



## ORIGINAL ARTICLE

# Patient profile and postoperative follow up compliance in refractive surgery



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### KEYWORDS

LASIK;  
Refractive surgery;  
Follow-up compliance;  
Patient profile;  
Post-operative education

### Abstract

**Purpose:** Analyze the relationship between LASIK patient profile and its follow-up compliance.  
**Methods:** The following study analyzes 108 randomly selected patients in a time period of 2 years that underwent refractive surgery, with a total of 213 eyes.  
**Results:** The average age of the LASIK patient was  $31 \pm 7.8$  years, with patients ranging from 18 to 39 years (61%). Professional sector and students outnumbered the occupational profile with a total of 53 professional sector patients and 35 students. The most common refractive error was myopia 54% followed by hyperopia 31%. The recommended six follow up visits were only completed by 6% of the patients; the average follow up number of visit was three. 78% of the patients that underwent refractive surgery had only one prior consult.  
**Conclusions:** Patients are not completing their suggested follow up visits. There was no association with age, gender, occupation or surgical treatment in the patients that did complete the established six follow up visits. However a non-significant trend was observed with the non-professional sector and the patients that had only one follow up visit.  
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### PALABRAS CLAVE

LASIK;  
Cirugía refractiva;  
Visitas post operatorias;  
Perfil paciente;

### Perfil del paciente y cumplimiento en el seguimiento postoperatorio en cirugía refractiva

### Resumen

**Propósito:** Analizar la relación entre el perfil del paciente de LASIK y su cumplimiento con sus consultas de seguimiento.

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## Educación postoperatoria

**Métodos:** El siguiente estudio analiza a 108 pacientes que se realizaron cirugía refractiva, seleccionados aleatoriamente en un periodo de tiempo de 2 años, consistiendo la muestra en un total de 213 ojos.

**Resultados:** La edad promedio de los pacientes de LASIK fue de  $31 \pm 7.8$  años, con un rango de 18 a 39 años (61%). El sector profesional y los estudiantes tuvieron la participación más alta, con un total de 53 pacientes y 35 estudiantes. El error refractivo más común fue la miopía, con un 54%, seguido por la hipermetropía, con un 31%. Se recomendaron 6 consultas de seguimiento postoperatorias, que solo fueron cumplidas por el 6% de los pacientes; estos fueron en promedio a 3 consultas post operatorias. El 78% de los pacientes que se sometieron a cirugía refractiva solo tuvieron 1 consulta pre operatoria.

**Conclusiones:** Los pacientes no están cumpliendo con las consultas preoperatorias recomendadas. No hubo asociación con la edad, el género, la ocupación o el tratamiento quirúrgico; sin embargo, se observó una tendencia no significativa entre los pacientes del sector no profesional y los pacientes que solo acudieron a una visita post operatoria.

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## Introduction

Originating immediate vision correction and significantly less side effects than its predecessors, it is no wonder LASIK surgery has become one of today's most popular elective procedures, with more than 28 million procedures performed worldwide.<sup>1,2</sup> A successful LASIK eye surgery depends mostly on the patient being a good candidate; meeting the age request, stable refractive error, as well as normal corneal topography. Follow-up appointments during the first 6 months after surgery also play an important role in the safe and satisfactory patient recovery.<sup>3</sup>

Different reports analyzing the functional outcomes and patient satisfaction after LASIK correction for myopia and astigmatism affirm that satisfaction rates were around 95–98%.<sup>4,5</sup> Most satisfaction in patients comes from the fact that they no longer need glasses, their vision improved greatly and there were no serious complications.<sup>6,7</sup> It is important to analyze the possible complications and that is the main objective of studying patients follows up recommended compliance. Most patients believe that if they have their vision corrected after the procedure they no longer need to schedule eye doctor visits, and they are far from the truth.<sup>8</sup> Even though some patients experience perfect vision after LASIK it is essential they attend all follow-up visits since surgeons can detect problems, long before they cause discomfort or vision problems.<sup>1,9–10</sup>

The purpose of the study was to build a profile for LASIK patients and follow them through their post-operative journey in order to observe their compliance in the established follow-up visits. Once that was recorded we aimed to analyze if there was a relationship with the patients profile and the number of visits after the surgery.

## Materials and methods

The following study analyzes 108 Hispanic randomly selected patients that underwent refractive surgery in a 2-year time period. None of the cases had previous ocular pathology and had a normal corneal topography and preoperative central corneal thickness  $>500 \mu\text{m}$ .

The research was retrospective, observational and included independent variables such as: age of patient, sex, occupation, refractive errors, pre-operative visits and if it was a binocular or monocular surgery. The dependent variables were the number of postoperative visits to the doctor. To collect the data we used the patient's records. For the inclusion criteria we defined: patients in age range from 18 year olds to 60 year olds. Cornea thickness with a minimum of  $500 \mu\text{m}$ , normal topography and without any other pathological eye problems.

We randomly selected records of patients who underwent myopic and hyperopic LASIK in a time period of 2 years (January 2012 to January 2014) at the Zambrano Hellion Medical Center in Monterrey, Mexico. All the patients signed an informed consent previous to the refractive surgery and were informed of the potential use of their refractive outcomes data for research purposes. Medical records from three different surgeons were revised. The Excimer laser platform used for all the procedures was Bausch + Lomb Technolas 217z (Technolas Perfect Vision GmbH). Procedures included: Zyoptix PersAdvanced (TLS)-2, Zyoptix Tissue Saving-2, Plano Scan and Zyoptix Aspheric-2. Descriptive statistic data as mean, median, range and standard deviation were obtained. Pearson's  $\chi^2$  test was used to find association between predictor variables (age, gender, occupation, baseline refraction, preoperative visits and monocular/binocular surgery) with the outcome variables (postoperative visits). Statistical significance was considered with a  $p$  value  $< 0.05$ . Statistical analysis was performed with the SPSS software version 20.0 (IBM, Inc., NY, USA) for Windows.

## Results

Average age of the LASIK patient was  $31 \pm 7.8$  years (range 18–59 years), with patients ranging from 18 to 29 years making up the 61% of the total, patients from 30 to 40 years were 9% of the sample and patients  $>40$  years were 30%. 53% were female and 47% male as seen in Table 1.

On the occupational variable there were the following categories: professional sector, which included

**Table 1** Gender in LASIK patients.

Gender	Total patients
Female	57
Male	51

**Table 2** Occupation in LASIK patients.

Occupation	Patients
Professional sector	53
Non-professional sector	9
Students	35
Retired	2
At home	9

Professional sector included different occupations like lawyers, teachers, engineers, etc. Non-professional included sector all the employees like laborers, hairdressers, merchants, etc.

**Table 3** Type of surgery.

Surgery	Patients
Binocular	102
Monocular	6

professionals ranging from lawyers, teachers, engineers, etc. non-professional sector all the employees like laborers, hairdressers, merchants, etc. Also in a separate categories, were the students, the retired and the stay at home patients. Table 2 shows professional sector and students outnumbered the rest with 49% professional sector patients and 33% students, respectively, then came the non-professional sector with 8% patients. There were 9% patients at home category and 1% retired ones.

When it came to the actual surgery 94% of the patients had a binocular surgery as shown in Table 3. The most common refractive error was myopia 64.81% followed by hyperopia 35.19%, Table 4.

Table 5 shows that 80% of the patients that underwent refractive surgery decided on their first visit to the doctor, 12% on their second, the other 7% had three or more pre-operative consults.

**Table 4** Refractive errors.

Refractive error	Patients
Myopia	59
Hypermetropia	34
Astigmatism	14

**Table 5** Number of pre-operative visits.

Number of visits	Patients
1	85
2	12
3	2
4	4
5	2

**Table 6** Number of post-operative consults.

Number visits	Patients
1	19
2	19
3	26
4	16
5	13
6	7
8	1

The average follow-up was of three visits following the surgery.

Of the total 108 patients studied, 20 patients went to one follow-up consult (18.5%), 20 went to two (18.5%). 28 patients had a total of three visits (26%). 17 patients went to four checkups (16%), 14 patients went to five (13%), 8 patients to six visits (7%) and 1 patient had 8 consults (1%) shown in Table 6. The average follow-up was of three visits following the surgery. Which means patients are on average attending their follow up consults for the first 3 months, not the recommended 6.

No correlation between age, gender, occupation, binocular/monocular treatment or type of refractive error and the number of postoperative visits was found ( $p=0.940$ ,  $p=0.727$ ,  $p=0.199$ ,  $p=0.651$  and  $p=0.456$ , respectively). Even though there was a non-significant  $p$  value, 47% of the 19 patients that only went to one follow up visit belonged to the non-professional sector.

## Discussion

The average LASIK patient in this study ranges from 18 to 30 years and is primarily a professional sector worker or student. We observed a bimodal distribution in the fourth decade of life (>40 years-old), having presbyopia as the main reason for surgery in this age group. Refractive surgery trends in North America has shown an increase in the average age of patients demanding vision correction with LASIK, today the hover at around 35 years old—five years younger on average than about a decade ago, as more people in their late 20s and 30s choose laser vision correction.<sup>11</sup> These results matched our own showing younger patients preference for LASIK, but our study also reflected how older than 40 year olds also acquiring an important space in number of interventions. Other articles also claim the over 40-year-old trend establishing LASIK as an alternative that is becoming increasingly popular among people over 50 or 55.<sup>12</sup> Still the mean age in 2007 was  $42.4 \pm 14.4$ , and the mean age in 2009 was  $39.6 \pm 14.5$  years for other publications.<sup>13–15</sup>

Almost 80% of the patients that underwent refractive surgery had only one prior consult, suggesting the popularity of this elective surgery and showing how patients show up with and already conceived idea of the surgery, as shown in Table 5.

The recommendations of the FDA with regards to the postoperative care are that initial postoperative visits should not be later than 24–48 h after the surgery, and at regular intervals for at least 6 months.<sup>16,17</sup> Our institution policy was defined as one first consult the first 24 h, then the next 72 h, after 1 week, 1, 2 and 6 months after the

surgery for a total of six follow up consults. Of the 108 patients studied only 8.3% completed the established follow up, showing a poor compliance in the postoperative visits. The average follow up number of visit was three (24% of the patients), which means that only  $\frac{1}{4}$  of the patients cover 50% of the established recommended visits. This data urge us to study the cause of patients stop coming to their visits and what strategy can we follow as health care professionals for patients to complete their follow up visits.

## Conclusion

There was no direct relationship with age, gender, occupation or surgical treatment in the patients that did complete the established six follow up visits, However there was a direct relationship with the non-professional sector and the patients that had only one follow up visit. Patients that where part of the non-professional sector made up 47% of one follow up visit. These conclusions leave us with more unanswered questions like what is it about the non-professional sector that makes them visit the doctor the few? Is it the locations where they live? Or was their understanding of the follow up visits unclear? This only shows how there is still much room for improvement when it comes to patient education and the implementations of new strategies for completing the desired six post-operative visits.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that this research has not been conducted experiments on humans or animals.

**Confidentiality of data.** The authors declare that this article does not appear patient data.

**Right to privacy and informed consent.** The authors declare that this article does not appear patient data.

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## Conflict of interest

The authors declare no conflict of interest.

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