These Glasses Make Me Seasick

Gary S. Schwartz, MD, MHA
Associated Eye Care
Stillwater, Minnesota
Not all patients are going to like their new glasses.
“You haven’t given your new glasses a chance unless you’ve worn them all day, every day, for three weeks.”
Let sleeping dogs lie.
The Problem Patients

- Young presbyopes (first bifocals).
- Older presbyopes (first trifocals).
- Hyperopes.
- People with the same glasses for many years.
- People who want new glasses, but also want to keep their old ones.
Figure out the problem

- Refractive
- Prismatic
- Presbyopic
- Lens materials
- Lens treatments
- Frames
All you really need to do

• Listen to your patient.
• Look at your patient.
• Don’t be overwhelmed if they come at you with 5-6 pairs of glasses. Take them one at a time and write down the good and bad about each one.
• Do a good refraction (distance and near).
• Remember Prentice’s rule and lens effectivity.
The “Glasses Recheck” Form

- **Optician section**
  - Prescriptions from old and new glasses
  - Base curves, optical centers, bifocal heights
- **COMT, COT, COA section**
  - Assessment of symptoms, history
  - New refraction
- **Doctor section**
  - More history, final assessment and plan
Refractive Problems
Refractive problems

- **Problem:** The glasses were ground to the wrong prescription.

- **Discovery:** This problem should be discovered by the optician. Tech and doctor shouldn’t even have to get involved.

- **Solution:** Re-grind to the correct prescription.
Refractive problems

- **Problem:** The incorrect prescription was given to the patient.
- **Discovery:** Comparing the prior chart note to the prescription card reveals a discrepancy.
- **Solution:** Give correct prescription.
Refractive problems

- **Problem:** Anisometropia.
- **Discovery:** Careful history taking reveals that symptoms are binocular. Patients often complain of diplopia with both eyes open. Refraction reveals >2-3 diopter difference between eyes.
- **Solution:** May need to undercorrect one eye. Consider contact lenses. Address any pathology (cataract, diabetes, pregnancy, ...).
Refractive problems

- **Problem:** Recent change in refractive error.
- **Discovery:** Change in refraction from previous examination to current one.
- **Solution:** Address any pathology (chalazion, cataract, diabetes, pregnancy, etc.). Change glasses accordingly.
Refractive problems

• **Problem:** Incorrect vertex distance.

• **Discovery:** The refraction is correct, but, especially in higher myopes (> -6) and hyperopes (> +5), vertex distance of glasses is different than vertex distance of phoropter or trial frames.

• **Solution:** Either adjust glasses or re-write prescription being sure to write vertex distance of trial lenses right on the prescription card.
Lens Effectivity

• \(D_2 = D_1 + (s)(D_1)^2\)
• \(D_1 = -8.00\) diopters
• \(s = -0.007\) meters
  • Wearing glasses with vertex distance of 20mm
  • Trial frames had vertex distance of 13mm
• \(D_2 = -8.00 + (-0.007)(-8.00)^2 = -8.50\) diopters
  • Needs to wear -8.50 lenses at 20mm
Refractive problems

- **Problem:** The patient is over-minused.
- **Discovery:** Patients usually complain of difficulty with near-tasks. Eyes tire after reading for a little while. Manifest refraction may be correct, but cycloplegic refraction reveals less myopia.
- **Solution:** If MR and CR are close, prescribe CR. If MR and CR are very different, bring patient back and push plus.
Over-minused

- Patient feels distance vision is good, but tires while performing near tasks.
- Usually affects patients in teens and 20’s.
- MR: -3.25 sph OU.
- CR: -2.00 sph OU.
- Push plus: -2.50 sph OU.
- Prescribe -2.50 sph OU.
Refractive problems

- **Problem:** Latent hyperopia.
- **Discovery:** Presents similar to over-minused patient. Difficulty with near tasks. Usually affects patients in 20’s - 30’s.
- **Solution:** Perform CR. If MR and CR are very different, bring patient back to push plus, otherwise give CR.
Latent hyperopia

• Patient feels distance vision is good, but tires while performing near tasks.
• Usually affects patients in 20’s and 30’s.
• MR: +2.00 sph OU.
• CR: +3.75 sph OU.
• Push plus: +3.00 sph OU.
• Prescribe +3.00 sph OU.
Prismatic Problems
Prismatic problems

• **Problem:** Image jump

• **Discovery:** Patient notices images seem to “jump” as line of sight crosses the top of bifocal segment.

• **Solution:** The people most bothered by image jump are hyperopes in round top bifocals. Switching to progressives or flat-tops will usually alleviate the problem.
Image jump

Transition area between base-up lens and base-down reading add.

Plus lens (base up)

Round-top bifocal (base down)
Prismatic problems

• **Problem:** Object displacement

• **Discovery:** When a patient looks through the bottom of bifocals, notices that image is displaced. Reaches in the wrong place for things.

• **Solution:** Object displacement tends to affect hyperopes in flat top or myopes in round top bifocals. Change lenses accordingly (or switch to progressives).
Object Displacement

- Plus lens (base up)
- Flat-top bifocal (base up)
- Minus lens (base down)
- Round-top bifocal (base down)
Prismatic problems

- **Problem:** Induced prism
- **Discovery:** Patient has eye strain or diplopia when looking through bifocal segment. Also found to have anisometropia.
- **Solution:** Discomfort caused by different amounts of induced prism in two eyes as patient looks through periphery of lens. Traditionally treated with “slab-off” more minus (or less plus) lens.
Induced prism

-4.00 sph OD, +1.00 sph OS
Reading position is 10mm below optical centers
Prentice’s rule: PD = (dist in cm)(diopters)
  - OD: PD = (1 cm)(-4.00D) = 4^Δ base down
  - OS: PD = (1 cm)(+1.00D) = 1^Δ base up
Total induced prism = 5^Δ BD OD (or 5^Δ BU OS)
Treat by slabbing off the OD lens
Slab off
Prismatic problems

- **Problem:** Improper optical centers
- **Discovery:** Patient notes vague discomfort, and will occasionally complain of diplopia. Optical centers do not match up with patient’s inter-pupillary distance.
- **Solution:** Re-grind lenses with proper optical centers.
Prismatic problems

- **Problem:** Convergence insufficiency
- **Discovery:** Patients complain that they tire easily while performing near tasks. Usually early 20’s. MR and CR are correct, can read J1 in the office. Usually esophoric at near. Convergence amplitudes are decreased, especially at near.
- **Solution:** Pencil push-ups. May need base-in prism in reading glasses.
Presbyopic Problems
Presbyopic problems

- **Problem**: Bifocal segment is too low.
- **Discovery**: Patient in “line” bifocal tires after reading. Examination reveals line is positioned too low (should be at lower limbus). When patient displays reading position, classic “chin-up-eyes-down” position is noted.
- **Solution**: Can sometimes get away with simple frame adjustment (nose pads). Often will need to re-grind lenses.
Presbyopic problems

• Problem: Progressive lenses positioned incorrectly.

• Discovery: Patient may note distortion, eye strain, “with” or “against”, or feel he needs to lift glasses up to read. Must use plastic guides to determine if progressives properly positioned.

• Solution: Adjust frames or re-grind lenses. May need to change to “line” bi- or trifocals.
Presbyopic problems

• **Problem:** Incorrect bifocal type

• **Discovery:** Patient cannot get used to new glasses. Symptoms may be at near, far, or both. Key to helping this patient relies on careful history taking -- What actually is bothering the patient the most?

• **Solution:** Put patient in type of bifocal he will tolerate. Better results if time is spent educating.
Presbyopic problems

- **Problem:** Bifocal is too weak.
- **Discovery:** “Line” bifocal patients will tell you they’re holding reading material uncomfortably far away. Progressive bifocal patients will tell you they’re lifting their glasses to read. Both comment they need a lot of light to read comfortably.
- **Solution:** Re-grind lenses with proper near power.
Presbyopic problems

- **Problem:** Accommodative insufficiency
- **Discovery:** A young patient complains of difficulty with near tasks. The near point of accommodation is remote (>15-20cm), and CR shows no latent hyperopia.
- **Solution:** Bifocals. Medical workup to rule out metabolic diseases (diabetes).
Presbyopic problems

- **Problem:** The patients who don’t understand their presbyopia.
- **Discovery:** Patients complain of difficulty with near or intermediate tasks but measure well with present glasses. Often complain that they, “are becoming more dependent on their bifocals.”
- **Solution:** A little education goes a long way.
Primary Glasses Problems
Primary Glasses Problems

• **Problem:** Discomfort secondary to change in lens materials.

• **Discovery:** Complains of “difficulty getting used to new glasses -- they make me seasick!” Examination of new and old glasses shows difference in lens materials, base curve, …

• **Solution:** All day, every day for 3 weeks. If can’t tolerate, re-grind lenses of same material as old.
Primary Glasses Problems

- **Problem:** Problems with anti-reflective, scratch-resistant, photo-gray, tints, ...
- **Discovery:** Patient says things like, “I can never get these clean!”, or, “they’re always too dark or too light.”
- **Solution:** Patient education. If this fails, re-grind lenses without the coatings that the patient doesn’t like.
Primary Glasses Problems

- **Problem**: Frames are too big.
- **Discovery**: Patients will complain of edge thickness, and peripheral lens aberrations.
- **Solution**: Encourage patient to try a smaller frame.
Primary Glasses Problems

• **Problem:** Frames are too small.

• **Discovery:** Sometimes patients will be bothered if they see their frames. Most of the patients who complain of small frames are presbyopes in progressive lenses. If the frame is too small, may cut off the strongest reading part of the bifocal area.

• **Solution:** Can either pick a larger frame, or use the same frame with a stronger progressive power.
Progressive lenses v. frame size

<table>
<thead>
<tr>
<th></th>
<th>0.0</th>
<th>0.50</th>
<th>1.00</th>
<th>1.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lens</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>blank</td>
<td>+1.50 diopter</td>
<td>reading add</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When a small lens is cut, the +1.50 part of the add is lost.

For a +1.50 add to fit in this frame, a +2.00 blank is used.
Let’s see what you’ve learned
31 year old man

- cc: Difficulty reading with glasses on or off
- PMHx: none
- POHx: glasses for 5 years -- wears them all the time.
- meds: none
31 year old man

- **PG:**
  - +1.00 sph  20/20, J3 at 20”
  - +1.00 sph  20/20, J3 at 20”
- **NPA (cc):** 25 cm
- **NPA (sc):** 33 cm
- **Convergence amplitudes normal**
- **MR:** +1.00 sph OU
31 year old man

- **MR:**
  - +1.00 sph 20/20, J3 at 20”
  - +1.00 sph 20/20, J3 at 20”

- **CR:**
  - +5.00 sph 20/20
  - +5.00 sph 20/20
31 year old man

- Push Plus:
  - +3.25 sph 20/20, J1+ at 14”
  - +3.25 sph 20/20, J1+ at 14”
25 year old woman

- cc: Feels vision is blurry in her right eye.
- PMHx: none
- POHx: Chalazion right upper lid -- I+D’d 3 weeks before.
- meds: none
25 year old woman

- **Va (cc):** 20/40, 20/15
- **PG:**
  - -2.00 sph
  - -2.00 sph
- **MR:**
  - -3.00 + 1.50 x 90  20/25-
  - -2.00 sph  20/15
50 year old man

- cc: Having difficulty seeing computer screen. Got new glasses 1 month ago, but sees computer better with old glasses. MR= +1.00 sph
- Old glasses: Line bifocals
  - +0.50 sph  +1.50 reading add  20/25, J4 at 60cm OU
- New glasses: Line bifocals
  - +1.00 sph  +2.25 reading add  20/20, J1 at 40cm OU
50 year old man

• Old glasses: Distance +0.50, Near +2.00
• New glasses: Distance +0.75, Near +3.25
• Solution: Cut back on add or give trifocals or computer glasses
24 year old woman

- **cc:** Recent decreased vision OU
- **PMHx:** Healthy
- **POHx:** Has worn glasses since age 12
- **Meds:** none
24 year old woman

- **PG:** (3 years old):
  - $-1.50 + 1.75 \times 90 \ (20/60)$
  - $-1.50 + 1.75 \times 90 \ (20/60)$

- **MR:**
  - $-2.50 + 4.25 \times 100 \ (20/20)$
  - $-2.00 + 3.75 \times 80 \ (20/20)$
24 year old woman

- This patient was not given a new Rx for glasses. Rather she was referred to her primary medical doctor and was found to be pregnant. Other causes of this kind of refractive change include diabetes mellitus and oral steroid use.
These Glasses Make Me Seasick

Gary S. Schwartz, MD, MHA
Associated Eye Care
Stillwater, Minnesota