

Cosmetic Surgery Survey of American Society of Oculoplastic and Reconstructive Surgery Members and a 6-Year Comparison

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Purpose: To examine the current cosmetic practices of American Society of Oculoplastic and Reconstructive Surgery members using a survey and compare those results with a similar survey that was performed 6 years prior, and to determine the types and breadth of cosmetic procedures that are currently performed within the field of ophthalmic plastic and reconstructive surgery.

Methods: A 49-question survey was sent to members of American Society of Oculoplastic and Reconstructive Surgery by post mail and/or electronic mail in 2007. The questions covered surgeon demographics, cosmetic practice design, and preferences for aesthetic procedures and commercial equipment and products. Frequencies and percentages of responses were obtained for each question individually. Responses to similar questions in a 2001 survey were compared with those in the current survey.

Results: Two hundred fifty-seven members of 488 responded (53%). Eighty-two percent of respondents (208 of 253) performed some type of cosmetic procedure. Fifty-five percent of respondents reported that less than 25% of their practice consisted of cosmetic procedures and services. Thirty-one percent of respondents reported that 25% to 75% of their practice was cosmetic.

Conclusions: A slightly higher percentage of respondents reported that more of their practice consisted of cosmetic procedures and services compared with 6 years ago; however, the difference did not reach statistical significance ($p = 0.895$). A lower percentage of respondents injected Botox cosmetic ($p = 0.02$), offered ablative laser skin resurfacing ($p < 0.001$), and performed rhytidectomy ($p < 0.001$) in 2007 compared with 2001.

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The number of surgical and nonsurgical cosmetic procedures has steadily grown in the United States over the past several years.^{1,2} This trend is occurring within many disciplines of medicine. In 2006, the *New York Times* reported on physicians originally trained in obstetrics, gynecology, emergency medicine, and family medicine who were turning to the “business of beauty.”³

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Oculoplastic and reconstructive specialists are contributing to the knowledge of aesthetic procedures and facial rejuvenation as can be seen in several oculoplastic and facial plastic journals. However, the trend of aesthetic surgery practice patterns among the general oculoplastic and reconstructive surgery community is not well known.

Our study evaluated the current cosmetic practices of American Society of Oculoplastic and Reconstructive Surgery (ASOPRS) members using a survey and compared those results with a similar survey that was performed 6 years ago. We aimed to determine the specific types and breadth of cosmetic procedures that are currently performed within the field of ophthalmic plastic and reconstructive surgery.

METHODS

A survey consisting of 49 questions was created (Appendix 1, <http://links.lww.com/IOP/A46>). The questions encompassed the surgeon's demographics and background, preferences for specific aesthetic surgical and minimally invasive procedures, choice of current commercial equipment and products, and cosmetic practice design. Several questions allowed for more than one response.

The survey was distributed to ASOPRS members within North America who were listed in the membership directory on the ASOPRS website in January 2007. Two different methods of distribution were used. In January 2007, paper surveys were sent via U.S. Postal Service. In August 2007, an abbreviated survey was distributed via electronic mail to members with addresses listed in the member directory to obtain a higher response rate. The abbreviated survey was created and collected using the SurveyMonkey online software program (SurveyMonkey.com, Portland, OR, U.S.A.). The questions used in the abbreviated survey were identical to those in the paper survey. Because all responses were anonymous, members who returned the paper survey were asked not to complete the online survey to prevent repeat survey submissions. Additional emails were sent on 2 subsequent occasions (October and December 2007) to increase the likelihood of participation. The collection period was ended on December 31, 2007.

Responses to both the paper and online survey versions were combined and analyzed collectively. Frequencies and percentages of responses were obtained for each question. Skipped questions were excluded from the response count.

In August 2001, a similarly designed 32-question survey (Appendix 2, <http://links.lww.com/IOP/A47>) was mailed to ASOPRS members within North America who had addresses available on the ASOPRS membership directory at the time. The surveys were only sent by mail with a self-addressed stamped envelope. All responses were anonymous. Responses received by November 2001 were used for analysis. The frequencies and percentages of responses were obtained

TABLE 1. Demographics of respondents

Question	Response	2007 Survey % (n)	2001 Survey % (n)	<i>p</i> *
Years in practice	<5 years	7 (18)	10 (19)	0.014
	5–10 years	18 (46)	19 (36)	
	10–15 years	16 (40)	27 (51)	
	15–20 years	24 (59)	19 (36)	
	More than 20 years	35 (88)	25 (46)	
Gender of member	Male	89 (221)	91 (169)	0.527
	Female	11 (28)	9 (17)	
Type of practice	Private	53 (133)	44 (82)	0.013
	Academic	21 (52)	15 (28)	
	Private with academic affiliation	23 (59)	39 (74)	
	Other	3 (7)	2 (4)	
	100% oculoplastics	61 (153)	47 (88)	
Percentage of practice that is oculoplastics versus general ophthalmology	99%–75%	14.3 (36)	17 (32)	0.056
	74%–50%	8.4 (21)	12 (22)	
	49%–25%	9.6 (24)	15 (29)	
	24%–1%	6.4 (16)	9 (16)	
	0%	0.4 (1)	0 (0)	
	100% cosmetic	3 (6)	2 (3)	
Percentage of practice that is cosmetic versus functional	99%–75%	7 (16)	7 (14)	0.895
	74%–50%	14 (29)	11 (21)	
	49%–25%	17 (36)	16 (29)	
	24%–1%	50 (106)	54 (101)	
	0	5 (10)	4 (7)	
	Uncertain	4 (8)	6 (11)	

**p* value based on chi-square test of the difference between surveys of the distribution over the categories in each question.

for each question in the survey. The results from the 2001 survey were not published.

The results of the 2001 and 2007 survey questions that were identical were compared. The significance of the difference in responses between the 2 surveys was assessed using the chi-square test. Chi-squared analysis of the demographics questions compared the difference between surveys in the distribution over all categories in each question. Some of the responses could not be compared due to the absence of the question in the earlier survey.

RESULTS

The 2007 survey was sent to 497 ASOPRS members. Eight surveys were not delivered. Two hundred fifty-seven members of 488 responded (53%). Four surveys from retired members were returned but not completed. Therefore, 253 surveys were used for the final analysis.

The 2001 survey was mailed to 410 members. One hundred eighty-eight members of 410 returned a completed survey (45.8%). The

responses to this survey that corresponded to the 2007 survey are listed in Tables 1 to 3.

Demographics. Table 1 contains the specific demographics of the respondents. Ninety-nine percent of the respondents answered the personal demographics questions. In the 2007 survey, most respondents were male (89%). Fifty-nine percent of respondents have been in practice for 15 years or more. Sixty-one percent have a clinical practice that is 100% oculoplastic. Most of the 2001 survey respondents were also male (91%). Forty-four percent were in practice for 15 years or more, and 47% had a practice that was 100% oculoplastic.

When the 2007 and 2001 surveys were compared, there was a significant difference in the number of years in practice ($p = 0.014$) and type of practice ($p = 0.013$). There was not a significant change in the percentage of one's practice that is comprised of cosmetic services ($p = 0.895$).

Most members (95%) have a cosmetic practice that is 75% to 100% female. Seventy percent have a cosmetic practice that is 75% to

TABLE 2. Surgical procedure preferences

Question	Response	2007 Survey % (n)	2001 Survey % (n)	<i>p</i> *
Blepharoplasty instrument preference†	Scalpel blade	65 (165)	54 (102)	0.020
	CO ₂ laser	21 (53)	28 (52)	0.102
	Monopolar needle tip	41 (104)	28 (53)	0.005
	Other	9 (23)	10 (19)	0.719
Offering cosmetic brow lifts	Yes	80 (195)	77 (135)	0.55
Offer thread lifts	Yes	14 (34)	‡	
Offering rhytidectomy	Yes	21 (51)	43 (66)	<0.001
Received resistance from plastic surgeons for performing face lifts	Yes	50 (36)	49 (38)	1.0
Offering liposuction	Yes	19 (43)	22 (42)	0.40

**p* value based on chi-square test.

†Percentages add to more than 100% due to the reporting of more than one instrument used.

‡Question not present in 2001 survey.

CO₂, carbon dioxide.

TABLE 3. Minimally invasive procedure preferences

Question	Response	2007 Survey % (n)	2001 Survey % (n)	p*
Offering ablative laser skin resurfacing	Yes	45 (111)	72 (133)	<0.001
Laser type for laser skin resurfacing†	CO ₂	84 (93)	86 (114)	<0.001
	Erbium YAG	18 (20)	23 (30)	0.009
	Sciton	14 (15)	3 (4)	0.050
	Derrma K	5 (6)	2 (3)	0.561
	Other	5 (6)	‡	
Offering Botox cosmetic injections	Yes	82 (208)	90 (169)	0.02
Offering filler injections	Yes	69 (170)	‡	
Fillers used‡	Restylane§	95 (164)	2 (3)	<0.001
	Juvederm	51 (87)	‡	
	Radiesse	36 (61)	‡	
	Autologous fat	24 (42)	26 (49)	0.017
	Collagen	23 (39)	22 (42)	0.069
Areas injected‡	Nasolabial folds	98 (168)	‡	
	Vertical lip lines	81 (140)	‡	
	Lips (Vermillion border)	81 (140)	‡	
	Marionette (mouth frown) lines	80 (138)	‡	
	Perioral lines	76 (131)	‡	
	Glabella	77 (132)	‡	
	Infraorbital rim/tear trough	73 (125)	‡	
	Lips (mucosa)	68 (117)	‡	
	Malar Hollows	56 (97)	‡	

*p value based on chi-square test.

†Percentages add to more than 100% due to the reporting of more than one response given.

‡Question not present in 2001 survey.

§Restylane was approved by Federal Drug Administration in 2003.

CO₂, carbon dioxide.

99% white. Seventy-two percent of members have a practice that is 1% to 24% Hispanic, 79% have a practice that is 1% to 24% Asian, and 76% have a practice that is 1% to 24% black. The most common age group served is 50 to 59 years, followed by the 60- to 69- and 40- to 49-year-old age groups. Thirty-four percent of respondents offer skin care products in their practice. An aesthetician is present in 16% of respondents' practices. Thirty-one percent do not offer any cosmetic ancillary services.

Table 2 summarizes respondent preferences for surgical procedures. The scalpel blade is used for blepharoplasty by 65% of respondents from the 2007 survey, making it the most common instrument of choice. The second most common instrument used is the monopolar needle tip, or equivalent, with 41% of respondents stating they use it for blepharoplasty. The CO₂ laser is reported to be used by 21% of members for blepharoplasty. In the 2001 survey, the scalpel blade was also the most common instrument of choice (54%).

Most 2007 and 2001 member respondents perform cosmetic brow lifts (80% and 77%, respectively). Thread lifts, rhytidectomy, and liposuction are performed by a minority of member respondents at 14%, 21%, and 19%, respectively.

Brow Lift. Among the respondents who offer cosmetic brow lifts (n = 195), 68% perform them endoscopically. Fifty-four percent offer cosmetic transblepharoplasty brow lifts, and 53% use a direct approach. Coronal brow lifts are performed by 24% of respondents. Percentages add to more than 100% due to the reporting of more than one type of procedure performed. Among the respondents who do not offer cosmetic brow lifts (n = 50), 92% perform their functional cases with a direct approach. Functional transblepharoplasty brow lifts are performed by 28% of members, whereas 8% report using an endoscopic approach. Most respondents learned their procedure of choice during fellowship training.

Rhytidectomy and Liposuction. Twenty-one percent of respondents reported that they performed rhytidectomy. Fifty-seven percent of those who offer, or once offered, rhytidectomy, received their training in

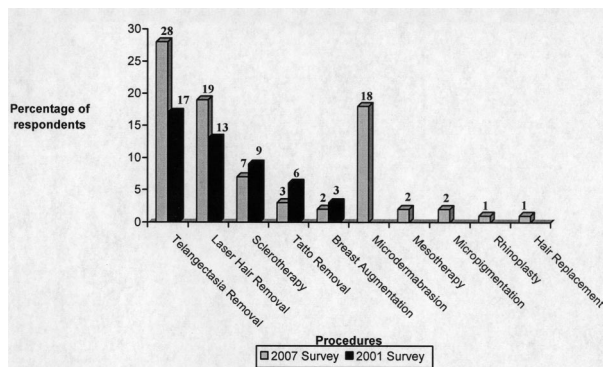
fellowship. Twenty-eight percent learned to perform the procedure from workshops or conference courses. Liposuction procedures were reported by 18% of respondents. Among those members, 79% treat the submental area, and 44% perform body contouring. Forty-three percent received their liposuction training in fellowship, 31% learned through workshops or conference courses, and 16% were trained under a supervised preceptorship.

Table 3 lists the minimally invasive procedures that are performed and preferred by respondents.

Ablative Laser Skin Resurfacing. Forty-five percent of respondents perform ablative laser skin resurfacing. Laser skin resurfacing skills were learned during a workshop course by 46% of respondents and during fellowship training by 38% of respondents. Twenty percent learned during a supervised preceptorship. In the 2001 survey, 72% of respondents offered laser skin resurfacing. This is a significant difference compared with the 2007 survey (p < 0.001).

Injectable Fillers. The most common injectable cosmetic wrinkle fillers were Restylane (Medicis Aesthetics, Inc., Scottsdale, AZ, U.S.A.) (95%), Juvederm (Allergan, Inc., Irvine, CA, U.S.A.) (51%), and Radiesse (BioForm Medical, San Mateo, CA, U.S.A.) (36%). The least used fillers were Cosmoderm/Cosmoplast (Allergan, Inc., Irvine, CA, U.S.A.) (23%), Sculptra (Dermik Laboratories, Berwyn, PA, U.S.A.) (33%), and Artefill (Artes Medical, Inc., San Diego, CA, U.S.A.) (9%). The most commonly injected areas include the nasolabial, mesolabial, and perioral regions. The specific sites injected by more than 50% of respondents are listed in Table 3. The areas least commonly injected are the cheeks (43%), chin (42%), forehead lines (41%), acne scars (36%), crow's feet (33%), orbit (17%), and thighs (4%). Percentages add to more than 100% due to the reporting of more than one area injected.

The survey included questions about preferences for cosmetic implants, nonablative skin resurfacing, radiofrequency devices, and chemical peels.



Percentage of American Society of Oculoplastic and Reconstructive Surgery members who offer additional cosmetic procedures.

Nonablative Skin Resurfacing and Radiofrequency Devices. Intense Pulsed Light and Fraxel (Reliant Technologies, Mountain View, CA, U.S.A.) treatments are reported to be used by 45 (18%) and 11 (4%) of 253 respondents, respectively. Thermage (Thermage, Inc., Hayward, CA, U.S.A.) is the most frequently reported cosmetic radiofrequency device used by 13 of 253 respondents (5%).

Cosmetic Implants and Chemical Peels. AlloDerm (LifeCell Corporation, Branchburg, NJ, U.S.A.) is the most commonly used implant. Eighty-two of 253 respondents (32%) reported using this product. Trichloroacetic acid peels are offered by 92 of 253 respondents (36%).

The Figure shows the percentage of ASOPRS respondents performing other selected cosmetic procedures for both 2001 and 2007 surveys.

DISCUSSION

The demographics of those responding in the 2001 and 2007 surveys were similar. In both surveys, most respondents were in practice for longer than 15 years. There were a slightly higher number of female respondents in 2007 as compared with 2001; however, there was no significant change in distribution of responses for this question ($p = 0.53$). Most of the member respondents in both surveys were in private practice. We did find a significant change in the distribution of responses from 2001 to 2007 for this question ($p = 0.013$). Although more members reported that 100% of their practice is oculoplastic and reconstructive in the 2007 survey (61%) compared with the 2001 survey (47%), there was borderline significance in the distribution between the 2 groups.

Although there has been a dramatic increase in the number of cosmetic procedures nationwide over the past few years, this trend appears to be occurring on a smaller scale among the members of ASOPRS. There was a trend toward an increase in cosmetic procedures and services compared with 6 years ago; however, the difference in the distribution of the responses between the 2 surveys was not significant ($p = 0.89$). The percentage of respondents who reported that 25% to 75% of their practice consisted of cosmetic procedures and services was 31% in 2007 as compared with 27% in 2001. We found that 55% of 2007 respondents and 58% of 2001 respondents reported that less than 25% of their practice consisted of cosmetic procedures and services.

The preferred instrument for a blepharoplasty was a scalpel blade in both surveys; however, the percentage increased from 54% in 2001 to 65% in 2007 ($p = 0.020$). Over the past 6 years, there was no significant change in the percentage of members using the CO₂ laser for their blepharoplasty

($p = 0.102$). There was, however, a significant increase in the percentage of those using an electrocautery or radiofrequency unit with a needle tip ($p = 0.005$). This is likely a function of the fact that these instruments have been shown to provide intraoperative and postoperative results comparable to the CO₂ laser at a fraction of the cost.^{4,5}

Twenty percent of member respondents perform only functional brow lifts. The procedure of choice for most of them (92%) is the direct brow lift. Among the members who offer both cosmetic and functional brow lifts, the direct brow lift was also the most common procedure for their functional cases (88%). Direct brow lifts have been traditionally used for brow ptosis causing a visual disturbance. It is not unexpected to see that most members, functional and cosmetic alike, perform direct brow lifts for their functional cases.

The 2007 survey showed that among members who perform cosmetic brow lifts, the most common cosmetic procedure was the endoscopic brow lift (51%). We found that members who are performing cosmetic brow lifts are more likely to offer their preferred cosmetic approach to their functional patients. Among the members who perform both functional and cosmetic brow lifts, 32% do the procedure endoscopically for functional cases, compared with only 8% of members who perform only functional brow lifts. We found the same trend for transblepharoplasty brow lifts. Among members who perform both functional and cosmetic brow lifts, 55% perform transblepharoplasty brow lifts for functional cases, compared with 28% of members who only perform functional brow lifts functionally. Members who perform a specific procedure for their cosmetic patients appear to perform the same procedure for their functional cases more than their functional-only brow lift member counterparts.

A minority of ASOPRS members reported that they perform rhytidectomy and liposuction. Among those who perform, or once performed, rhytidectomy, half reported that they have received resistance from plastic surgeons against performing the procedure. Our survey showed that most of the ASOPRS member respondents who perform this procedure have had advanced formal training during subspecialty fellowship. Similarly, most ASOPRS member respondents who perform liposuction received training through subspecialty fellowship or supervised preceptorship.

The percentage of members performing laser skin resurfacing has decreased since 2001. In that survey, 72% of respondents reported that they offer laser skin resurfacing, compared with 45% in the 2007 survey ($p < 0.001$). The CO₂ laser was the method of choice for most of the ASOPRS member respondents in both surveys. The CO₂ laser ablates the epidermis and superficial dermis while producing a limited amount of thermal damage in the underlying dermis.⁶ This induced dermal thermal injury induces collagen remodeling that can improve photoaged skin and facial rhytids. Despite proven long-term efficacy,⁷ the acceptance of prolonged recovery time by both patients and physicians has declined as other products and devices offering dermal remodeling with reduced recovery time emerged. Recently, nonablative devices, such as Fraxel, Thermage, and Portrait Plasma (Rhytec, Inc., Waltham, MA, U.S.A.), have gained popularity over ablative techniques. Most recently, fractional CO₂ laser technology (ActiveFX/Encore, Lumenis, Santa Clara, CA, U.S.A.) has been introduced that offers reduced recovery time.⁸

Injectable cosmetic wrinkle fillers have become more popular after Federal Drug Administration approval of several hyaluronic acid and other dermal fillers since 2003. Hyaluronic acid fillers offer longer-lasting correction of nasolabial folds when compared with bovine collagen with a similar adverse

event profile but without the need for hypersensitivity testing.⁹ There was a shift in the type of injectable fillers used from the 2001 survey to the 2007 survey. In the 2001 survey, the most commonly used filler was autologous fat and bovine collagen. In the 2007 survey, Restylane and Juvederm were the most commonly used filler. The most common sites injected by member respondents in 2007 correspond with those in a recent study on the patient-preferred sites of Restylane injection.¹⁰ In this study, the most frequently injected sites were the nasolabial folds, melolabial folds, lips, intraorbital rims, perioral rhytids, and glabella. Our study measured the frequency of members who inject in particular areas rather than the frequency in which these areas were injected per patient preference.

The percentage of ASOPRS member respondents who inject Botox (Allergan, Inc., Irvine, CA, U.S.A.) for aesthetic purposes decreased by 9% from 2001 to 2007 ($p = 0.02$). The reason for the decrease is not clear. Competition from other physicians offering cosmetic Botox, including those in primary care, may play a role. The American Society for Aesthetic Plastic Surgery found a 12.8% decrease in Botox procedures from 2006 to 2007.¹ However, the American Society of Plastic Surgeons 2007 national statistics showed that not only is Botox the most commonly performed cosmetic procedure in the United States, there was a 13% increase in anatomic site injections since 2006 and a 488% increase since 2000.² Our survey evaluated the number of members who inject Botox cosmetically and not the number of anatomic sites injected.

There are some limitations inherent to this method of study. The most apparent limitation of a survey is the response rate. The response rate for our 2007 survey was lower than the initial target. Although response rates above 50% are generally acceptable, a response rate that is 80% or higher is more desirable. The data we obtained, however, were from a considerable number of respondents and reflect a significant body of information that we felt should be shared.

More critical than response rate is the degree to which nonrespondents are similar to the respondents of our survey. Our survey results represented the male to female ratio of ASOPRS accurately. The ASOPRS Member Database shows a membership in the United States and Canada to be 505, 446 male and 59 female. The percentage of female ASOPRS members (11.6%) is similar to the percentage of respondents who were female (11.2%). Male members in practice longer than 15 years represented the majority of our respondents. A sizable percentage of respondents (41%), however, have been in practice for 15 years or less. The smallest subgroup of respondents was those in practice for less than 5 years. This information should be taken in consideration when extrapolating the responses of the respondents to the general ASOPRS membership. The ASOPRS Member Database did not have data available indicating the years in practice for members.

The most serious potential weakness of any survey involves the validity and reliability of the responses obtained. Our survey was anonymous so that the members would be more willing to offer honest responses even if they were contrary to generally accepted norms of society. A measure of test-retest reliability was not performed.

Our 2007 survey results represent the cosmetic and functional practices of a large number of ASOPRS members. Based on the responses, we calculated that 82% of respondents (208 of 253) perform some type of cosmetic procedure. Furthermore, most respondents have practices that are completely oculoplastic and reconstructive and less than 25% cosmetic. Although there is value in this information, future survey distributions should aim for more membership participation with abbreviated surveys and wider education on how these results can benefit ASOPRS members and their practices.

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