CORRELATION BETWEEN OCULAR SURFACE CHANGES AND CENTRAL CORNEAL THICKNESS AFTER LASER ASSISTED IN SITU KERATOMILEUSIS

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Introduction

Laser Assisted in situ keratomileusis (LASIK) has an effect on ocular surface, tear film production, and corneal sensation, so surgery can induce dry eye disease or worsen an existing one. All patients experience eye dryness after refractive surgeries at least transiently. Although good visual acuity after LASIK, quality of life is affected by dry eye disease. Normal ocular surface microenvironment (OSM) is essential for healthy ocular surface. Any change of its components affect the homeostasis of the ocular surface leading eventually to lacrimal function unit dysfunction causing dry eye. There are many clinical signs present in Post LASIK dry eye .If post LASIK dryness become chronic it may affect vision and cause refractive regression. The management is the same as treating dry eye disease.
The treatment: is temporary for most patients but some patients need to continue for long time.

Aim of the work

The work aimed to correlate between the ocular surface changes and central corneal thickness after LASIK, using the ocular surface analyzer OSA.

Patients and Methods

The study included 40 eyes of 22 patients with myopia or myopic astigmatism who underwent LASIK surgery with informed consent.
Inclusion Criteria:
Patients aged between 18 – 40 years.
Myopic patients from -0.75 to -5.00 with or without astigmatism
Exclusion Criteria: Moderate to severe dry eye in addition to LASIK contraindication.
This prospective study in which Patients enrolled underwent LASIK surgery All patients were informed about variable surgical options. The steps of operation were explained to the patients with informed consent.

All patients were subjected to:
1. Full history
2. Preoperative Full ophthalmologic examination
3. Preoperative evaluation of dry eye using OSDI questionnaire, shirmer test and OSA
4. Pentacam

LASIK surgery Procedure was done using EX 500 wave light
Immediate postoperative care
Post operative Follow up
All Patient was examined at 1 month and 3 months Postoperatively:
1. Postoperative Full ophthalmologic examination
2. Postperative evaluation of dry eye
3. Pentacam

Results

Table 1: Comparison between the UCVA by LogMAR chart preoperative, 1 month after LASIK and 3 months after LASIK (n = 40)

UCVA (LogMAR)	Before LASIK	After LASIK		Fr	P
		1 months	3 months		
Min. – Max.	0.30 – 0.77	0.0 – 0.17	0.0 – 0.17	80.0*	<0.001*
Mean ± SD.	0.48 ± 0.15	0.06 ± 0.08	0.06 ± 0.08		
Median (IQR)	0.48 (0.30 – 0.60)	0.0 (0.0 – 0.17)	0.0 (0.0 – 0.17)		
Sig.bet. periods	p_1<0.001*, p_2<0.001*, p_3=1.000				

Table 2: Correlation between thickness and different parameters (n = 40)

	Reduction in Thickness from Before LASIK to			
	1 months		3 months	
	r_s	P	r_s	P
Reduction in K mean	0.803*	<0.001*	0.803*	<0.001*
Reduction in NIBUT	-0.319*	0.045*	-0.461*	0.003*
Increase in MG loss Lower	0.377*	0.017*	0.277	0.083
Increase in MG Loss Upper	0.144	0.376	0.131	0.419
Reduction in Tear meniscus	-0.281	0.080	-0.302	0.058

Conclusion

- LASIK shows great predictability and effectiveness in correction of myopic refractive errors. Post LASIK dry eye can impact patient's quality of life. Post LASIK DED is transient and reversable in most cases with the corresponding topical treatment.
- There is a correlation between reduction in thickness and reduction in NIBUT in the duration from before LASIK and 1 month after LASIK and in duration from before LASIK and 3 months after. There is a correlation between reduction in thickness and increase in MG Loss lower lid in the duration from before LASIK and 1 month after LASIK.