

# Enhancing the Value of Operative Dentistry

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A recurring topic for editorials in this journal is concern for the status and future of operative dentistry in dental education and as a distinct clinical discipline. In 1996, Mjör and Wilson proposed that operative dentistry has been compromised by the evolution of dental specialties with the subsequent loss of expertise to those fields, along with narrowly focused definitions and textbooks limiting the scope and curricula of the discipline<sup>1</sup>. In response to this compromised status (or devaluation) they recommended that the “aims and objectives...must be global, and as a consequence, broad-based.” Further, they suggested that “the preservation and further evolution of operative dentistry cannot be considered to be vested in a single organization.”<sup>1</sup>

In 1972, Grainger wrote, “Operative Dentistry must look at its fundamentals in the light of the future. Operative Dentistry must accept the challenge of a restorative and biologic multispecialty...The discipline of Operative Dentistry must shrug off its apathy, recognize its worth and dominate once more the direction that dentistry must take... We are skilled in producing skeptics, but not very good at producing individuals who can create their own framework for values. The first step towards the reconstruction of professional values is the rediscovery of values in one’s own tradition.”<sup>2</sup>

In light of these concerns and others, it seems appropriate to assess operative dentistry’s current status and role in dental education and as an essential multi-specialty discipline. This assessment will be made from the following perspectives: the dental school academic unit, the dental curriculum, dental licensing exams, affiliations with the academic dental community, and national/international associations. My purpose is to highlight the considerable values operative dentistry already possesses and those which it has to offer other educational disciplines and recognize current and potential partners for its future growth and development.

## Academic Unit

A review of the websites of US dental schools reveals that the term “Operative Dentistry” exists as a formally designated part of the schools’ organizational structure in 16/59 or 27% of all schools.<sup>3</sup> Some new schools were not included in this review due to insufficient data on their websites. In five of the 16 schools (8% of the total) operative dentistry appears as a primary academic unit (eg, department), while in the other 11 schools, it appears as a division or section under another higher level unit. The other units that serve as the departmental location of the operative dentistry *function* in the schools’ organizational structures are variations of “Restorative Dentistry” (35 schools), “General Dentistry” (8), “Clinical Dentistry/Sciences” (3), “Comprehensive Care” (3), “Oral Rehabilitation” (2), and three others including “Adult Dentistry,” “Reconstructive Sciences,” and “Oral Health Practice.”

Operative Dentistry curricula exists in every dental school even if the academic unit to which it is assigned does not intuitively sound like a traditional or appropriate location in a school’s

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organizational chart. The term Operative Dentistry is often used interchangeably with the more inclusive Restorative Dentistry, so that organizational link could be predicted. Regarding the other academic affiliations, and considering the trend towards more diverse, multi-disciplinary departments and clinics, the association of operative with General/Clinical/Comprehensive Dentistry or Oral Rehabilitation/Reconstructive Sciences units reflects the educational philosophy of those schools (broad-based departments) and/or the tendency to down-size their administrative structure (personnel) by combining departments.

Some operative dentistry educators have expressed their displeasure with the gradual loss of its status as a primary academic unit, which they perceive as a decrease in stature or value. The historic departmentalization (or *compartmentalization*) of operative dentistry may well have contributed to its current prevailing status as a *component* of a larger academic unit for the reasons outlined by Mjör and Wilson above. If one of the aims of operative dentistry is to be “broad-based,” what better platform to do this than within a broad-based department structure? The competition for resources (eg, faculty, curriculum time, and funds) is just as stiff in dental schools as it is in other bureaucracies. The larger academic units should have an advantage relative to resource procurement, and there is often some discretion within the unit regarding how its resources are dispersed. Resources and perceptions aside, the location of a discipline in a dental schools’ departmental hierarchy should not have a bearing on value. The real value of operative dentistry to dental education may be best judged by its unique contributions to the curriculum and its significant role on dental licensing exams.

### Dental Curriculum

The 2006 Consortium of Operative Dentistry Educators (CODE) National Agenda contained the following survey question on operative dentistry curricular content: “List the ten most important Operative Dentistry concepts or techniques that should be taught in a pre-clinical lab course in relative order of importance. One can identify more than ten, but please choose at least ten essential core Operative Dentistry Curriculum items that are “non-negotiable” in your school. The concepts or techniques that are identified should be those that are routinely used in your clinics (adult patients) and/or that faculty believe are useful to a practicing dentist.”<sup>4</sup>

The responses from all six geographic CODE regions were presented at the national CODE meeting at the 2007 Academy of Operative Dentistry meeting. All of the regional responses were combined into the following common categories to yield a concise list of topics that operative dentistry academic units teach—Isolation, Definitive Direct Restorations, Caries Prevention and Management, Adhesion, Core Build-ups, Conservative Indirect Restorations, and Vital Pulp Therapy. This type of survey should be repeated at frequent intervals to provide the discipline with a self-assessment of its essential curriculum content to cope with the continual compression of the whole dental curriculum to make room for the expansion of evidenced-based knowledge and the introduction of effective new therapeutic techniques. The threat to curricular time is not new. Dr Louis Terkla summarized it well in 1976 when he addressed the subject of adequate curriculum time for restorative dentistry, “Clinical faculties in restorative dentistry must hold strongly to their convictions about the importance of their disciplines in the preparation of future dentists.... Nobody bothers much about the fact that operative dentistry not only needs all of what it has left but is dangerously marginal in terms of having enough time to do the job.”<sup>5</sup>

Before we can hold onto our convictions, we must know what they are and why they matter. The list of curriculum items above is fundamental, very traditional, and uniquely ours. We are, or should be the undisputed curriculum experts in isolation techniques, definitive direct restorations, minimum intervention dentistry, management of carious lesions, adhesion, vital pulp therapy, and core build-ups on vital teeth. We are, or should be, no less than equal partners with other disciplines in nonsurgical caries management, preventive dentistry, core build-ups on nonvital teeth, and conservative indirect single tooth restorations. These subjects help shape our identity as a “restorative and biologic multispecialty” and reveal our value.

The topics listed above represent the unique or *intrinsic values* (ie, “worth having for itself, not as a means to something else”) that operative dentistry brings to a dental curriculum, regardless of its place in the organizational chart. Operative dentistry also provides extrinsic or *instrumental values* (ie, “worth having as a means towards getting something else that is good”).<sup>6</sup> In the dental curriculum, instrumental values provided by one discipline are useful to other disciplines for the good or utility that they provide. Some examples of operative dentistry

derived instrumental values include initial training in: basic psychomotor techniques with hand instruments (eg, grips and finger rests), indirect vision with the mirror, hand-piece operation, ergonomics, and using specific criteria to perform and evaluate clinical procedures (eg, cavity preparations) on a fine scale. The basic training students receive in preclinical operative dentistry and the repeated practice they obtain in their early clinical experiences facilitate the training provided by, and the competence developed in, other disciplines as well. The clinical licensing exam represents the culmination of many operative-derived specific skills and its spin-offs, or the intrinsic and instrumental values of operative dentistry's contributions to dental education.

### Dental Licensing Exams

No other dental discipline has such a prominent role in the testing of candidates for licensure as operative dentistry. An assessment of the content of all of the licensing exams listed on the American Association of Dental Boards website shows that operative procedures comprise from 66% to 100% of the clinical portions of these exams, with a clinical periodontal exam making up the remainder in those cases where it is included.<sup>7</sup> The operative portions of these patient-based exams include varying combinations of the Class II amalgam, Class II composite resin (conventional or slot preparation), Class III or IV composite resin, and conservative gold castings. Manikin-based clinical portions include prosthodontic and endodontic procedures, while some diagnostic disciplines such as oral medicine and radiology have been assigned to broad-based computerized exams, or form a component of the primary test of clinical skills—operative dentistry. Operative dentistry educators should take pride in knowing that some of the most basic direct restorative procedures—Class II and Class III direct restorations—are considered to be so essential and valuable to daily general practice that they make up most or all of the clinical board exam that our students must take to become licensed.

Dr Hunter Brinker recognized the value of affiliation between operative dentistry and state boards in his commentary: "Is Our Island Sinking?" With regard to the "decline in the level of competency of dental graduates in the clinical skills..." he concluded that "By working together, we (educators and board examiners) can plunge forward and give operative dentistry its proper place in the curriculum."<sup>8</sup> How significant is that comment today

considering that most (or all) of the clinical exam is composed of operative procedures compared to the more comprehensive clinical exams in 1977.

The Consortium of Operative Dentistry Educators, an affiliate of the American Dental Education Association (ADEA) Section on Operative Dentistry and Biomaterials, has been meeting since 1974, and it provides a unique opportunity for operative faculty to meet annually in six geographic regions and discuss important curricular issues. This group has provided an essential forum for operative dentistry education between schools and more recently with licensing boards through the participation of their representatives at our regional meetings. It is anticipated that as we build closer ties with members of the American Association of Dental Boards we can enhance our status through the value we can provide to them on behalf of the public we both serve.

Dental Licensing Boards are just one example of the partnerships and affiliations that operative dentistry should be developing to preserve our status as an essential and distinct discipline; there are others that can provide a basis for enhancement as our discipline evolves to keep pace with the rest of the profession.

### Affiliations in Dental Education

Since operative dentistry units are predominately part of larger academic units, provide intrinsic and instrumental value to other units, and have such vital roles to play in clinical licensing exams, the potential for close affiliations with other school-based disciplines are obvious and essential. Cariology requires a multi-disciplinary approach from diagnosis to therapy and operative dentistry is the most conspicuous partner with the basic science and oral medicine faculty that provide the evidence-based foundations for caries treatment that operative dentistry is uniquely equipped to deliver. Mjör called operative dentistry "preventive endodontics" and that interdisciplinary affiliation is obvious with our focus on single tooth restoration that starts with the measures we take to preserve the pulp-dentin complex.<sup>9</sup> In most schools, operative dentistry lays the groundwork for prosthodontics by treating carious lesions and restoring teeth (vital or nonvital) to a stable condition suitable for crowns and other prostheses. The perio-operative connections are clear when you consider how much influence we have on interproximal and cervical tooth contours from our efforts to repair the destruction of teeth due to caries, fracture, abrasion, erosion, and iatrogenic



causes. Several academic interdisciplinary connections are waiting to be initiated or enhanced, to the benefit of all partners and especially our patients.

There are other potential educational affiliations to be developed besides the apparent ones in dental schools. The Section on Operative Dentistry and Biomaterials in ADEA's Council of Sections is potentially one of our most valuable and underutilized partners. The Section on Operative Dentistry merged with the Section on Biomaterials in 2004, and it has continually supported the Cariology Special Interest Group in its successful quest for section status (approved in 2010).<sup>10</sup> Joint programs have been conducted with Biomaterials and Cariology at the annual ADEA meeting and with CAMBRA (Caries Management by Risk Assessment) at the Academy of Operative Dentistry meeting for the last several years. Other ADEA sections that have natural links to operative dentistry and should be partnered with include: Dental Anatomy and Occlusion, Community and Preventive Dentistry, Comprehensive Care and General Dentistry, and Clinical Simulation to name a few obvious ones in addition to the Sections on Endodontics, Periodontics, and Prosthodontics for reasons cited above.

The affiliations described so far, within and between dental schools and with dental licensing boards, are examples of opportunities to enhance our stature and value on the national level. With regard to Mjör and Wilson's comment about being "global," we also have options to broaden our base and sphere of influence on an international level.

### Global Presence

The purpose of the Academy of Operative Dentistry (AOD) is "to promote excellence in Operative Dentistry by exerting our influence in the practice of health professions, in organized dentistry, in health science education, in research and in any other realm where dentistry is involved" and ever since its founding in 1972, it has been an international organization. The History and Archives section on the AOD webpage describes how the academy started and includes the following: "There are 385 charter members representing 41 states and seven foreign countries."<sup>11</sup> International memberships have grown over the years providing the basis for the European Section, established in 1998, giving the academy a formal global presence. Considering the success of the first international section, other intercontinental sections should be encouraged and promoted.

Although ADEA and CODE are generally considered to be US organizations, both have active members in Canada and Puerto Rico. Over the past two years, CODE has conducted surveys on operative dentistry education simultaneously in the US and the UK with the aid of the European Section of the AOD. Results of these surveys were presented during the CODE meeting at the AOD meeting and were subsequently published.<sup>12,13</sup> This type of joint activity between US and European schools further broadens our base and enhances the reputation of the discipline on a wide scale.

*The Journal of Operative Dentistry*, established in 1976 as the successor to the former *Journal of the American Academy of Gold Foil Operators*, has an international presence with subscribers in over 50 countries.<sup>14</sup> Considering the frequency of manuscript submissions from other countries and its highly regarded status with the Institute for Scientific Information journal rankings, the journal serves as one of the most significant international ambassadors for our discipline with each bimonthly issue.

### CONCLUSION

Considering our current status and existing affiliations, operative dentistry is well positioned as it continues to make significant contributions to dental education and clinical practice. However, if operative dentistry is going to persist as a distinct and sustainable discipline, we must acknowledge and exploit our own unique and instrumental values in education and clinical care, and recognize the value of collaborating with other disciplines and organizations, nationally and internationally. In this way we can take a broad-based approach if we choose to influence the direction of dentistry through our traditional role as a "restorative and biologic multi-specialty." Finally, we need to actively support the ADEA Section on Operative Dentistry and Biomaterials, CODE, the Academy of Operative Dentistry, and our journal if we concur with the sentiments of Mjör and Wilson that "the preservation and further evolution of operative dentistry cannot be considered to be vested in a single organization."

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