Refractive surgery on high

Should refractive surgery patients be climbing mountains, much less going into earth orbit? Reports dating to the 1990s of mountain climbers who had undergone radial keratotomy (RK) developing dangerous amounts of hyperopic shift raised a red flag. There is strong evidence that the effect of altitude exposure on post-RK eyes is caused by hypoxia rather than hypobarism and that breathing a normoxic inspired gas mix will not protect against the development of hypoxic corneal changes. Previous RK recipients who insist on participating in mountaineering ventures at 2744 m (9000 feet) or higher should bring multiple spectacles with increasing plus lens power. However, more recent reports suggest that patients who undergo LASIK or surface ablation procedures do all right in extreme environmental conditions. Studies of Mount Everest climbers who had LASIK have concluded that LASIK may be a good choice in high altitude activities but those achieving extreme altitudes should be aware of possible fluctuation in vision. Data suggest that a small refractive shift in the myopic direction may be present at extreme altitudes. Post-LASIK dry eye may play a role in this environment with such low ambient humidity. Climbers who do not ascend beyond moderate altitudes should not experience a post-LASIK refractive shift. What about space travel? Researchers reported as early as 1999 that an astronaut who had undergone bilateral cataract surgery with IOL implantation maintained excellent and stable vision while in orbit. NASA recently approved of the use of LASIK for potential astronauts. In this issue, Gibson et al. describe the effects of photorefractive keratectomy (PRK) in an astronaut during a 12-day Russian Soyuz mission to the International Space Station. They found that PRK is likely a safe, effective and well-tolerated procedure in astronauts during spaceflight. After return, refraction, keratometry, corneal topography and wavefront aberrations were largely unchanged. As private non-governmental activities in space flights continue to increase, it will be necessary to take a closer look at ophthalmic issues in respect to vision and ophthalmic surgery.

T Kohnen, JCRS, “Effects of refractive surgery in extreme altitude or space”, Volume 38, Issue 8, Pages 1307-1308.

OCT study of accommodation

What happens to central anterior chamber depth (ACD) in patients with high myopia during accommodation? Russian researchers looked at this question, obtaining ACD measurements in the non-accommodative state and during accommodation using the Visante AS-OCT device. They found that PRK is likely a safe, effective and well-tolerated procedure in astronauts during spaceflight. After return, refraction, keratometry, corneal topography and wavefront aberrations were largely unchanged. As private non-governmental activities in space flights continue to increase, it will be necessary to take a closer look at ophthalmic issues in respect to vision and ophthalmic surgery.


Thomas Kohnen
ASSOCIATE EDITOR OF JCRS

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