Analysis of Practice Settings for Craniofacial Surgery Fellowship Graduates in North America☆,☆☆

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OBJECTIVE: In North America, the number of craniofacial surgery fellowship graduates is increasing, yet an analysis of practice settings upon graduation is lacking. We characterize the practice types of recent graduates of craniofacial fellowship programs in the United States and Canada.

DESIGN: A 6-year cohort of craniofacial fellows in the United States and Canada (2010-2016) were obtained from craniofacial programs recognized by the American Society of Craniofacial Surgery. Practice setting was determined at 1 and 3 years of postgraduation, and predictors of practice setting were determined.

RESULTS: A total of 175 craniofacial surgeons were trained at 35 fellowship programs. At 1 year of postgraduation, 33.6% had an academic craniofacial position and 27.1% were in private practice ($p = 0.361$). A minority of graduates pursued additional fellowships (16.4%), nonacademic craniofacial positions (10.0%), academic noncraniofacial positions (5.7%), and international practices (7.1%). At 3 years of postgraduation, the percentage of graduates in academic craniofacial positions was unchanged (34.5% vs 33.6%, $p = 0.790$). The strongest predictors of future academic craniofacial practice were completing plastic surgery residency at a program with a craniofacial fellowship program (odds ratio = 6.78, $p < 0.001$) and completing an academic craniofacial fellowship program (odds ratio = 4.48, $p = 0.020$).

CONCLUSIONS: A minority of craniofacial fellowship graduates practice academic craniofacial surgery. A strong academic craniofacial surgery background during residency and fellowship is associated with a future career in academic craniofacial surgery. These data may assist trainees choose training programs that align with career goals and educators select future academic surgeons. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2016 Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery)

KEY WORDS: training, residency, craniomaxillofacial, education, fellowship

COMPETENCIES: Professionalism, Systems-Based Practice

INTRODUCTION

In the United States, the number of fellowship-trained craniofacial surgeons is increasing. Yet, some have suggested that this increasing supply has exceeded the demand for craniofacial surgeons.[1] Increasingly, recently graduated craniofacial fellows have difficulty finding a job focused in craniofacial surgery. The oversaturation of craniofacial surgeons may lead to decreased career satisfaction associated with subspecialty training.[2] In the era of value-based health care, a detailed workforce analysis of recent craniofacial surgeons is lacking.

Recently, several U.S. craniofacial fellowship programs have adopted American Council of Graduate Medical Education (ACGME) accreditation.[3] Yet, the influence of ACGME accreditation on craniofacial fellowship programs including job prospects for graduating fellows remains unclear. Among the proposed benefits of ACGME accreditation, trainees have protected learning and research opportunities.[3] Such protected time might increase academic output and create opportunities for future careers in academic craniofacial surgery.

Elucidation of training factors associated with academic practices may assist educators in selecting future leaders in craniofacial surgery. For prospective trainees, knowing which fellowship programs routinely produce academicians could help align them with academic aspirations. Similarly,

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TABLE 1. Craniofacial Surgery Fellowship Programs and Number of Fellows (2010-2016)

Academic Affiliation	Location	Fellowship Director(s)	ACGME Accreditation	No. of Fellows
University of Toronto	Toronto, Ontario	Forrest	No	10
University of Washington	Seattle, Washington	Hopper	No	10
New York University	New York, New York	McCarthy/ Rodriguez	No	8
Children's Healthcare of Atlanta Center for Cranio	Atlanta, Georgia	Berstein/Williams	No	6
Harvard University—Boston Children's Hospital	Boston, Massachusetts	Mulliken	No	6
The Craniofacial Center	Dallas, Texas	Fearon	No	6
Indiana University	Indianapolis, Indiana	Havlik/Flores/ Tholpady	Yes, pre-2010	6
Johns Hopkins University—University of Maryland	Baltimore, Maryland	Rodriguez/Kumar	Yes, pre-2010	6
University of Tennessee, Memphis	Memphis, Tennessee	Wallace	No	6
University of Michigan	Ann Arbor, Michigan	Buchman	Yes, 2012	6
University of Pennsylvania	Philadelphia, Pennsylvania	Bartlett/Taylor	Yes, 2013	6
University of Pittsburgh	Pittsburgh, Pennsylvania	Losee	No	6
Stanford University	Palo Alto, California	Lorenz	No	6
University of California Los Angeles	Los Angeles, California	Bradley/Ozaki	No	6
University of California San Diego	San Diego, California	Cohen	No	6
University of Southern California	Los Angeles, California	Urata	No	6
University of Texas Southwestern	Dallas, Texas	Hobar/Kane	Yes, 2013	6
Cleveland Clinic—Akron Children's Hospital	Cleveland, Ohio	Lehman/Papay	No	5
University of Cincinnati—Cincinnati Children's Hospital	Cincinnati, Ohio	Billmire/van Aalst	No	5
Medical City Hospital	Dallas, Texas	Hobar	No	5
Harvard University—Massachusetts General Hospital	Boston, Massachusetts	Yaremchuk	No	5
Medical College of Wisconsin	Milwaukee, Wisconsin	Denny	Yes, pre-2010	5
Craniofacial Foundation of Utah	Salt Lake City, Utah	Morales/Schmelzer	No	5
University of Texas—Dell Children's Hospital	Austin, Texas	Harshbarger	Yes, 2012	5
George Washington University—Children's National	Washington, District of Columbia	Rogers	No	4
Nicklaus Children's Hospital	Miami, Florida	Wolfe	Yes, pre-2010	4
University of Toronto, Sunnybrook	Toronto, Ontario	Antonyshyn	No	4
McGill University	Montreal, Quebec	Lessard	No	3
University of North Carolina	Chapel Hill, North Carolina	Van Aalst	No	3
Washington University	St. Louis, Missouri	Kane/Tetrault	No	3
Medical City Hospital	Dallas, Texas	Genecov	No	2
University of Utah	Salt Lake City, Utah	Siddiqi	No	2
Baylor University	Houston, Texas	Khechoyan	No	1
Beaumont Children's Hospital	Detroit, Michigan	Jackson	No	1
Ohio State University—Nationwide Children's Hospital	Columbus, Ohio	Kirschner	No	1

Note: Academic craniofacial fellowship programs are nonitalicized. Private-practice–based programs are italicized.

those seeking private-practice positions may choose a program with a track record for producing surgeons who go into private practice. We therefore designed a cross-sectional study of recently graduated craniofacial surgery fellows in the United States and Canada to determine which plastic surgery residency programs train future craniofacial fellows, which craniofacial fellowships train academicians vs nonacademicians, and which factors are associated with future practice settings.

METHODS

Names of craniofacial fellows in the United States and Canada from 2010 to 2016 were obtained from training programs recognized by the American Society for Craniofacial Surgery in the United States and Canada as well as those with a focus on adult craniofacial surgery (Table 1). The craniofacial surgery fellowship programs