultimate accrediting body is given by the continued inspection and approval by the U.S. Department of Education. In conjunction with the American Association of Oral and Maxillofacial Surgeons, it will set criteria for and approve residency training programs. The standards cover a wide range of institutional, faculty, curriculum, program resources and patient care areas to assure a high level of education in all accredited programs. Each program is subject to reinspection every five years in distinction to the general dental school and all other specialty cycle of seven years.

Residency Curriculum

Following graduation from dental school, resident surgeons complete a surgical residency of at least four years. A minimum of 30 months is spent on the oral and maxillofacial surgery service providing a broad scope of specific surgical experience for the resident. At least 18 months are spent on off-service rotations on a variety of medical/surgical services, which are applicable to the oral and maxillofacial surgeon. There are several required off-service rotations, including a minimum of four months of hospital anesthesia, two months on the clinical medicine service, and four months on the general surgery service. In addition, at least eight months is spent on a variety of other services, which may include rotations in plastic surgery, otolaryngology, neurosurgery, infectious disease, and pediatric surgery. During this time, residents learn management of both adult and pediatric patients.

The resident's outpatient experience is very broad, as a substantial amount of surgical activity is provided in this setting. Each oral and maxillofacial surgery resident sees more than 3,000 patients per year on an ambulatory basis. This would include at least 100 general anesthetics or deep sedations for adults and children per senior resident position for outpatient, ambulatory surgical procedures.

The oral and maxillofacial surgeon admits and manages a large number of patients to the hospital for major medical procedures. These patients fall into a variety of categories, including trauma, reconstruction, orthognathic surgery, pathology, and esthetic surgery. In support of the hospital-based procedures and general anesthesia training, the residents all become certified in advanced cardiac life support and are trained in advanced trauma life support.

Residents also complete a structured, didactic course in physical diagnosis similar to that provided to medical students. This course is taught early in residency, enabling application throughout training. It is reinforced during rotations to the medical, surgical, and anesthesia services where oral and maxillofacial surgery residents must function at the level of the other residents in the respective services. Because of this specialized education, oral and maxillofacial surgeons are capable of performing significant surgical procedures within a diverse scope of practice.

In summary, upon completion of an accredited oral and maxillofacial surgery program, the surgeon is competent to perform a wide variety of diagnostic and surgical procedures for the comprehensive management of the diseases, injuries and defects involving both the functional and esthetic aspects of the hard and soft tissues of the oral and maxillofacial regions.

The Medical Degree

Some residency programs provide education to earn a medical degree as an integrated component of oral and maxillofacial surgery training. Regardless of whether a resident decides to complete residency with or without a medical degree, the oral surgical training is similar. In accordance with accreditation standards, all residents must complete the same rotations through the medical, surgical and anesthesia services with the same level of responsibility. While the medical degree does not impact the oral and maxillofacial surgical education, it provides an excellent opportunity for expanded learning in the medical care of patients at all levels.

Because of their specialized education in general, oral and maxillofacial surgeons are trained to perform many procedures that are also performed by physicians, including reconstruction of the nose and orbits, maxillofacial surgery, cleft lip and palate and facial esthetic surgery. Regardless of degree, the oral and maxillofacial surgeon who is trained today is a competent individual who is capable of many surgical procedures to help patients in need.[5]

California Training Opportunities

Within California, there are seven fully accredited residency education programs for oral and maxillofacial surgery.

University of California, Los Angeles

Earl G. Freymiller, DMD, MD, program director

The University of California, Los Angeles, has a six-year combined oral

and maxillofacial surgery and MD degree program. Two residents are selected each year and their education consists of the required oral and maxillofacial surgery rotations as well as two years of medical school and one year of general surgery internship.

The residents spend their time on the oral and maxillofacial surgery service by rotating at UCLA Medical Center, Harbor-UCLA, and Kaiser Permanente. They receive training in dentoalveolar surgery, orthognathic surgery, trauma and pathology. Extensive implant and reconstructive surgery education is part of the curriculum as are trips to Mexico for cleft surgery education. Being based in the school of dentistry offers a multitude of opportunities for didactic education as well as significant interaction with all the specialties of dentistry in patient care.

The program allows for a one-year internship in oral and maxillofacial surgery for individuals who would like to experience additional education in that area.

University of California, San Francisco

M. Anthony Pogrel, DDS, MD, program director

The residency program in oral and maxillofacial surgery at UCSF leads to either an MD degree from the University of California, San Francisco, School of Medicine, or the University of California, Davis, School of Medicine. Both MD programs require a one-year general surgery internship. The length of the residency program depends on the placement of the resident into medical school with advanced training and can last either six or seven years.

The residents may also combine a PhD in oral biology with their certificate in oral and maxillofacial surgery and their MD degree. This program is approximately nine to 10 years in length, allowing for three years of research leading to the PhD.

The residents rotate through University of California, San Francisco Medical Center, San Francisco General Hospital and San Francisco Veteran's Administration Medical Center. The residents get experience in pathology, reconstruction, orthognathic surgery, TMJ surgery, implants, dentoalveolar surgery and anesthesia.

The residents receive intense training in didactic courses and lectures. They participate in the tumor board, journal club and the orthognathic conference.

In their senior year, residents may have the opportunity to exchange positions with a resident program in Great Britain to afford a broad base of education.

King/Drew Medical Center

Richard Leathers, DDS, program director

The King/Drew Medical Center takes two residents a year for a four-year certificate program in oral and maxillofacial surgery. The facility is a Level 1 trauma hospital where the residents spend the majority of their program. They also rotate to Harbor-UCLA Medical Center for their anesthesia and general surgery training. At Kaiser hospital in Los Angeles, they get experience in orthognathic surgery.

They are currently working on several projects including trauma and wound healing research.

University of the Pacific/Highland Hospital

A. Thomas Indresano, DMD, program director

The Alameda County Highland Hospital oral and maxillofacial surgery residency program was started in 1926 as an independent program. By 2001, University of the Pacific affiliated with the long-standing Highland residency. At that time, the residency also made an affiliation with Kaiser Permanente in Oakland.

The residency currently accepts two residents per year for a four-year certification in oral and maxillofacial surgery. Next year, the residency will increase to three positions per year. The education of the residents includes didactic courses and hands-on dissection labs.

At Highland Hospital, the residents gain experience in trauma, implants, pathology, dentoalveolar and TMJ surgery. The senior resident rotates at Kaiser for six months during which time they receive extensive training in orthognathic surgery. At University of Pacific, the residents participate in a joint orthognathic conference with the orthodontic residents and get experience with complicated dentoalveolar cases. At both institutions, the residents perform conscious and deep sedation.

In November, a team from the residency goes to Mexico with the Thousand Smiles program to perform surgery on cleft lip and palate patients.

Travis Air Force Base/David M. Grant Medical Center

Lt. Col. David Smith, DDS, MD, program director

To be a resident in this program, one must be a member of the military. Travis has a four-year program leading to an oral and maxillofacial surgery certificate. They accept two residents per year most of whom have the rank of captain or major.

The residents rotate to Fresno at the University Medical Center for eight months to get their trauma training. The main surgical procedures performed at Travis are orthognathic, cosmetic and dentoalveolar surgery.

University Medical Center, Fresno

Robert Julian, DDS, MD, program director

One resident is accepted per year to the four-year oral and maxillofacial surgery certification program in Fresno. They do offer a one-year oral and maxillofacial surgery internship and have one of the Travis Air Force Base residents for eight months of the year.

The resident at UMC gets voluminous experience covering the VA, Children's Hospital, Kaiser, St. Agnes and the Community Medical Centers of Fresno. The major areas of focus are trauma, pathology and surgical oncology, orthognathic surgery and some cosmetic surgery.

Current research projects include plating mandible fractures without the use of maxillomandibular fixation, osteomyelitis and endoscopically treated mandible fractures.

Loma Linda University

Alan Hereford, DDS, MD, program director

The oral and maxillofacial surgery residency at Loma Linda University offers two tracks: a four-year certificate, and a six-year MD program. Residents in the six-year MD program attend the Loma Linda University School of Medicine. At the end of their medical training, residents complete a one-year general surgery internship.

The program has affiliations with the Loma Linda University, School of Dentistry, Loma Linda University Medical Center, Riverside Regional County Medical Center, and Arrowhead Regional Medical Center.

The training the residents receive is full scope oral and maxillofacial surgery including trauma, reconstruction, pathology, orthognathic surgery, esthetic surgery, temporomandibular surgery, craniofacial and dentoalveolar surgery.

USC/LAC Medical Center

Dennis Duke Yamashita, DDS, program director

The University of the Southern California/Los Angeles County oral and maxillofacial surgery residency program is celebrating its 50th anniversary this year. Yamashita, the residency program director, has seen some changes in the curriculum over the past several years. Ten years ago, the program took the first MD integrated resident. At present, the program takes two residents per year into the six-year MD integrated, and one in the four-year certificate program.

The MD program residents enter residency by doing their four months of anesthesia and integrating with the medical school during their first year. In total, they complete 30 months of medical school. During that time, they integrate some of the clinical rotations on the oral and maxillofacial surgery service. After completing medical school, a mandatory one-year internship is done on the general surgery service at Huntington Memorial Hospital. The residents complete their fifth and sixth year of training on the oral and maxillofacial surgery service at LA County Hospital.

LAC is a Level 1 trauma center where residents spend the majority of their time. They also spend time at Children's Hospital where they get their orthognathic surgery training and are part of a craniofacial team. At the University of Southern California, School of Dentistry, they perform other surgical procedures including implants.

Current research by the faculty and residents include a grant for trauma research and an Oral and Maxillofacial Foundation grant for research on osteodistraction.

There is a one- year internship available. CDA

References / **1.** ADA Definition of Oral and Maxillofacial Surgery, 1977.
2. Recruitment of Oral and Maxillofacial Surgery Residents, AAOMS, 2003.
3. The Building of a Specialty: Oral and Maxillofacial Surgery 1918-1998 Educational Standards, AAOMS, 2000.
4. AAOMS Statement on Oral and Maxillofacial Surgeons, 2000.
5. Competencies of the Oral and Maxillofacial Surgeon at the Completion of Training, AAOMS, 2002.

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