Title: Femto-LASIK vs PRK: impact on ocular surface condition

Short running head: Femto-LASIK vs PRK: impact on ocular surface condition

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SYNOPSIS (30 words)

Contrary to previous LASIK versus PRK descriptions, femto-LASIK and PRK showed to have a similar impact on ocular surface.
**ABSTRACT** (250 words/Journal of refractive surgery)

**Femto-LASIK vs PRK: impact on ocular surface condition**

**Purpose:** To compare ocular surface characteristics in eyes after femtosecond laser assisted in situ keratomileusis (femto-LASIK) and photorefractive keratectomy (PRK).

**Settings:** Centro de Oftalmología Barraquer, Barcelona, Spain

**Design:** Prospective, comparative observational study.

**Participants:** Forty-four myopic eyes of 44 patients who underwent femto-LASIK (22 eyes) or PRK were included.

**Methods:** Tear osmolarity, OSDI questionnaire, Schirmer I test, corneal sensitivity (with Cochet-Bonet esthesiometer), tear break up time (TBUT) and corneal fluorescein staining were evaluated before, 3, 6, and 12 months postoperatively.

**Results:** After 3 months, corneal sensitivity was significantly lower in both femto-LASIK and PRK groups (Wilcoxon rank test; p=0.002, p=0.02, respectively) and corneal staining was significantly increased in femto-LASIK group (Wilcoxon rank test; p=0.008). After 6 months, corneal sensitivity remained significantly lower than baseline values in both groups (femto-LASIK: p=0.03; PRK: p=0.04) and tear osmolarity significantly increased in femto-LASIK group (p=0.001). After one year, in both groups, all variables had returned to preoperative values except for tear osmolarity which, even if remaining within normal limits, was still significantly increased in femto-LASIK and PRK groups (p=0.01, p=0.04, respectively), and for TBUT that significantly improved compared to preoperative values (p=0.01, p=0.04, respectively). No differences were reported when comparing femto-LASIK versus PRK techniques at any
time except for a lower corneal sensitivity after 3 months (Mann-Whitney test; p=0.02) and a longer TBUT after 12 months in femto-LASIK group (p=0.02).

**Conclusions:** Femto-LASIK and PRK techniques seem to be safe for ocular surface condition and to have a similar minimal impact on it.

**KEYWORDS:** corneal sensitivity, refractive surgery, tear osmolarity, Femto-LASIK, PRK
INTRODUCTION

Laser in situ keratomileusis (LASIK) and photorefractive keratectomy (PRK) are the most commonly used corneal refractive techniques to correct low and moderate myopia.\(^1\) Both are safe and effective, and the choice of either surgical technique is mainly determined by the degree of ametropia and the corneal morphology of the candidates.\(^2\) As their indications partially overlap, decision-making is also influenced by professional demands of the patients (patients engaged in contact sports or violence-prone occupations), differences in postoperative recovery time, and ocular surface condition. Patient’s most common non-refractive postoperative complaint is dry eye and related symptoms such as visual fluctuations and foreign body sensation.\(^3\) Even if dry eye symptoms are mostly temporary, this issue remains the major cause of patient dissatisfaction after corneal refractive surgery.\(^4\)\(^-\)\(^7\) Dry eye disease (DED) prevalence data are difficult to compare as they vary according to criteria used by authors, surgical techniques used and follow-up times. It is described that 50% of patients have symptoms of dry eye at 1-week post LASIK, 40% at 1 month and 20 to 40% at 6 months.\(^5\) The incidence of DED post PRK is described to be around 3%, although few studies exist.\(^8\)\(^,\)\(^9\)

PRK technique is considered the treatment of choice in patients with ocular surface disorders based, mainly, on the higher incidence of dry eye and related symptoms after LASIK surgery. Nevertheless, only one direct comparative study between both techniques has been published so far.\(^10\) Since then, however, both surgical and diagnostic advances have been remarkable in this field. First, the introduction of a clinical device as Tear Lab osmolarity system (TearLab Corp, San Diego, CA) allows,
with a simple and non-invasive method, to measure clinically tear osmolarity in a few seconds (lab-on-a-chip technology). Changes in tear osmolarity and inflammation are cited in the definition of DED from 2007 Dry Eye Workshop (DEWS) report, and is now considered a key element in the pathogenesis and diagnosis of DED. In addition, although more expensive than the traditional microkeratome, the femtosecond (FS) laser provides more accurate, reliable and safer LASIK flap creation (femto-LASIK). Despite DED pathogenesis is not well established yet, corneal refractive surgery has spotlighted the key role of corneal innervation in the regulation of tear flow. Femtosecond laser produces thinner and more regular flaps, and therefore a different effect on tear flow could be expected since iatrogenic corneal nerves damage occurs in a more superficial level.

These new developments demand new studies to evaluate the effect of femto-LASIK and PRK techniques on the ocular surface and to test whether the classical assumption is still correct. This work summarizes the results of a prospective, clinical study designed to compare the impact on ocular surface condition of current femto-LASIK and PRK techniques with one-year follow-up time.

METHODS

This prospective, comparative, non-randomized clinical study conducted in the Centro de Oftalmología Barraquer (Spain) adheres to the tenets of the Declaration of Helsinki. Previous approval was obtained from a National Ethics Research Committee (Comité Ético de Investigaciones Clínicas del Centro de Oftalmología Barraquer). Informed consent was obtained from all patients that participated in the study.
Patients

We calculated that a minimum simple size of 22 eyes per group was necessary to detect a tear osmolarity difference of 55 mOsmol/L between groups assuming a standard deviation (SD) of 65 mOsmol/L with 80% statistical power and 0.05 probability of type 1 error (two tailed). The magnitude of the effect chosen was the significant difference previously found when comparing LASIK and PRK\textsuperscript{10} with the largest required sample size.

Forty-four eyes of 44 caucasian myopic patients scheduled for femto-LASIK or PRK surgeries were prospectively included between October, 2012 and March, 2014. Inclusion criteria were patients older than 21 years old, planned myopic femto-LASIK or PRK with a manifest spherical equivalent $\leq 6.5$ diopters, and willingness to complete the follow-ups. Patients were offered PRK if the central paquimetry was <500 microns or if they were engaged in contact sports or violence prone occupations, and LASIK was proposed if central paquimetry >500 microns. For both techniques, a residual stromal bed thickness >300 microns was preserved. Exclusion criteria were ocular pathologies, systemic disorders, profilactic Mytomicin C requirement and Schirmer I test <10 mm/5 minutes, as preoperative Schirmer test without anesthesia value is described to be the most predictive test for post LASIK dry eye symptoms development.\textsuperscript{17} Detailed patient preoperative data are shown in Table 1.

Surgical technique
Both femto-LASIK and PRK procedures were performed by the same surgeon (J.A.T.) under topical anesthesia (0.8% oxybuprocaine tetrachloride, Colircusí Anestésico Doble, Alcon laboratories). Patients were asked to interrupt contact lens wear 15 days before the surgery.

**PRK procedure**

After exposing the cornea to a round 8-9 mm surgical sponge soaked with 20% alcohol for 1 minute, the ocular surface was copiously irrigated with balanced salt solution (BSS) to minimize toxicity to the limbus, and the loosen epithelium was then removed with a blunt spatula. Excimer photoablation (Allegretto 500, Alcon Laboratories, Fort Worth, TX) was performed for a 6.5 mm optical zone and a therapeutic bandage contact lens was placed on the cornea. On average the contact lens was removed 3 days after the procedure when the epithelium had healed. Postoperative medications included ofloxacin 3mg/1mL (Exocin®, Allergan laboratories) 5 times a day, ketorolac 5mg/1mL (Acular®, Allergan laboratories) 4 times a day and preservative-free artificial tears every 2 hours until complete epithelium healing, followed by a tapering course of fluorometholone 1mg/1mL (FML®, Allergan laboratories) 5 times a day for 1 month, 3 times a day for a month and once a day for a month in order to prevent corneal haze. Intraocular pressure was monitored every month while patients were on topical steroids.

**Femto-LASIK procedure**

The corneal flap was made by IntraLase iFS 150 kHz (Advanced Medical Optics Inc, Santa Ana, CA) with a 9mm superior hinge and 100-µm depth. Excimer photoablation
(Allegretto 500, Alcon Laboratories, Fort Worth, TX) was performed for a 6.5 mm optical zone. An eye drops with 0.3% tobramycin/0.1% dexamethasone suspension (Tobradex®, Alcon Laboratories) was administered 3 times a day for one week and sodium hyaluronate 0.1% preservative free eye drops (Hylocomod, BrillPharma laboratories) was administered 5 times a day for 1 month. In both groups, preservative free artificial tears were then administered when needed.

**Clinical examinations**

The preoperative evaluation consisted of a complete ophthalmic examination. Slit-lamp evaluations followed a defined sequence which included OSDI questionnaire (score 0-100), tear osmolarity (TearLab Corp, San Diego, CA), corneal sensitivity (with Cochet-Bonet esthesiometer), corneal fluorescein staining (grade 0-5 according to Oxford scale), Tear Break-Up-Time (TBUT) and Schirmer I test (mm/5minutes without anesthesia). All examinations were performed preoperatively, 3, 6 and 12 months after the surgery.

**Statistical analysis**

The statistical analysis (i) assessed, separately for femto-LASIK and PRK groups, the tendency of every variable score at 3, 6 and 12 months postoperatively compared with the preoperative baseline evaluation, and (ii) compared variables behavior between LASIK and PRK groups at different time points.

Normality was assessed using the Kolmogorov-Smirnov test. Wilcoxon rang test and Mann-Whitney test were used to assess intra and inter group comparisons,
respectively. A significant level of p<0.05 was considered. Data were analyzed in IBM Statistical Package for the Social Sciences version 19.0 (SPSS Inc, Chicago, IL).

RESULTS

Forty-four eyes of 44 patients completed the study. Twenty-two eyes were included in LASIK group and 22 in PRK group. No adverse effects or complications were observed. Table 2 shows the summary statistics for OSDI, TBUT, Schirmer I test, tear osmolarity and corneal sensitivity in both groups before surgery and at 3, 6 and 12 months postoperatively. Figure 1 represents corneal staining distribution at each time point.

Femto-LASIK group

Three months after the surgery, no significant changes were observed for OSDI, TBUT, Schirmer I test and tear osmolarity compared to preoperative values (Figures 2, 3, 4, 5). Nevertheless, there was a significant increase in corneal staining (p=0.008) compared with the preoperative baseline evaluation (Figure 1). Preoperatively, 71.4% and 28.6% of the patients were classified as grade 0 and grade 1 respectively according to Oxford scale, against 33.3% and 57.1%, respectively, 3 months after the surgery (Figure 1). Similarly, corneal sensitivity significantly decreased at 3 months postoperatively compared with the preoperative baseline evaluation (p=0.002) (Figure 6).

Six months postoperatively, corneal sensitivity remained significantly decreased (p=0.03) (Figure 6). The other studied variables showed similar values than preoperatively. One year after the surgery, corneal staining, OSDI, Schirmer I test and
also corneal sensitivity values disclosed no significant differences when comparing with baseline values (p>0.05 in all the comparisons) (Figures 1, 2, 4, 6). Interestingly, TBUT significantly improved 12 months postoperatively (p=0.01) (figure 3) reaching, for the first time, normal mean values. Tear osmolarity significantly increased compared with the preoperative baseline evaluation (p=0.01) (figure 5) however mean values remained within normal limits.

**PRK group**

Three months after the surgery, no significant changes were observed for corneal staining, OSDI, TBUT, Schirmer I test and tear osmolarity compared with preoperative values (Figures 1, 2, 3, 4, 5) except for corneal sensitivity that was significantly decreased (p=0.02).

Six months postoperatively, corneal sensitivity remained altered (p=0.04) (Figure 6) and tear osmolarity significantly increased (p=0.04). The other studied variables showed similar values than preoperatively. One year after surgery, tear osmolarity still disclosed significantly increased respect to baseline (p=0.04) (Figure 5) but, as in all the studied time points, held within normal limits. Corneal staining, OSDI, Schirmer I test and also corneal sensitivity disclosed similar tendency that preoperative values (Figures 1, 2, 4, 6). As in femto-LASIK group, TBUT significantly improved 12 months postoperatively and its mean value was closer to the normal limit (p=0.04, figure 3).

**Femto-LASIK vs PRK**

No statistically significant differences were found in the studied ocular surface parameters between femto-LASIK and PRK treated eyes before and at any time of the
follow-up except for a significantly lower corneal sensitivity in femto-LASIK group at 3 months postoperatively ($p=0.02$, figure 6) and a significantly higher TBUT in femto-LASIK group by postoperative month 12 ($p=0.02$, figure 3). For corneal sensitivity, 12 (55%) and 6 (27%) patients in femto-LASIK and PRK groups, respectively, disclosed values below 60 mm at 3 months, 6 (27%) and 5 (23%), respectively, after 6 months, while in both groups no patients remained below 60 mm after 12 months.

**DISCUSSION**

Among the studied features, decrease in corneal sensitivity was the main ocular surface alteration found during the follow-up period. This disturbance appeared in both groups, disclosing thus a temporal pattern of possible nerve damage at 3 and 6 months after the refractive procedure and underlying the importance of proper treatment with artificial tear drops in this period of time. These changes were accompanied by a tendency for a higher corneal staining grade in femto-LASIK group only at 3 months postoperatively. Consistently, the most clinically relevant difference between the groups was the significantly lower corneal sensitivity in femto-LASIK group exclusively at this time point. It is worth mentioning that, in both groups, ocular surface conditions could be considered unaltered at the end of the follow-up period of 12 months, despite the statistically significant but not clinically relevant increase of tear osmolarity. Therefore, both femto-LASIK and PRK procedures seem to be acceptable in the setting of ocular surface condition. In addition, TBUT improvement in both groups one year postoperatively reflects a positive tendency in the long term after corneal refractive surgery.
Preoperative dry eye signs and symptoms are fairly common in patients selected for refractive surgery due to contact lens abuse or dry eye associated contact lens intolerance leading them to seek alternate methods of refractive error correction. The prevalence of dry eye syndrome prior to corneal refractive surgery is described to be around 38 and 75% depending on the diagnosis criteria used.\(^5,6\) Thus, despite a tendency to improvement over time, TBUT mean values are lower than the cut-off value of the test during all the follow-up except at 12 months postoperatively in femto-LASIK group. Contact lens wear interruption after the surgery may be one explanation for this improvement in ocular surface condition in the long term. On the contrary, according to OSDI questionnaire, ocular symptoms score always remains without changes and within normal limits. This lack of agreement between signs and symptoms is also well documented in the literature.\(^12\)

An overall evaluation including patients’ symptoms, signs and test results is required in order to establish DED severity, but current evidence suggests that tear osmolarity is the most sensitive and specific diagnostic method.\(^11,12\) Unfortunately, previous studies measuring tear osmolarity after refractive surgery are limited in number and follow-up time. In two published studies, tear osmolarity had returned to preoperative values at the end of the follow-up by 1 and 2 months after LASIK.\(^18,19\) Only Dooley and co-workers\(^20\) present results of tear osmolarity 12 months after LASIK describing similar values than preoperatively. We only found one recent study that evaluated tear osmolarity after PRK\(^21\), disclosing that tear osmolarity significantly increased 2 months after PRK and returned to baseline values at the end of the follow-up, 4 months after surgery. In our study, tear osmolarity had a slight tendency to increase and remained
higher than preoperatively values in both groups 12 months after the surgery. Nevertheless, mean values were within the normal range during all the examinations.

There was a significant increase in corneal staining 3 months postoperatively in femto-LASIK group compared with the preoperative baseline evaluation, while no differences were detected in PRK group. The neurogenic origin of post refractive dry eye compromises the maintenance of the integrity and repair of the corneal epithelium and is undoubtedly associated with inflammatory mechanisms. The 3 months corticoid tapering treatment established after PRK procedure to avoid corneal haze may mask the real effect of PRK on ocular surface 3 months postoperatively, thus reducing temporal intragroup differences that without the drug could be significant. However, nerve damage occurs more superficially in PRK, thus the lower neurogenic effect could explain the lack of changes in corneal staining in this group.

We found a significant decrease in corneal sensitivity in both groups at 3 and 6 months postoperatively. Fortunately, these temporal alterations were not found 12 months after surgery. Central corneal sensitivity was previously described to return to preoperative levels by 3, 6 and 9 months after LASIK. Subbasal and stromal nerve fiber bundles damage observed with in vivo confocal microscopy after LASIK is associated with central corneal sensitivity decrease to mechanical stimuli. Furthermore, ablation depth is associated with more severe corneal nerves damage after refractive surgery. However, it is difficult to compare quantitatively the neurogenic damage induced by both techniques. In LASIK the lamellar cut transects afferent sensitive nerve fibers preserving the hinge where corneal nerves remain structurally present which might accelerate their restoration after the surgery.
both techniques, Excimer photoablation alters the nerve plexus 360°, although nerve damage occurs deeper in LASIK which may explain the difference observed for corneal sensitivity between the groups. Nevertheless, as femto-LASIK produces thinner and more regular flaps than standard LASIK technique, iatrogenic corneal nerves damage occurs in a more superficial level increasing the safety of this surgical option for the ocular surface.\textsuperscript{15,28} Indeed, the incidence of LASIK-associated dry eye has been described to be significantly higher in microkeratome than femtosecond laser group (46 vs 8%)\textsuperscript{28} and Barequet and coworkers\textsuperscript{15} found that a thin, uniform femtosecond flap does not appear to have an adverse effect on corneal sensitivity and dry eye signs at 6 months postoperatively. As in the present study, they concluded that femto-LASIK exhibited a minimal impact on the ocular surface.

To our knowledge, this is the first time the effect of femto-LASIK vs PRK on ocular condition has been compared and there is only one previous study comparing ocular surface condition after LASIK and PRK. In that study, Lee and co-workers\textsuperscript{10}, comparing Schirmer test, tear osmolarity and TBUT at 3 and 6 months found a higher decrease in tear secretion after LASIK surgery at 6 months. This is one of the reasons why PRK technique has been considered the treatment of choice in patients with ocular surface disorders so far. These authors determined tear osmolarity with former laboratory methods different than the technique used in the present study, and corneal flaps were obtained with a microkeratome, which could explain the worse results in LASIK group. Moreover, both eyes of the patients were recruited in their sample. Including 2 eyes in a sample violates the assumption of independence of the data underlying in the statistical tests and increasing the possibility of finding significant differences when, in fact, there are none.\textsuperscript{29}
In the same sense of our study, Dooley and co-workers\textsuperscript{20} evaluated Schirmer test, tear osmolarity, corneal staining and TBUT after thin-flap LASIK versus LASEK (quite similar to PRK) and no differences on ocular surface condition were found between them. Similarly, a prospective study evaluated with appropriate questionnaires, self-reported postoperative dry eye symptoms, vision fluctuation and foreign body sensation comparing femto-LASIK and PRK.\textsuperscript{4} In both groups, all 3 features were symmetrically increased at 1, 3, and 6 months postoperatively but recovered baseline preoperative values at 12 months postoperatively. Although in that case an increase of symptoms was found, the similar progression and final result are in agreement with our study.

In summary, the present study showed that both PRK and femto-LASIK techniques, performed with the current surgical advances, seem to be safe for ocular surface condition and to have a similar minimal impact on it. Nevertheless, patient ocular surface condition remains an important component in the initial assessment of any refractive surgery candidate in order to avoid chronic ocular surface alterations.

**WHAT WAS KNOWN**

- LASIK surgery performed with the previous standard technique seemed more compromising for ocular surface condition than PRK surgery

**WHAT THIS PAPER ADDS**
Both PRK and femto-LASIK surgeries seem to be safe for ocular surface condition

Both PRK and femto-LASIK surgeries seem to have a similar minimal impact on ocular surface condition

REFERENCES


Figure 1. Oxford Scale score (range 0-5) distribution preoperatively (A), 3 months (B), 6 months (C) and 12 months (D) postoperatively.
Figure 2. Mean OSDI questionnaire score (0-100) distribution at 3, 6 and 12 months postoperatively.
**Figure 3.** Mean TBUT (seconds) distribution at 3, 6 and 12 months postoperatively. *Significant differences with preoperative baseline data (\(\ast=\text{P}<0.05\)).

**Figure 4.** Mean Schirmer test without anesthesia (mm) distribution at 3, 6 and 12 months postoperatively.
Figure 5. Mean tear osmolarity (mOsm/L) distribution at 3, 6 and 12 months postoperatively. *Significant differences with preoperative baseline data (*=P<0.05).
Figure 6. Mean corneal sensitivity (mm) distribution at 3, 6 and 12 months postoperatively. *Significant differences with preoperative baseline data and between groups (*=P<0.05).
Table 1: Patient demographics

<table>
<thead>
<tr>
<th></th>
<th>Femto-LASIK (N=22)</th>
<th>PRK (N=22)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>32±5.3</td>
<td>29±3.5</td>
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<tr>
<td>Gender (F/M) %</td>
<td>59/41</td>
<td>64/36</td>
<td>0.762</td>
</tr>
<tr>
<td>Preoperative spherical equivalent (D)</td>
<td>-3.67±1.4</td>
<td>-2.96±1.02</td>
<td>0.100</td>
</tr>
</tbody>
</table>

Data are reported as mean ± standard deviation (D=diopters, ¹ = Student’s t-test for independent samples, ² Chi-squared test, ³ Mann–Whitney U test). No differences were statistically observed between femto-LASIK and PRK groups.
Table 2. Ocular surface condition parameters preoperatively and at 3, 6 and 12 months after refractive surgery

<table>
<thead>
<tr>
<th></th>
<th>Femto-LASIK (N=22)</th>
<th>PRK (N=22)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Median</td>
<td>Range</td>
</tr>
<tr>
<td><strong>OSDI (0-100 score units)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoperatively</td>
<td>7.4±7.9</td>
<td>4.0</td>
<td>0-23</td>
</tr>
<tr>
<td>3 months</td>
<td>12.3±18.5</td>
<td>13.0</td>
<td>0-27</td>
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<tr>
<td>6 months</td>
<td>9.7±7.7</td>
<td>9.3</td>
<td>0-25</td>
</tr>
<tr>
<td>12 months</td>
<td>8.5±8.1</td>
<td>8.0</td>
<td>0-33</td>
</tr>
<tr>
<td><strong>Tear Break-up Time (seconds)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoperatively</td>
<td>8.2±2.3</td>
<td>9.5</td>
<td>3-10</td>
</tr>
<tr>
<td>3 months</td>
<td>8.2±1.6</td>
<td>8.5</td>
<td>4-10</td>
</tr>
<tr>
<td>6 months</td>
<td>8.5±2.0</td>
<td>10.0</td>
<td>4-10</td>
</tr>
<tr>
<td>12 months</td>
<td>9.8±0.6</td>
<td>10.0</td>
<td>8-10</td>
</tr>
<tr>
<td><strong>Schirmer Test without anesthesis (mm)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoperatively</td>
<td>25.5±6.6</td>
<td>30.0</td>
<td>13-30</td>
</tr>
<tr>
<td>3 months</td>
<td>22.5±9.1</td>
<td>27.0</td>
<td>5-30</td>
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<tr>
<td>6 months</td>
<td>24.1±8.1</td>
<td>30.0</td>
<td>6-30</td>
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<tr>
<td>12 months</td>
<td>26.9±5.0</td>
<td>30.0</td>
<td>13-30</td>
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<tr>
<td><strong>Tear osmolarity (mOsm/L)</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Preoperatively</td>
<td>295.4±17</td>
<td>295.5</td>
<td>284-310</td>
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<tr>
<td>3 months</td>
<td>299.6±9.9</td>
<td>298.5</td>
<td>282-321</td>
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<tr>
<td>6 months</td>
<td>300.1±16.8</td>
<td>298.0</td>
<td>277-333</td>
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<tr>
<td>12 months</td>
<td>304.2±9.8</td>
<td>305.0</td>
<td>289-316</td>
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<tr>
<td><strong>Corneal esthesometry (mm)</strong></td>
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<tr>
<td>Preoperatively</td>
<td>60±0</td>
<td>60.0</td>
<td>60</td>
</tr>
<tr>
<td>3 months</td>
<td>46.4±16.1</td>
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<td>15-60</td>
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<tr>
<td>6 months</td>
<td>52.3±18.4</td>
<td>60.0</td>
<td>15-60</td>
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<tr>
<td>12 months</td>
<td>59.4±2.4</td>
<td>60.0</td>
<td>50-60</td>
</tr>
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</table>

OSDI=Ocular Surface Disease Index, SD=Standard Deviation. The Mann-Whitney U test was used to compare differences between the groups. Boldface* indicates mean values statistical difference (P<0.05) between femto-LASIK and PRK groups as observed for corneal sensitivity and TBUT at 3 and 12 months postoperatively, respectively.