training backgrounds and scope of practice. *Plast Reconstr Surg.* 2020;146:1017–1023.
2. American Council of Graduate Medical Education. Plastic surgery: National resident statistics report. Available at: https://www.acgme.org/Portals/0/PDFs/360_National_ Report_Program_Version_2017-2018.pdf. Accessed November 18, 2020.
3. Handler E, Tavassoli J, Dhaliwal H, Murray M, Haiavy J. A review of general cosmetic surgery training in fellowship programs offered by the American Academy of Cosmetic Surgery. *J Oral Maxillofac Surg.* 2015;73:580–586.
4. Mioton LM, Buck DW 2nd, Gart MS, Hanwright PJ, Wang E, Kim JYS. A multivariate regression analysis of panniculectomy outcomes: Does plastic surgery training matter? *Plast Reconstr Surg.* 2013;131:604e–612e.
5. Newcomb A. Oregon doctor charged in patient's death from botched tummy tuck. ABC News (website). August 29, 2012. Available at: https://abcnews.go.com/Health/oregon-doctor-charged-death-botched-cosmetic-surgery/story?id=17104454. Accessed December 11, 2020.

Reply: Board Certification in Cosmetic Surgery: An Evaluation of Training Backgrounds and Scope of Practice

In Dr. Haiavy's first point, he claims that we have falsely suggested that an American Board of Cosmetic Surgery (ABCS) cosmetic surgery fellowship is a standalone experience. To clarify, our article[1] is based on the *categorical residency* training of ABCS diplomates. Accredited residency training outside of plastic surgery in a "related" field, which is deemed sufficient for the ABCS, affords little or no mandatory prerequisite aesthetic case requirements. Non–plastic surgery training is not designed to prepare a resident in aesthetic surgery for 1 year of postgraduate training. Therefore, in most instances, ABCS fellows obtain *all of their experience* in this new and broad field (i.e., aesthetic surgery) in just 1 year of training.

To be clear, this discussion is not about scope of practice, it is about scope of training. As we stated in our article, "Although additional training in aesthetic surgery qualifies some surgeons to perform limited cosmetic procedures anatomically related to their primary training (e.g., otolaryngologist performing a face lift), patient safety is surely compromised in cases where surgeons are performing operations far beyond the scope of their residency training (otolaryngologists performing procedures below the neck, or obstetricians or dermatologists performing rhytidectomy)."[1]

In Dr. Haiavy's second point, he raised concern about the number of aesthetic cases performed in plastic surgery residency. In 2019, residents graduating from plastic surgery programs accredited by the Accreditation Council for Graduate Medical Education completed, on average, 346 cosmetic and 1605 reconstructive procedures for a total of 1952 procedures.[2] Through dedicated training in cosmetic and reconstructive surgery principles, a formally trained plastic surgeon, with nearly 2000 cases of prerequisite experience, is able to properly execute safe, comprehensive aesthetic care, including management of complications. Among a graduating resident's nearly 2000 cases, there are hundreds of reconstructive cases of the face, breast/trunk, and extremity that have substantial aesthetic considerations.

Lastly, Dr. Haiavy is correct that numerous surgical fellowships are not accredited by the Accreditation Council for Graduate Medical Education. Using his example, a neurological surgeon who completes a nonaccredited pediatric neurosurgery fellowship is further specializing the scope of that surgeon's residency training.[3] Importantly, though, pediatric neurosurgery fellowships do not accept trainees without prerequisite neurosurgical training (e.g., a general surgeon). Similarly, a facial plastic surgery fellowship accepts ear, nose, and throat trainees, which again is congruent prerequisite foundational training. However, these facial plastic surgeons should not be doing body contouring surgery. As with all terminal 1-year training programs, aesthetic surgery fellowships should be limited to those with proper prerequisite training who are looking to hone their skills, not those who lack this congruous foundational training. The Accreditation Council for Graduate Medical Education–accredited independent plastic surgery training pathway remains open to surgeons who want to develop this foundation and go on to a comprehensive aesthetic practice, which we absolutely encourage.

In conclusion, the ABCS seeks to provide an alternative, non–Accreditation Council for Graduate Medical Education–accredited aesthetic training pathway and board credentials primarily for non–plastic surgeon physicians seeking aesthetic verification. However, nearly two-thirds of ABCS diplomates advertise procedures not congruous with the scope of their accredited residency training. The use of "board-certified cosmetic surgeon" may be confusing to the public given the different training pathways allowed by the ABCS.

DOI: 10.1097/PRS.0000000000008865

Brian C. Drolet, M.D.
Kyle Gabrick, M.D.
Department of Plastic Surgery
Vanderbilt University Medical Center
Nashville, Tenn.

Jeffrey E. Janis, M.D.
Department of Plastic Surgery
The Ohio State University
Columbus, Ohio

Galen Perdikis, M.D.
Department of Plastic Surgery
Vanderbilt University Medical Center
Nashville, Tenn.

Correspondence to Dr. Drolet
Department of Plastic Surgery
Vanderbilt University Medical Center
1211 Medical Center Drive
Nashville, Tenn. 37212
brian.c.drolet@gmail.com

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this communication.

REFERENCES

1. Long EA, Gabrick K, Janis JE, Perdikis G, Drolet BC. Board certification in cosmetic surgery: An evaluation of training backgrounds and scope of practice. *Plast Reconstr Surg.* 2020;146:1017–1023.
2. Accreditation Council of Graduate Medical Education. Plastic surgery case logs: National data report 2018-2019. Available at: https://www.acgme.org/Portals/0/PDFs/360_National_Report_Program_Version_2018-2019.pdf. Accessed January 17, 2021.
3. Accreditation Council of Graduate Medical Education. Neurosurgery case requirements. Available at: https://www.acgme.org/Specialties/Documents-and-Resources/pfcatid/. Accessed January 22, 2022.

Using Artificial Intelligence to Measure Facial Expression following Facial Reanimation Surgery

In the article titled "Using Artificial Intelligence to Measure Facial Expression following Facial Reanimation Surgery," Boonipat et al.[1] proposed an innovative approach to assess facial expression using machine learning software. By recording and analyzing videos of facial expression preoperatively and postoperatively, the authors were able to assess functional outcomes following facial reanimation surgery. We are writing to offer some considerations on how facial expression tracking software could complement telemedicine applications in craniofacial surgery based on the facial transplantation literature.

Beyond the first posttransplant year, facial transplantation patients are expected to return for in-person visits at least twice yearly for the rest of their lives. Recovery of facial expression in these patients has been tracked using clinical scales, optic movement tracking devices, and electromyography.[2] In 2018, Bedeloglu et al.[3] proposed using photograph analysis software in face transplant recipients to detect emotional expression, including anger, fear, and happiness. In 2019, Fischer et al.[4] demonstrated the feasibility of tracking functional recovery in facial transplantation using video analysis software on recordings from a commercially available camera (Canon EOS 600D; Canon, Tokyo, Japan). Recipients were followed for a year after transplantation, and objective improvements in mouth opening, nose wrinkling, and smile excursion were detected relative to before transplantation. Interestingly, some of the analyzed videos were self-recorded by face transplant recipients while at home, which may pave the way for facial expression tracking via telemedicine.[4]

The paradigm shift from traditional face-to-face patient-provider interactions to social-distancing forms of health care delivery spurred on by the coronavirus disease of 2019 pandemic has undoubtedly accelerated broad acceptance of telemedicine.[5] However, the inability to perform a comprehensive physical examination still limits integration of telemedicine in craniofacial surgery. Boonipat et al.[1] proposed measuring the relative proportions of seven cardinal facial expressions using the Noldus FaceReader, a commercially available software (Noldus Information Technology BV, Wageningen, The Netherlands), and were able to objectively quantify facial expression among patients undergoing facial reanimation surgery.[1] This software may also be used to analyze videos self-recorded by patients at home in a similar fashion to that noted by Fischer et al.[4] in face transplant recipients. Such a development would have marked implications in craniofacial surgery care, by reducing the financial burden and infectious risks associated with long-distance travel during a pandemic while objectively quantifying facial surgical outcomes.

In conclusion, facial expression is an important outcome following craniofacial surgery with significant functional and psychosocial implications, and there is potential for innovation in its measurement via telemedicine. The study by Boonipat et al.[1] demonstrates that currently available software applications may be able to objectively measure functional outcomes in craniofacial procedures. Software-based video analysis of facial expression has been used to obtain important quantitative data on the postoperative functional recovery of face transplant recipients, even when patients self-record the videos. Given the ongoing disruption in health care delivery caused by COVID-19 and telemedicine's speedy expansion to address some of the resultant challenges, facial expression analysis may enhance telemedicine applications tailored for patients undergoing craniofacial surgical procedures.

DOI: 10.1097/PRS.0000000000008866

Daniel Boczar, M.D.
Ricardo Rodriguez Colon, B.S.
Bachar F. Chaya, M.D.
Jorge Trilles, B.S.
Eduardo D. Rodriguez, M.D., D.D.S.
Hansjörg Wyss Department of Plastic Surgery
New York University Langone Health
New York, N.Y.

Correspondence to Dr. Rodriguez
Hansjörg Wyss Department of Plastic Surgery
New York University Langone Health
222 East 41st Street, 6th Floor
New York, N.Y. 10017
eduardo.rodriguez@nyulangone.org
Instagram: @dr_eduardo_d_rodriguez_nyc

DISCLOSURE

The authors have no financial interest in this communication.