Radial Keratotomy: Cosmetic or Functional?

The question: “Radial keratotomy surgery: cosmetic or functional?” can best be answered when the two aspects of the question are separated. The first aspect is the nature of the surgical procedure itself, and the second is the patient’s motivation.

First, the nature of the surgery itself is not a matter for debate. It is purely a matter of fact and definition. This surgery does not enhance the beauty or appearance of the patient or his eye. It does not enlarge the eye, alter its color, or redefine its shape. The corneal scars are almost impossible to detect. Why then do some continue to contend that it is cosmetic, when it actually restores the proper focus to the eye? By definition, this surgery is functional surgery and not cosmetic. Until recently, optical devices have been a lifelong necessity for myopic persons. Now, refractive surgery such as radial keratotomy (RK) offers patients an opportunity to correct their vision rather than to constantly depend on glasses or contacts.

In other fields of medicine this is already a well-established principle. For instance, a patient with otosclerosis can hear with the assistance of a hearing aid. The aid successfully transmits sound to an otherwise healthy inner ear; however, surgery to relieve the otosclerosis, such as stapes mobilization, restores the function of the organ. It enables the patient to hear without any mechanical device. The inner ear itself has not been improved, but the mechanism to transmit the sound has been reestablished. It is true the patient no longer is required to wear a hearing aid, which he might have considered ugly and been self-conscious about, but the purpose of the surgery is to restore hearing. It is functional, not cosmetic surgery.

Likewise, a patient requiring a brace to walk may be told corrective orthopedic surgery can restore the function of his defective limb. We all would consider the restoration of the proper function of his leg functional surgery. It is true, as a secondary advantage he is freed from an ugly brace or crutch; however, no one would agree with the statement that the orthopedic surgery was cosmetic.

If it is not cosmetic for a person to have restored hearing or to walk without aids, why is it not true for the visually-handicapped also?

If an RK patient’s vision is restored to proper functioning, this is functional. It is not cosmetic, though getting rid of the mechanical optical device is a secondary result.

The second aspect of the question that should be considered is patient motivation. Why do people elect to have refractive surgery? If the patient’s primary concern is to improve his appearance, then for him, the surgery is cosmetic.

From my own clinical observation, this has not often been the case. The vast majority of my contact lens patients definitely do indicate the primary purpose of contact lenses is cosmetic. Other considerations, such as improved peripheral vision and the ability to move their eyes without running into the restriction of the frame is less important. In sharp contrast, almost all RK patients come to my office seeking improved function. After surgery, they expressed extreme satisfaction with being able to function without dependency on optical appliances. Many patients had a better appearance with glasses than without them. Since their goal was not cosmetic, their enthusiasm following successful surgery is not a result of merely discarding their glasses.

Again, patients who had been successfully wearing contact lenses before radial keratotomy obviously did not gain any measure of improved appearance. Only the small group of patients unable to wear contact lenses could be said to have gained any cosmetic advantage. However, they too stated the greatest advantage was the freedom to see any time and at all times without being forced to use an appliance.

This anecdotal information is also documented by Bourque (in PERK patients) and by Powers. These
studies explored patient motivation by using standard psychometric techniques. The conclusion was that cosmetic advantage is a very small factor in electing RK surgery. Startling to those inexperienced with RK patients, cosmetic reasons for choosing surgery is the dominant factor in only 3% of the cases.

Then why all the concern about whether or not doing or having the procedure is justified? If you accept the erroneous premise that RK is primarily cosmetic surgery, and acknowledge the possibility of serious complications (even if it is less than one in 10,000 cases), then a patient is risking his sight just to improve his appearance. This would not be wise or prudent. A person would have to be vain, foolish, or ill-informed to desire RK. This is not the case, however, since it is easily documented that the surgery restores useful vision and thus is functional.

Radial keratotomy is definitely functional surgery and not cosmetic surgery. Patients desire surgery so they can avoid the dangers, risks, inconveniences, and frightening situations that they know will occur when they are caught without their glasses or contact lenses. They are particularly concerned about everyday situations, such as driving the family car, navigating steps and curbs, boating, swimming, and skiing. Walking down city streets, particularly at night, or being able to find an escape route from a burning building are also basic motivations for the surgery. They want to be relieved of their handicapped vision and function in a safe and normal way every minute of every day, and who can blame them?

Opponents of RK have a right, nay, a duty to document the risks, complications, and results of any improperly performed RK. Because they frequently underestimate the patient’s natural fear of any surgical procedure, they do not recognize the very cautious approach the patients use in making the decision to have keratotomy surgery. The opponents can call the procedure frivolous, dangerous, and unsafe, it that is their interpretation of the scientific facts, but they do not have the right to indict the motives of others, patients or physicians. Likewise, no matter how often and how loudly they repeat it, they do not have the right to create a lie that functional surgery is “cosmetic.” It is time for this issue to be resolved. Radial keratotomy is a curative, effective procedure. It is not, and never has been, cosmetic surgery.

References

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Prednisolone acetate in a combination.
Poly-Pred® (prednisolone acetate. neomycin sulfate. polymyxin B sulfate)
Liquifilm® sterile ophthalmic suspension

INDICATIONS AND USAGE: A steroid-anti-infective combination is indicated for steroid-responsive inflammatory ocular conditions for which a corticosteroid is indicated and where bacterial infection or a risk of bacterial ocular infection exists.

Ocular steroids are indicated in inflammatory conditions of the palpebral and bulbar conjunctiva, cornea, and anterior segment of the globe where the inherent risk of steroid use in certain infectious conjunctivitis is accepted to obtain a diminution in edema and inflammation. They are also indicated in chronic anterior uveitis and corneal injury from chemical radiation, thermal burns, or penetration of foreign bodies.

The use of a combination drug with an anti-infective component is indicated where the risk of infection is high or where there is an expectation that potentially dangerous numbers of bacteria will be present in the eye.

The particular anti-infective drugs in this product are active against the following common bacterial eye pathogens: Staphylococcus aureus, Escherichia coli, Hemophilus influenzae, Klebsiella, Enterobacter species: Neisseria species, and Pseudomonas aeruginosa.

The product does not provide adequate coverage against: Serratia marcescens: Streptococci, including Streptococcus pneumoniae.

CONTRAINDICATIONS: Epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, varicella, and many other viral diseases of the cornea and conjunctiva. Mycobacterial infection of the eye. Fungal diseases of the ocular structures. Hypersensitivity to a component of the medication. (Hypersensitivity to the antibiotic component occurs at a higher rate than for other components.)

The use of these combinations is always contraindicated after uncomplicated removal of a corneal foreign body.

WARNINGS: Prolonged use may result in glaucoma with damage to the optic nerve. Defects in visual acuity and fields of vision, and posterior subcapsular cataract formation. Prolonged use may suppress the host response and thus increase the hazard of secondary ocular infections. In those diseases causing thinning of the cornea or sclera perforations have been known to occur with the use of topical steroids. In acute purulent conditions of the eye: steroids may mask infection or enhance existing infection. If these products are used for 10 days or longer: intraocular pressure should be routinely monitored even though it may be difficult in children and uncooperative patients.

Employment of a steroid medication in the treatment of herpes simplex requires great caution.

There exists a potential for neomycin sulfate to cause cutaneous sensitization. The exact incidence of this reaction is unknown.

PRECAUTIONS: The initial prescription and renewal of the medication order beyond 20 milliliters should be made by a physician only after examination of the patient with the aid of magnification, such as slit lamp biomicroscopy and where appropriate, fluorescein staining.

The possibility of persistent fungal infections of the cornea should be considered after prolonged steroid dosing.

ADVERSE REACTIONS: Adverse reactions have occurred with steroid/anti-infective combination drugs which can be attributed to the steroid component, the anti-infective component, or the combination. Exact incidence figures are not available since no denominator of treated patients is available.

Reactions occurring most often from the presence of the anti-infective ingredients are allergic sensitizations. The reactions due to the steroid component in decreasing order of frequency are: elevation of intraocular pressure (IOP) with possible development of glaucoma, and infrequent optic nerve damage; posterior subcapsular cataract formation; and delayed wound healing. Secondary Infection: The development of secondary infection has occurred after use of combinations containing steroids and anti-microbials. Fungal infections of the cornea are particularly prone to develop coincidentally with long-term applications of steroid. The possibility of fungal invasion must be considered in any persistent corneal ulceration where steroid treatment has been used.