IOP in Corneal Refractive Surgery

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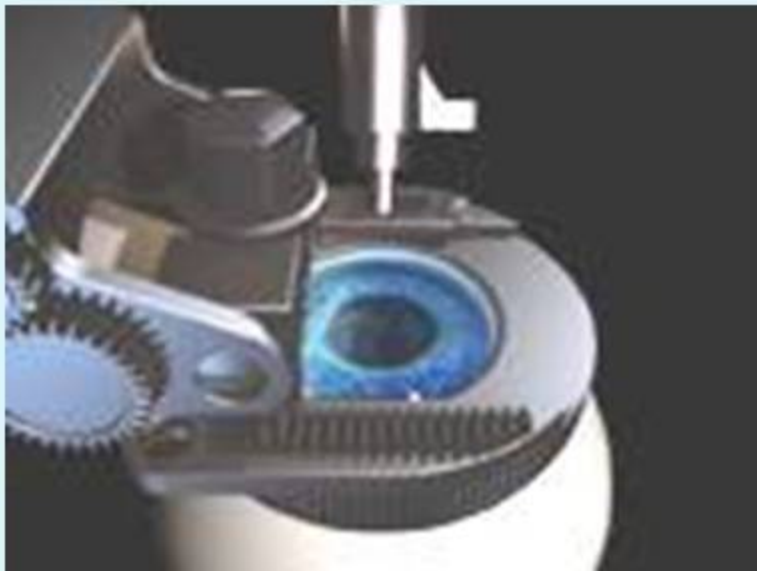
Preoperative

- High Risk Patients
  - Suction Ring
  - Steroid Induced IOP^{+++}
- Corneal thickness
- Antiglaucoma drugs



Intraoperative

- LASIK
  - IOP assessment during Suction
    - Barraquer
    - Pneumotonometer
    - Pupil
    - Finger
  - Vascular accidents

Postoperative

- Steroid-Induced IOP^{+++}
- IOP Measurement
- PISK

IOP Measurement

- **RK** - 0:7mmHg

  (Faucher et al., 1997)

- **PRK** - Myopia
  - 0.5:3 mmHg *(Chatterjee et al., 1997)*
  - 1.6 – (0.4X SE)

  - Hyperopia
    - <3D 0.5^{+} mmHg
    - > 3D 1.5^{+} mmHg
    - > 14 mmHg ⟶ ↓postop
    - < 14 mmHg ⟶ ↑postop

    (Munger et al., 2001)

IOP Measurement

- **LASIK**
  - 2.5:4.5mmHg
  - 0.3:0.5mmHg/D
  - 1 mmHg/30:40um
  - 1mmHg 1:5D;
    3 mmHg 6:10D;
    5.3 mmHg 11-15D

IOP Measurement

- Corneal Thickness ++++++
- Corneal Curvature
- Astigmatism-HOA
- Bowman's layer
- Central vs Peripheral

IOP Measurement

- Goldmann
- Pneumotonometer
- Air-Puff
- Tonopen

- Dynamic Observing Tonometry (DOT-DCT)

Kaufmann et al., Apr.2000-Sep.2003

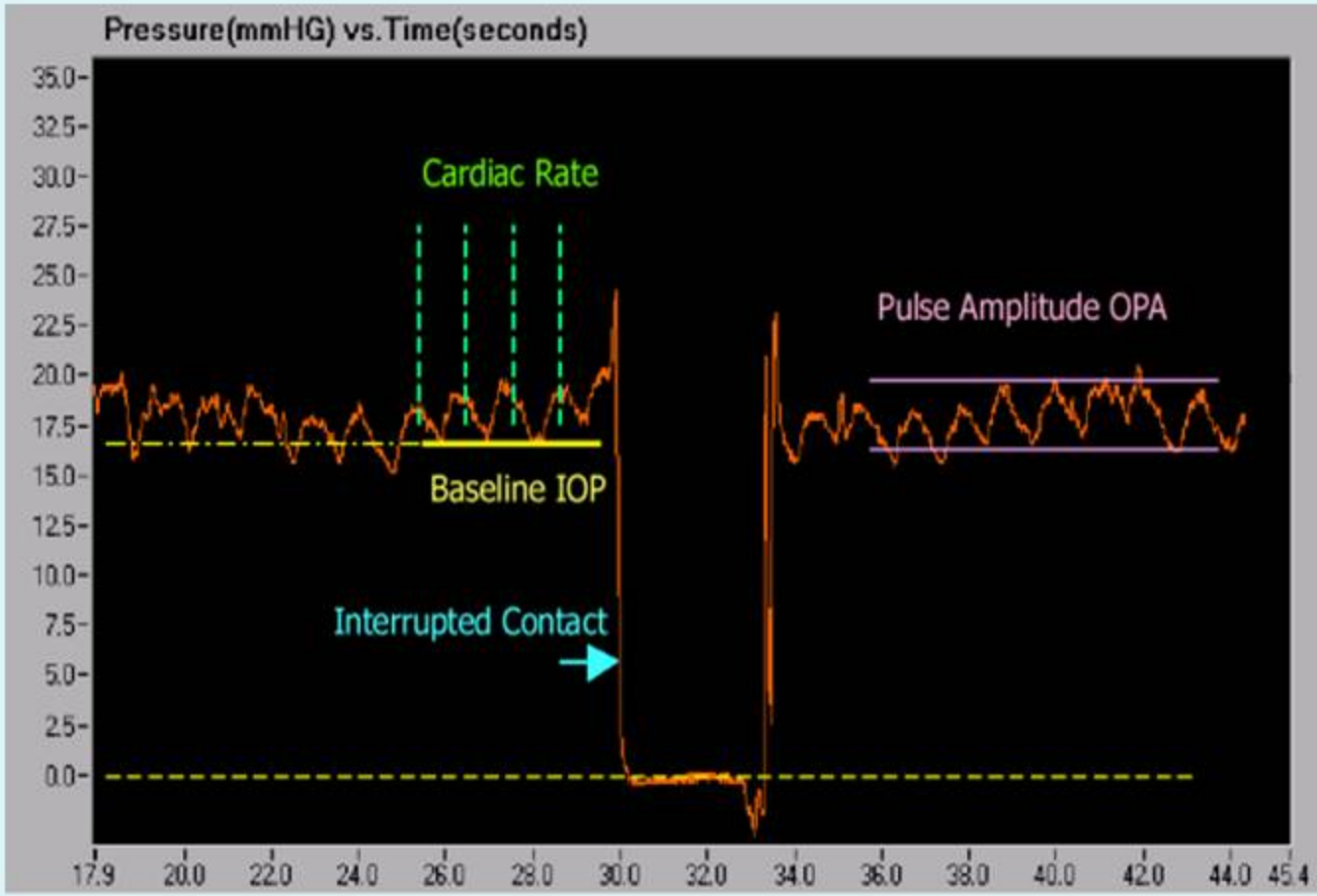
- Pascal
- ORA
- Corvis

Dynamic Observing Tonometry

SmartLens

ODC, Switzerland
Ziemer Ophthalmic Systems

- OD
- Gonio
- IOP
- OPA



Dynamic Observing Tonometry

SmartLens

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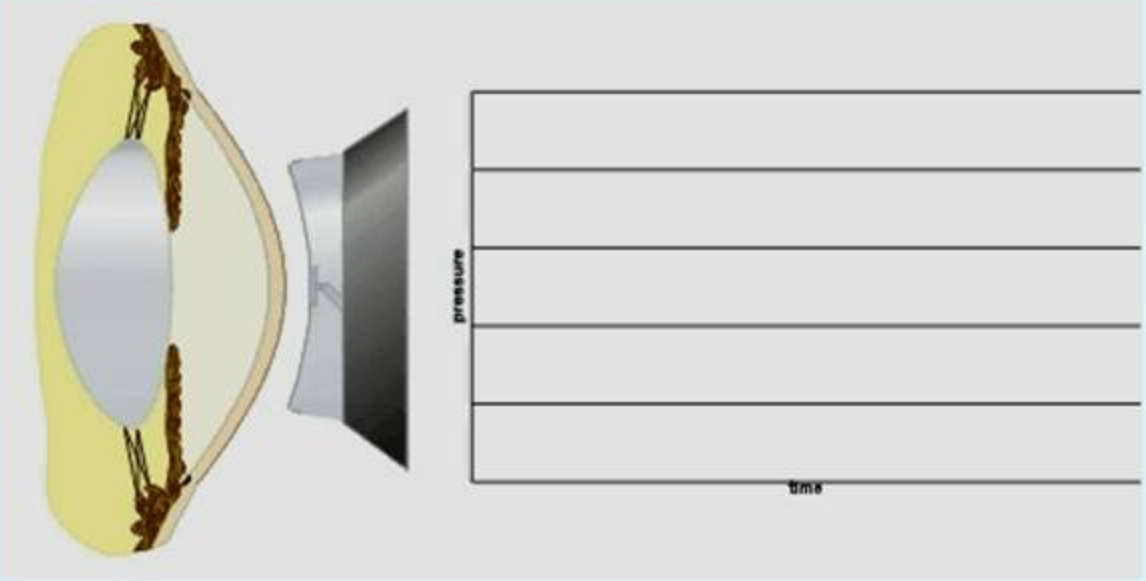
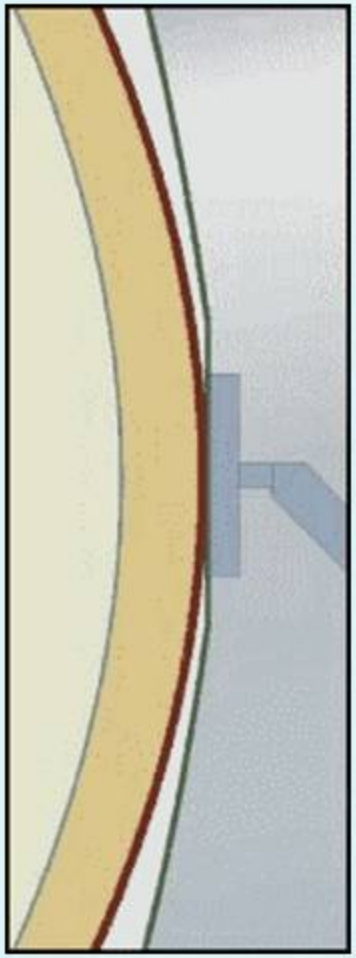




Dynamic Contour Tonometry

Pascal Lens *(Ziemer Ophthalmology)*

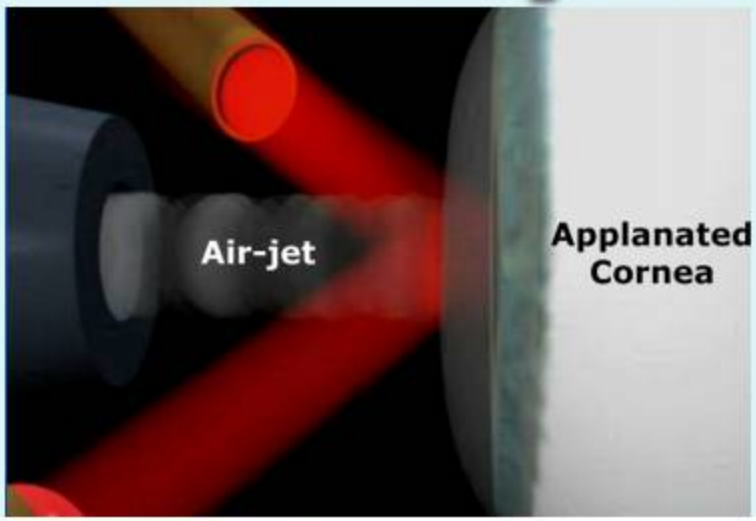
- ❑ Digital contact tonometer
- ❑ Slitlamp mounted
- ❑ Numeric output of IOP&OPA dynamically

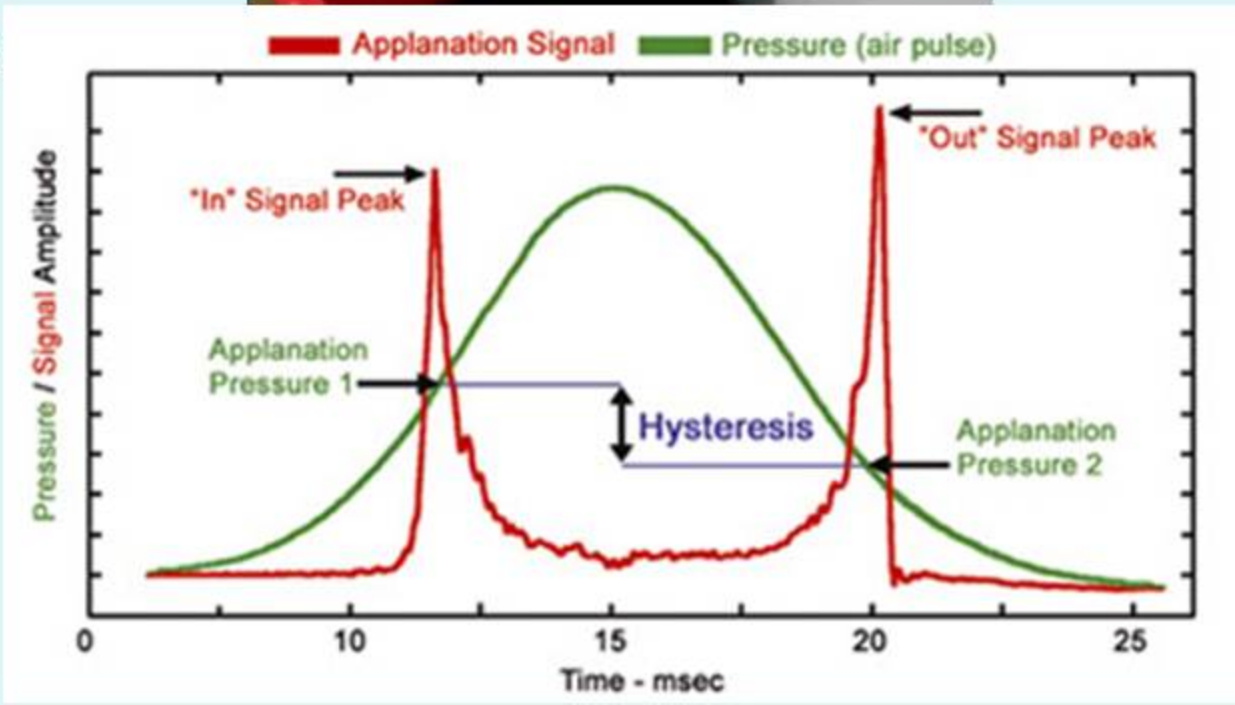
Ocular Response Analyzer (ORA)

Ocular Response Analyser

Reichert

- **CH**
  viscous damping in the cornea
- **CRF**
  rigidity of the cornea
- **IOPcc**
  less affected by corneal properties
- **IOPg**

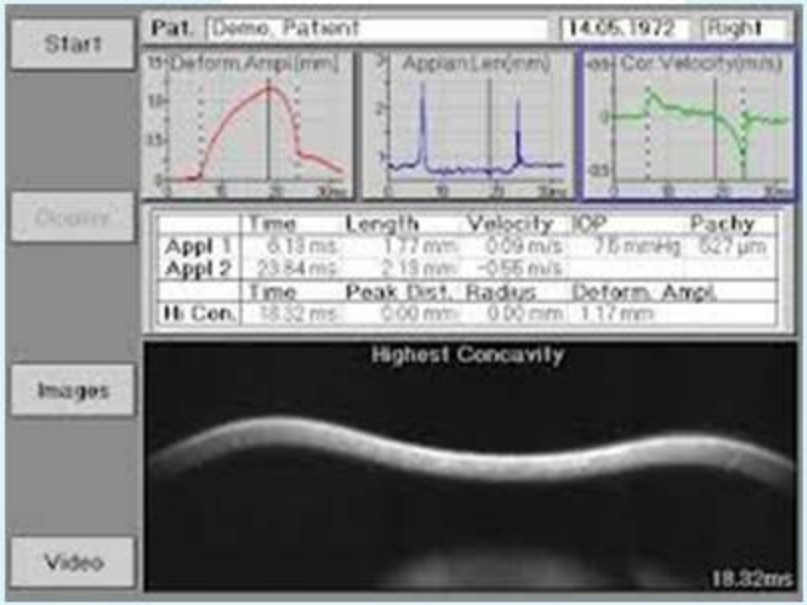




Corvis ST

Corneal Visualization Scheimpflug Technology - Oculus

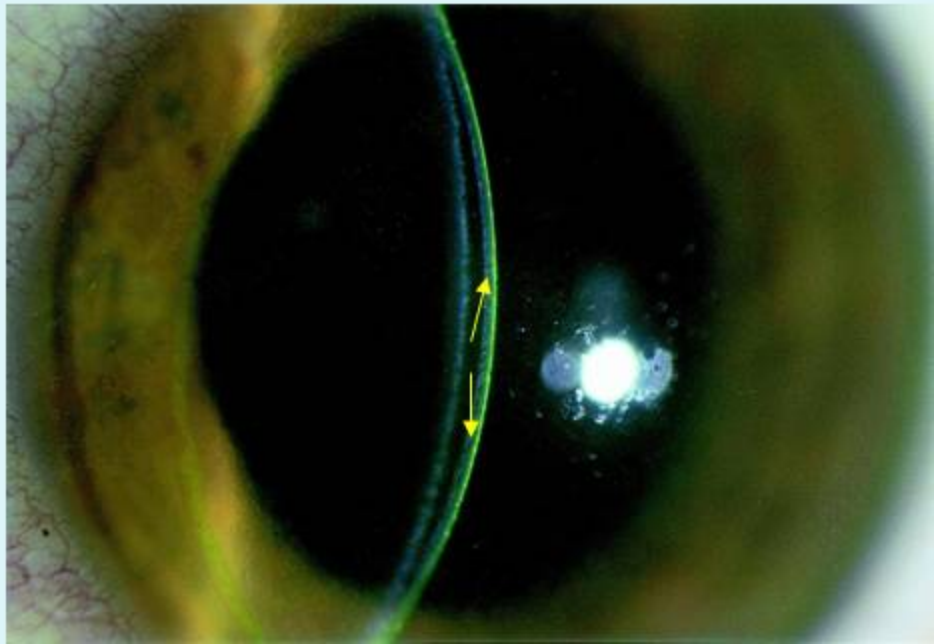
- Slow-motion video of the corneal deformation after air pulse
- Scheimpflug images of applanation moments & highest concavity
- Deformation amplitude
- IOP-measurement



PISK

Pressure Induced Stromal Keratitis

- DLK after LASIK
- ttt agressively with steroids
- Steroid-induced IOP^{+++}
- Interface fluid & Microcystic edema
- Falsely low IOP



- **Interface fluid associated with DLK**

  Lyle&Jin, 1999

- **Interface fluid after LASIK**

  Folga et al., 2001

- **Steroid-Induced Glaucoma after LASIK associated with Interface Fluid**

  Hamilton et al., 2002

- **PISK** *Belin et al., 2002*

- **Interface Fluid Pocket after LASIK**

  Dawson et al., 2003

THANK YOU