

HRT linked with regression post-LASIK

Daithí Ó hAnluain in Paris

A NEW study from Ireland suggests a link between refractive regression following LASIK surgery and hormone replacement therapy.

Ms Maeve O'Doherty, lead researcher on the Irish study, conducted a retrospective chart review of all myopic females who underwent LASIK at the Mater Misericordiae private hospital in Dublin who were receiving either hormone replacement treatment (HRT) or using the oral contraceptive pill (OCP). She will present the study at the XXII Annual Congress of the ESCRS in Paris.

There were 176 eyes in the OCP group and 44 eyes in the HRT group, with 81 eyes serving as a control group. The researchers recorded postoperative refraction and visual acuity at one week, three months, six months and one year. They compared the change in refraction and change in visual acuity over a six-month period for patients in the OCP, HRT and control groups.

Nearly all eyes (96%) of women taking HRT at the time of LASIK had postoperative visual acuities of 6/12 or better at one-week post surgery. However, only 81% of the HRT group maintained a visual acuity of 6/12 or better at six months. In contrast, 97% of

eyes of patients in the oral contraceptive group achieved 6/12 or better one-week post-op, maintained by 96% at six months.

She told EuroTimes that since HRT may be a factor in determining the risk of regression post LASIK, ophthalmologists needed to determine a prospective patient's hormone state. In addition to HRT, doctors must check if the patient is pregnant, has had a hysterectomy or oophorectomy, and whether she is peri- or post-menopausal. All these conditions either lower the success rate of refractive procedures like LASIK and PRK, or could potentially do so.

"From our survey, and many others, there are indications that all these conditions can have a negative impact on the outcome of refractive procedures like LASIK and PRK. We know hormones play a role in the structural integrity of the cornea, and since there is no current study on the impact of HRT or OCP we wanted to examine whether a link existed," she said.

She believes there was no significant risk associated with women taking an oral contraceptive because the hormone dose involved is so small.

A similar study on the impact of hormone and menopausal status following excimer laser photorefractive keratectomy (PRK) in

women (Aust. NZ J Ophthalmol. 1996;24:215-222) found that post menopausal women suffered a higher rate of regression postoperatively and women on HRT fared even worse.

Meanwhile, another recent study (JCRS: 30; 3 (March 2004); 675-684) examined the link between dry-eye and LASIK regression in a retrospective chart review. The study looked at 565 eyes that were examined two weeks before LASIK with follow-up at one, three, six, and 12 months.

Regression after LASIK was related to chronic dry eye. It occurred in 27% of 45 patients with chronic dry eye and in seven percent of 520 patients who did not have dry eye ($P < .0001$). Patients with chronic dry eye had significantly worse myopic outcomes than those without chronic dry eye.

The risk for chronic dry eye was significantly associated with female sex, higher attempted refractive correction, greater ablation depth, and the following pre-LASIK variables: increased ocular surface staining; lower tear volume, tear stability, and corneal sensation; and dry-eye symptoms before LASIK. The risk for regression was significantly associated with higher attempted refractive correction, greater ablation depth, and dry-eye symptoms after

LASIK.

That study added to the consensus that the risk of refractive regression after LASIK was increased in patients with chronic dry eye. An increasing body of evidence indicates that hormone status plays an important role in refractive outcomes. But whether this is caused by a higher incidence of dry-eye among women with a disrupted hormone system, or whether it is as a direct result of changes in the structure of the cornea, is not yet known.

It is known, however, that hormonal status has an impact on the incidence of dry eye. A recent study by the National Eye Institute found that women with premature ovarian failure (POF) had a greater incidence of dry-eye than age-matched controls (Arch Ophthalmol. 2004;122:151-156).

In an editorial accompanying the POF study, Stephen C. Plugfelder, MD, Professor of Ophthalmology in the Baylor Medical School, wrote: "The increased prevalence of keratoconjunctivitis sicca in patients with POF supports the concept that hormones modulate ocular surface homeostasis."

But no study has yet demonstrated whether hormone disruption alone is responsible for poorer outcomes through damage to the ocular surface, or whether it is mediated through a higher inci-

dence of dry-eye, though the two appear to be linked.

It is known that hormone disruption affects dry-eye, ocular structure and PRK regression, but HRT is meant to reduce hormone disruption in women post-menopause. One would therefore expect it to minimise ocular surface damage and, logically, refractive regression after LASIK and PRK, she noted. At the same time, some studies have actually demonstrated that post-menopausal women on HRT

report higher rates of dry eye than post menopausal women not on HRT, she pointed out, adding:

"The body's hormones are in a constant state of change. Also, of course, some HRT formulations have no oestrogen content but have higher progesterone levels to prevent uterine cancer, so I guess HRT can never truly represent pre-menopausal status. It would be interesting to perform a study that examined dry-eye and LASIK outcomes in post-menopausal women taking HRT vs. those that are not,"

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