Demographic and Clinical Profile of Patients who Underwent Refractive Surgery Screening

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Disclosure: The authors did not receive any financial support nor did they have any proprietary interest for conducting this study.

ABSTRACT

Objective: To describe the demographic and clinical profile of patients who underwent refractive surgery screening.

Method: Medical records of patients who sought consult for refractive surgery from January 2010 to December 2014 at a refractive center were reviewed and analyzed. The preoperative clinical conditions, optical characteristics of myopes and hyperopes, refractive screening tests, and causes for disqualification were determined.

Results: A total of 1215 patients who sought consult for refractive surgery had a mean age of 36.45 ± 11.60 years. Seven hundred ten (58.44%) were females and 860 (70.78%) were Filipinos. Nine hundred eighty eight (81%) were myopes. The mean manifest refractive spherical equivalent (MRSE) for myopic patients was -4.41D±2.98 with mean uncorrected distance vision (UCDVA) of 20/400 (logMAR 1.26) and mean best-corrected distance vision (BCDVA) of 20/20 (logMAR 0.02). For hyperopic patients, the mean MRSE was +1.33D±3.76 with mean UCDVA of 20/40 (logMAR 0.33) and mean BCDVA of 20/20 (logMAR 0.001). Reasons for disqualification from undergoing a refractive procedure included thin cornea (5.27%), irregular corneal topography (2.39%), steep cornea (0.78%), high refractive errors (0.41%), optic nerve (0.41%), and retina (0.25%) pathologies.

Conclusion: Patients who underwent screening for refractive surgery were young, mostly female, with myopic refractive errors. LASIK remained the most popular refractive surgery procedure.

Keywords: Refractive surgery, Screening, LASIK, Photorefractive keratectomy, Supracor, Phakic IOL

Philipp J Ophthalmol 2015;40:64-71

Refractive error is the state of an eye in which light rays are not properly focused on the retina, resulting in a blurred image. Blurred vision from refractive error can be treated in most cases by neutralizing the refractive error with corrective lenses, such as spectacles and contact lenses or by refractive surgery.[1-4]

Refractive surgery encompasses surgical procedures used to improve the refractive state of the eye and decrease or eliminate dependency on corrective lenses. These procedures include corneal remodeling techniques, such as LASIK (laser-in-situ keratomileusis) or PRK (photorefractive keratectomy), and lens-based techniques, such as phakic intraocular lenses or clear lens extraction procedures with intraocular lens implantation.

The desire to eliminate the need for eyeglasses or contact lenses and see clearly can encompass a wide range of age groups from all walks of life. But even with a huge market potential, not everyone comes for refractive surgery. The most common reasons cited are fear and cost. For those who eventually seek consult, it may be useful to analyze their demographic and clinical profile prior to undergoing surgery.[5-11]

Studies and publications on refractive surgery mostly centered on surgical techniques, new equipment, surgical outcomes,[4,12-14] and complications.[15-18] Rarely do they include a detailed analysis of the preoperative profile of patients who seek consult for refractive surgery. The demographic and clinical characteristics of these patients are varied and these data could establish a clinical profile of patients, improve marketing strategies, and increase awareness of people about refractive surgeries. Currently, there are no profiles of the patient population in the Philippines who desire refractive surgery.

This study described the demographic and clinical profile of patients who sought consultation for refractive surgery and analyzed the clinical findings seen during refractive screening.

METHODOLOGY

This is a descriptive, cross-sectional, single-center study that included 2,430 eyes of 1,215 patients that underwent refractive screening from January 2010 to December 2014. Patient data were gathered from their clinical charts, tabulated using Microsoft Excel, and retrospectively reviewed and analyzed. The following demographic data were gathered: age, gender, nationality, employment status, immediate reason for consult, and source of information if any. The following clinical data were gathered: systemic medical conditions, history of contact lens use, uncorrected distance visual acuity (UCDVA), best-corrected distance visual acuity (BCDVA), uncorrected near visual acuity (UCNVA), distance-corrected near visual acuity (DCNVA), reading add, manifest refraction, intraocular pressure, optic nerve findings, dilated fundus examination findings, pachymetry, corneal topography (Orbscan, Bausch and Lomb, USA)[19], aberrometry (I-Trace, Tracey Technologies, USA),[20] and Schirmer's test results.[21,22] From these data, demographic and clinical profiles of patients coming for refractive screening were established.

Study Population

Approximately 250-300 patients come annually for refractive screening. We have set the range of the study to cover 5 years from January 2010 to December 2014. The estimated study population for this study was 1,500 individuals. Inclusion criteria were the following: age above 18 years, wearing eyeglasses or contact lens for distance or near tasks, expressed their desire to undergo refractive surgery, came in for refractive screening for the first time and was able to complete all the tests during screening. Exclusion criteria were the following: incomplete data sheets; incomplete screening process; presence of previously diagnosed disease in the ocular surface, optic nerve or retina; previous diagnosis of cataract; had undergone any form of eye surgery; and neurologic disease that may affect cognition and testing outcomes.

This study followed the tenets of the Declaration of Helsinki and was approved by the Ethical Committee of Clinical Investigation of the Asian Eye Institute.

Statistical Analysis

Descriptive statistics were used to summarize the clinical characteristics of the patients. Frequency and proportion were used for nominal variables, median and IQR for ordinal variables, and mean and SD for interval/ratio variables. Missing variables were neither replaced nor estimated. STATA 12.0 was used for data analysis.

RESULTS

A total of 1,215 patients (2,430 eyes) were included in this study. Mean age of the population was 36 years (range, 18-76 years) with 63% (770) aged 40 years and below. More than half (58.44%) were females. Majority of patients were Filipinos (70%), followed by a small group of Americans (6%), Japanese (5%), Koreans (5%), and Australians (3%). About 60% of patients were gainfully employed. (Table 1).

Table 1. Demographic profile of patients (N=1215).

	Frequency (%); Mean ± SD
Age	36.45 ± 11.60
≤40	770 (63.37)
>40	445 (36.63)
Gender	
Male	505 (41.56)
Female	710 (58.44)
Nationality	
Filipino	860 (70.78)
American	69 (5.68)
Japanese	64 (5.27)
Korean	62 (5.10)
Australian	38 (3.12)
Others	122 (10.04)
Employment status	
Employed	617 (50.78)
Self-employed	130 (10.70)
Unemployed	220 (18.10)
Student	127 (57.72)
Homemaker	60 (27.27)
Others	33 (2.71)
Unspecified	248 (20.41)

Half of the patients (51%) came in for refractive surgery screening while 29% underwent general eye check-up first and then decided to undergo the screening test. Sources of information regarding the institution and the procedures were mostly from referrals of family, friends, and colleagues (Table 2).

Table 2. Reasons for refractive screening and sources of information.

Reasons	
Refractive screening	629 (51.77)
General eye check-up	359 (29.55)
Contact lens-related problems	62 (5.10)
Others unspecified	165 (13.58)
Sources of information	
Referrals	748 (61.56)
Internet	24 (2.00)
Print ads	21 (1.72)
Unspecified	422 (34.72)

The most common medical condition patients suffered from at the time of screening included hypertension, diabetes, asthma, and drug allergies (Table 3).

Table 3. Medical profile of screened patients.

Medical condition	Number of patients
Hypertension	88
Diabetes	26
Asthma	58
Allergy (drug)	26
Thyroid disorder	17
Kidney disease	13
Heart disease	12
Liver disease	8
Arthritides (RA/Gouty/SLE)	3
Others	14

The mean age of patients year on year remained constant at the mid-30s; 63% of patients were 40 years old or less. However, patients more than 40 years old gradually increased from 2012 to 2014 (Table 4).

Table 4. Study population stratified by age per year (N=1215).

	2010 (n=232)	**2011 (n=189)**	**2012 (n=188)**	**2013 (n=345)**	**2014 (n=261)**	**Total (N=1215)**
Age (Mean)	36.06 ±10.67	35.82 ±11.63	37.32 ±11.38	36.78 ±12.13	36.17 ±11.82	36.45 ±11.60
18 to 30 yrs	83 (35.78)	71 (37.57)	59 (31.38)	128 (33.04)	112 (41.00)	453 (37.28)
31 to 40 yrs	71 (30.60)	61 (32.28)	55 (29.26)	79 (22.90)	51 (19.54)	317 (26.09)
41 to 50 yrs	56 (24.03)	37 (19.58)	49 (26.06)	82 (23.77)	60 (22.99)	284 (23.37)
≥51 yrs	22 (9.48)	20 (10.58)	25 (13.30)	56 (16.23)	38 (14.56)	161 (13.25)

The study population was divided into 988 (81%) myopic and 225 (18%) hyperopic patients. Two patients were pure emmetropes and were not included in the sub-analysis.

The mean manifest refractive spherical equivalent (MRSE) for myopic patients was -4.41D±2.98, with mean uncorrected distance vision (UCDVA) of 20/400 (logMAR 1.26) and mean best-corrected distance vision (BCDVA) of 20/20 (logMAR 0.02). For hyperopic patients, mean MRSE was +1.33D±3.76 with mean UCDVA of 20/40 (logMAR 0.33) and mean BCDVA of 20/20 (logMAR 0.001).

Among the myopic patients 40 years and below, 431 (43%) patients were contact lens users with 36 (8%) having suffered contact lens-related problems. The mean UCDVA was 20/400 (logMAR

1.33) and mean BCDVA was 20/20 (logMAR 0.02). Mean manifest refraction was -4.29D sphere, -1.00D cylinder, and -4.79D mean MRSE. Most (41%) had moderate myopia with a manifest refraction between -3.00D to -6.00D of sphere error (Table 5).

For the myopic patients above 40 years old, 100 (10%) patients were contact lens users with 10 (10%) having contact lens-related problems. Mean UCDVA was 20/250 (logMAR 1.10) and mean BCDVA was 20/20 (logMAR 0.01). Mean uncorrected near visual acuity (UCNVA) was Jaeger 5 (logMAR 0.31), correctable with a mean reading add of +1.71D. Mean distance-corrected near visual acuity (DCNVA) was Jaeger 3 (logMAR 0.17). Mean manifest refraction was -3.43D sphere, -0.81D cylinder, and MRSE of -3.43D. Most were low myopes (50%) with a manifest refraction of less then -3.00D sphere (Table 5).

Table 5. Optical characteristics of myopes (n = 988 patients, 1975 eyes).

MYOPIC	**≤40 years**	**>40 years**
Contact lens wearer	431 (43.62)	100 (10.02)
With problems	36 (8.35)	10 (10.00)
	(n = 1495 eyes)	**(n = 480 eyes)**
UCDVA logMAR	1.33±0.57 (20/400)	1.10±0.68 (20/250)
BCDVA logMAR	0.02±0.10 (20/20)	0.01±0.12 (20/20)
UCNVA logMAR		0.31±0.30 (J5)
DCNVA logMAR		0.17±0.19 (J3)
Reading add		1.71D
Manifest refraction		
Sphere	**- 4.29D ± 2.82**	**-3.43D ± 2.84**
0 to -3.00D (low)	576 (38.53)	243 (50.63)
>-3.00 to -6.00D (mod)	617 (41.27)	169 (35.21)
>-6.00D (high)	302 (20.20)	68 (14.16)
Cylinder	**- 1.00D ± 1.05**	**-0.81D ± 0.77**
-0.25 to <-2.00D	1327 (88.76)	448 (93.33)
≥-2.00D	168 (11.23)	32. (6.67)
MRSE	**- 4.79D ± 2.94**	**-3.83D ± 2.92**
0 to -1.00D	67 (4.48)	85 (17.71)
>-1.00 to -3.00D	415 (27.76)	144 (30)
>-3.00 to -6.00D	626 (41.87)	171 (35.63)
>-6.00 to -10.00D	315 (21.07)	64 (13.33)
>-10.00D	72 (4.82)	16 (3.33)

For the hyperopic patients 40 years and below, 7 (11%) were contact lens users with almost all (85%) having contact lens-related problems. Mean UCDVA was 20/50 (logMAR 0.43) and mean BCDVA was 20/25 (logMAR 0.08). Mean manifest refraction was +1.60D sphere, -1.87D cylinder, and MRSE of +0.60D. Most (86%) had a manifest refraction between +0.25D to +3.00D sphere (Table 6).

For the hyperopic patients above 40 years old, only 3% were contact lens wearers with majority of users complaining of contact lens-related problems. Mean UDCVA was 20/40 (logMAR 0.29) and mean BCDVA was 20/20 (logMAR 0.01). Mean UCNVA was Jaeger 8 (logMAR 0.52), correctable with a mean reading add of +1.97D. Mean manifest refraction was +1.51D sphere, -0.52D cylinder, and MRSE of +1.22D. Mean DCNVA was Jaeger 3 (logMAR 0.17). Most (95%) had a manifest refraction between +0.25D to +3.00D sphere (Table 6).

Table 6. Optical characteristics of hyperopes (n = 225 patients, 450 eyes).

HYPEROPIC	**≤40 years**	**>40 years**
Contact lens wearer	7 (3.11)	14 (3.46)
With problems	6 (85.77)	10 (71.43)
	(n = 45 eyes)	**(n = 405 eyes)**
UCDVA logMAR	0.43±0.35 (20/50)	0.29±0.31 (20/40)
BCDVA logMAR	0.08±0.15 (20/25)	0.01±0.04 (20/20)
UCNVA log MAR		0.52±0.21 (J8)
DCNVA logMAR		0.17±0.21 (J3)
Reading add		1.97D
Manifest refraction		
Sphere	**+1.60D ± 1.96**	**+1.51D ± 1.16**
+0.25 to <+3.00D	39 (86.66)	385 (95.06)
≥+3.00 to +6.00D	6 (13.34)	20 (4.94)
Cylinder	**- 1.87D ± 1.63**	**-0.52D ± 0.67**
-0.25 to <-2.00D	29 (64.44)	394 (97.28)
≥-2.00D	16 (35.56)	11 (2.72)
MRSE	**+0.60D ± 2.37**	**+1.22D ± 1.24**
0 to -3.00D	24 (53.33)	27 (6.67)
0 to +1.00D	12 (26.67)	186 (46.67)
>+1.00 to +3.00D	3 (6.66)	177 (43.70)
>+3.00D	6 (13.33)	15 (3.70)

A number of ancillary procedures were done during the refractive screening process. These included corneal pachymetry, topography, aberrometry using I-Trace, and Schirmer's testing. Majority of patients have corneal thickness of 501 to 599 um. Mean pachymetry of the two age groups were almost identical (541.86 um and 544.09 um). With-the-rule (WTR) astigmatism was mainly

seen. Mean corneal spherical aberration was 0.26 microns for the total population. Majority of the Schirmer's test scores were greater than 6 mm (Table 7).

Table 7. Refractive screening tests.

Pachymetry (n=2391 eyes)	**Number of eyes**
≤450um	51 (2.13)
451 – 500um	282 (11.79)
501 – 549um	985 (41.20)
550 – 599um	884 (36.97)
≥600um	189 (7.90)
Mean/SD pachymetry of total population	542.67um ± 42.10
Mean/SD pachymetry of ≤40 years	541.86um ± 41.40
Mean/SD pachymetry of >40 years	544.09um ± 43.29
Corneal topography (Orbscan) (n=2097 eyes)	
With-the-rule astigmatism	1,528 (72.87)
Against-the-rule astigmatism	121 (5.77)
Oblique astigmatism	402 (19.17)
Irregular	46 (2.19)
Corneal spherical aberration (I-Trace)	
Mean/SD sph aberration of total population	0.26 ± 0.08
Mean/SD sph aberration of ≤40 years	0.23 ± 0.08
Mean/SD sph aberration of >40 years	0.27 ± 0.09
Schirmer's test results	
≥11 mm	1,033 (43.51)
6 - 10 mm	703 (29.61)
≤5 mm	638 (26.87)

Part of the refractive screening process involved checking for signs of glaucoma. Intraocular pressures (IOP) were taken using Goldmann applanation tonometer (GAT) and optic nerves were closely examined for any abnormality. In our study population, 32 eyes of 18 patients (1.48% of the entire cohort) had optic nerve findings and were labeled as glaucoma suspects. Additional tests, optic nerve-optical coherence tomography (ON-OCT) and visual field tests (VFT), were done. Results showed that 6 eyes had abnormal ON-OCT and 5 eyes had abnormal VFT. Out of these 11 eyes, 4 eyes proceeded with a refractive procedure while 7 eyes did not. These 4 eyes were monitored for at least one year with no sign of progression. The mean IOP of our population was 13.42 mmHg ± 3.54. Fourteen eyes had IOP >21 mmHg. Five eyes did not proceed with refractive surgery (Table 8).

Table 8. Glaucoma examination of patients.

	Number of patients (N=1215)
Normal optic nerve findings	1197 (98.52)
With optic nerve findings	18 (1.48)
Glaucoma suspects	**Number of eyes (n=32)**
Cup-to-disc (CDR) ratio >0.3	32
Proceeded with refractive surgery	16
Did not proceed with surgery	16
Abnormal OCT	6
Proceeded with refractive surgery	2
Did not proceed with surgery	4
Abnormal VFT	5
Proceeded with refractive surgery	2
Did not proceed with surgery	3
Mean IOP of the total population	13.42 ± 3.54
Eyes with IOP >21mmHg	14
Proceeded with refractive surgery	9
Did not proceed with surgery	5
Given medications	8
No medication	6

Dilated fundus examination was also done for each eye. Sixty seven (67) eyes of 44 patients (3.6% of the entire cohort) were found to have abnormal retinal findings. The most common finding was lattice degeneration (73%). Forty-one eyes with retinal findings required treatment, most of which were focal laser therapy (FLT) (Table 9).

Table 9. Retinal examination of patients.

	Number of patients (N=1215)
Normal retinal findings	1171 (96.38)
With retinal findings	44 (3.62)
Retinal findings	**Number of eyes (n=67)**
Lattice degeneration	49
Retinal holes	6
Retinal tear	1
Retinal detachment	2
Retinitis pigmentosa	2
Retinopathy of prematurity	2
Epiretinal membrane	2
Traction membrane	2
Macular scar	1
Requiring treatment	41
Focal laser	38
Cryotherapy	2
Vitrectomy	1
No treatment	26
Proceeded with refractive surgery	46
Did not proceed with refractive surgery	21

After the refractive screening process, the findings were discussed and treatment options given to patients. Most patients were recommended LASIK,

followed by PRK. Three-fourths of LASIK and PRK patients underwent surgery. Supracor and phakic IOL had lower conversion rates (Table 10).

Table 10. Recommended procedures after screening.

	Recommended	Performed	Conversion Rate
LASIK	1361	1035	76.05%
PRK	369	272	73.71%
Supracor	230	93	40.43%
Phakic IOL	151	51	33.77%

The most important criteria to qualify for LASIK are corneal thickness sufficient for flap creation and tissue ablation and normal corneal curvature. The common reasons why PRK were deemed more appropriate than LASIK were thin cornea (61.86%) and irregular topography (24.74%). The most common reasons why patients were disqualified for both PRK and LASIK were thin cornea (4.94%), followed by irregular topography (1.76%), very steep cornea (0.33%), and high refractive errors (0.37%). Phakic IOL was recommended for those who were disqualified for both LASIK and PRK. Ten patients diagnosed with glaucoma and 6 patients with retina pathology were totally disqualified from any refractive procedure (Table 11).

Table 11. Reasons for disqualification.

Reasons why PRK instead of LASIK	**Number of eyes (n= 193)**
Thin cornea	120
Irregular topography	48
High refractive error	9
Cornea too steep	8
Suspicious topography	4
Cornea too flat	4
Reasons for disqualification from LASIK and PRK	**Number of eyes (n= 249)**
Thin cornea	128
Irregular topography	58
Cornea too steep	19
High refractive error	10
Glaucoma	10
Cataract	8
Suspicious topography	6
Retinal pathology	6
Cornea too flat	4

DISCUSSION

Refractive surgery is a field wherein seemingly "healthy" eyes with refractive error but no other pathology undergo a surgical procedure to eliminate the inconvenience of wearing spectacles or contact lenses. Typically, a patient is a possible candidate for refractive surgery if they are above 18 years old and have no eye diseases, such as cataract, glaucoma, or retina problems. However, most patients just know that they need eyeglasses or contact lenses to see clearly. They are not aware if they have any underlying disease or if they are a good candidate for a refractive procedure. They came for consultation or screening because they seek information and they want to find a solution.

Refractive surgery has evolved into a lifestyle procedure because it focuses more on convenience and less on disease.[23] As a consequence of this evolution, it is important to study the characteristics of a refractive patient so that a wide spectrum of procedures can be offered that are responsive to their needs and clinical situation. The objective of this paper was to gain a better understanding of the demographic and clinical profile of patients going to a refractive surgery practice in an urban setting and to identify trends and patterns that stand out to help predict where to allocate treatment resources.

We reviewed the clinic census and generated a list of 1,215 patients who came for refractive screening in our institution from 2010-2014. In our study, 63% were aged 40 years and below and 60% were female. Studies by Bamashmus[24] and Torricelli[25] also showed that female patients comprised the majority (54% and 51.4%, respectively) of patients coming for refractive surgery. Filipinos comprised 70% of our patient base. Being in an urban area with a vibrant financial district, foreigners were part of the patient pool (20%), and majority of patients (60%) were employed or self-employed. Half of the subjects (51%) deliberately came for refractive screening while 29% came for a general checkup and afterwards decided to undergo refractive screening in the same visit. This was an important finding and a significant addition to the patient pool that could not be ignored. Patients gained confidence and trust in subjecting themselves to diagnostic procedures after they have received information directly from an ophthalmologist or have seen the medical facilities for themselves. Two-thirds of patients were referred by family, friends, or colleagues. This reinforced our belief that endorsement from people we know are more powerful calls for action than media outlets, like television, internet, newspaper, or radio that tend to be less personal.

About 45% wore contact lenses, majority of

whom were below 40 years of age. In the study of Morgan, the mean age of contact lens wearers was 33 ± 13 years, of which 64% were females.[26] Only a few patients reported contact lens intolerance or various problems with their contact lens as with other studies.[27,28] Improvements in contact lens technology have lessened complaints and are probably one of the reasons why refractive surgery volumes have remained stagnant over many years.

The mean age of our population was 36.45 years. This was similar to the findings of Bamashmus and Torricelli, where the mean ages were 26 and 39 years, respectively.[24,25] Approximately 60% of patients were 40 years old and below and this trend has remained consistent over the past 5 years. Having 40% of our patients at 40 years old and above was an important finding. This might not be the same breakdown in other refractive centers where a higher percentage were below 40 years old. Two factors could influence this difference. First was the availability and increasing awareness of presbyopic LASIK,[29] in our case, Supracor. Second, the financial capacity of the 40 years and above age group was probably much higher than the younger patients to afford a lifestyle procedure, such as refractive surgery.

About 80% of our patients were myopes. The mean MRSE of patients 40 years and below was -4.79D while those above 40 years was -3.83D. Twenty percent of subjects were hyperopes. Significantly, 90% of the hyperopes who came for screening were in the presbyopia age group. It was no surprise that when the hyperopes were younger, they rarely consulted an eye care professional because far and near vision were quite good. But when they turned presbyopic, they began to need spectacles which irritated them. Their main reason for consult was to get rid of their reading glasses. Having a presbyopic LASIK treatment option has opened a new market segment which we predict will grow over the next few years.

Corneal thickness is an important parameter in qualifying a patient for refractive surgery because higher refractive errors mean deeper stromal ablation and less residual corneal thickness. The mean pachymetry reading we obtained was 542 microns similar to the findings of Aghaian[30] with no difference between the 40 years and below and the above 40 year age groups. Most of the corneal topographies were normal and showed with-the-rule astigmatism pattern. The mean corneal spherical aberration was 0.26 microns which was similar to the study of Beiko.[31] Approximately 25% of eyes had Schirmer's scores of less than 5 mm. However, few patients had symptoms and complaints of dry eye during their screening and only a few needed pre-treatment with dry eye medications prior to surgery.

Axial length can affect the structure of the optic nerve and posterior pole. Longer eyeballs tend to have larger optic disc cupping and tilt, as well as peripapillary degeneration. Therefore, it is important to check the optic nerve carefully, especially of myopes. In our study, 32 eyes of 18 patients (1.48% of the entire cohort) were found to have suspicious optic nerve findings. Ten out of the 32 eyes were found to have a strong likelihood of glaucoma and were totally disqualified from any refractive procedure. Moreover, IOP measurement by GAT is correlated with pachymetry wherein IOPs can be falsely high with thicker corneas and falsely low with thinner corneas. Fourteen (14) eyes had pressures above 21 mmHg which we deemed as risky and were disqualified from proceeding with refractive surgery. Our study suggested that the incidence of glaucoma or glaucoma suspects was low in the refractive surgery population.

Axial length can also affect the retina whereby longer eyeballs probably have retinas that are stretched and thinned out. These can manifest as lattice degeneration, retinal holes or tears, and retinal detachment. Sixty-seven (67) eyes of 44 patients (3.62% of the entire cohort) had abnormal retina findings. The most common pathology was lattice, followed by retinal holes. A retina specialist performed focal laser treatment in 38 eyes, cryotherapy in 2, and vitrectomy in 1 eye. No treatment was needed for 26 eyes. Six patients were disqualified from undergoing refractive surgery. We have had no case of retinal detachment after refractive surgery all throughout the 5-year review. This emphasized the importance of a thorough retina examination on patients having refractive procedures even though the incidence of retina pathology was low (3.62%).

After a thorough refractive screening, majority of patients were qualified for LASIK. Inadequate corneal thickness and irregular topography were the most common reasons for disqualifying from LASIK. Patients were either recommended for PRK or if the cornea was too thin or refractive error too high, then phakic IOL was suggested. A new indication for refractive surgery is presbyopia correction, specifically Supracor, which was introduced four years ago.

Supracor has opened a new population of presbyopes who previously did not consider refractive surgery but now feel there is a better solution for them to get rid of their reading glasses.

In conclusion, our study showed that the number of patients who came for refractive screening have been consistent over the past 5 years. Majority of the subjects were female, younger than 40 years, employed, Filipino individuals, referred by other patients coming for refractive screening. Majority of myopic patients were 40 years and below while majority of the hyperopic patients were above 40 years. The incidence of optic nerve and retina pathologies seen during refractive screening was low. Nevertheless, these were important tests necessary in a comprehensive screening. The most common contemplated procedure with the highest conversion rate was LASIK. The lowest conversion rate was phakic IOL, followed by Supracor, probably due to the higher costs of these procedures.

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