Contact Lens Parameters
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Objectives
- Basic Anatomy 5 min
- Contact Uses 5 min
- Contact Characteristics 5 min
- Patient Education
- Pre-Fitting Considerations
  - Patient Rx
  - Medications
  - Patient motivation
  - Patient hygiene
- Patient Compliance
- Complications

Test Question
- On what does a contact lens rest?

Big Question!
- What anatomical structures are critical to a successful contact lens fit?
Important to know that tear quality is a critical aspect for contact lens fitting success.

Review all structures of the eye to determine contact wear feasibility.

Why is pupil size important in RGP patients?

Transparent Organ (no blood vessels/avascular)
Primary function is refraction of light rays
Refractive power approx +45.00 D

Chronic blepharoconjunctivitis
Bad acne or rosacea
Larger Pterygium
Seventh Nerve Palsy (Bell’s Palsy)
Severe allergies
Severe dry eyes
Poor hygiene
Convenience

Medical Uses

Cosmetics

Sports

Low water contacts are 38%

High water content contacts are 55% and up

Visitints are for pts with high Rx’s to see the lens
When a patient interested in wearing contact lenses enters the office, no evaluation can be made without a thorough pre-fitting assessment of the feasibility of this person as a possible contact lens wearer. A thorough case history is necessary, as well as several testing procedures to evaluate the patient’s ocular health. Even if all of the refractive and ocular health testing results in a very suitable candidate, several questions remain to be answered: Is the patient very motivated for lens wear? Does this person appear to have good hygienic habits? What is the best contact lens for this patient? This section will examine the pre-fitting evaluation of a patient, step by step.

**Pre-fitting Evaluation**

- Chief Complaint...helpful in determining wear-ability
- History of present illness
- Medical/ocular history (Dx)
- Family History (FHx)
- Work History
- Social history (age-appropriate)
- Alcohol? Smoke? Occupation? Illicit drugs?

**Case History**

- Tested during the CPOT practical exam
- Components
  - Medical and ocular history
    - Patient
    - Family
  - Occupation and avocation
- Confidentiality

HIPAA...how long are records maintained?

**SIGN and SYMPTOMS**

SIGN - an indication of a particular disorder that is observed by a clinician but is not necessarily apparent to the patient

SYMPTOM - an indication of a disease or disorder noticed by the patient
1. Lid Considerations

- The palpebral aperture, or the separation of the lid margins between blinks with normal relaxed distance gaze, can be measured with a millimeter rule or PD stick. The ruler is placed vertically near the patient’s eye, with fixation over the examiner’s shoulder at a distant object.

- The average fissure size is 9 to 10 mm.

- The Visible Iris Diameter (VID) is the distance from the nasal limbus to the temporal limbus and constitutes the lateral diameter of the iris. With the patient fixating straight ahead, a millimeter rule is angled into the iris. A normal reading is between 10.5 and 12.5 mm.

2. Blink Rate

- Determining the rate of blinking can be accomplished quite easily by counting the number of blinks made by the patient in a minute. The procedure should be performed without the patient’s knowledge, as the results could be affected. Patients should be aware that blink rate prior to fitting can be used as a baseline value with which to compare values obtained after lens wear has begun. A blink rate of 15 times per minute is considered normal.

- How many times a day do we blink?

3. Corneal Sensitivity

- Sensitivity of the cornea may be quickly checked by gently holding the lids apart and touching a wisp of wet sterile cotton wool or swab onto the cornea from one side, so that its approach is not seen by the patient. *Be careful with diabetic patients!

4. Tear Film Evaluation

- The tear film should remain uniform over the corneal surface for a minimum of 15 to 20 seconds following a normal blink. If it quickly breaks up and becomes discontinuous, the outer layer of the cornea will become drier and susceptible to injury. A short break-up time (BUT) indicates a problem with the mucoid layer of the tear film.

- Tear film quality is best observed by applying fluorescein above or below the cornea and immediately observing the cornea with the slit lamp using the cobalt blue light and the largest possible circular aperture to illuminate the entire cornea.

- If the break-up time is less than 10 seconds, treatment is indicated.

- A thorough corneal evaluation is needed to determine whether a patient is a viable contact lens candidate. After the standard illumination examination, the corneas should be stained with fluorescein. Fluorescein sodium is used in fluorescein-impregnated strips and stains dry or irritated areas of the cornea, which show up as bright areas of green with the cobalt blue filter of the slit lamp is used, since the damaged cells will absorb the fluorescein.
Lids: Both the upper and the lower lids should be evaluated as to their appearance. Previous contact lens wearers may have raised areas on the under side of the lids called papillae; these are commonly caused by irritation from the lens edge, reactions to lens surface coating, or an allergic reaction to the solution regimen. Papillae can also be present prior to lens wear. Therefore, the upper lid should be everted and evaluated. A satin (S) appearance of the lid conjunctiva is present when it is devoid of papillae and has a smooth surface. Uniform cobblestone appearance (UGA) indicates several papillae are present per millimeter of conjunctiva. Usually they are congregated near the tarsal fold and become larger at the nasal and lateral junctions.

**General Health History**

- **Rule out specific health problems**
- **Current health status**
  - Diabetes
  - High blood pressure
  - Heart disease
  - Other...allergies and meds

*Why is a patient’s general health history important?*

**Dispensing Contacts**

- **Fitting...if you get the chance, have pt practice technique**
- **Check VA’s before and after dispensing**
- **Care and Handling**
  - Use's and Don't's of contact lens wear
  - Hand washing
  - Soaps
  - Towels
  - Activities
  - Make-up
  - Medications
  - Fumes and vapors...high school kid
  - Patient appearance
  - Patient motivation
  - Work Conditions
  - Cleaning System...do not keep solutions opened for more than 90 days
  - Contact lens case...clean daily, let air dry
- **Follow-up Care...emphasize on the value of scheduled follow-ups**
- **Disappointment Instructions**

**Medications Matter**

- Name
- Amount taken
- Frequency
- Prescribed for
- Prescribed by
- Illegal drugs too!

*Why is illegal drug use important?*

**The New Experience**

- Your eyes may feel funny
- You are more aware of one lens
- Your vision may seem different than with glasses
- You may have better vision in one eye
- You may have trouble handling your lens at first
- It may take longer at first

- **Pre-fit evaluation**
  - Palpebral fissure size...prevents glare issues
  - Visual Iris Diameter-measure limbus to limbus
  - Break up time- BUT- Tear Quality...15-20 secs
  - Schirmer Tear test- Tear Quantity...
  - Keratometry, Topography, Refraction

**Contact Lenses**
Always consider the lacrimal tear layer, aka the lacrimal tear lens when fitting gas permeable lenses.

What is a good tear BUT? What is the minimal tear BUT?

Overall Diameter (OAD)
Optical Zone (OZ)
Secondary Curve (SC)
Peripheral Curve (PC)
Secondary Curve Width (SCW)
Peripheral Curve Width (PCW)

2PCW + 2SCW + OZ = OAD

Eye RX BC Dia Brand Remarks
OD -2.75 - 1.00 x 030 8.7 14.4 AV Toric
OS: -3.00 - 2.00 x 070 8.9 14.0 Ciba Toric

What is the minimal information needed to order contacts?
What is a prism ballast used for?
Amber—tracking fast moving balls (baseball, soccer, tennis, football)
Grey-green—decrease sun glare (golf, running)

Safety First!
- Wash your hands!
- Procure all supplies
- Procedure must be safe
- Explain procedure
- Explain do's and don'ts
- Practical exams automatic failure for contact lens station

Care and Handling Techniques
- Lens Care Systems
  - Clean
  - Rinse
  - Disinfect & Store
  - Protein Removal

Why is it important to keep up with current trends?

2010 Article
- CDC study suggests most contact lens solutions may not kill acanthamoeba.
- In the Los Angeles Times (7/22) Booster Shots blog, Shara Yurkiewicz wrote, "Most contact lens solutions do not kill the type of amoeba that causes severe eye infections," Acanthamoeba, "according to researchers at the Centers for Disease Control and Prevention." Investigators from examined three species of amoeba that frequently cause the infection. They added solutions containing dormant, inactive forms (cysts) from each of these species to 11 different brands of contact lens solutions. Next, "the cysts were soaked in lens solution for between four to six hours (depending on the manufacturer's soaking time instructions) or 24 hours." The researchers then "watched for two weeks to see which cyst solutions resulted in the growth of active, disease-causing amoeba. Notably, out of 11 solutions tested, the only ones that disinfected against the bugs were those that contained hydrogen peroxide."
**Insertion and Removal Techniques**

- **Soft**
  - Patient comfort
  - Adaptability ease
  - Fits under both lids
- **RGP**
  - Adaptability difficulties
  - Small size
  - Use gravity
  - Best optics

**Progressive Evaluations**

- History
- Visual Acuity
- Over-refraction
- Slit Lamp examination
- Follow-up care

**Special Lens Designs**

- Bifocal
- Toric
  - Front
  - Back
  - Bitoric
- X-Chrome-color vision
- Rose K-keratoconus
- Diabetic Lens (not yet approved)
- Orthokeratology
  - CRT-Corneal Refractive Therapy

**Contact Lens Complications**

- GPC-Giant Papillary Conjunctivitis
  - Contact Lens Induced Papillary Conjunctivitis
- Keratitis-inflammation of the cornea
- Abrasion-rubbing off of the superficial layer
- Acanthamoeba
- Pseudomonas

Which part of the conjunctiva is infected?

**Success =**

1. Great Patient Education
2. Optimum vision
3. Optimum comfort
4. Patient Compliance
5. Healthy eyes
6. Happy customers

**Questions**

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