

The Underrepresented Minority in Hand Surgery Challenges and Strategy for Success



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KEYWORDS

• Underrepresented minority • Hand surgery • Diversity

KEY POINTS

- The number of underrepresented minority (underrepresented in medicine [UIM]) Hand surgeons remains incredibly low compared with the diverse population of the United States.
- Each step of the training process to become a Hand surgeon is a potential barrier that a UIM Hand surgeon must face.
- A strategy that identifies the many challenges and considerations for entering Hand Surgery are provided.
- Successful advancement as a medical student, resident, fellow, and attending with mentorship/sponsorship will increase the number of UIM Hand surgeons for the United States.

INTRODUCTION

Hand surgery is a rewarding subspecialty that helps patients get back to living their daily lives, from a child being able to play outside to an adult being able to get back to work. This article serves to identify the challenges that an underrepresented in medicine (UIM) student will face and provide a strategy for identifying resources and important milestones for pursuing a career in Hand Surgery in the United States.

In addition to the academic rigor and personal sacrifices that many students experience, a UIM student's journey is made more difficult by being a gender and/or racial minority. It is not a hyperbole to say that these barriers and challenges begin at an early age. Disparities that affect minority populations can be traced to the zip code of birth or childhood. Racial minorities in the United States face systemic and institutional challenges from health care access to unequal treatment by law enforcement and the judicial

system. The authors are no exception to this reality having experienced their own racial prejudices throughout their childhoods and medical training.

Reading the current state of disparities in surgical training can be very discouraging. Accounts of microaggressions, being the “only,” always needing to be a “pioneer,” and high attrition rates are exhausting to learn and hear about. The lack of UIM mentors and surgeons in leadership positions contribute to the sense that one does not belong in Hand Surgery. Research on racial and gender demographics over the past decades have not shown much improvement in racial diversity of surgical residents and practicing surgeons. Although Hand Surgery has seen a modest increase in gender diversity—14.3% women in 2016, racial diversity has not improved much for African American, Hispanic/Latino, and Native American membership in the American Association for Hand Surgery (ASSH) at 1.7%, 4.3%, and 0% respectively, in 2016.¹

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The authors believe that Hand Surgery provides a tremendously fulfilling career with amazing financial, personal, and social/societal benefits. They believe that the lack of diversity should not hinder a student's desire to want to become a Hand surgeon and contribute to his/her local community—defining success for the UIM individual reading this article. Research demonstrates that with patient's and physician's racial and gender concordance, patients are more likely to adhere to physician instructions and therefore more successful outcomes.²⁻⁴ Perseverance to enter this field is worthwhile.

Why Hand Surgery: The Secret Is Out

Hand surgery is unique and includes incredible breadth, and therefore additional training is warranted (Fig. 1). The field encompasses a variety of practice settings which can include academic, group practice, and private practice. Depending on the practice setting, the field includes hand trauma from replantation to mangled extremity, microsurgery, arthritis surgery, reconstructive surgery, congenital hand differences, peripheral nerve injury, brachial plexus injuries, and so forth. To become a Hand surgeon, one must complete either an orthopedic, Plastic Surgery or general surgery residency and then engage an additional 1-year fellowship in Hand Surgery. Aside from becoming board certified in their primary board, Hand surgeons also obtain a certification of the subspecialty of surgery of the hand. Each of these residencies varies in training length from 5 to 7 years. These specialties are competitive compared with some nonsurgical specialties. Plastic surgery and orthopedic surgery are among the most competitive specialties to match into.⁵ Please note that general surgery is a pathway to become a Hand surgeon after fellowship; however, this is infrequent compared with orthopedic and Plastic Surgery. There are many orthopedic and Plastic surgeons who practice some aspects of Hand Surgery after completing their residency; however, additional training including the board certification process promotes further subspecialization to occur and therefore more comfort to practice in this complex field.

Similar to investigating any field of medicine or surgery, it becomes important to fully explore Hand Surgery. This includes seeking out shadowing opportunities both in the clinic and the operating room. The goal is to discover what the basic “bread and butter” cases are and what the complex cases are. Experiencing both simple and complex hand and upper extremity surgeries will allow you to appreciate the anatomy and the form and function. If these experiences speak to

you, then it becomes important to explore exactly how to pursue this field as a career.

Medical School: Choose Your Adventure

Medical school is a wonderful opportunity to differentiate yourself in Hand Surgery. By shadowing and choosing your field of choice, which typically includes orthopedics and Plastic Surgery, at that point you focus on pursuing your specific residency. The details on how to pursue specific residencies are beyond the scope of this article. Here, we hope to demonstrate that finding the love for Hand Surgery can happen early. The earlier you differentiate into a Hand surgeon, the sooner you can shoot for the goal of matching into a hand fellowship to become a Hand surgeon.

Although gender demographics of medical school matriculants in the United States have improved greatly over the past few years, the representation of students from racial minority backgrounds has changed minimally.⁶ There have been large strides in gender representation in medical school with nearly half of all medical schools being women. However, African American and Hispanic/Latino and Alaskan/Native students have seen minimal improvements and are still rare or have minimal representation in some medical schools and regions of the country. It stands to reason that with the lack of representation this far up the stream/pipeline to becoming a Hand surgeon, the chances of making it to becoming a surgery specialist such as a Hand surgeon are difficult but not impossible.

Although these disparities exist, it is possible to build a community and find supportive mentorship in medical school. Organizations such as the J. Robert Gladden Orthopedic Society (JRGOS), Nth Dimensions, Ruth Jackson Foundation, The Perry Initiative, American Society for Plastic Surgery Recruitment of Accomplished and Diverse Medical-student Applicants into Plastic Surgery, Student National Medical Association, Latino Medical Student Association, and Asian Pacific American Medical Student Association are student organizations that are incredibly useful in building a network.

During medical school, it is important to build a network and a record of experiences that make you a good candidate for your chosen residency. Aspects to consider include clinical experiences, basic science or clinical research, and leadership participation. Resources that can help with gathering these experiences are the network organizations previously mentioned and also scholarship opportunities that are dedicated to diversity, equity, and inclusion (DEI) initiatives. The importance

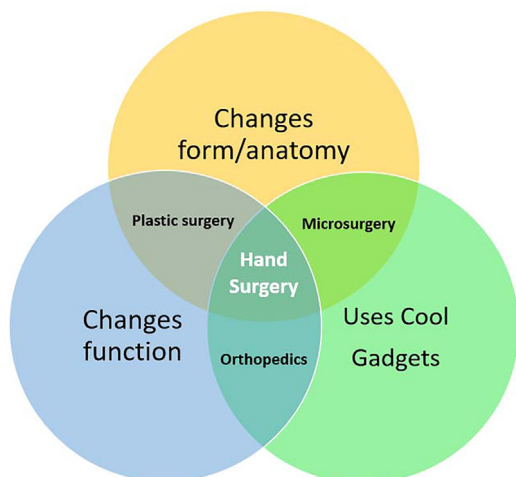


Fig. 1. Hand surgery is a special surgical subspecialty. It includes changing form/anatomy, function, and the use of technology. These principles are common in orthopedic surgery, Plastic Surgery, and microsurgery. Combined these skills make a great Hand surgeon.

of identifying mentorship and sponsorship becomes vital for the success of any medical student pursuing a competitive field.

To improve the chances of matching for residency, it becomes critically important to seek mentors/sponsors and build a network. Shadowing is the best way a mentor that fits the individual well. If you are unable to find a mentor at your institution, consider searching for mentorship at other institutions if needed. Spending time with attending physicians during their typical workday is important to deciding if this field is the correct fit for you. Research suggests that medical schools with a small number of UIM faculty in orthopedic surgery produce lower numbers of residents from a UIM background.⁷ Remember that you likely will not find a mentor or sponsor at your institution who looks just like you; however, it always becomes worthwhile to find a supportive mentor. In addition, it is natural as a female student to find female mentorship, which may or may not be in your desired field. Always be diligent to find the next individual that you can add to your supportive team.

Social media has become very important in building networks especially for minority communities. Social media platforms such as Twitter, Instagram, Facebook, and TikTok are easily accessible and are powerful ways to learn about each individual medical school and also to learn about resources offered for medical school and residency/fellowship training. In addition, for those who may not have a Hand Surgery home program, this is another avenue to reach out to Hand surgeons directly for mentorship.

Research suggests that minority students have more difficulty seeking and receiving mentorship opportunities for research and also shadowing/clinical experiences.⁵ It is important to create these networks to learn from and to take advantage of these opportunities. Other than an in-person audition rotation or sub-internship, residency selection is heavily based on previous experiences on a Curriculum Vitae. Please note that basic science and clinical research will be valued more than other experiences when applying for residency. In addition, all institutions are not created equal, and therefore, there will be a significant variability of research opportunities available that may require students to consider either performing research at another institution or taking a year to perform dedicated research at another institution. These decisions for dedicated time to perform research should be closely guided by a trusted mentor who helps navigate the student through the competitiveness of the specialty.

With the recent change of Step 1 of the board test series becoming pass/fail, testing will hopefully be less emphasized in the selection of residency candidates; however, there will always be screening measures taken (ie, Step 2). Standardized testing is difficult, and it is worthwhile to seek resources to ensure that you have time to study to pass these tests without undue issues. Your goal in medical school is to match into a residency program that has a strong Hand Surgery program if possible. This will afford opportunities to further develop your interest in Hand Surgery and help you with making the process for applying easier given more opportunities for research and mentorship.

Residency: Explore Hand Surgery

Residency training in orthopedic and Plastic Surgery have wide spectrum of experiences within this subspecialized field. Although hand call can be a good way to experience Hand Surgery, one should understand that fingertip injuries and hand infections are only a small part of a career in Hand Surgery. Besides these standard rotations that you have within your residency, it is advisable to look at the operating room (OR) schedule of the Hand Surgery service to find interesting cases to observe. In addition, there are typically Hand Surgery conferences that occur on a weekly basis where didactics, clinical cases, and journal clubs would be another avenue to learn about the field and demonstrate interest by showing up engaged.

Residency serves as another barrier to becoming a Hand surgeon as a UIM applicant. In orthopedic, plastic, and general surgery, match

rates among UIM applicants are lower than what is reported for medical student matriculates. There are also not many applicants from UIM backgrounds.^{8,9} Similar to medical school, there are groups including the Garnes Society, the Latino/a Plastic Surgery Society, the Women of Color in PRS, the JRGOS, and the American Association of Latino Orthopedic Surgeons that provide resources, community, and mentorship/sponsorship for those from UIM backgrounds.

As with any surgery subspecialty, research and publications are one of the ways to differentiate your application from others. We all know that opportunities are unequal at each institution depending on resources, faculty, grants, and so forth. Despite these unequal opportunities, it is imperative that the resident remains assertive to enter this competitive field. This means meeting with as many Hand Surgery mentors and seeing if there is any potential for you to work on research projects. Be ready to commit to do a stellar job because getting a strong letter will distinguish one's application because the reputation of a strong mentor carries enormous influence to leaders in the field. Starting research projects early in residency, especially clinical projects allow you to finish these and get them published before applying into Hand Surgery. Another important aspect is to present this research at Hand Surgery specific meetings such as with the Hand Society (ASSH), the American Association for Hand Surgery, and any local hand society, for example, the New England Hand Society. Remember that Hand Surgery conferences are a great way to meet and make connections with other UIM Hand surgeons and Hand Surgery fellowship programs.

Hand Surgery Fellowship: Let the Differentiation Begin

Applying to Hand Surgery fellowships is really an extension of your training. Therefore, it becomes important to look at the training that you have had during your residency, speak with your mentors, attend hand meetings, meet current fellows, and identify a fellowship that you believe would offer additional training to make you a better and more complete Hand surgeon.

The ASSH provides a list of hand fellowships that can be applied to at www.assh.org/applications/s/fellowshipdirectory. It can be quite difficult to determine which programs an orthopedic or a Plastic surgeon can apply to. There is a combination of spots that are reserved for a specific type of applying resident. Most fellowship programs are equal opportunity and allow any

resident within the fields of orthopedic, plastic, and general surgery to apply. Searching a Hand Surgery fellowship program's respective Web site for information can be helpful, although sometimes this information can be outdated and remember to search social media (ie, Instagram) because they may be represented there.^{10,11} Contacting the program directly may be helpful to determine if this is a good fit for your application. Ensure that you are cordial and professional in all your interactions with the program. Typically, there is a fellowship coordinator who is doing the magic behind the scenes during the application and interview process.

A common question is how many Hand Surgery fellowship programs should be applied to. This is an individual question that should be reviewed with the program director at your institution or residency program director and will depend on the overall strength of your application. Most Plastic Surgery applicants apply to 10 to 20 programs; however, many orthopedic surgery residents may apply and interview at several more.¹² Gauging the number of programs to apply is based on how competitive your application is, guided by your mentors, and apply to as many as you feasibly can. Have a good story on why Hand Surgery is a good fit for you, this story you will communicate in your personal statement and interviews.

When considering Hand Surgery fellowships, it becomes important to consider several aspects that include clinic experience, operative experience, mentorship, rotation schedules, the number of fellows, the on-call requirements, didactic instruction, research opportunities, pediatric experience, geographic location, and so forth. An important consideration may be the amount of shoulder surgery that is performed within the fellowship which would most likely be not as relevant for a Plastic Surgery trained Hand Surgery Fellow. Similarly, a program that has a significant amount of replantation or microsurgery may be less relevant to an Orthopedic Surgery trained Hand Surgery Fellow who has accepted a future job with no plans to perform microvascular surgery. Hand fellowship programs may emphasize specific clinical areas of their respective fields including orthopedic and Plastic Surgery; however, having training in both aspects is what makes a strong Hand surgeon.¹³ Our overall goal is to take the best possible care of patients and the more diverse the training the better. As Dr Quinn Capers IV, an interventional cardiologist and leader in diversity efforts, states "diversity drives excellence."

The disparity in representation is also present in fellowship programs. There also seems to be gender and racial preferences when choosing

fellowship programs after residency training and orthopedic surgery.¹⁴ Hand surgery was shown to be the most diverse subspecialty and fellowship program that was chosen after orthopedic surgery training. Unfortunately, this appearance of diversity is somewhat misleading given that African American, Latino/Hispanic, and Native American physicians continue to be underrepresented without much increase over the past few decades.

The Hand Surgery fellowship application is similar to applying to residency. The main difference is you will be in the trenches of your surgical residency when you are applying into fellowship. The application process starts your second to last year of residency, for example, in the fourth year of a 5-year orthopedic surgery residency or the fifth year of a 6-year Plastic Surgery residency. However, preparation for application starts several months earlier.

Recommendations While Applying for Fellowship

- Make sure to complete your application at the beginning of the application cycle.
- Plan ahead for the interview trail including vacation, call schedules, and so forth.
- Save up vacation time for interviews.
- Identify three to four letter writers for your letters of recommendation including the chief of your department, Hand Surgery fellowship directors, or research mentors. Make sure to meet with them and ask them to support your candidacy and give them at least 2 months warning to complete your letter.
- Talk to upper class women/men in your residency program that who applied in Hand Surgery; they may provide useful advice.
- Make sure to communicate with applicants who are also applying your year including your own residency or the other residency, whether orthopedic or Plastic Surgery applicants. You should be applying as colleagues rather than thinking of them as your competition. Make sure to use your colleagues as a resource while you are applying.

Once a resident has interviewed at multiple programs, the next step is the match process itself. The Hand Surgery Fellowship Match is administered by the National Resident Matching Program and occurs at the end of May of each year. This past year (2021) for appointment in 2022, the total programs were 91 for 187 available positions. It becomes incredibly exciting to finally be on your way to become a Hand surgeon as your defined career.

Identifying the “Right Fit” Training Programs

Identifying whether a residency or fellowship program is the “right fit” for the resident is an important consideration. The competitive nature of each step along the path to becoming a Hand surgeon includes medical school, residency, and fellowship programs are somewhat prohibitive when thinking or having the idea of a choice or being choosy when deciding where to go. For minority students, good training at a program that is supportive and is intentional about protecting and supporting their students from minority backgrounds is ideal. Identifying these programs can be difficult. The best way to do so or to reach out to mentors and current/past trainees from each program. The JRGOS also publishes a list of medical schools that trained the most African American Orthopedic surgeons.¹⁵ The medical schools included are Howard, Meharry College, Harvard, and Morehouse.

A Life Interrupted for the Underrepresented in Medicine Individual

A challenge that is unique to students from a minority background is experiencing re-traumatization from world events such as the George Floyd’s murder, the murder of Trayvon Martin, violence toward Asian Americans, and other horrific and very public displays of racial prejudice. Although this work was being written, another mass shooting targeting Black men and women occurred in Buffalo, NY. It is in these times where students may think the most alone in training programs that are predominantly White.

Although these national or worldwide events cannot be ignored or eliminated, it is the authors’ belief that medical training programs, at each level of training, must support their trainees who may be emotionally or mentally affected by these incidents. In an effort for inclusivity, training programs must acknowledge these incidents and demonstrate their support for their staff and trainees through tangible actions. Providing trainees with mental health resources or simply breaks from training to cope with these events if necessary. Although it is difficult to identify which programs are supportive of their students from minority backgrounds, there are a few programs that stand out with their commitment to DEI. The Historically Black Colleges and Universities programs have been strong supporters for the advancement of minority students. Also, the University of Pennsylvania and Harvard are a few examples of universities that have been consistent supporters of diversity within their trainees.

SUMMARY

The perspective of the UIM Hand surgeon is valid. The hope is that this article can serve as an outline for those from atypical backgrounds to seek a career in Hand Surgery, despite the multiple obstacles. The authors are proud of their achievements to date, and the hope is that the readers will too be able to find a success pathway, with mentors and sponsor along the way, and reach their goal of becoming a well-trained Hand surgeon for every community.

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