



Medical Education in a COVID Era: The Role of Virtual Conference



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The University of Pennsylvania Department of Orthopaedics has been at the cutting edge of both telemedicine as well as conferencing advancements since the drastic adjustments COVID required. A quick google search of “disruptive innovation + COVID” offers approximately 23 million hits—needless to say the COVID-19 virus was a disruptor of epic proportions. It did however serve as the genesis for unprecedented medical innovation. Within a matter of weeks, the standard operating procedures of hospitals needed to be recreated out of thin air with only the barest bit of information available concerning COVID itself. An entire discussion of this is outside the scope of this brief update. We will discuss the salient points of virtual conferencing and the beneficial effects we have noted it to have on both resident orthopaedic education as well as resident leadership and professional development.

As a result of the COVID-19 pandemic, many residency and fellowship programs implemented unique and creative solutions to continue required graduate medical education¹ while adhering to social distancing guidelines. These strategies include utilization of Google Hangouts for daily surgical lessons in anatomy and clinical practice², “platooning” residents into “active duty” and “working remotely” factions that allow focus on service and education respectively³, attending-led discussions of high-quality surgical videos⁴, and weekly morning, afternoon, and evening educational teleconferences⁵. It was unclear, however, how these virtual educational initiatives compared to traditional educational

activities, how effective they were in accomplishing their educational goals, and how satisfied residents and faculty have been with those efforts.

At Penn, daily fracture conference and weekly subspecialty educational conferences that traditionally met in person were disrupted by social distancing restrictions in mid-March 2020. In order to continue educating our residents, we implemented both morning and evening teaching via a screen-sharing software platform on personal computers and mobile phones (BlueJeans or Zoom) (Figure 1, 2). The evening fracture conference at our institution was met with active participation and the resident response was enthusiastic. For this reason, we expanded the conference format with the support of the Orthopaedic Trauma Association. The conference was organized as a case-based imaging presentation similar to traditional fracture conference, supplemented by “chalkboard” discussions led by a rotating group of orthopaedic trauma faculty across the country. Virtual real-time polling questions were incorporated to assess learner knowledge during the case and to create discussion. Though we felt that the national conference was being well received we were unsure if this was simply a case of confirmation bias due to high attendance and enthusiasm of certain faculty and residents.

For this reason, we conducted a national survey to gauge resident and faculty perceptions of virtual fracture conference with very compelling results. The overwhelming majority (88%) responded that participation in the virtual fracture conference improved their overall educational experience;



Figure 1.



Figure 2.

47% noted moderate improvement and 41% noted significant improvement. Additionally, 100% of participants were likely to recommend this virtual conference to their colleagues, with 100% of participants also recommending continuing this conference even after the COVID-19 issues resolve⁶.

Our yearly leadership forum also occurred virtually during 2020. In an effort to promote leadership as part of residency training, we have had the privilege of engaging and collaborating with the Wharton School at the University of Pennsylvania since 2017 to create an annual leadership program, with topics rotating on a four-year cycle. Over the course of two days, the program provides didactic training in leadership that provides an overview of leadership to residents. The formal program is supplemented by periodic grand rounds speakers in addition to a quarterly leadership ‘journal club’.

In a serendipitous turn the first year we decided to collect data on the value of our leadership conference, it was forced to go virtually as a result of COVID. Early results were very promising. Survey of our residents’ perspectives on the annual leadership conference showed that 100% of residents found value in the program, with 71% of participants finding it be of either excellent or very good value overall. In terms of value to their career development in particular 93% found it to be useful. 64% found it the career development potential to be extremely or very valuable. A majority of residents also found the speakers to be engaging with a high level of comfort in asking them questions concerning their specific content⁷.

It remains to be seen if interest in our virtual conferences will remain as COVID-19 recedes, elective surgery resumes, and demanding clinical duties resurface. Unfortunately, we cannot predict either the future of COVID-19 or how learners will respond in a post-COVID learning environment. The COVID-19 disruption has accelerated our adoption of clinical innovations that have been years in the making. For example, rapid telehealth expansion has met a positive reception^{8,9}. Evolution does not always occur in a steady or gradual manner

but is more aptly characterized by eras of dramatic leaps and advances in times of unprecedented stressors. These innovations are re-shaping the realm of education as well. In the domain of orthopaedics this has led to the successful implementation of a weekly, national fracture conference, and leadership conference which residents find both educational and of high professional value. Even as clinical practice has resumed our national fracture conference continues to average 120-150 participants every Wednesday evening—another sign that virtual conferencing may remain a mainstay in the education of surgeons in-training.

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