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Current Trends in Cataract and Refractive Surgery in Japan: 1997 Survey

Tetsuro Oshika,* Shiro Amano,*
Makoto Araie,* Yoshinao Majima† and David V. Leaming‡

*Department of Ophthalmology, University of Tokyo School of Medicine, Tokyo, Japan; †Department of Ophthalmology, Fujita Health University, Aichi, Japan; ‡Desert Eye Medical Corporation, Palm Springs, CA, USA

Purpose: A sixth annual survey was carried out by mail in January 1998, to investigate the current trends in cataract and refractive surgery in Japan.

Respondents: Questionnaires were sent to 816 ophthalmologist members of the Japanese Society of Cataract and Refractive Surgery. Data received from 409 (50.1%) of the recipients were cross-analyzed and compared with those from the previous surveys.

Results and Conclusion: In cataract surgery, there have been trends toward more surgical procedures performed by a surgeon, shorter period of hospitalization, and increased number of outpatient surgery. Ninety-two percent of respondents preferred phacoemulsification, 54% used the self-sealing wound-closure technique, and 19% used topical anesthesia for phacoemulsification. As for refractive surgery, surgeons remained rather conservative; with 28% and 7% of surgeons doing astigmatic keratotomy and refractive keratotomy, respectively. Photorefractive keratectomy, laser in situ keratomileusis, and phakic intraocular lens were judged to be useful refractive surgical procedures by 56.6%, 43.3%, and 25.1% of the respondents, respectively. **Jpn J Ophthalmol 1999;43:139–147**

Key Words: Cataract surgery, intraocular lens, Japanese Society of Cataract and Refractive Surgery, refractive surgery, survey.

Introduction

Because cataract and refractive surgical procedures are now among the most successful and the most common in medicine, a clear understanding of the current situation and future trends in these fields has become increasingly important. In the United States and European countries,[1–17] surveys have been conducted on the practice styles and preferences of anterior segment surgeons, giving a detailed view of the trends taking place in those countries. Since 1992, we have conducted annual mail surveys of members of the Japanese Society of Cataract and Refractive Surgery.[18–20] The current study represents the sixth such survey on cataract and refractive surgical practices in Japan.

Materials and Methods

Survey forms with 45 multiple-choice questions were mailed in January 1998 to 816 ophthalmologist members of the Japanese Society of Cataract and Refractive Surgery. To maintain the confidentiality of the respondents, return envelopes and questionnaires were not marked or labeled.

Results

Replies were received from 409 (50.1%) of the recipients prior to the cutoff date of February 28, 1998. We used personal computer database programs (Paradox™ for Windows™; Borland, Tokyo, and Statistica™ for Windows™; StatSoft, Tulsa, OK, USA) for data analysis. Summaries of representative data follow.

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Address correspondence and reprint requests to: Tetsuro OSHIKA, MD, Department of Ophthalmology, University of Tokyo School of Medicine, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan

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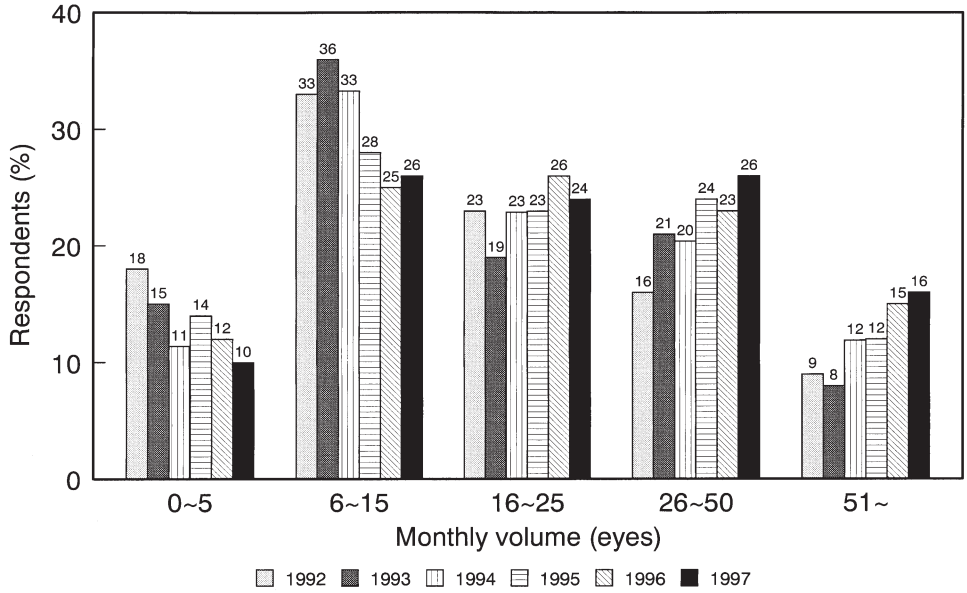

Figure 1. Cataract surgery volume per month (eyes).

Demographics

The majority of the respondents were in the 30–39 and 40–49 year age groups, accounting for approximately 70% of all respondents again this year. The volume profile for cataract surgery showed that 26% of the surgeons were doing 6–15 procedures, 26% doing 26–50 procedures, and 24% doing 16–25 procedures per month (Figure 1). The average number of cataract surgery procedures per month increased from 20.1 (1993), 25.2 (1994), 26.6 (1995), and 28.7 (1996) to 30.1 this year. Surgeons doing 75 or more cases monthly constituted 6.1%, 7.3%, and 7.1% of the respondents in 1995, 1996, and 1997, respectively.

Hospitalization

Most of the cataract operations were carried out on hospitalized patients. Twenty-seven percent of

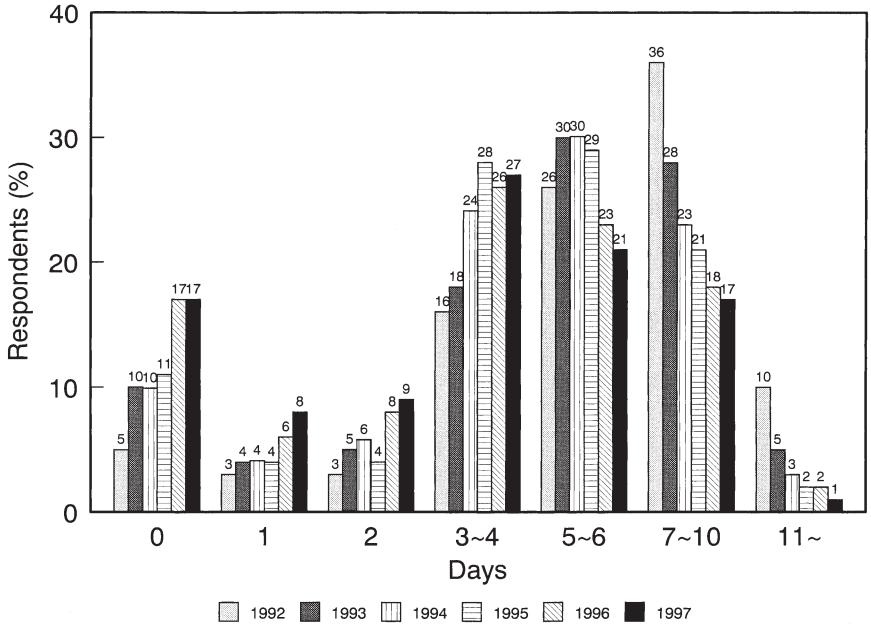

Figure 2. Duration of hospitalization for cataract surgery.

Table 1. Preoperative Examination

	Always	Frequently	Occasionally	Never
Specular microscopy	78%	2%	7%	13%
Videokeratography	28%	4%	15%	52%

surgeons replied that they hospitalized their patients for 3–4 days, 21% said for 5–6 days, and 17% for 7–10 days (Figure 2). The proportion of surgeons who hospitalize patients for longer than 1 week decreased from 46% (1992), 33% (1993), 26% (1994), 23% (1995), and 20% (1996) to 18% this year. Seventeen percent of the doctors said that the majority of their patients had outpatient surgery. The average period of hospitalization was 4.0 days in 1997, against 5.6 days in 1993, 5.1 days in 1994, 4.8 days in 1995, and 4.1 days in 1996. The percentage of surgeons who perform outpatient cataract procedures increased from 24% (1992), 26% (1993), 41% (1994), 44% (1995), and 59% (1996) to 64% this year.

Preoperative Examination

Specular microscopy and videokeratography were routinely performed by 78% and 28%, of the respondents (Table 1), respectively.

Anesthesia

The percentage of surgeons using retrobulbar anesthesia has decreased from previous years, whereas Tenon anesthesia and topical anesthesia have gained popularity (Figure 3). Intracameral anesthesia was performed by 2% of the respondents.

Cataract Extraction

Preferred techniques of cataract extraction are shown in Figure 4. Phacoemulsification and aspiration (PEA) with nucleus-dividing technique grew in popularity again this year. When asked about the percentage of patients treated using PEA, 73% of surgeons replied that they used it in 95% or more of cases, a sharp increase during the last 6 years (Figure 5). Only 4% never used PEA. The data indicate that 92% of surgeons use PEA for more than half of their patients, and 8% use extracapsular cataract extraction (ECCE) for more than half of their cases. The rate of surgeons who prefer PEA increased from 59% in 1992, 71% in 1993, 80% in 1994, 83% in 1995, and 90% in 1996 to 92% this year.

As for the surface contour of wounds in PEA, 14% made the incision parallel to the limbus, 54% made it tangential to the limbus, 19% made a frown incision, and 14% made a clear corneal incision (Figure 6). Preferred size of incisions in PEA varied. The most frequently cited sizes were, in descending order, 3.5 mm (18%), 5.5 mm (18%), 6.0 mm (17%), and 4.0 mm (15%).

Self-sealing wound construction was the main wound closure technique in PEA for 54% of the

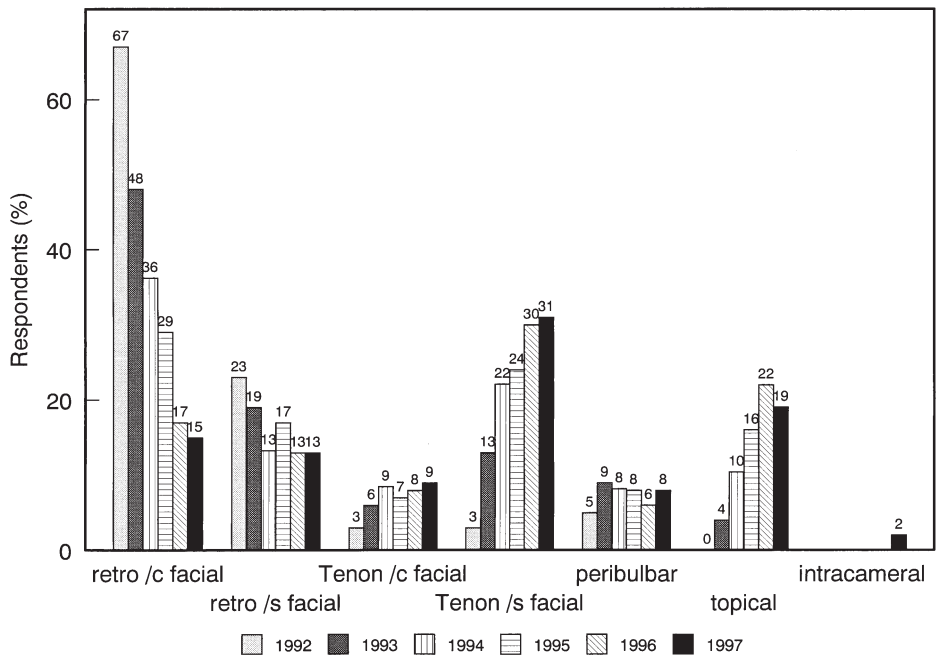

Figure 3. Preferred anesthesia.

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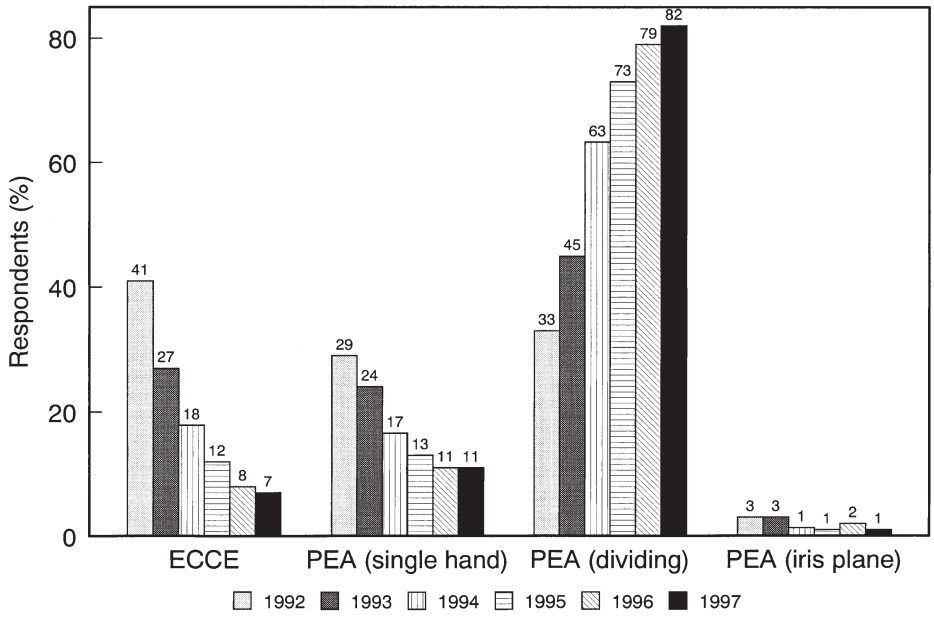

Figure 4. Preferred technique of cataract extraction. PEA: phacoemulsification and aspiration, ECCE: extracapsular cataract extraction.

ophthalmologists in 1997, which increased sharply from 25% in 1992, 30% in 1993, 38% in 1994, 42% in 1995, and 53% in 1996 (Figure 7).

Intraocular Lenses

Preferred size of the optics for PEA and ECCE were asked. For PEA, 5.5-mm spherical was the highest ranked (48%), followed by 6.0-mm spherical (43%). For ECCE, 50% chose 6.0-mm spherical and 33% selected 6.5-mm spherical.

The type of intraocular lenses currently being used for small incision cataract surgery included acrylic foldable intraocular lens (60%), silicone intraocular lens (33%), and small spherical polymethylmethacrylate (PMMA) intraocular lens (20%). Twenty-one percent of surgeons did not use any small incision intraocular lenses (Figure 8). When asked what in-

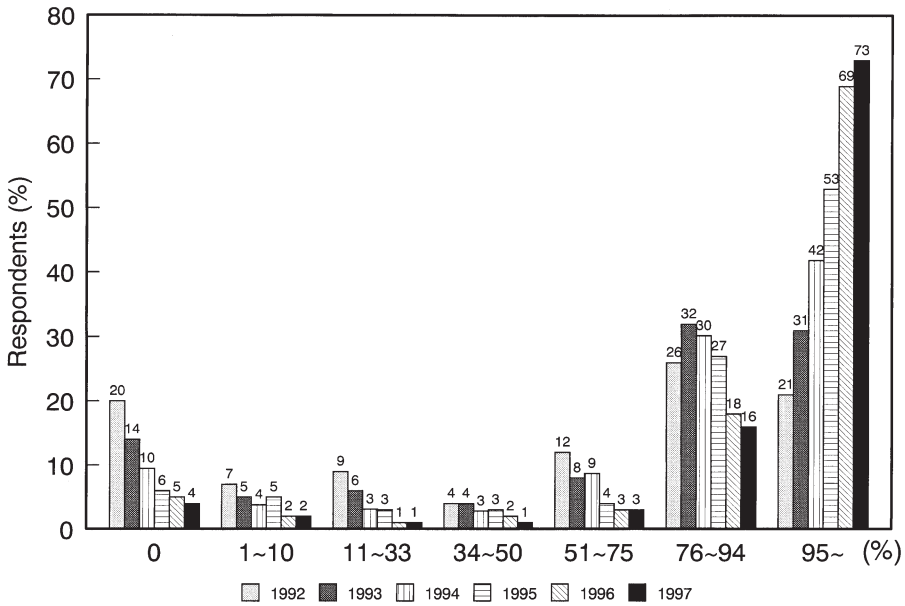

Figure 5. Percentage of phacoemulsification use.

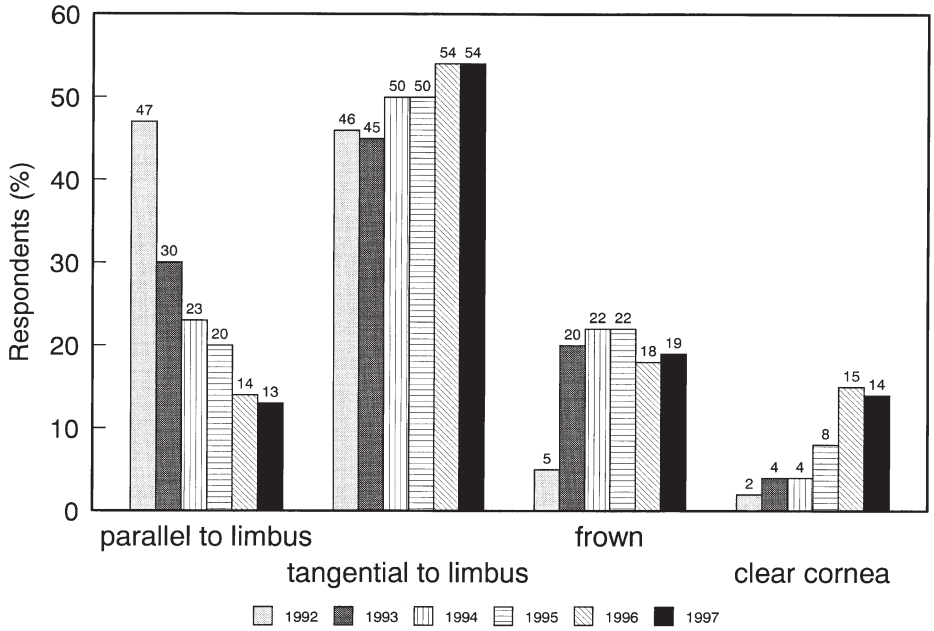

Figure 6. Preferred surface contour of wound.

traocular lens style or material held the most promise for small incision cataract surgery, 57% chose acrylic foldable, 8% silicone foldable, 3% hydrogel, and 2% small spherical optic PMMA (Figure 9).

Viscoelastics

The greatest number of respondents reported that the actual use of viscoelastic material amounted to 0.4–0.6 mL, whereas the ideal use amounted to 0.6 mL. When questioned about the usage of viscoelastic agents during anterior capsulotomy, 79% replied that they used them in all cases, 2% used them in more than half their cases, 2% applied them occasionally, and 9% were not using such agents at all.

Complications

The rate of posterior capsular rupture was reported by the surgeons (Figure 10), and it varied

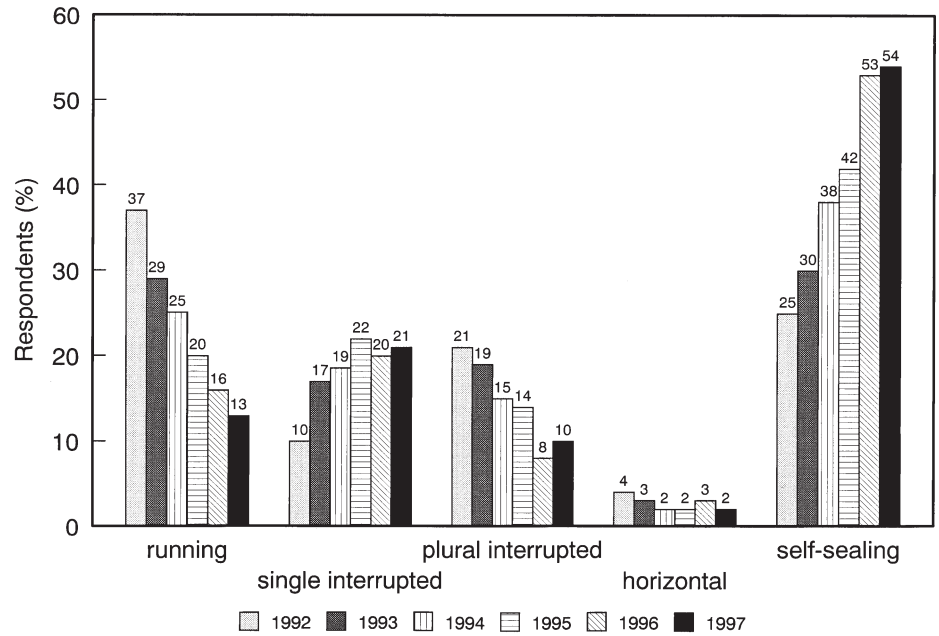

Figure 7. Wound closure technique in phacoemulsification.

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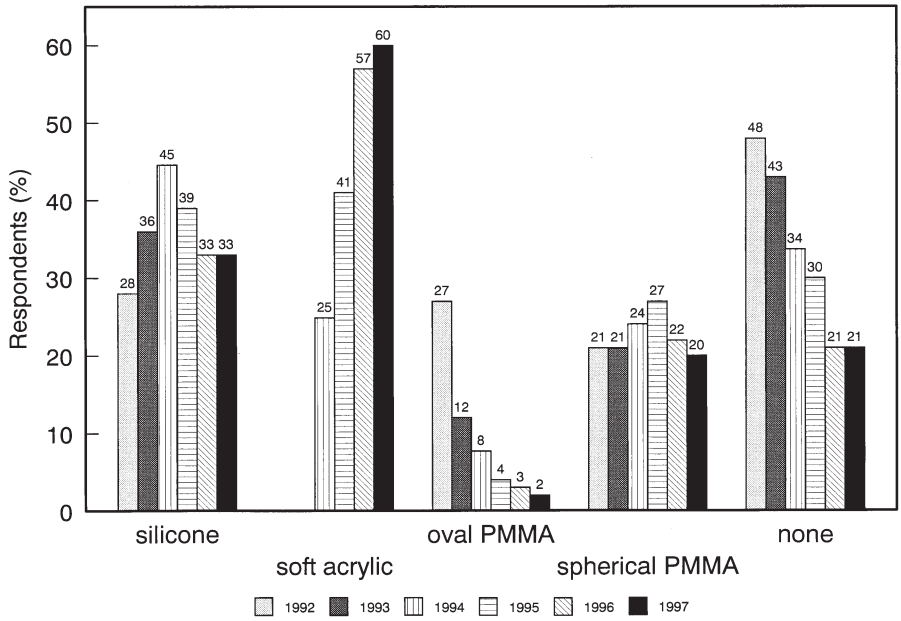

Figure 8. Small incision intraocular lenses currently used. PMMA: polymethylmethacrylate.

from 0%–10%. The average rate was 1.87%. Surgeons doing fewer surgeries per month reported higher rates of posterior capsular rupture (Figure 11).

Twenty-six respondents reported displacement of the nucleus into the vitreous during the past year. The occurrence rate was 0.99 cases per 1,000 cataract surgeries. For cases in which the nucleus was displaced into the vitreous, the dropped nucleus was removed intraoperatively in 52%, postoperatively in 41%, and no answers were available in 7%.

Twenty-eight percent of respondents had experienced explantation of an intraocular lens during the past year. The most frequently cited reason was intraocular lens power miscalculation, followed by intraocular lens decentration/dislocation, endophthalmitis, corneal endothelial damage, and retinal

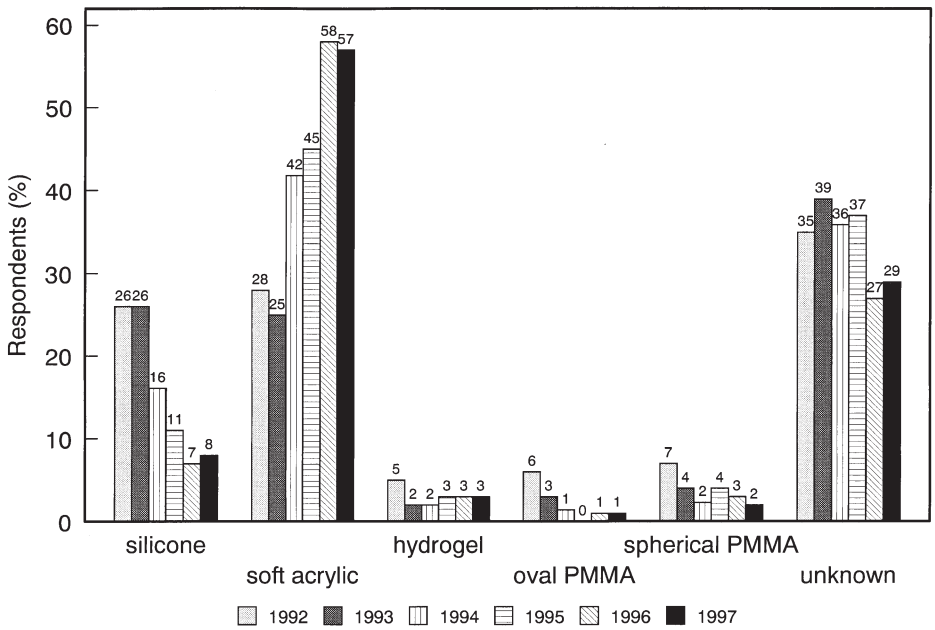

Figure 9. Most promising intraocular lens for small incision cataract surgery. PMMA: polymethylmethacrylate.

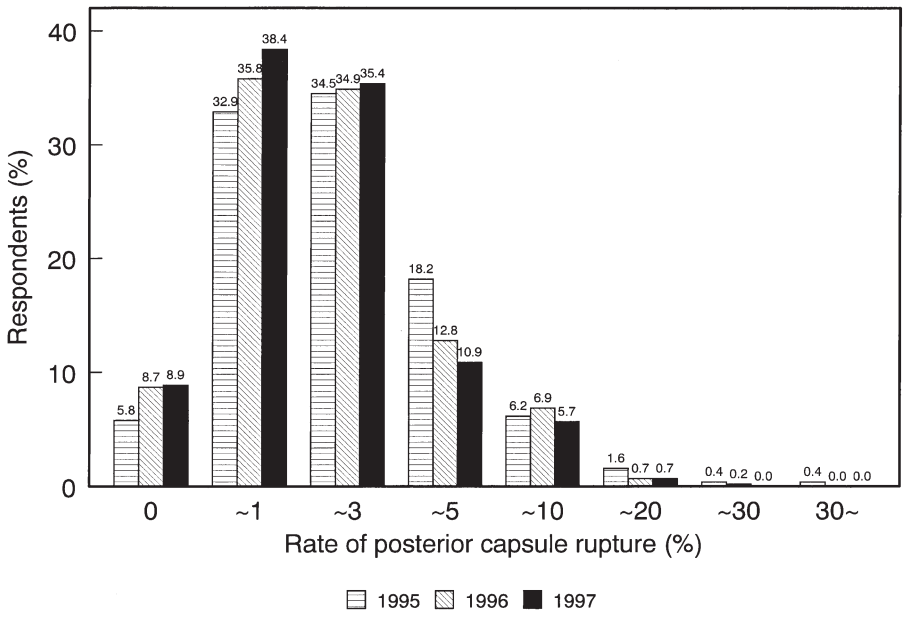

Figure 10. Rate of posterior capsule rupture.

detachment. The incidence of other complications is listed in Table 2.

Refractive Surgery

Twenty-six percent of all surgeons were performing astigmatic keratotomy to some degree, and its application was positively correlated with an increase in the volume of cataract surgery. Of those doing astigmatic keratotomy, 18% used it in combination with cataract surgery. Among the surgeons who are not currently performing astigmatic keratotomy, 54% answered that they want to perform the procedure in the future.

Radial keratotomy was used by 6% of respondents. Of those who are not doing the procedure at present, 14% replied that they wish to perform radial keratotomy in the future.

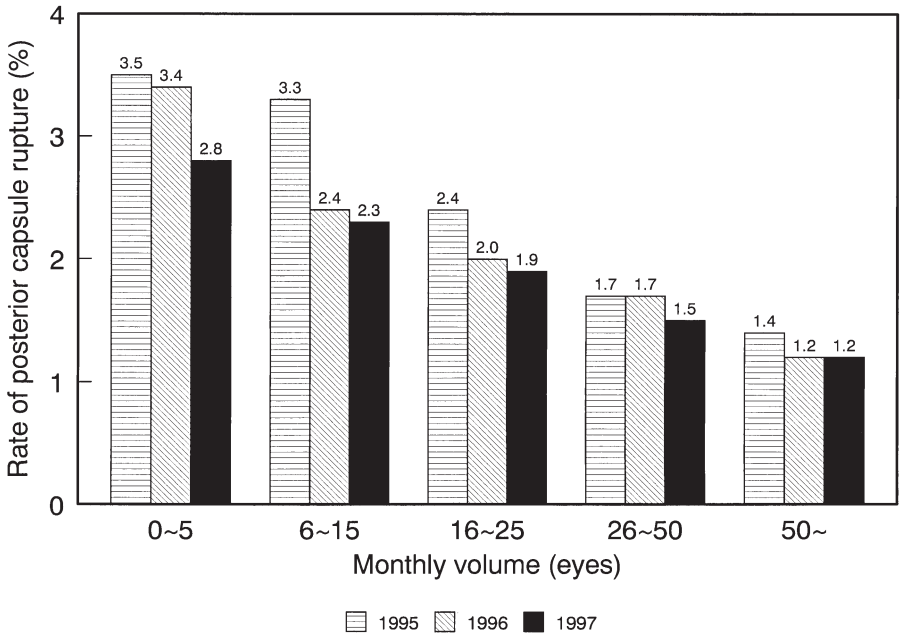

Figure 11. Monthly surgery volume and rate of posterior capsular rupture.

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Table 2. Percentage of Complications Encountered During Past Year

	None	1 Case	2 Cases	3 Cases	4 Cases	5+ Cases
Expulsive hemorrhage	97.0	2.7	0.2	0	0	0
Endophthalmitis	85.6	10.1	2.7	0.7	0.2	0.5
Nucleus displacement	73.6	19.7	4.9	1.2	0	0.5
Intraocular lens explantation	72.4	16.7	4.2	3.4	0.5	2.7

Respondents' views on astigmatic keratotomy, radial keratotomy, photorefractive keratectomy, laser in situ keratomileusis, and phakic intraocular lens are listed in Table 3. Although astigmatic keratotomy and excimer laser photorefractive surgery attracted notably high interest, less attention was directed toward radial keratotomy and phakic intraocular lens.

Discussion

Because the respondents in this survey were members of the Japanese Society of Cataract and Refractive Surgery, results may not exactly reflect the opinions of all Japanese ophthalmologists. The sampling population might have represented a group of ophthalmologists who are more active in the field of cataract and refractive surgery. Because of the anonymous nature of the survey, it is not possible to trace the ophthalmologists who did not return the survey to see whether their replies would differ significantly from the responses of those who returned it.

This survey series, however, has been taken in a similar group of surgeons,[18–20] and thus we believe that the data do describe the trend and direction of cataract/refractive surgery in this country. A longer-term, continuing study, similar to others,[1,3,4] would further define the direction of our profession and contribute to the quality of medical services that future patients will receive.

We express our appreciation to the hundreds of surgeons who responded so comprehensively to the request for information. This study was originally published in IOL & RS 1998;12:216–239 (in Japanese) and is published in here with the permission of IOL & RS.

Table 3. Are Refractive Surgeries Useful for Your Future Practice?

	Yes	No	Unknown
Astigmatic keratotomy	56.7	10.4	32.9
Radial keratotomy	18.4	41.8	39.8
Photorefractive keratectomy	53.6	9.1	37.3
Laser in situ keratomileusis	43.3	8.9	47.8
Phakic intraocular lens	25.1	32.0	42.9

References

1. Leaming DV. Practice styles and preferences of ASCRS members-1985 survey. J Cataract Refract Surg 1986;12:380–4.
2. Kraff MC, Sanders DR, Karcher D, et al. Changing practice patterns in refractive surgery: results of a survey of the American Society of Cataract and Refractive Surgery. J Cataract Refract Surg 1994;20:172–8.
3. Leaming DV. Practice styles and preferences of ASCRS members-1996 survey. J Cataract Refract Surg 1997;23: 527–35.
4. Leaming DV. Practice styles and preferences of ASCRS members—1997 survey. J Cataract Refract Surg 1998;24: 552–61.
5. Shein OD, Steinberg EP, Javitt JC, et al. Variation in cataract surgery practice and clinical outcomes. Ophthalmology 1994; 101:1142–52.
6. Steinberg EP, Bass EB, Luthra R, et al. Variation in ophthalmic testing before cataract surgery. Results of a national survey of ophthalmologists. Arch Ophthalmol 1994;112:896–902.
7. Bass EB, Steinberg EP, Luthra R, et al. Variation in ophthalmic testing prior to cataract surgery. Results of a national survey of optometrists. Arch Ophthalmol 1995;113:27–31.
8. Schein OD, Bass EB, Sharkey P, et al. Cataract surgical techniques. Preferences and underlying beliefs. Arch Ophthalmol 1995;113:1108–12.
9. Wong D, Steele ADM. A survey of intraocular lens implantation in the United Kingdom. Trans Ophthalmol Soc UK 1985;104:760–5.
10. Beckett R, Rosen ES. The results of the 1986 survey of cataract surgery and intraocular lens implantation in the United Kingdom. Eur J Implant Refract Surg 1987;5:52–8.
11. Beckett R, Rosen ES. Results of the 1988 survey of cataract surgery and intraocular lens implantation in the United Kingdom. Eur J Implant Refract Surg 1989;1:231–5.
12. Hodgkins PR, Luff AJ, Morrell AJ, et al. Current practice of cataract extraction and anaesthesia. Br J Ophthalmol 1992; 76:323–6.
13. Campbell DN, Spalton DJ. A national survey of the use of local anaesthesia for cataract surgery. Eur J Implant Refract Surg 1992;4:213–7.
14. Courtney P. The national cataract surgery survey: I. Method and descriptive features. Eye 1992;6:487–92.
15. Ninn-Pederson K, Stenevi U. Cataract surgery in a Swedish

population: observations and complications. J Cataract Refract Surg 1996;22:1498–505.

16. Hansen TE. Practice styles and preferences of Danish cataract surgeons—1997 survey. Acta Ophthalmol Scand 1997;75:577–80.
17. Norregaard JC, Schein OD, Anderson GF. International variation in ophthalmologic management of patients with cataracts. Arch Ophthalmol 1997;115:399–403.
18. Oshika T, Masuda K, Hayashi F, Leaming DV. Current trends in cataract and refractive surgery in Japan—1992 survey. Jpn J Ophthalmol 1993;37:432–44.
19. Oshika T, Masuda K, Hayashi F, et al. Current trends in cataract and refractive surgery in Japan—1995 survey. Jpn J Ophthalmol 1996;40:419–33.
20. Oshika T, Araie M, Hayashi F, et al. Current trends in cataract and refractive surgery in Japan—1996 survey. Jpn J Ophthalmol 1998;42:227–41.