

Current Trends in Cataract and Refractive Surgery in Japan: 1996 Survey

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Abstract: A fifth annual survey was carried out by mail in February 1997 to investigate the current trends in cataract and refractive surgery in Japan. A questionnaire was sent to 867 ophthalmologist members of the Japanese Society of Cataract and Refractive Surgery. Data received from 440 (50.7%) of the recipients were cross-analyzed and compared with those from the previous surveys. For 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 percent of respondents preferred phacoemulsification, 42% employed the self-sealing wound closure technique, and 26% used topical anesthesia for phacoemulsification. As for refractive surgery, surgeons remained rather conservative, with 26% and 6% of surgeons doing astigmatic keratotomy and refractive keratotomy, respectively. **Jpn J Ophthalmol 1998;42:227-241** © 1998 Japanese Ophthalmological Society

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,¹⁻²⁶ 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.²⁷⁻³⁰ The current study represents the fifth such survey on cataract and refractive surgical practices in Japan.

Materials and Methods

Survey forms with 53 multiple-choice questionnaires were mailed in February 1997 to 867 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 440 (50.7%) of the recipients before the cutoff date of March 31, 1997. We used a personal computer database program (Paradox for Windows [Borland Inc., Tokyo], Statistica for Windows [StatSoft Inc., Tulsa, OK, USA]) for data analysis. Summaries of representative data follow.

Demographics

Most 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 cataract surgery volume profile showed that 26% of the sur-

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geons were doing between 16 and 25 procedures per month, followed by 25% with 6-15 and 23% with 26-50 procedures per month (Figure 1). The average number of cataract surgery procedures per month increased from 20.1 (1993) to 25.2 (1994) to 26.6 (1995) to 28.7 (1996). Surgeons doing 75 or more cases monthly constituted 6.1% and 7.3% of the respondents in 1995 and 1996, respectively.

Hospitalization

Most of the cataract operations were carried out on hospitalized patients. Twenty-six percent of surgeons replied that they hospitalized their patients for 3 to 4 days, 23% said for 5 to 6 days, and 18% for 7 to 10 days (Figure 2). The proportion of surgeons who hospitalize patients for longer than 1 week decreased from 46% (1992) to 33% (1993) to 26% (1994) to 23% (1995) to 20% (1996). Seventeen percent of the doctors said that most of their patients had outpatient surgery. The average period of hospitalization was 4.1 days in 1996, compared with 5.6 days in 1993, 5.1 days in 1994, and 4.8 days in 1995. Fifty-nine percent of surgeons were performing some outpatient cataract procedures, an increase

from 24% in 1992, 36% in 1993, 41% in 1994, and 44% in 1995.

Preoperative Examination

Specular microscopy and videokeratography were routinely performed by 73% and 28%, respectively, of the respondents (Table 1).

Anesthesia

The percentage of surgeons using retrobulbar anesthesia has decreased from previous years, whereas Tenon anesthesia and topical anesthesia have gained popularity (Figure 3). Use of a facial block was more popular among surgeons who prefer extracapsular cataract extraction (ECCE) to phacoemulsification and aspiration (PEA). Although 53% of those who prefer ECCE used the retrobulbar technique with a facial block and 3% used retrobulbar anesthesia alone, 14% of surgeons who leaned toward PEA used the retrobulbar technique with a facial block and 15% used the retrobulbar alone (Figure 4). Twenty-six percent of surgeons who prefer PEA used topical anesthesia in the majority of cases.

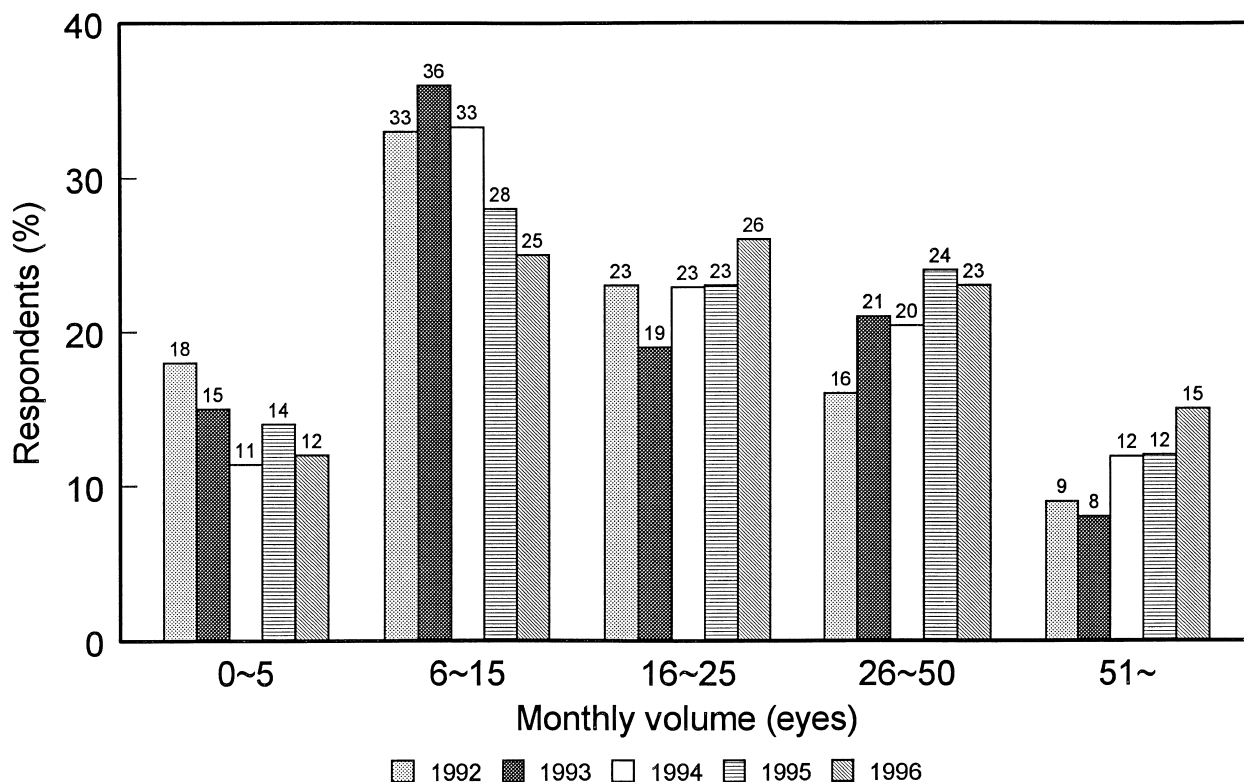


Figure 1. Cataract surgery volume per month (eyes).

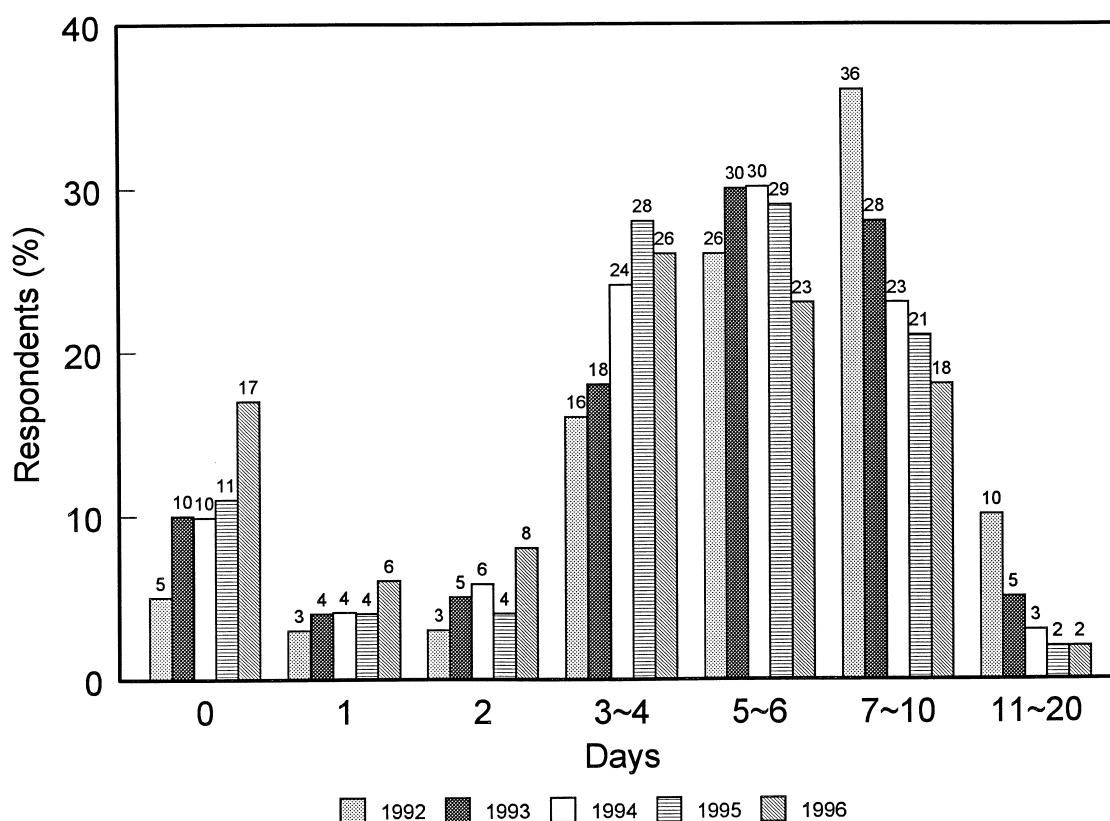


Figure 2. Duration of hospitalization for cataract surgery.

Cataract Extraction

Preferred techniques of cataract extraction are shown in Figure 5. Phacoemulsification and aspiration with a nucleus-dividing technique grew in popularity again this year. When asked about the percentage of patients treated using PEA, 69% of surgeons replied that they used it in 95% or more of cases, a sharp increase during the last 5 years (Figure 6). Only 5% never used PEA. The data indicate that 90% of surgeons use PEA for more than half of their patients, and 10% use ECCE for more than half of their cases. The rate of surgeons who prefer PEA increased from 59% in 1992 to 71% in 1993 to 80% in 1994 to 83% in 1995 to 90% in 1996.

As for the surface contour of wounds in PEA, 14% made the incision parallel to the limbus, 54%

made it tangential to the limbus, 18% made a frown incision, and 15% made a clear corneal incision (Figure 7). Preferred size of incisions in PEA varied as shown in Figure 8. The most frequently cited sizes were, in descending order, 3.5 mm, 5.5 mm, 6.0 mm, and 4.0 mm.

Self-sealing wound construction was the main wound closure technique in PEA for 53% of the ophthalmologists in 1996, which increased sharply from 25% in 1992, 30% in 1993, 38% in 1994, and 42% in 1995 (Figure 9). The running radial suture was preferred by 16%.

As for disposable knives, 17% did not use them at all, 39% used them once, and 44% reesterilized and reused them twice or more.

Intraocular Lenses

Preferred size of the optics for PEA and ECCE are shown in Figures 10 and 11, respectively. For PEA, 5.5-mm spherical was the highest ranked (47%), followed by 6.0-mm spherical (43%). For ECCE, 44% chose 6.0-mm spherical and 37% selected 6.5-mm spherical.

Table 1. Preoperative Examination

	Always	Frequently	Occasionally	Never
Specular microscopy	73%	3%	9%	15%
Videokeratography	28%	4%	17%	51%

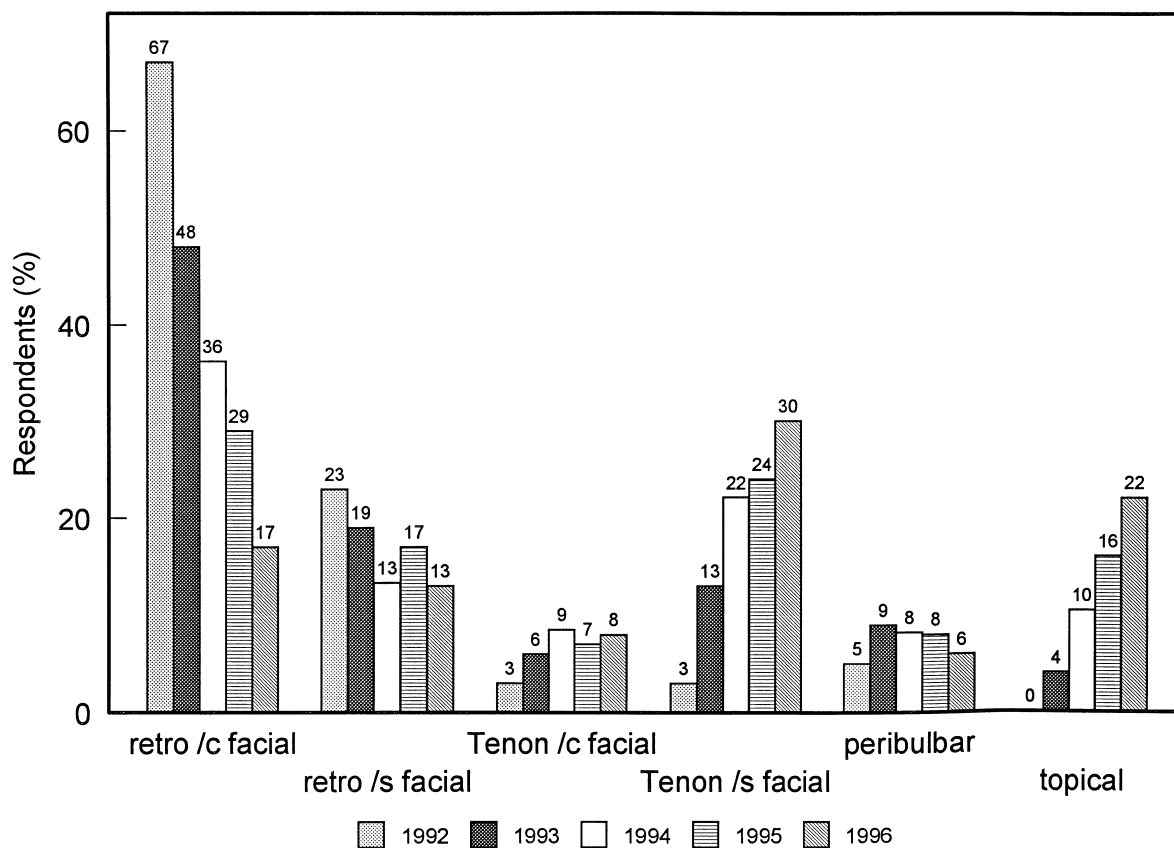


Figure 3. Preferred anesthesia.

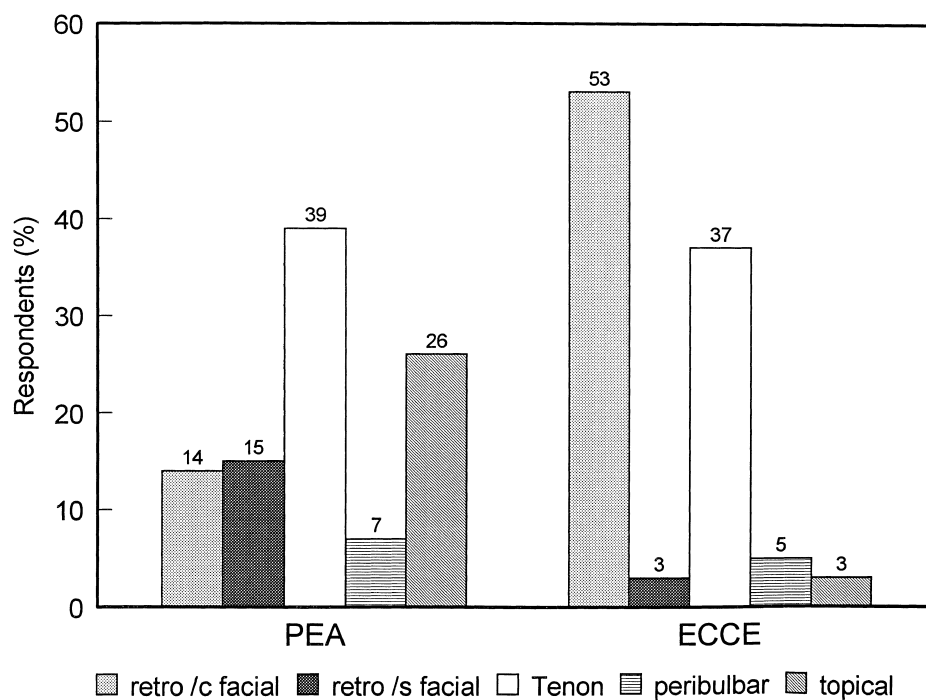


Figure 4. Preferred anesthesia in relation to preferred techniques of cataract extraction. PEA: phacoemulsification and aspiration. ECCE: extracapsular cataract extraction.

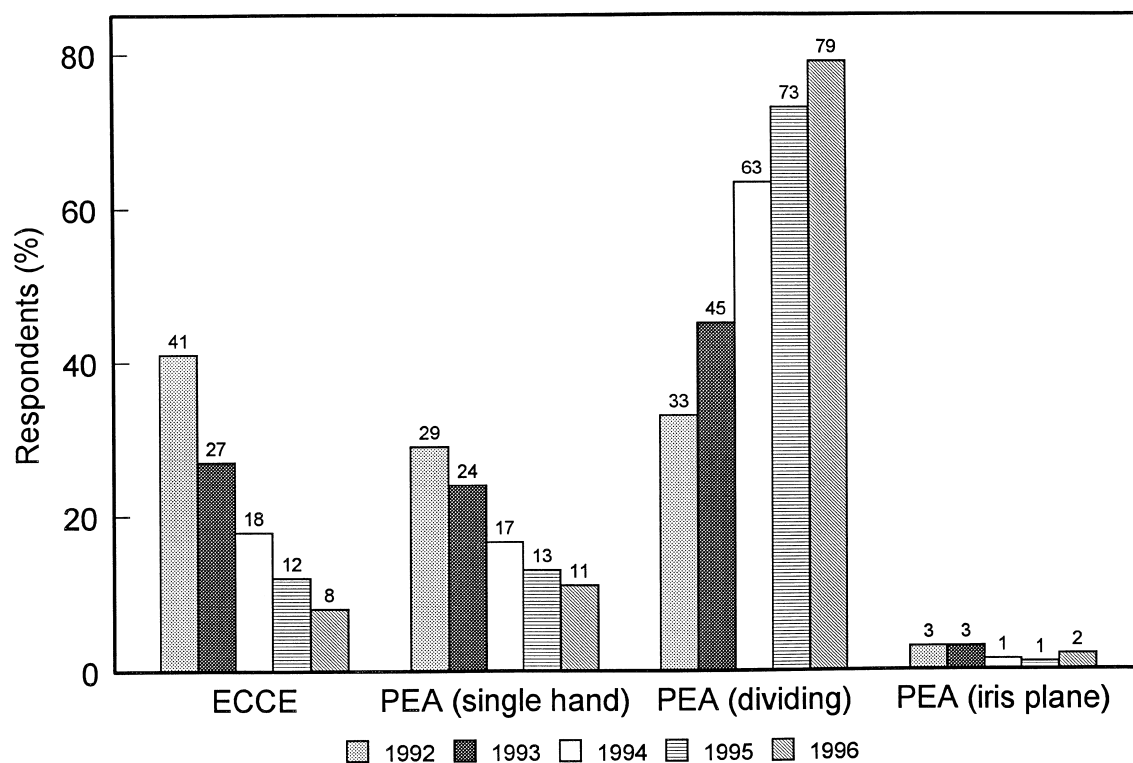


Figure 5. Preferred technique of cataract extraction. PEA: phacoemulsification and aspiration. ECCE: extracapsular cataract extraction.

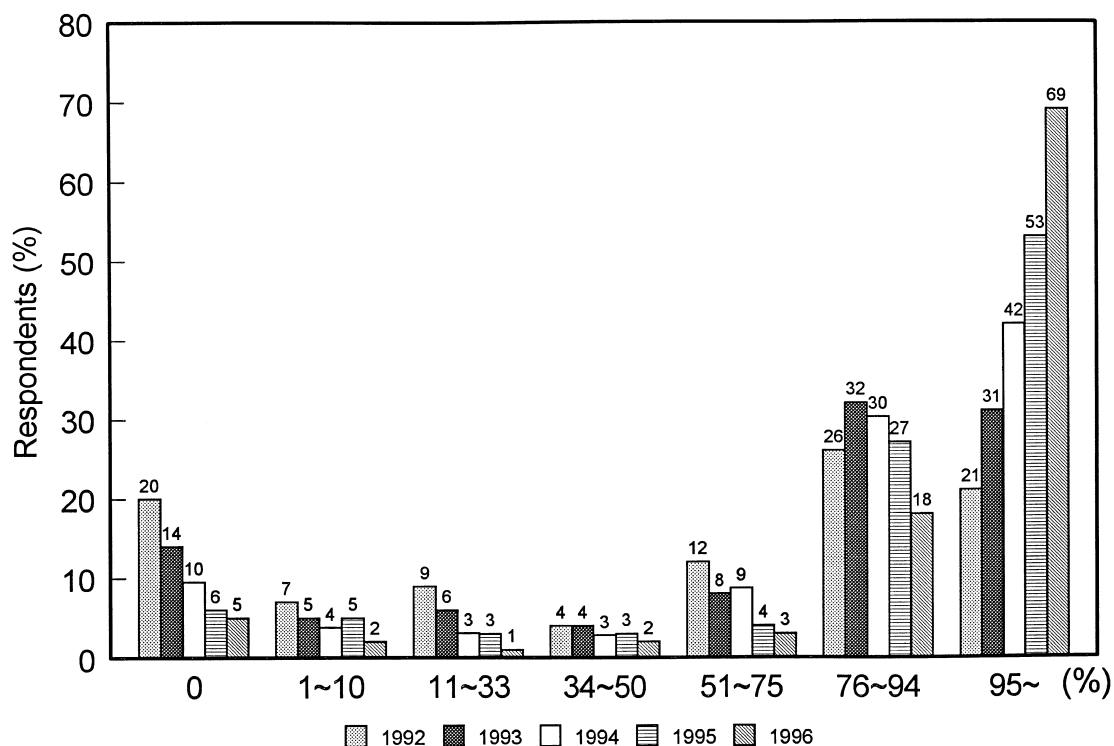


Figure 6. Percentage of phacoemulsification use.

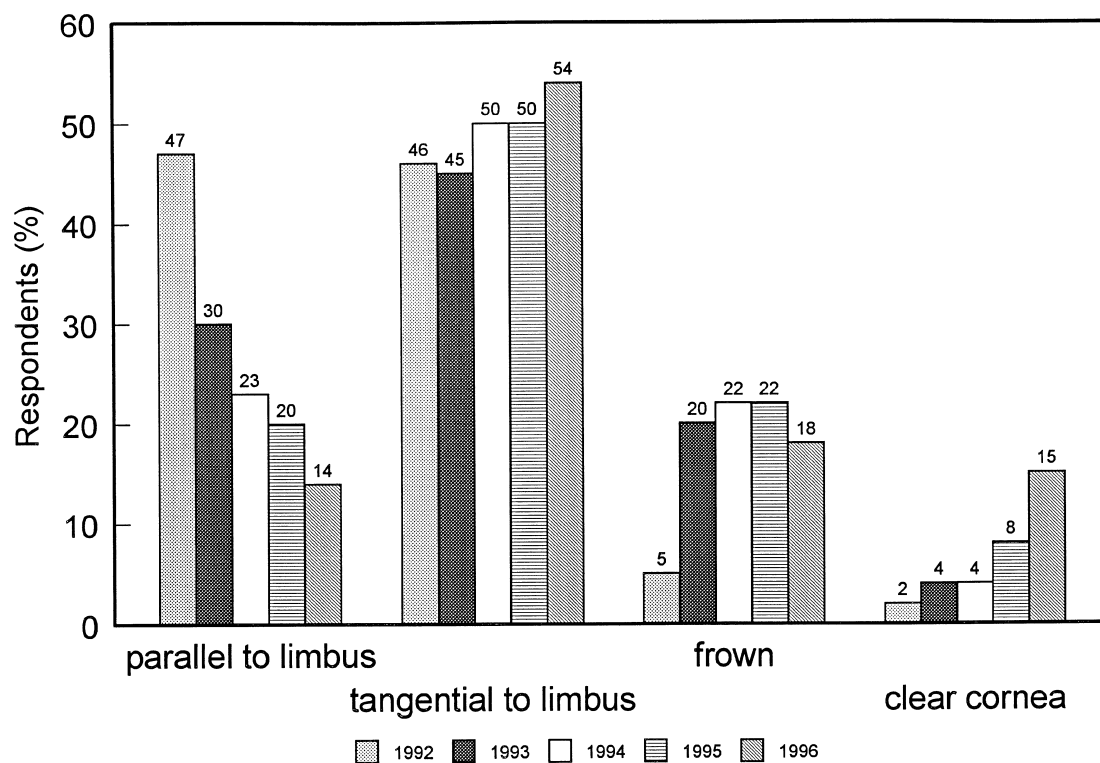


Figure 7. Preferred surface contour of wound.

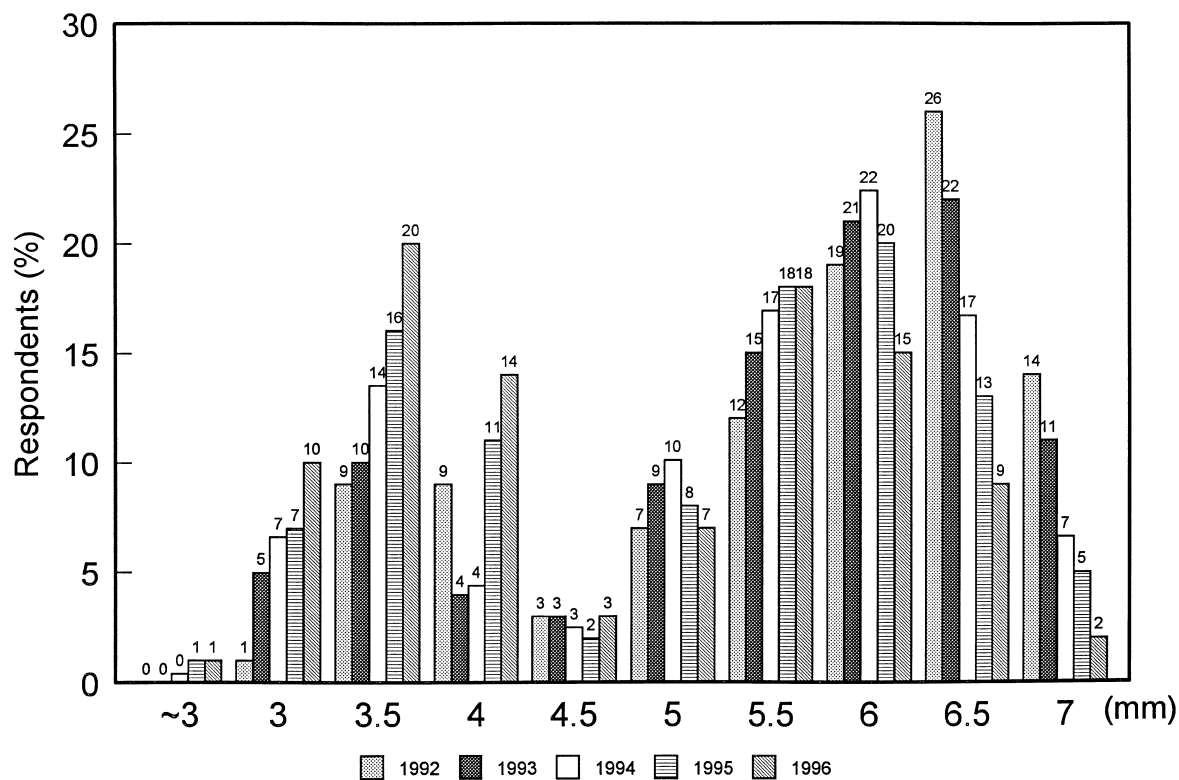


Figure 8. Preferred size of incisions (mm) in phacoemulsification and lens implantation.

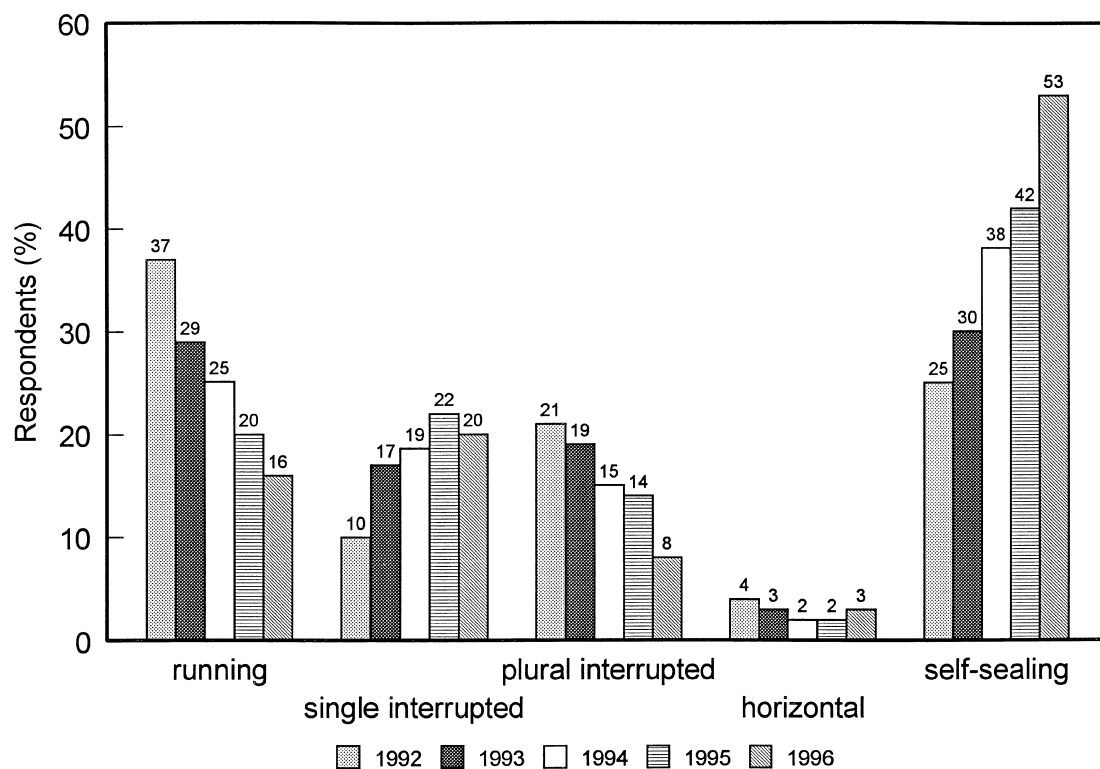


Figure 9. Wound closure technique in phacoemulsification.

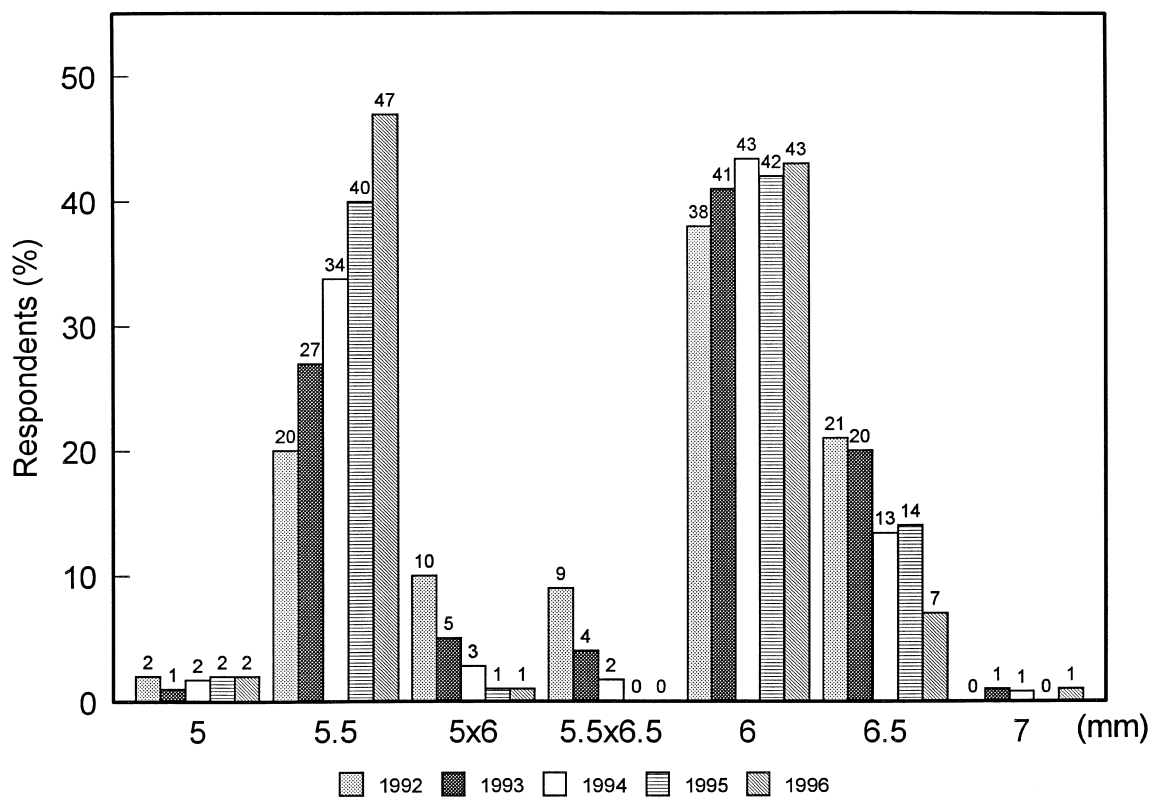


Figure 10. Preferred size of intraocular lens optic for phacoemulsification.

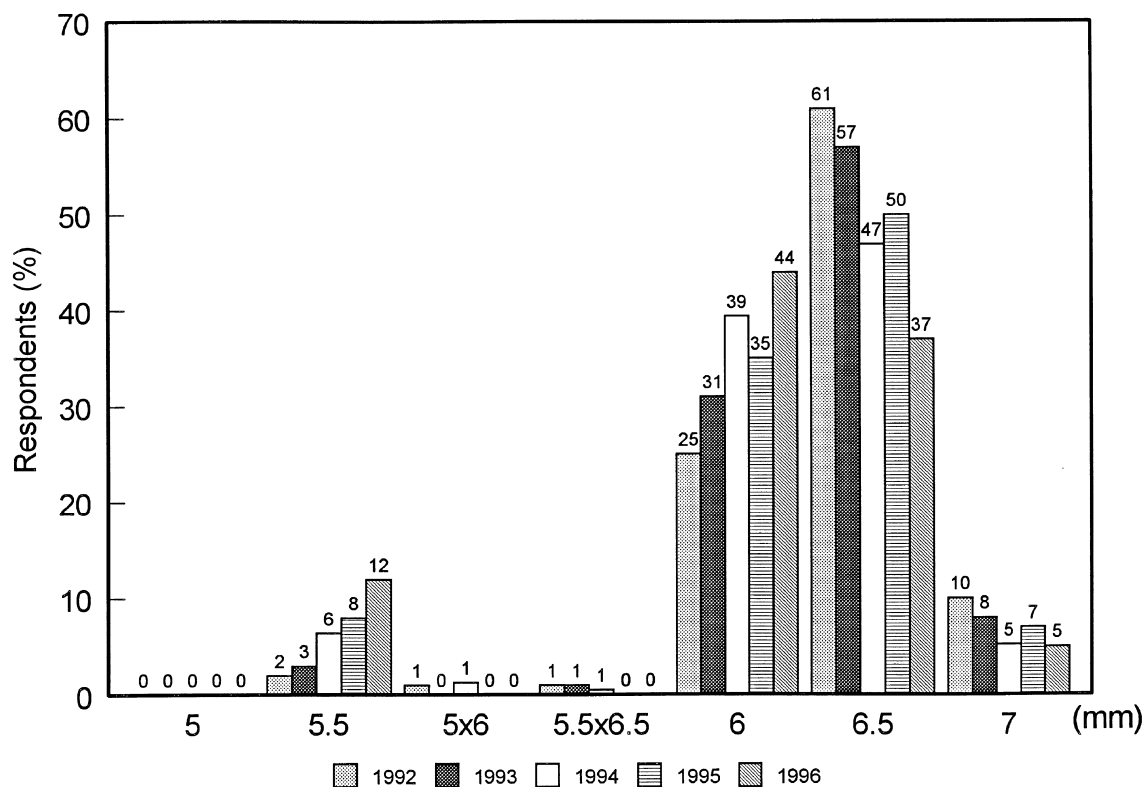


Figure 11. Preferred size of intraocular lens optics for extracapsular cataract extraction.

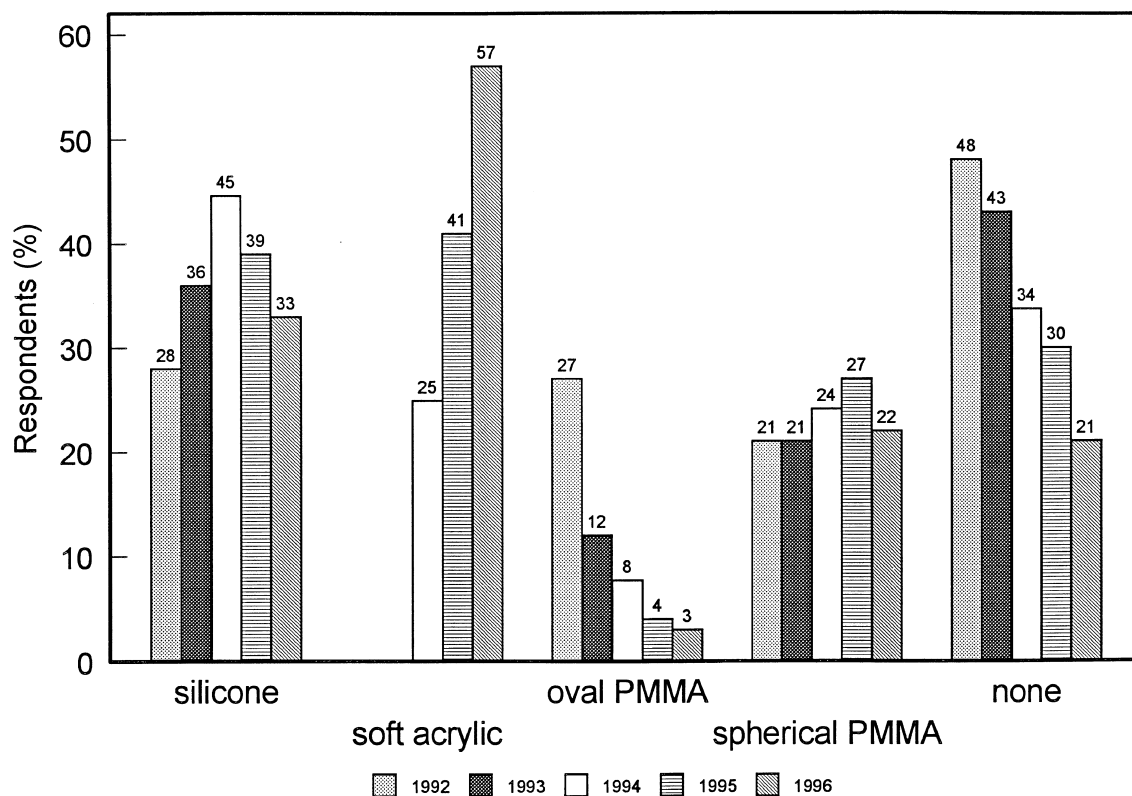


Figure 12. Small incision intraocular lenses currently used. PMMA: polymethylmethacrylate.

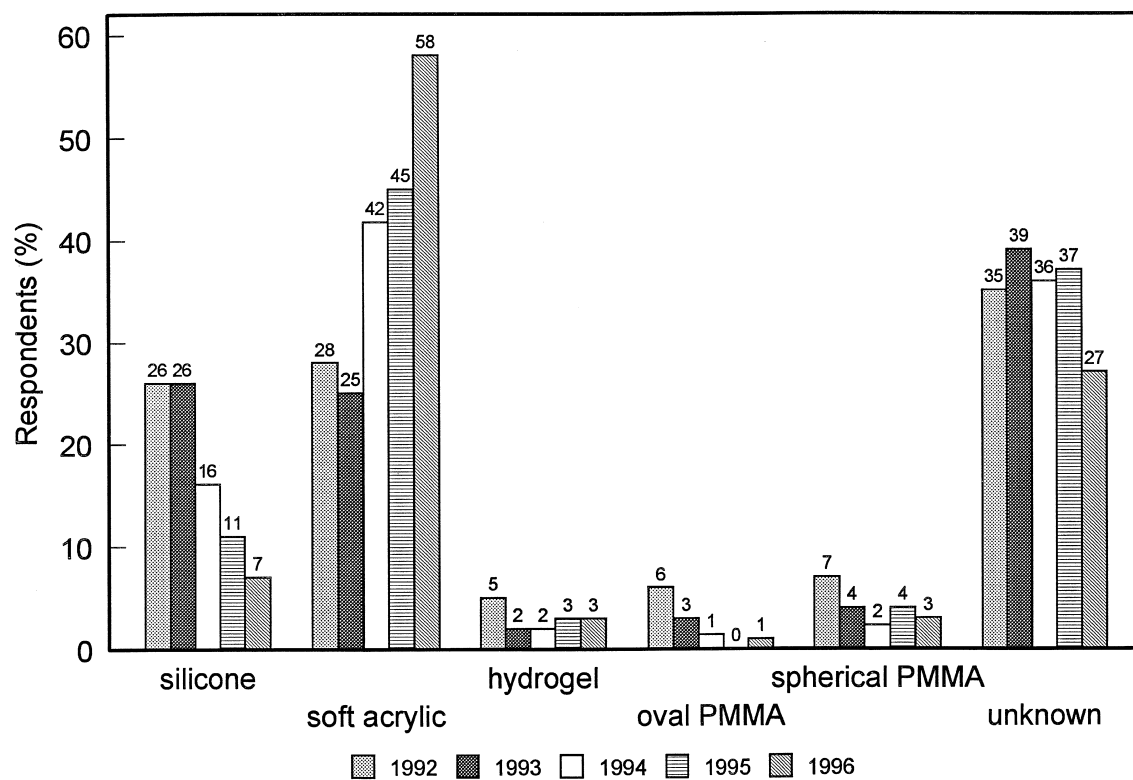


Figure 13. Most promising intraocular lens for small incision cataract surgery. PMMA: polymethylmethacrylate.

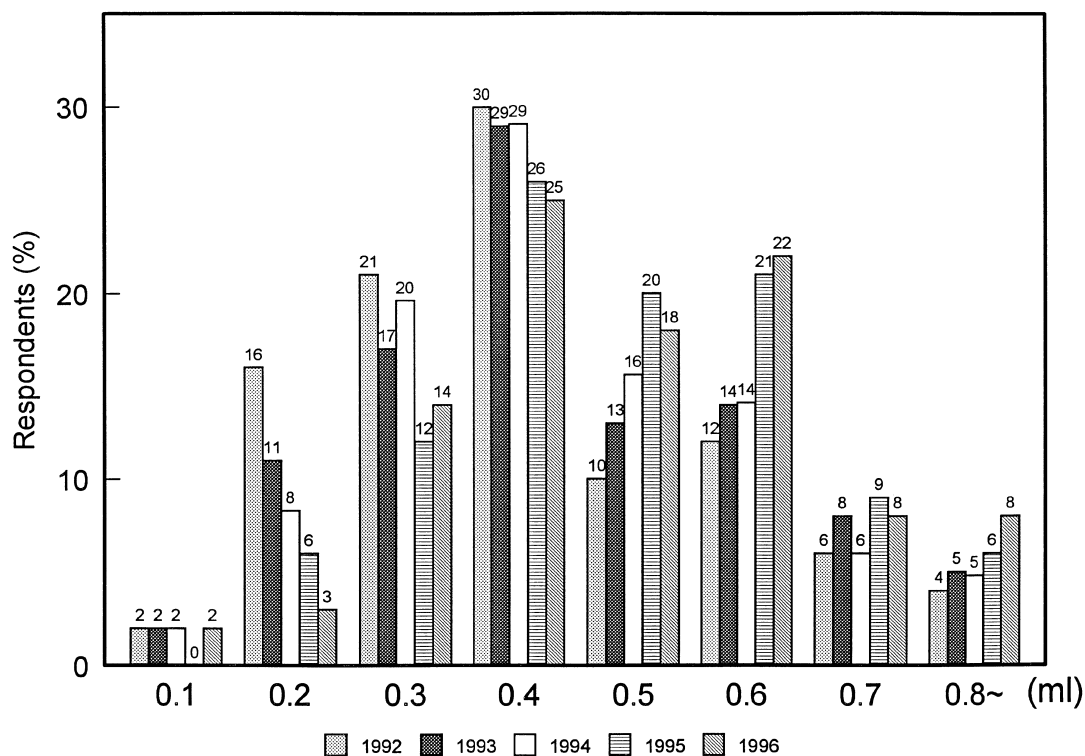


Figure 14. Actual amount of viscoelastic agents used in one cataract surgery.

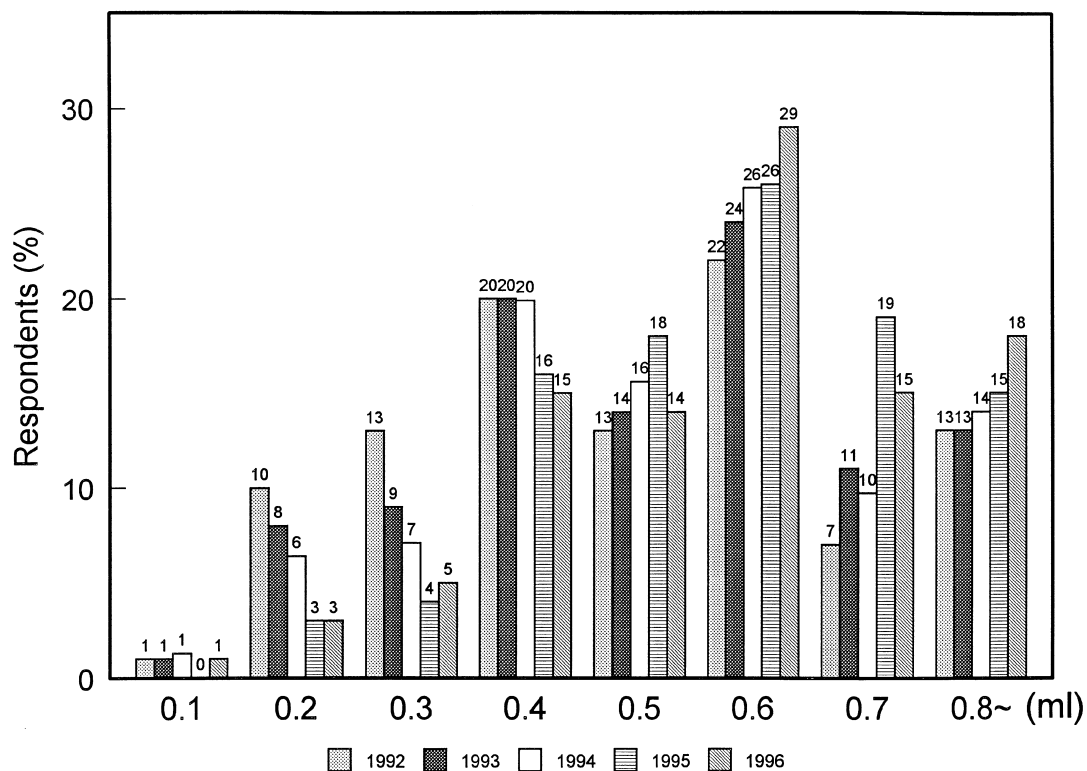


Figure 15. Ideal amount of viscoelastic agents for one cataract surgery.

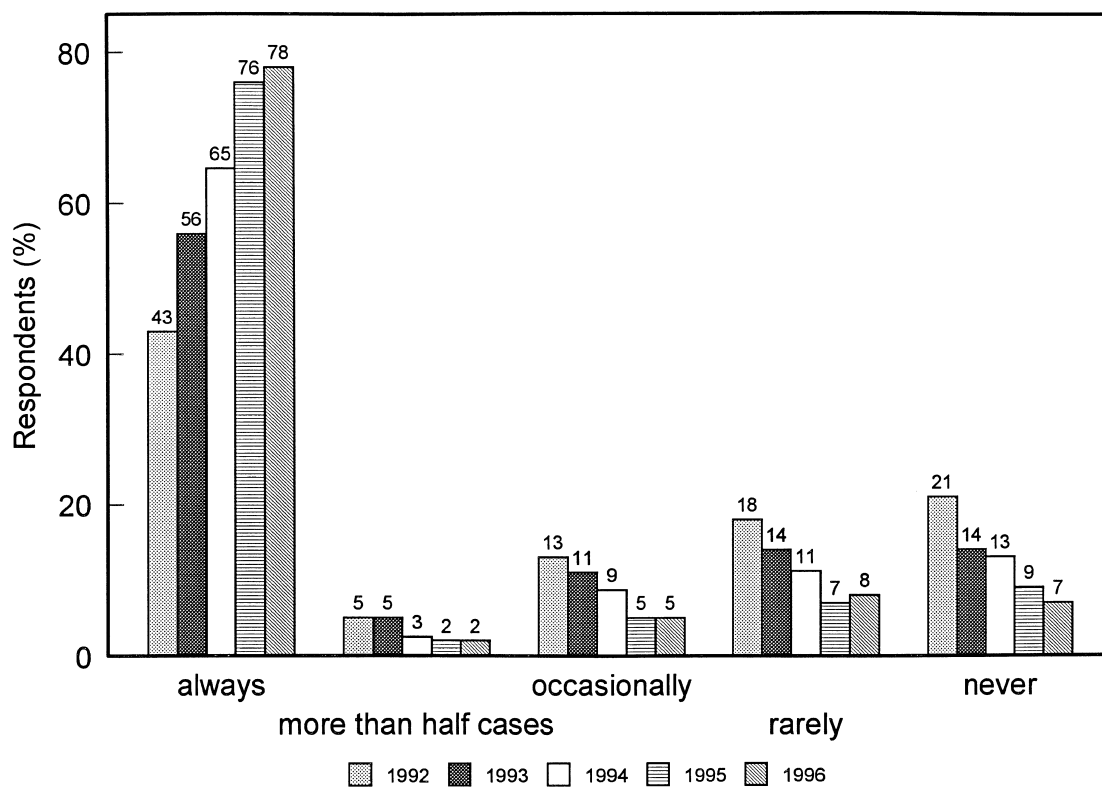


Figure 16. Use of viscoelastic agent in anterior capsulotomy.

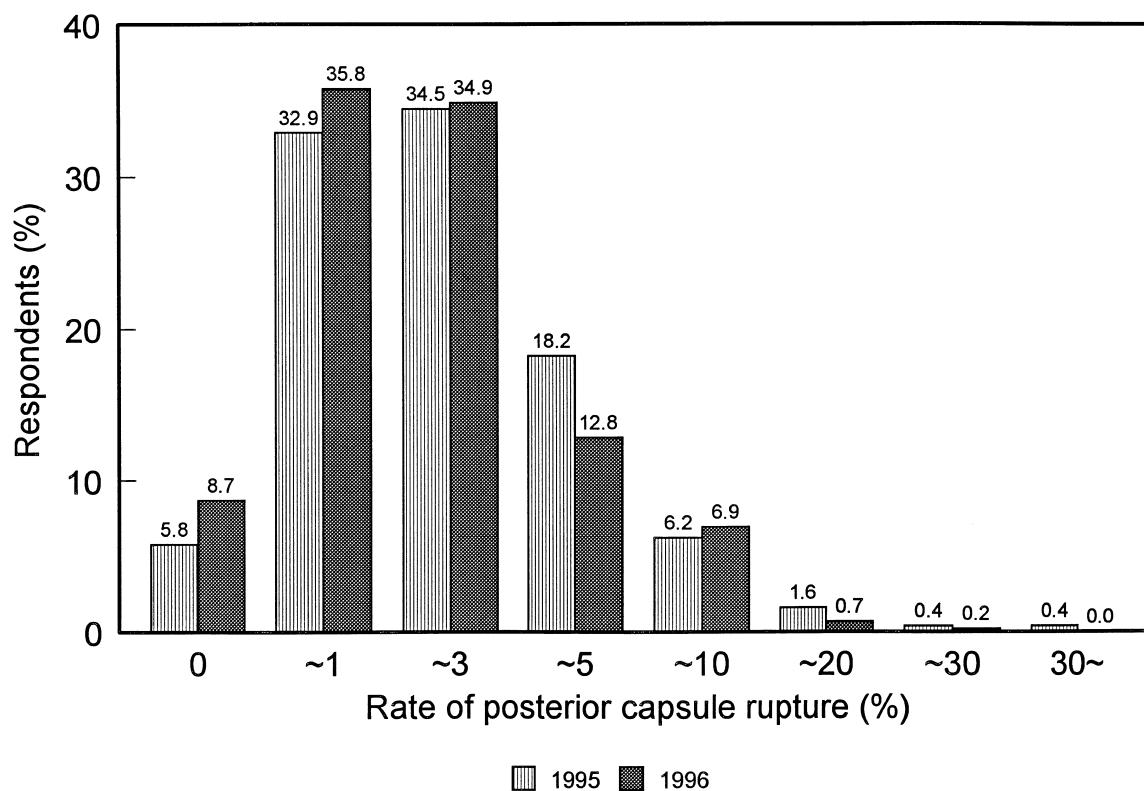


Figure 17. Rate of posterior capsule rupture.

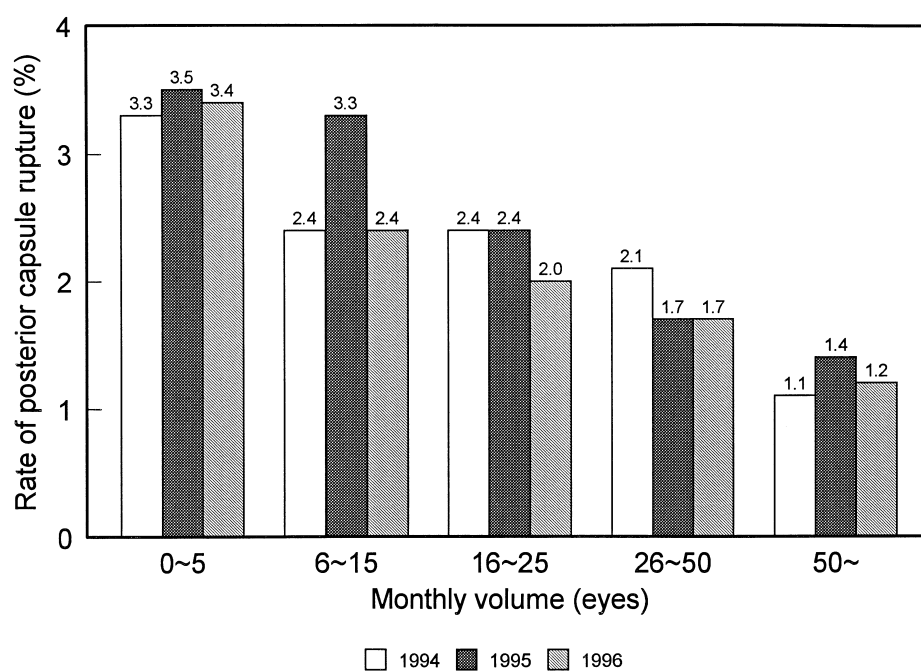


Figure 18. Monthly surgery volume and rate of posterior capsular rupture.

Table 2. Percentage of Complications Encountered During the Past Year

	None	1 Case	2 Cases	3 Cases	4 Cases	5+ Cases
Expulsive hemorrhage	97.5	2.5	0	0	0	0
Endophthalmitis	85.3	11.5	1.6	1.1	0.2	0.2
Bullous keratopathy	88.1	11.0	0.7	0.2	0.3	0
Retinal detachment	75.5	18.3	4.6	0.7	0	0.9
Nucleus displacement	72.8	21.1	3.9	1.8	0.2	0.2
Intraocular lens explantation	69.8	20.4	4.6	2.5	0.5	2.3

The type of intraocular lenses currently being used for small incision cataract surgery included acrylic foldable intraocular lenses (57%), silicone intraocular lenses (33%), and small spherical polymethylmethacrylate (PMMA) intraocular lenses (22%). Twenty-one percent of surgeons did not use any small incision intraocular lenses (Figure 12). When asked what intraocular lens style or material held the most promise for small incision cataract surgery, 58% chose acrylic foldable, 7% silicone foldable, 3% small spherical optic PMMA, and 3% hydrogel (Figure 13).

When asked about the intraocular lens power calculation formula being used in practice, 60% of respondents replied SRK II, 18% SRK/T, and 2% Binkhorst formulas. Thirty-one percent of surgeons modified the A-constant provided by the manufacturer, and 69% did not.

Viscoelastics

The greatest number of respondents reported that actual use of viscoelastic material amounted to 0.4–0.6 mL (Figure 14), whereas ideal use amounted to 0.6 mL (Figure 15). When questioned about the usage of viscoelastic agents during anterior capsulotomy, 78% replied that they used them in all cases, 2% used them in more than half of their cases, 5% applied them occasionally, and 7% were not using such agents at all (Figure 16).

Complications

The rate of posterior capsular rupture was reported by the surgeons (Figure 17), and it varied from 0 to 10%. The average rate was 2.1%. Surgeons doing fewer surgeries per month reported higher rates of posterior capsular rupture (Figure 18).

Twenty-seven respondents reported displacement of the nucleus into the vitreous during the past year. The occurrence rate was 0.87 cases per 1000 cataract surgeries. For cases in which the nucleus was displaced into the vitreous, the dropped nucleus was removed intraoperatively in 50%, post-

operatively in 41%, and no answers were available in 9%.

Thirty percent of respondents had experienced explantation of an intraocular lens during the past year. The most frequently cited reason was inadequate intraocular lens power because of miscalculation, followed by endophthalmitis, intraocular lens decentration/dislocation, corneal endothelial damage, and retinal detachment. The incidence of other complications is listed in Table 2.

Refractive Surgery

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

Twenty-six percent of all surgeons were performing astigmatic keratotomy to some degree (Figure 19), and its application was positively correlated with an increase in the volume of cataract surgery (Figure 20). Of those doing astigmatic keratotomy, 18% used it in combination with cataract surgery. Radial keratotomy was used by 6% of respondents (Figure 21).

Discussion

Because subjects of this survey were members of the Japanese Society of Cataract and Refractive Surgery, results may not reflect the opinions of all Japanese ophthalmologists. The sampling population might have represented a group of ophthalmologists who are rather active in the field of cataract and re-

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

	Yes	No	Unknown
Astigmatic keratotomy	54%	12%	35%
Radial keratotomy	21%	36%	44%
Excimer laser keratotomy	49%	9%	42%

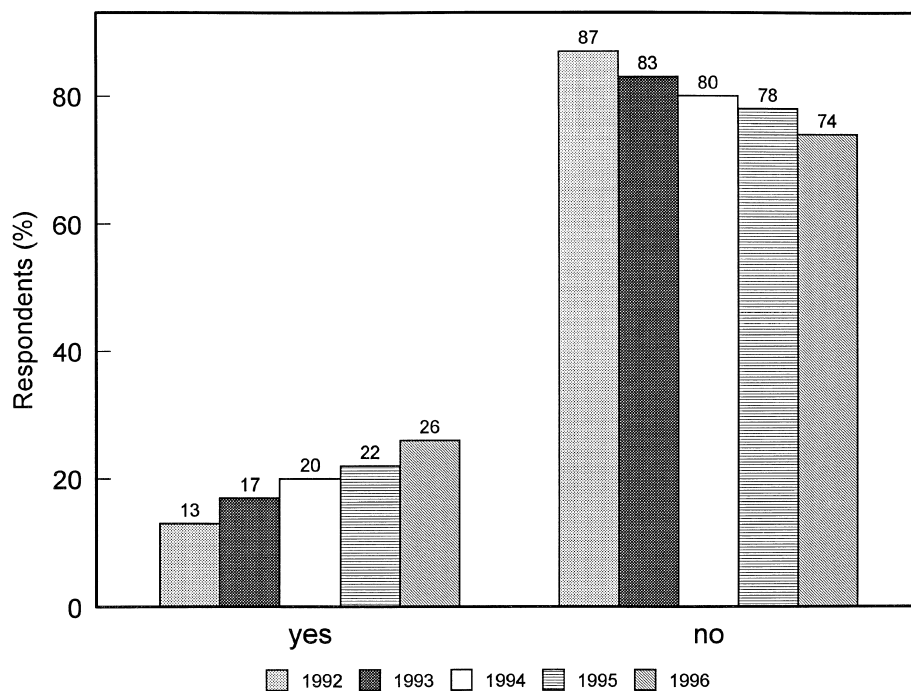


Figure 19. Performance of astigmatic keratotomy.

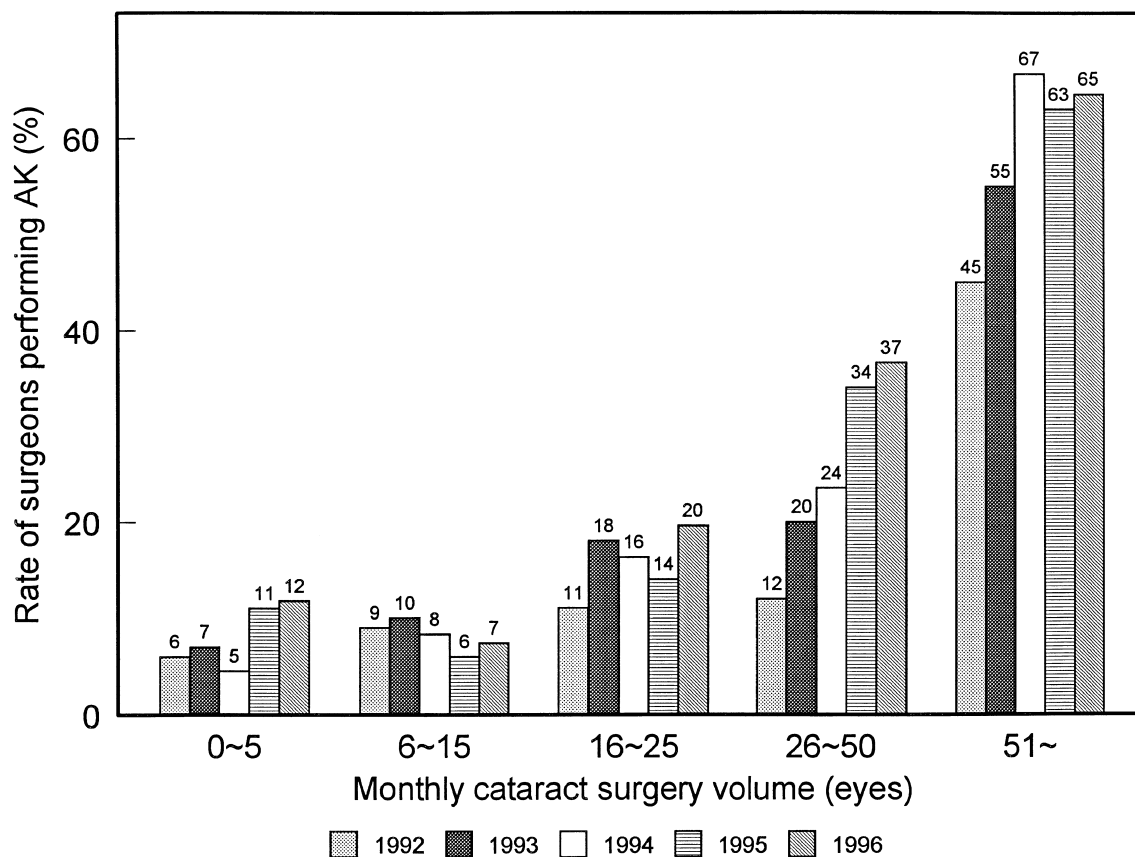


Figure 20. Performance of astigmatic keratotomy (AK) and monthly cataract surgery volume.

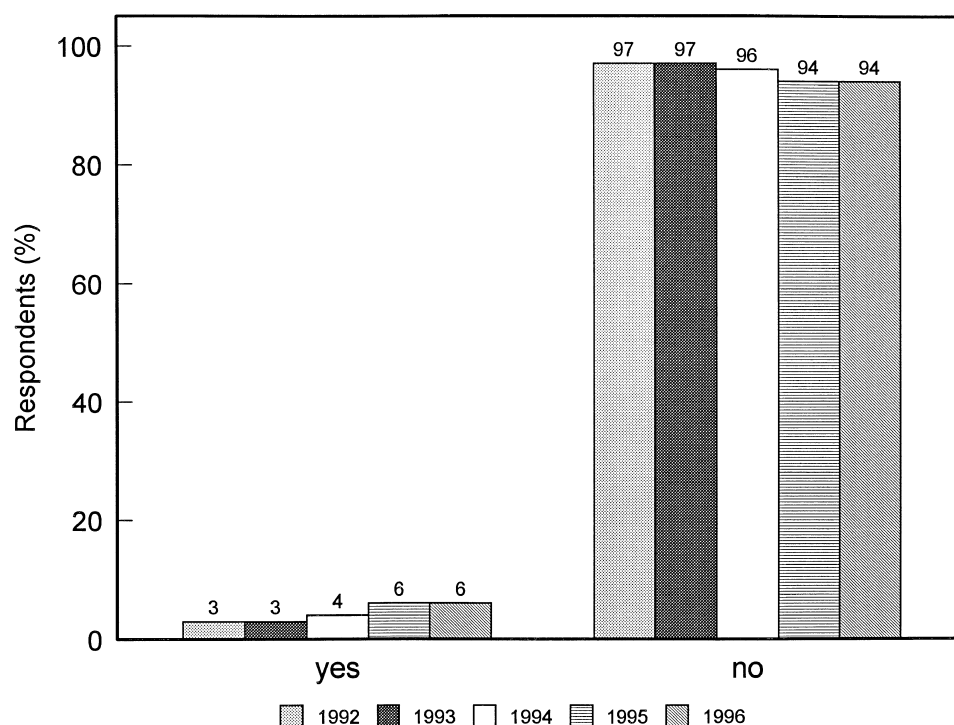


Figure 21. Performance of radial keratotomy.

fractive surgery. Second, the questionnaire was multiple choice rather than open ended, which makes it easier for bias to enter the reports and does not allow responses that are not on the answer list. 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,²⁷⁻³⁰ and thus we believe that the data do describe the trend and direction of cataract/refractive surgery in this country. A longer term, regular study, similar to others,^{1-9,11,12} would further define the direction of our profession and contribute to the quality of medical services that future patients will receive.

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