Methods: Medical students in a Plastic Surgery elective were randomly assigned to receive a traditional lecture on craniosynostosis alone (control group), or receive the lecture plus participate in a hands-on session using 3D printed skull models demonstrating craniosynostosis (intervention group). Prior to this study, the senior author collaborated with the Department of Radiology at a large tertiary care urban children’s hospital to have 12 models 3D printed from computed tomography (CT) scans of representative craniosynostosis patients. Pathologies represented include sagittal, metopic, lambdoid, unicoronal, and bicoronal craniosynostosis as well as pansynostosis resulting in Kleeblattschadel skull. Three of the skulls demonstrate post-operative changes following surgery for craniosynostosis with reconstructive techniques including strip craniectomy, modified Pi procedure, and frontoorbital advancement. A 23-question test evaluating knowledge of CS was administered at three timepoints: prior to the course, after the lecture +/- the intervention, and three weeks later. Statistical analysis compared test performance between cohorts.

Results: 21 students were enrolled; 11 were randomized to the control group, 10 to the intervention group. Test 1 (pre-intervention) showed no significant difference in the mean overall score (defined as total percent of correct answers) between groups (control=61%, intervention=57% correct; p=0.67). On Test 2 (post-intervention), both groups had significant increases in overall score. The control group improved by 21.3% (p=0.004) and the intervention group improved by 34.4% (p=0.002). Moreover, the mean score for the intervention group was significantly higher compared to that of the controls, with 92.1% correct versus 82.6% (p=0.041). Test 3 overall scores were not statistically different from test 2 scores, indicating little temporal decay. Students were highly satisfied with the quality and content of the intervention.

Conclusion: 3D printed skull models are effective educational adjuncts in craniofacial surgery. 3D printing technology is an inexpensive tool with high satisfaction rates that can be increasingly applied to medical student and resident education.

26. Heavy Rotation: Changing Consensus in Integrated Residency Training Program Rotation Schedules

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Background: As plastic surgery training evolves, ongoing appraisal of the 6-year integrated curriculum is warranted. We performed the current study to describe inter-program variance in structured US plastic surgery curricula.

Methods: In August 2021, we obtained rotation schedules from plastic surgery training program websites. When unavailable, we requested schedules from program coordinators. Individual blocks were each recorded as one of 52 rotations and sorted as follows: led by plastics faculty (“Core Plastics”), hosted by non-plastic surgeons within the scope of plastic surgery (“Off-Service”), and rotations outside the scope of plastic surgery (“General Surgery”). Within these categories further characterization was performed using descriptive statistics.

Results: Of 84 US programs, rotation schedules were obtained for 71.4% (n=60): 50.0% (n=42) listed complete data on their websites, 3.6% (n=3) listed partial data on their websites and provided additional data upon request, 17.9% (n=15) listed no data on their websites and provided data upon request, and 28.6% (n=24) provided no data online or upon request. The most common program structure was the “2+4” model (n=29, 48.3%) followed by the “1+5” (n=16, 26.7%), the combined “3+3” (n=13, 21.7%), and the “0+6” (n=2, 3.3%) models. Overall, programs offered mixed plastic surgery [mean=28.5 (SD±14.2) months] followed by ENT and dermatology. The most common plastic surgery rotations were hand, mixed cosmetics, and craniofacial/pediatrics. Most programs offered either electives [n=31, 2.3 (SD±1.2) months] or research time [n=22, 2.0 (SD±0.9) months]. Many programs offered experience in areas beyond ACGME requirements such as neurosurgery [n=19, 1.0 (SD±0.1) months], thoracic surgery [n=14, 1.0 (SD±0.3) months], and/or urology [n=6, 1.0 (SD±0.0) months].

Conclusion: Our findings show that >75% of integrated plastic surgery training programs featured a majority (74 years) of specialty-specific training with only 21.7% continuing the “3+3” model. While many programs provided data upon request, more than half did not include rotation schedules on their websites, potentially influencing competitive candidates’ decisions to apply. Continued transparency around plastic surgery training curricula can help program directors further refine their programs.