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Certification Examination Cases of Candidates for Certification by the American Board of Plastic Surgery: Trends in Practice Profiles Spanning a Decade (2000–2009)

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Abstract

Background—To evaluate the case mix of plastic surgeons in their early years of practice by examining candidate case-logs submitted for the Oral Examination.

Methods—De-identified data from 2000–2009 consisting of case-logs submitted by young plastic surgery candidates for the Oral Examination were analyzed. Data consisted of exam year, CPT (Current Procedural Terminology) Codes and the designation of each CPT code as cosmetic or reconstructive by the candidate, and patient age and gender. Subgroup analyses for comprehensive, cosmetic, craniomaxillofacial, and hand surgery modules were performed by using the CPT code list designated by the American Board of Plastic Surgery Maintenance of Certification in Plastic Surgery (ABOCP®) module framework.

Results—We examined case-logs from a yearly average of 261 candidates over 10 years. Wider variations in yearly percent change in median cosmetic surgery case volumes (–62.5% to 30%) were observed when compared to the reconstructive surgery case volumes (–18.0% to 25.7%). Compared to cosmetic surgery cases per candidate, which varied significantly from year-to-year ($p < 0.0001$), reconstructive surgery cases per candidate did not vary significantly ($p = 0.954$). Subgroup analyses of proportions of types of surgical procedures based on ABOCP® CPT code categories, revealed hand surgery to be the least performed procedure relative to comprehensive, craniomaxillofacial, and cosmetic surgery procedures.

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Conclusions—Graduates of plastic surgery training programs are committed to performing a broad spectrum of reconstructive and cosmetic surgical procedures in their first year of practice. However, hand surgery continues to have a small presence in the practice profiles of young plastic surgeons.

Keywords

Case-mix; Certification examination; Cosmetic Surgery; Reconstructive Surgery; American Board of Plastic Surgery

The American Board of Plastic Surgery (ABPS) is one of twenty-four medical specialty boards that make up the American Board of Medical Specialties (ABMS). The mission of the ABPS is to promote safe, ethical, efficacious plastic surgery practices by maintaining high standards through education, examination, certification and maintenance of certification of plastic surgeons. Board certification assures the public of the competence of their physician in “medical knowledge, judgment, clinical and communication skills, professionalism, and leadership ability to provide high quality patient care.”^{1, 2} In addition, board certification by one of the 24 ABMS members is now recognized as an indicator of quality healthcare delivery.³ Given the constantly changing healthcare system and accelerated advances in medical knowledge, the ABPS periodically examines and recalibrates the certification process to ensure its consistency and accuracy in coordination with the training curriculum of plastic surgery residency programs.

The plastic surgery board certification examination process is a two-part process requiring both a written and oral examination. Our study focuses on the oral examination for which candidates must submit a case-log of all performed surgical cases to ensure proficiency in the broad range of plastic surgery procedures. Ten years (2000–2009) of candidate case-logs, which have never before been systematically examined, are available to the ABPS as a nationwide plastic surgery database. Using this unique dataset, we examined the practice patterns of all plastic surgery candidates from the past decade, compared the 10-year trends of reconstructive and cosmetic surgery case volumes, and assessed the distribution of types of surgical procedures performed by candidates in their early years of practice. The aims of this study are to understand trends in the practice profiles of newly graduated plastic surgeons and identify areas of strengths and weaknesses in this workforce by examining the proportions of their practice as categorized by the four core components of plastic surgery procedures.

Methods

Each case-log represents cases completed after finishing plastic surgery residency training, over a 7 (2003–2009) to 12 month (2000–2002) period during which time the candidate must hold medical staff privileges in plastic surgery at one or more accredited United States, Canadian, or foreign hospitals. Candidates must submit information from all inpatient, outpatient and office-based surgical procedures into a secure web-based data collection program.⁴ Each case includes the following information: candidate board identification number, institution identification, and patient and case information. Patient information includes initials, age, gender, and diagnosis for the submitted case. Case information includes date of surgery, CPT codes for the procedures performed, outcome/adverse events, and duration of procedure. Reconstructive categories include congenital, general reconstructive, hand, skin (including cancer), trauma and burn surgery. We analyzed limited, de-identified data from exam years 2000–2009. This limited dataset contained exam year, CPT code(s) for the procedure(s) performed, the designation of the case as cosmetic or

reconstructive surgery, and each patient's age and gender. Individual candidates were distinguished by identification numbers that did not link back to the original source.

Given the limited nature of the dataset (e.g., a lack of detailed information about the indication for the procedure), we were unable to validate the accuracy of the candidates' classifications of cosmetic versus reconstructive surgery. For example, reduction mammoplasty could not be verified as a cosmetic or reconstructive procedure. However, in an effort to ensure comparable classifications of cosmetic or reconstructive procedures, the top procedures identified in each category were compared with the definitions for cosmetic procedures set forth by an insurance company.⁵

We used the ABPS Maintenance of Certification in Plastic Surgery (MOC-PS®) program framework for categorizing the comprehensive, craniomaxillofacial, cosmetic, and hand surgery modules to perform subgroup analyses. The comprehensive module defines practices encompassing the broad spectrum of plastic surgery procedures that do not fall into the other three modules. Fulfillment of a minimum number of procedures in each of these four modules is necessary to meet the eligibility requirement for the Cognitive Examination of the MOC-PS® examination.⁶ The MOC-PS® examination and case-logs are completed eight to ten years after initial certification. Inclusion lists of CPT codes for the cosmetic, hand, and craniomaxillofacial surgery modules and an exclusion list of CPT codes for the comprehensive surgery module are published in the 2008 Maintenance of Certification in Plastic Surgery Booklet of Information.⁷ We compared the median number and distribution of performed procedures of these four modules. In addition, a list of the top ten CPT codes identified for the year 2007 among candidates applying for the MOC-PS® examination was provided by the ABPS Board staff through personal communication with Terry Cullison, RN, MSN and Melissa Karch. This information allowed us to compare the most frequently performed surgical procedures among plastic surgeons practicing for at least ten years with young plastic surgeons early in their practices and applying for initial certification. These top ten procedures are selected from among the CPT codes that comprise the four modules.

For statistical analyses, we used descriptive statistics to calculate means, medians, and percentages. Because much of the data were skewed, median values were used to summarize the data. To examine the stability of reconstructive and cosmetic surgery from year to year, linear regression analyses were performed with year as the independent variable and the total number of cases per candidate for each candidate as the dependent variable. Significance was set at $p=0.05$. SAS (Edition 9.2, SAS Institute, Inc., Cary, NC 2009) and SPSS (PASW Statistic 17.0.3, Chicago, Illinois, 2009) statistics softwares were used for all analyses. This project was approved by the American Board of Plastic Surgery Data Committee and the full Board of Directors of the American Board of Plastic Surgery.

Results

Ten cohorts of candidates from exam years 2000–2009 were examined. Table 1 reports the pooled information of each of those cohorts. An average of 261 candidates collected cases for the exam each year (range: 244–283). Each candidate performed an average of 200 procedures (by CPT code; range: 158–224). By module (per MOC-PS® Module classification), an average of 114 comprehensive, 20 craniomaxillofacial, 34 cosmetic, and 6 hand surgery procedures per candidate were performed over the 10 years. Over all years, 6.8% of candidates (range: 4.8%–9.3%) reported a case-mix of 40% – 60% reconstructive surgery cases balanced with cosmetic surgery cases during their early years of practice (Figure 1). On average, however, each candidate performed approximately 18 cosmetic surgery cases and 96 reconstructive surgery cases. These case classifications were categorized by the

candidate, and the spectrum of reconstructive surgery cases included congenital, general reconstructive, hand, skin (including cancer), trauma and burn surgery operations.

We first compared trends in reconstructive versus cosmetic surgery case volumes of initial certification candidates over the 10 years. Because the numbers of reconstructive and cosmetic surgery cases were highly skewed, we log-transformed the count of surgery by type and modeled the log count of each surgery type separately as a function of year in a linear regression model. The number of reconstructive surgery cases per candidate was stable over the entire 10 year period, as indicated by the insignificant coefficient for year in the model ($p=0.95$). By contrast, the number of cosmetic surgery cases per candidate varied significantly from year to year over the 10 year period ($p<0.0001$).

We next examined whether the median percentage of case volumes increased or decreased compared to the prior year to identify whether specific years were associated with variations in case volume (Figure 2A–B). Compared to reconstructive surgery, the percentage change in the median number of cosmetic surgery case volumes varied more widely during the 10 years than reconstructive surgery (25.8% to –18.1%, variance = 142 (reconstructive surgery); 30% to –62.5%, variance = 758 (cosmetic surgery)). To evaluate whether this variability in cosmetic case volumes coincided with the economic recession, we focused on 2007 and 2008. According to the National Bureau of Economic Research, the most recent and current economic recession started in December 2007.⁸ Indeed, from 2007 to 2008, the median cosmetic surgery case volume decreased by 62.5% (Figure 2B, bar graph), compared to an increase of 2.98% (Figure 2A, bar graph) in the median reconstructive surgery case volume of the same year.

We next examined what types of procedures comprised the top 10 reconstructive and cosmetic procedures from 2000–2009. Table 2 lists the procedures. A greater range of general reconstructive procedures was performed by candidates. The top 10 reconstructive procedures comprised only 54% of all procedures reported, whereas the same number of cosmetic procedures represented 77% of procedures reported. Only one procedure appeared on both lists: reduction mammoplasty, which made up 3.3% of the reported reconstructive procedures reported and 4.4% of the reported cosmetic procedures.

Because the candidates' classification of reconstructive cases encompassed a broad spectrum of reconstructive surgery types, in order to contrast specific types of reconstructive surgery procedures, we used the *ABOCS** examination Module framework (comprehensive, craniomaxillofacial, cosmetic, and hand surgery modules)⁷ (Figure 3). Hand surgery procedures were the least performed procedure per candidate relative to the other four module types. In 2005, we observed a steadily rising median number of hand surgery procedures per candidate. By contrast, cosmetic procedures revealed a steadily declining trend in median number of performed procedures per candidate beginning in 2006.

We next examined what percentage of a young candidate's practice profile was comprised of these four procedure types prior to his or her initial certification (Figure 4). We examined three time points: 2000, 2005, and 2009. Two modules emerged as having candidates with practice profiles that consisted of greater than 80% comprehensive and cosmetic surgery. This finding was consistent for all three time points. These findings contrasted with the craniomaxillofacial and hand surgery modules. In fact, hand surgery procedures comprised the smallest percentage of a candidate's practice profile prior to initial certification for all three years. Despite a small increase in the percentage of hand surgery procedures performed by candidates in 2009, it remained the least performed procedure type relative to comprehensive, craniomaxillofacial, and cosmetic procedures.

Discussion

This study is the first to examine and describe the types and volumes of procedures performed by plastic surgery oral examination candidates within their early years of practice over the last 10 years (2000–2009). These findings contribute to the growing literature about trends in the practice profiles of the plastic surgery workforce. The novelty of this study includes the availability of 10 years of data and the use of objective data, such as the collected CPT codes. These CPT codes allowed us to analyze the data by 4 key components of plastic surgery and examine them over time. By contrast, most studies evaluating the plastic surgery work-force have used survey methodology and are therefore vulnerable to non-response bias and report perceptions of practice.^{9–11} Thus this study serves to report more objective data and describes the practice profiles of the young plastic surgery work-force during their early years of practice.

Despite decreasing professional fee reimbursements, the data support the notion that reconstructive surgery is largely “recession-proof,” as described by Rohrich and colleagues based on 2008 statistics.^{10, 12} Figure 2 illustrates the stable nature of reconstructive surgery case volumes, contrasting with cosmetic surgery case volumes. In fact, our data are consistent with the supposition that fluctuations in cosmetic surgery case volumes mirror the economy.¹³ Indeed, during the 2007 and 2008 recession, cosmetic surgery case volumes sharply declined by 62.5%. This finding suggests that cosmetic surgery volumes may serve as another indicator of economic recessions, analogous to spikes in crude oil prices, often described as a leading economic indicator preceding a failing economy.¹⁴ Similarly, the volume of Lasik procedures was recently labeled the “Lasik indicator.”¹⁵

Subgroup analyses examining the types of surgical procedures comprising each candidate’s practice profile revealed hand surgery to be the least commonly performed procedure among this pool of plastic surgeons (Figure 3–4). This striking finding is consistent with the description of hand surgery as an “endangered species” among plastic surgeons.^{16, 17} A recent report describing trends in hand surgery fellowships at the Curtis National Hand Center reported a 1:2.3 ratio of plastic surgery-to-orthopedic surgery trained hand surgery fellows from 1998 to 2010.¹⁷ This description is consistent with the assumption that hand surgery is predominantly performed by orthopedic surgeons.¹⁸ According to National Resident Matching Program statistics, among 69 certified hand surgery programs, 1 program (1%) is affiliated with general surgery, 11 programs (16%) are affiliated with plastic surgery, and the remaining 57 programs (83%) are affiliated with orthopedic surgery programs (Table 3). The number of filled fellowship positions reflects this proportion of affiliated certified hand surgery programs with an overwhelming 79% of available positions filled by orthopedic surgery applicants compared to 10% filled by plastic surgery applicants.¹⁹

Higgins provides two plausible explanations as to why plastic surgery residents and training programs may be disadvantaged in both extent and level of exposure to hand surgery.¹⁷ First, the structure of plastic surgery residency programs may result in less exposure to hand surgery compared to the orthopedic surgery counterparts. For example, in the traditional combined 6-year programs, plastic surgery residents usually begin their core plastic surgery rotations in year 4 of a 6-year residency program and must train to operate over a broad spectrum of cases. The need to select and apply for fellowships in year 5 may result in inadequate exposure compared to orthopedic surgery programs, which begin their core training in year 2 of a 5-year program. Second, Higgins comments on the lack of hand surgery mentors in plastic surgery, citing declining numbers of plastic surgery-trained applicants for subcertification in hand surgery.

Both of these reasons are consistent with a survey distributed to senior level plastic and orthopedic surgery residents to identify factors related to pursuing a career in hand surgery.²⁰ Using factor analysis, the authors identified an “intellectual issues” category, which included variables related to adequate hand surgery exposure and having clinical role models. This category emerged as having a strong influence among senior residents deciding about hand surgery careers. An additional factor may be the number of opportunities for mentored research pursuits, which in turn may be limited by the number of hand surgeons in plastic surgery compared to orthopedic surgery. Studies show that interest in specific career directions²¹ and subspecialty choices²² can be strongly influenced by academic pursuits, such as research.

Certainly, a discussion regarding choosing subspecialty careers must also consider the possible motivation behind financial incentives.^{17, 23} The question remains whether plastic surgery residents are less likely to perform or pursue hand surgery procedures or fellowship training given other more lucrative procedure options.²³ However, the same aforementioned survey that identified factors related to pursuing hand surgery fellowships reported that “lifestyle issues,” which included income, was not a primary factor.²⁰ In addition, a recent evaluation of orthopedic fellowship training opportunities, revealed hand surgery fellowship training to have a financial productivity advantage compared to other general orthopedic practices, controlling for worked duty-hours.²⁴ In fact, after spine surgery, hand surgery was the second leading orthopedic subspecialty that demonstrated faster returns in financial investment with a break-even point at 7-years. One possible reason for this finding is that specialty training allows for broader access to patients by referral and strengthens the ability to perform more cases efficiently.²⁴ Furthermore, the current need for hand centers and surgeons who are able to perform more complex hand procedures²⁵ serves as an open job market for graduating residents. Bringing awareness of this information to plastic surgery residents may further enhance their interest in hand surgery.

There are several limitations to this study. Some of the limitations result from the limited nature of the available data to respect the anonymity of the candidates. Data regarding candidate demographics (e.g., age, gender, geographic location or identification of residency program, pursued specialty fellowship, or whether they chose an academic or private practice career) and outcomes of each case were not available. Thus further subgroup analyses comparing candidate practice profiles with type of plastic surgery practice (i.e. private practice or academic) or specialty fellowship training could not be performed. In addition, changes in the certification examination policies and processes in response to candidate needs as well as trends in medicine will be reflected in the data collection. For example, changes include, but are not limited to, new added CPT codes for innovative procedures. These changes may introduce some variability in the results. However, the robustness of having 10 years of candidate data are invaluable for the purpose of examining general trends in the practice of young plastic surgeons. Additionally, specific case-collection requirements for the case-logs (e.g., minimum case number requirements and anatomical regions and categories) have been only recently established for the 2010 examination process. No such mandatory requirements for the case-logs were in place from 2000 to 2009. Thus we feel confident that practice profiles and trends described in the dataset are reflective of all available and chosen surgeries by young plastic surgery candidates.

Conclusions

Ten years of practice profiles of young plastic surgery candidates for initial certification are described and analyzed for the first time by the American Board of Plastic Surgery. Compared to reconstructive surgery cases, cosmetic surgery cases demonstrated variability

in year-to-year case volumes. These yearly trends paralleled the economic recession. Nonetheless, despite the recession and declining reimbursement fees, plastic surgery candidates show commitment to satisfying both reconstructive and cosmetic surgery procedure demands in their respective communities. Finally, among the types of reconstructive surgery procedures, hand surgery procedures emerged as the least commonly performed procedure during the past 10 years among these young plastic surgeons. An effort to enhance awareness of the need for hand surgery is warranted among plastic surgery residents.

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References

1. Nahrwold, DL.; Youker, JE.; Miller, SH., editors. Competence Initiatives: A Status Report. Evanston, Illinois: American Board of Medical Specialties; 2000.
2. Chung KC, Clapham PJ, Lalonde DH. Maintenance of Certification[®], Maintenance of Public Trust. *Plast Reconstr Surg*. In press.
3. American Board of Medical Specialties. [Accessed February 18, 2010] Welcome to ABMS: Improving Healthcare Quality through Board Certification. Available at: <http://www.abms.org/>
4. American Board of Plastic Surgery. Booklet of Information: July 1, 2009-June 30, 2010. Philadelphia: ABPS; 2009.
5. Aetna. [Accessed February 17, 2010] Clinical Policy Bulletin: Cosmetic Surgery. 2010. Available at: http://www.aetna.com/cpb/medical/data/1_99/0031.html
6. American Board of Plastic Surgery, Inc. Maintenance of Certification in Plastic Surgery (MOC-PS) Booklet of Information. 2010. p. 1-53.
7. American Board of Plastic Surgery, Inc. Maintenance of Certification in Plastic Surgery (MOC-PS) Booklet of Information. 2008. p. 1-73.
8. National Bureau of Economic Research. [Accessed February 20, 2010] NBER Research. Available at: www.nber.org
9. Rohrich RJ, McGrath MH, Lawrence TW, et al. Plastic surgeons over 50: Practice patterns, satisfaction, and retirement plans. *Plast Reconstr Surg*. 2008; 121:1458–74. discussion 1475–7. [PubMed: 18349669]
10. Rohrich RJ, McGrath MH, Lawrence WT, et al. Assessing the plastic surgery workforce: A template for the future of plastic surgery. *Plast Reconstr Surg*. 2010; 125:736–746. [PubMed: 20124858]
11. Macadam SA, Kennedy S, Lalonde D, et al. The Canadian plastic surgery workforce survey: Interpretation and implications. *Plast Reconstr Surg*. 2007; 119:2299–2306. [PubMed: 17519733]
12. American Society of Plastic Surgeons. [Accessed February 20, 2010] Report of the 2008 Statistics. National Clearinghouse of Plastic Surgery Statistics. 2009. Available at: <http://www.plasticsurgery.org/Media/stats/2008-US-cosmetic-reconstructive-plasticsurgeryminimally-invasive-statistics.pdf>
13. Singer, N. [Accessed February 2, 2010] NYTimes online. Skin Deep: Putting Vanity on Hold. Updated: December 18, 2008. Available at: http://www.nytimes.com/2008/12/18/fashion/18skin.html?_r=1&emc=eta1
14. Yamarone, R. The Trader's Guide to Key Economic Indicators. New York: Bloomberg Press; 2007. p. 1-328.
15. Feder, BJ. [Accessed March 9, 2010] NYTimes online. As Economy Slows, so do Laser Eye Surgeries. Updated: April 24, 2008. Available at:

<http://query.nytimes.com/gst/fullpage.html?res=9F0CE7D81131F937A15757C0A96E9C8B63&sec=&spon=&emc=eta1>

16. Chang WH. The plastic hand surgeon: An endangered species? *Plast Reconstr Surg.* 1988; 81:85–87. [PubMed: 3336643]
17. Higgins JP. The diminishing presence of plastic surgeons in hand surgery: A critical analysis. *Plast Reconstr Surg.* 2010; 125:248–260. [PubMed: 20048616]
18. Chang J, Hentz VR, Chase RA. Plastic surgeons in American hand surgery: The past, present, and future. *Plast Reconstr Surg.* 2000; 106:406–412. [PubMed: 10946941]
19. National Resident Matching Program. Match Results Statistics: Combined Musculoskeletal Matching Program (CMMP). May 20. 2010
20. Chung KC, Lau FH, Kotsis SV, et al. Factors influencing residents' decisions to pursue a career in hand surgery: A national survey. *J Hand Surg Am.* 2004; 29:738–747. [PubMed: 15249103]
21. Hernandez J, Al-Saadi S, Boyle R, et al. Surgeons can favorably influence career choices and goals for students interested in careers in medicine. *J Am Coll Surg.* 2009; 209:62–67. [PubMed: 19651064]
22. Harris MC, Marx J, Gallagher PR, et al. General versus subspecialty pediatrics: Factors leading to residents' career decisions over a 12-year period. *Arch Pediatr Adolesc Med.* 2005; 159:212–216. [PubMed: 15753262]
23. Concannon MJ. Discussion. the diminishing presence of plastic surgeons in hand surgery: A critical analysis. *Plast Reconstr Surg.* 2010; 125:261–263. [PubMed: 20048617]
24. Gaskill T, Cook C, Nunley J, et al. The financial impact of orthopaedic fellowship training. *J Bone Joint Surg Am.* 2009; 91:1814–1821. [PubMed: 19571105]
25. Richards WT, Barber MK, Richards WA, et al. Hand injuries in the state of Florida, are centers of excellence needed? *J Trauma.* 2010; 68:1480–1490. [PubMed: 20065873]

Figure 1.
Percentage of Candidates[†] with a Balanced Practice Profile of both Reconstructive and Cosmetic Surgery Cases

[†]This data is a snapshot of each candidate's practice profile during their early years of practice.

Figure 2.

Yearly Percent Differences of Median Case Volumes per Candidate

(A) The median number of reconstructive surgery case volumes per candidate are plotted as a line graph and ranged from 68.5–98 cases from 2000–2009. The yearly percent changes in median reconstructive case volume are represented by the bar graph and fluctuate from –18.0% to 25.7%. (B) For direct comparison, the yearly percent changes in median cosmetic surgery case volume per candidate are also plotted as a bar graph (ranging from –62.5% to 30.0%) on the same scale as the reconstructive surgery case volume analysis. However, the range of the median number of cosmetic surgery cases per candidate (7–14 cases, line graph) was much less than reconstructive surgery and is reflected in the scale corresponding with the line graph.

*Descriptive statistics was used to calculate the median number of reconstructive and cosmetic cases per candidate.

Figure 3.
Median Number of Procedures Performed per Candidate by Module Type from 2000–2009
*Descriptive statistics was used to calculate the median number of reconstructive and cosmetic cases per candidate.

Figure 4.
Proportions of Procedure Type that Comprise a Plastic Surgery Candidate's Practice Profile
for the Years 2000, 2005, and 2009
Abbreviations: No., number.

Table 1

Number of Candidates, Cases, and Procedures by Year

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008 [§]	2009	Mean ± S.D./
Candidates	283	258	251	249	244	246	270	269	263	279	261 ± 14
Total Procedures [†]	51,976	41,638	39,549	55,119	54,770	52,971	57,657	54,912	56,957	56,777	52,233 ± 6,395
Comprehensive Module [‡]	30,128	29,128	22,783	32,345	30,914	30,193	31,297	29,308	31,153	29,251	29,650 ± 2,626
Craniomaxillofacial Module [‡]	5,990	4,516	4,099	5,960	5,968	4,969	5,574	5,208	5,372	5,698	5,335 ± 646
Cosmetic Module [‡]	6,379	5,798	5,115	8,089	8,575	9,712	12,194	12,179	10,810	11,138	8,999 ± 2,622
Hand Module [‡]	688	706	758	927	916	852	999	1,821	3,366	3,809	1,484 ± 1,159
Cases ^{††}	30,003	24,450	22,964	31,750	31,980	30,205	32,428	31,079	30,978	31,318	29,716 ± 3,271
Reconstructive Cases	25,838	21,163	20,312	27,221	27,251	24,574	25,779	24,475	25,838	26,751	24,920 ± 2,408
Cosmetic Cases	4,165	3,287	2,652	4,529	4,729	5,631	6,649	6,604	5,140	4,567	4,795 ± 1,287

[§]In 2008, the analytic scoring method was instituted for the Oral Board Examinations. (2008 ABPS Newsletter)

[†]Total procedures are summed as each CPT Code submitted by the candidate. Per the 2009 CPT Code eligibility manual, the Comprehensive Module has 2,656 eligible CPT codes, the Craniomaxillofacial Module has 473 eligible CPT codes, the Cosmetic Module has 80 eligible CPT codes, and the Hand Module has 247 eligible CPT codes.

[‡]Frequencies of CPT Codes belonging to Comprehensive, Craniomaxillofacial, Cosmetic, and Hand Modules do not sum to frequency of Total Procedures (see Methods).

^{††}Cases are counted per operation; cases are designated by the candidate as reconstructive or cosmetic at the time of case-log submission.

Abbreviations: S.D., standard deviation

[‡]Descriptive statistics was used to calculate means and standard deviations.

Table 2

Top 10 Reconstructive and Cosmetic Procedures for 2000–2009

Procedure category	CPT code range	Percentage of reported procedures [†]
Reconstructive Procedures		
Excision of benign lesion	11400–11446	12.2%
Debridement	11010–11044	8.6%
Repair, complex wound	13100–13153	6.3%
Excision of malignant lesion	11600–11646	6.2%
Repair, intermediate wound	12301–12057	4.1%
Adjacent tissue transfer or rearrangement	14000–14061	3.8%
Surgical preparation of recipient site for graft or flap	15002–15005	3.3%
Reduction mammoplasty	19318	3.3%
Simple repair of superficial wound	12001–12021	3.1%
Breast reconstruction	19350–19380	3.1%
Cosmetic Procedures		
Augmentation mammoplasty	19324–19325	22.0%
Excision, excessive skin and subcutaneous tissue	15830–15839, 15474	18.0%
Suction assisted lipectomy	15876–15879	14.3%
Mastopexy	19316	6.2%
Reduction mammoplasty	19318	4.4%
Subcutaneous injection of filling material	11950–11954	3.2%
Blepharoplasty	15822–15823	3.1%
Excision of benign lesion	19381	2.6%
Rhytidectomy	15824–15829	2.1%
Rhinoplasty	30400–30420	2.0%

Percentages were calculated over the total number of reconstructive or cosmetic procedures, accordingly.

Total procedures are summed as each CPT Code submitted by the candidate.

[†] Reduction mammoplasty could be classified as reconstructive or cosmetic, but not as both.

Table 3

Hand Surgery Fellowship Statistics

		Positions		
	Certified Programs	Offered	Filled	Unfilled
Affiliated Hand Surgery Fellowships				
General Surgery	1 (1%)	8	8 (6%)	0
Orthopedic Surgery	57 (83%)	120	113 (79%)	7 (5%)
Plastic Surgery	11 (16%)	16	14 (10%)	2 (1%)

Adapted from the National Residency Match Program Statistics.¹⁸