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## **Impact On Vision Of The Lasik Surgery Depending On The Patients' Optical Quality**

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### **Abstract: Purpose:**

To evaluate and compare the relative impact on the vision quality caused by LASIK surgery, in patients with different optical quality at the pre-surgical stage.

### **Methods:**

In this study we evaluate the changes in the eye's optical quality after LASIK surgery, taking into account the results reported for several groups of patients with different optical qualities at the pre-surgical stage. We analyze relative the improvement or worsening in the visual quality that take place in those different groups considered. The eye's optical quality is measured by means of the double-pass system OQAS (Optical Quality Analysis System, Visiometrics), which provides the OQAS VALUE (OV), parameter that accounts for the visual quality of the patients. Specifically, its standard values range from 0 to 2 approximately. Values higher than 1 are related to an acceptable visual quality. 25 LASIK myopic patients were included in this study. Their eye's optical quality was analyzed by means of the OQAS VALUE and the Visual Acuity (BSCVA, best spectacle corrected visual acuity, and UCVA, uncorrected visual acuity), at the pre-surgical stage and one month after the intervention. Only patients with a preoperative BSCVA of 20/25 or better were included in the comparison.

The following groups of patients' eyes with different optical quality ranges (pre-surgical) were considered: 5 eyes corresponding to patients with  $OV < 0.6$ , 11 with  $0.6 < OV < 0.9$ , 16 with  $0.9 < OV < 1.2$  and 11 with OV higher than 1.2.

### **Results:**

The results obtained show that patients with a poor optical quality before the surgery have a relative improvement of their visual quality after the LASIK surgery with respect to their initial quality. Specifically, an averaged improvement in the OQAS VALUE of 29% (patients with  $OV < 0.6$ ) and 17% (patients with  $0.6 < OV < 0.9$ ) is observed. However, in the other two groups a very different behavior is shown after the surgery; in patients with  $0.9 < OV < 1.2$ , a mean worsening of 5% in the optical quality is found. In patients with OV higher than 1.2, the patients show a worsening in the visual quality of approximately 37%.

### **Conclusions:**

The higher the optical quality is at the pre-surgical stage, the larger is the worsening shown in terms of optical quality in LASIK patients. This effect could explain the patient complains after LASIK, mainly if they have a good vision before the surgery.

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