

## The Medical Model in Orthodontic Education

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Why is dentistry independent from medicine?

Anatomically, the “dental territory” is in the head and neck region; biologically, the mouth includes most body tissues and contains others (teeth, attached mucosa, tongue) as well as developmental processes (two dentitions) that are unique. Why, then, is dentistry cut out of medicine?

I use the question to indicate that dentistry is medicine. While confirming this conviction, heading an orthodontic division at a medical school<sup>1</sup> within the department of otolaryngology–head and neck surgery complements my formal life as a trainee and clinician academician in a dental model.

The medical model exists at several institutions (Mayo Clinic, Rochester, Minn; Montefiore, NY; Einstein, Pa). The orthodontic residency is the only dental unit at “our” medical school. Residents are “at home” in a hospital for 3 years. Each orthodontic resident starts treatment of at least 75 new patients, three to ten of whom need orthognathic surgery. They correspond with medical residents and physicians every day in an environment that has facilitated the generation of clinical and basic research of different depths or focus than in the dental milieu.

Research is required for a medical school–based masters degree. One resident investigates the optimal time for removal of tissues blocking nasal breathing to avoid a permanent track toward characteristics of the adenoid faces. In daily contacts with ear, nose, and throat (ENT) residents, he or she is adept at their thinking and treatment, and they recognize the posterior crossbite and hyperdivergent pattern developed with mouth breathing. In another resident’s masters in anatomy, focus on craniofacial configuration associated with Class III malocclusion reveals that a possible reason for anterior crossbite in children is forward mandibular positioning for better breathing—not unlike our treatment for some patients with sleep apnea who

are overseen by the pulmonary specialist. Such crossbite, if sustained, can lead to maxillary retrognathism that otherwise would not exist. One resident’s masters (microbiology/immunology) explores periodontitis and premature birth. Mothers are recruited through the Obstetrics-Gynecology department. Another resident works with an endocrinologist on how bisphosphonate affects dental development.

Like most US programs, orthodontists teach the edgewise–straight-wire methods learned in the United States and Europe (eg, Tweed, bioprogressive, bidimensional, amalgamated, and self-developed mechanics) and treatment with an array of functional and removable appliances. A laboratory technologist’s course spans the entire first year. A periodontics series running weekly for 3 years includes biology of tooth movement and an orthodontist-tailored implants course. The periodontist supervises placement of mini-implants by the residents, who also assist on adjunctive procedures (eg, tooth exposure, gingival grafting). A maxillofacial surgeon (an MD) leads the craniofacial anomalies and orthognathic clinic; the residents rotate with him or her in the operating room. An oral surgeon lectures on bone biology, minor surgery, and also implants. One of two affiliated prosthodontists directs the occlusion and temporomandibular joint dysfunction course and weekly clinic, whereas the other teaches the dental materials course. Both advise on multidisciplinary treatment.

Core basic science courses are embedded within the masters curriculum. ENT specialists lecture on head and neck topics; a floor-neighbor pediatric endocrinologist consults on somatic growth. We return collegial favors through presentations on now-familiar medical grounds. With affiliated dental specialists, orthodontic residents provide the first line of consultation for emergency calls and inpatients, including children at the local chapter of the St Jude Cancer Center.

Our status demonstrates that medicine naturally absorbs orthodontics in the context of its clinical and scholarly activities. Moreover, we represent a core unit for a developing Face Center, an umbrella of services expanding from our alliance with ENT to dermatology.

A New England dental school dean who was visiting Beirut spoke of the future of dentistry as its “integration into medicine,” depicting the biotechnological de-

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\* The New York State–chartered American University of Beirut celebrates its 140th anniversary in 2006. The dental school, founded in 1910, closed in 1940. The first resident of the new orthodontic division graduated in 2005.

velopments responsible for this direction. At that time, the graduate medical education, accepted in hospitals, was denied at US dental schools. Recognizing dental clinics as offsite hospital-affiliated outpatient treatment centers might have been a level of ankylosis between dentistry and medicine.

By 2106, dental clinics could be an integrated discipline of biomedical engineering. At present, substantive, logistic, historical, and political reasons prevent their union, though different patterns have been advanced. At some institutions, dentists specializing in maxillofacial surgery have moved to medicine, but no traffic moves in the opposite direction. Ironically, Edward Angle received an MD degree nearly 20 years after studying dental surgery.

Every environment sustains its own culture. Periodic interaction between two ways is not as forming as continuous interfacing. The orthodontic residents are at

ease with a more global approach to health while fully versed in orthodontic science and clinical practice. Physicians and their students value the scope, knowledge base, and potential of dentofacial orthopedics, from growth modification to orthognathic surgery.

The medical model certainly does not reflect Main Street's private-practice setting. But the issue is education and the impact of the formative years on standards of care is enduring and self-renewing. I wonder with my residents how another educational model could not be as challenging and fulfilling, given the range of scientific thought and culture and the substance of learning and contributions. The existence of the medical model along the dental model is an asset to orthodontics, dentistry, and medicine. Variation surely inhabits each model. Perhaps a systematic analysis of the educational paradigms and their products is overdue.