

1. TITLE: Refractive Surgery - Overview and Complications

2. DESCRIPTION

This presentation will review refractive surgery techniques, the advantages and disadvantages of each modality, and possible complications of each type of procedure. There will be a particular focus on laser-based methods: PRK, LASIK, and SMILE.

3. LEARNING OBJECTIVES

- a. Understand the differences between LASIK, PRK, and SMILE along with the pros and cons of each modality
- b. Be able to recognize the common complications of these procedures
- c. Understand the pre-operative evaluation process for laser vision correction

4. OUTLINE

- A. Brief history of refractive surgery
 - a. History of excimer laser development
- B. Categorization of refractive surgery types
 - a. Intraocular: cataract surgery, ICL
 - b. Corneal
 - i. Incisional: LRI/AK, RK/Hex-K

1. PERK study review

2. LRI calculations

- ii. Laser-based

1. Surface ablations, PRK, LASIK

2. Lenticule-based: SMILE

C. Laser technologies

- a. Femtosecond laser

- b. Excimer laser

D. Overview of excimer laser treatment optimizations

- a. Spherical aberrations optimization

- b. Higher-order aberrations: topo-graphy guided ablations and Contoura treatment

- c. Phoroides optimization of astigmatic vectors

E. Complications and treatments

- a. All corneal refractive surgeries: optical aberrations (spherical, higher-order aberrations), ectasia, over- and under- corrections

- i. Decentered ablations, central toxic keratopathy (CTK)

- ii. Infectious keratitis

- b. LASIK and PRK: comparison of complications including haze, scarring, recovery time, ectasia risk

- i. Diffuse lamellar keratitis (DLK)

- ii. Pressure-induced stromal keratitis (PISK)

- iii. Striae
- iv. Epithelial ingrowth

- c. SMILE
- d. Dry eye syndrome

F. Comparison of LASIK/PRK and SMILE

- a. Current data on outcomes
- b. Advantages and disadvantages

G. Brief overview of current research and developments in the near future

- a. CLEAR (corneal lenticule extraction for advanced refractive correction)

H. Brief overview of other intraocular and corneal refractive techniques

- a. ICL
- b. Cataract surgery
- c. Intacs
- d. Incisional corneal refractive surgery: LRI/AK