Corneal Reshaping

Among patients with physiological myopia, is orthokeratology, as compared to LASIK therapy, effective in corneal reshapement?

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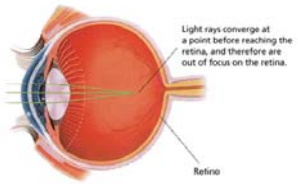
Myopia

- Definition: a refractive defect of the eye in which light produces image focus in front of the retina
- Most common cause of vision loss around the world
  - Worldwide prevalence ranges from 800 million to 2.3 billion
- Most prevalent among Asians followed by 25% of African Americans and 13% of Caucasians.
- Average age of onset: 8 years

Myopia

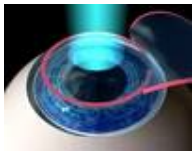


- Etiology
  - In myopia, the eye shifts the focus in front of the retina because:
    - The cornea is too curved
      OR
    - The lens is too powerful for the length of the globe.
  - As a result, objects at a distance are seen unclearly, while near objects remain focused.

Myopia

- Signs and Symptoms
  - Blurred far vision
  - Frontal headaches
  - Patient may squint to produce a pinhole effect, which improves distance vision.
- Diagnosis
  - Typically confirmed during an eye examination by an ophthalmologist or optometrist
  - Only definitive diagnosis through the use of cycloplegic drops that hinder the focus so that an accurate prescription can be determined

Myopia



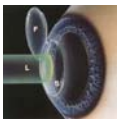
- Treatment Options
  - Eye Glasses
  - Daily wear contact lenses
  - Orthokeratology
  - Refractive Surgery
    - Incisional procedures
    - Lenticular refractive procedures
    - Excimer laser refractive surgery:
      - Photorefractive Keratectomy (PRK)
      - Laser epithelial keratomileusis (LASEK)
      - Laser-assisted in situ keratomileusis (LASIK)

Comparison of Criteria for Treatments of Myopia

	Orthokeratology	LASIK
Age (years)	All Ages	18+
Myopia	< -6.00 D	Between -0.50 to -12.00 D
Hyperopia	----------	< +6.00
Stable Refraction	None required	At least 1 year
Ocular Contraindications	Acute/Subacute inflammation or infection of the anterior segment, Diseased/injured eyes, Dry eyes, Corneal hypoesthesia, corneal infections, red or irritated eyes	Keratoconus, Pellucid marginal degeneration, Keratoglobus, Progressive myopia, Corneal disease, Glaucoma, Cataract, Scarring of the cornea, Lagophthalmos, Severe dry eye & Blepharitis
Other Contraindications	Systemic infections that may be exacerbated by wearing contact lenses, Allegeric reactions; including mercury or thimersosal allergy	Uncontrolled vascular disease, Autoimmune disease, Collagen disorders, Immunocompromised persons, Pregnancy or nursing, History of keloids, Diabetes mellitus, Use systemic
Anatomical contraindications	The lens is fit to each individual.	Deep set eyes, very narrow palpebral fissures, abnormal lid position, or severe acne rosacea

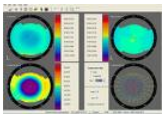
LASIK Treatment

- Pros
  - Earlier post-treatment stabilization
  - Less post-treatment discomfort
  - Faster improvement of visual acuity
  - Easier enhancement procedures
  - Very little stomal haze



- Cons & Complications
  - Irreversible
  - Opt for a non-surgical treatment
  - Cost
    - Many insurance companies do not cover refractive surgery
  - Flap complications
  - Corneal ectasia

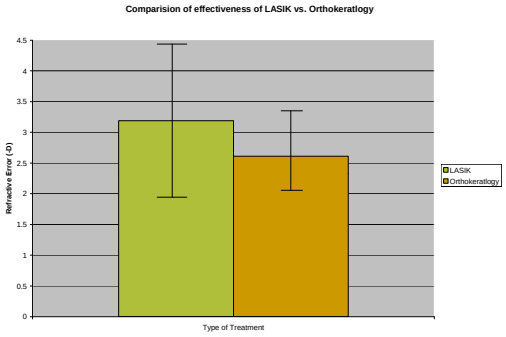
Orthokeratology



- Pros
  - Reversible
  - More comfortable and convenient method
  - Decreased ocular dryness and lens staining
  - Immediate increase in visual acuity
  - Only worn at night
- Cons and Complications
  - Daily use
  - Microbial keratitis
  - Epithelial mircocysts
  - Endothelial polymegathism
  - Lens adherence
  - Hemosiderin deposition
  - Corneal ulcers

Results

- The total mean change in refractive error from the beginning of orthokeratology treatment was +2.67 D.
- The total mean change in refractive error from the beginning of the treatment to the time of measurement after LASIK was +3.19 D.



Mean Change By Length of Study

	Orthokeratology	LASIK
8 days	+2.35 D	----
1 month	+2.73 D	+3.75 D
2 months	+2.47 D	+3.27 D
3 months	+2.41 D	+3.27 D
6 months	----	-3.20 D
12 months	----	-3.96 D
5 years	----	-3.04 D

Mean Change By Pre-treatment Refractive Error

	Orthokeratology	LASIK
<6.00	----	+ 4.81
<-5.00	----	-4.28
<-4.00	+3.01	+3.21
<-3.00	+2.35	-2.64

Conclusion

- The use of orthokeratology treatment may readily be acceptable as alternative to LASIK therapy in the time preceding the surgery.
- Predictable results have shown the efficacy of OK for short term treatment.
- Further studies are needed to show long term efficacy, though projected results appear to be in favor of orthokeratology as a long-standing treatment

Clinical/Recertification Pearls

- Average age of onset is 8 years old
- Temporal headaches may be a sign of myopia, especially in children
- Remember, there are other options for treatment beyond eyeglasses and daily wear contacts
- One must be 18 years old for LASIK, but can begin orthokeratology at any age

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QUESTIONS??