The senior authors of this study have therefore created a low-cost model of a human hand using 3D printing and silicone molding to facilitate at-home practice sessions for K-wiring.

**Methods:** Following IRB review and approval, 11 plastic surgery residents (PGY 1-6) were recruited for this study. All residents watched a presentation from the senior author (A.P.), which outlined 10 steps to K-wire fixation; the task at hand was placement of two K wires diagonally across a simulated metacarpal fracture. These trials were timed. Residents were divided into two groups in which Group A performed K-wire fixation and Group B observed. The groups then crossed over. The residents performed four practice sessions at home prior to the next assessment. Confidence and satisfaction data in a 15 question survey were recorded using a Likert scale from 1-5, with 5 corresponding to strong agreement. Aggregate scores are represented in parentheses below.

**Results:** All residents agreed that the model was realistic (4.7), sufficient for fracture identification (4.5) and had appropriate approximation of soft tissue and bony tactile feedback (4.3). Moreover, all residents agreed that they found these sessions stimulating (4.9). All residents would recommend this model to other trainees (4.8) and reported feeling that they had learned valuable skills (4.6). Most residents had scrubbed either 0-5 or 6-10 cases requiring K wiring. All residents felt more confident with K-wiring following the practice sessions when compared to pre-training baselines (2.7 vs. 4.4). Times were stratified by PGY level; PGY 1-4 (n = 8) average times Session 1 was 712 seconds and 433 seconds for Session 2, while PGY 5-6 (n = 3) times were 495 seconds and 247 seconds respectively (p = 0.037).

**Conclusion:** Our analysis demonstrates that residents universally approved of and benefitted from the K wiring instructional session and practice model. The time improvement was statistically significant. We therefore believe that this is a practical and efficacious model to improve a critical skill in hand surgery across training levels.

**5. The Resident Review: A Plastic Surgery Educational Podcast**

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**Background:** There is currently a paucity of online educational material for Plastic Surgery trainees. While other specialties have developed podcasts and websites to aid in test preparation, a similar media platform did not exist within Plastic Surgery. Thus, our aim was to provide a novel avenue for high-quality and accessible Plastic Surgery education through creation of a podcast.

**Methods:** The Resident Review, the first Plastic Surgery educational podcast, was launched in 2019. Each podcast included an expert in the field of discussion, except for our “Quick Hits” series, which served as a review for our in-service examination. Other series included “Microsurgery Masters,” featuring leaders in microsurgery, “Flap Cast,” which helped residents review flap anatomy and prepare for perforator dissections, and “Back to Basics,” which aimed to prepare medical students for Plastic Surgery rotations.

**Results:** Our team has created 83 episodes including 46 “Quick Hits,” 2 “Microsurgery Masters,” 6 “Flap Cast,” 6 “Back to Basics,” and 23 traditional episodes. To date, 21% of the episodes pertain to hand surgery, 18% discuss microsurgery topics, 13% cover aesthetic surgery, and the remainder discuss general reconstruction. The total listens since conception is over 43,000 with 12% international listens and a 700% growth in 2021. We have included guest hosts from the Buncke Clinic, M.D. Anderson Cancer Center, Northwestern University, Emory University, Duke University, and Asan Medical Center in South Korea, among others. In addition, we created the first URM (underrepresented minority) scholarship to support medical student sub-internships in Plastic Surgery. Over 10 other institutions have followed suit, with the first class rotating this year.

**Conclusion:** The Resident Review was created to provide high-quality and equitable educational material for exam preparation, case review, and general Plastic Surgery education. Through institutional partnerships, scientific conference participation, and industry support, we have become a primary source for high-yield and purposeful Plastic Surgery content. Future goals include an increased international reach, production of additional video content, patient education, and creation of a research network to assist with multi-institutional participation.

**6. Description and Early Validation of the Use of an Immersive Virtual Reality Learning Module in Deliberate Practice of Zygoma Fractures Among Surgical Residents**

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**Background:** Operative management of facial fractures is a three-dimensional (3D) educational challenge faced by surgery residents. Currently, most knowledge-based learning occurs outside the operating room (OR) using textbooks and videos with occasional use of cadaver and 3D models. We hypothesized that use of immersive virtual reality (IVR) could offer a realistic, reproducible, and feasible, 3D learning environment to fill in the gap between conventional learning modalities and experiential learning in the OR. Secondly, we hypothesized that the gamified experience would improve residents’ learning.

**Methods:** An IVR module was programmed from a CT scan of human skeleton with an isolated zygomaticomaxillary complex (ZMC) fracture. Twenty participants completed a pre-intervention questionnaire assessing their demographics and gaming/surgical backgrounds. After watching a platform demonstration and completing a trial game, participants were asked to complete the module by identifying, segmenting, reducing, and plating the ZMC fracture using IVR. Participants then completed a post-intervention questionnaire to assess their experience with the IVR environment and its effectiveness for surgical learning and planning.

**Results:** The module was considered useful for conceptualization of operative anatomy (mean 4.3±1 out of 5; 5 being strongly agree), being an effective learning tool (mean 4.1±0.9), and its potential use in other training areas (mean 4.2±1). Senior residents indicated particular support for IVR’s benefit in improving operative competence and confidence (mean 3.6, p=0.02), and supported using IVR to replace other surgical training modalities (mean 3.6±0.7; p=0.03). The module was described as effective for surgical planning (mean 4.2±0.8). The anatomy and 3D perception of the module were found to be realistic (means 4.4±0.6 and 4.4±0.9, respectively).

**Conclusion:** The use of IVR in surgical training shows promising potential to fill the gap between knowledge-based and experiential learning of facial fractures. IVR provides a reproducible, digitally modifiable, and feasible modality, which utilizes patient-specific anatomy for pre-operative rehearsal and deliberate practice. The gamified experience associated with IVR may play a role in motivating residents and improving learning dynamics. More studies focusing on content validity and measuring objective performance metrics will help establish IVR validity as an innovative surgical training strategy.

7. WITHDRAWN

8. Combining Search Query Data with Operation Smile and Smile Train Outreach to Better Understand Global Cleft Surgical Care

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**Background:** Understanding patient awareness of cleft lip and/or palate (CL/P) and evaluating demand for necessary procedures may serve to better target future efforts in global outreach. One potential solution to help understand patient demand for cleft care is assessing the density of cleft-related internet search terms in developing countries.

**Methods:** We utilized internet search query data from Google Trends for the terms: “cleft lip,” “cleft palate,” “cleft lip and palate,” “cleft surgery,” and “cleft repair” from January 2004 to January 2021. Relative search volumes (RSV) recorded for the top 5 highest displaying countries and top three available regions within those countries were compared against global outreach by Operation Smile, as measured by the number of patients treated. World Health Organization (WHO) indicators were used to validate the RSV values for each country and better understand the current infrastructure and need for cleft care in those countries.

**Results:** Globally, there was an increase in RSV for the terms “cleft lip,” “cleft palate,” “cleft lip and palate,” “cleft surgery,” and “cleft repair” between 2004 and 2021. For “cleft lip,” the countries with the highest displaying RSVs included: Ghana (100%), Zimbabwe (97%), Nepal (78%), the Philippines (64%), and Kenya (52%). Countries with high RSVs and moderate to high WHO indicators included Ghana, Kenya, India, Nigeria, and Zimbabwe. Countries with high RSVs and poor WHO indicators included Nepal and Pakistan. Some countries had specific regions with high search demand that are not currently targeted for global outreach.

**Conclusion:** Using Google Trends’ longitudinal data may help find more feasible locations and targeted care for efforts in global outreach with better patient awareness and turnout.