‘Complicated’ Refractive Cases and Prescribing Considerations

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Disclosures: NONE at this time.

Suggested Desk Reference: Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders
Fourth Edition
Mitchell Scheiman, Bruce Wick
Lippincott, Williams & Wilkins, 2008

Objectives

- Review examination sequences to evaluate patient complaints which are often ambiguous
- Describe refractive management considerations for binocular dysfunctions
- Highlight best refractive management for addressing most common vergence and accommodative disorders

General Guidelines

Some refractive guidelines can be applied to most patients but the art of prescribing lenses is in knowing when to look beyond these refractive conditions and evaluate the state of visual efficiency.

- Visual Acuity ≠ Efficiency and Comfort
- Prescribing Considerations
- Age
- Accommodative Status
- Binocular Function
- Visual Demands
- Previous Spectacle Rx
Case Discussions

Case 1
24 y.o. WM presents with a complaint of BLUR
Difficulty reading road signs while driving
Daytime = Night
Mild
Gradual change
Near vision is “good”
LEE and Rx: 2 years ago
POHx/PMHx non-contributory

Patient Data
Habitual Rx
   OD:  -1.50 DS
   OS:  -1.25 DS
Visual Acuity
   Dist: 20/20-2 OD, OS
   Near: 20/15 OD, OS
Cover Test
   Dist: ortho
   Near: ortho
Retinoscopy
   -1.75-0.25X135
   -1.50-0.25X050

Phoria
   Dist: ortho
   Near: 2EP’

Near Assessment
Vergence Ranges
   BI: X/18/14
   BO: 24/30/18
AMP: 10D OD, OS
MEM:  +0.50 OD, OS
NRA:  +2.25 D
PRA:  -2.50 D

Prescribing Considerations
Age
Accommodative Status
Binocular Status
Complaints and Visual Demands
Occupation: delivery truck driver
Hobbies: waterskiing & fishing

Assessment

Final Rx
Additional Considerations?
Sunglasses?
Contact Lenses?
Case 2
24 y.o. BF presents with
a complaint of BLUR
Distance, only when not wearing glasses
Moderate
Relief with habitual spec wear
Near vision is “good” with and without glasses
LEE and Rx:  2 years ago
POHx/PMHx non-contributory

Patient Refractive Data:  same as Case 1

Cover Test                     Phoria
   Dist:  ortho               Dist:  ortho
   Near:  ortho               Near:  2EP’

Near Assessment
Vergence Ranges
   BI:   X/18/14
   BO:  24/30/18
AMP:  10D OD, OS
MEM:  +0.50 OD, OS
NRA:  +2.25 D
PRA:  -2.50 D

Prescribing Considerations
Occupation:  kindergarten teacher
Hobbies:  gardening

Assessment
Final Rx

Case 3
24 y.o. HF presents with
a complaint of BLUR
Distance >> Near
Mild
Worse at the end of the day
Near vision is just “all right”
LEE and Rx:  2 years ago
POHx/PMHx:  (+) HA
frontal/temporal 3-4 times per week; dull, pounding, Tylenol with some relief
**Patient Refractive Data:** unchanged from previous cases

Cover Test
- Dist: ortho
- Near: 4 EP'

Phoria through MR
- Dist: ortho
- Near: 6 EP'

Phoria thru +1.00 Add
10 XP'

**Near Assessment**

Vergence Ranges
- BI: X/08/05
- BO: 24/30/18

AMP: 10D OD, OS
MEM: +1.25 OD, OS

NRA: +2.50 D
PRA: -1.25 D

Occupation: 911 dispatcher
Hobbies: reading non-fiction

**Assessment**

**Final Rx**

**Case 4**
24 y.o. BM presents with a complaint of BLUR
Distance >> Near
Mild
Worse at the end of the day
Near vision is “OKAY”
LEE and Rx: 2 years ago
POHx/PMHx: (+) eyestrain
At near, with associated fatigue; (-) diplopia, but loses “focus” frequently when working

**Patient Refractive Data:** unchanged from previous cases

Cover Test
- Dist: ortho
- Near: 7 XP’

Phoria through MR
- Dist: ortho
- Near: 7 XP’

Phoria thru +1.00 Add
10 XP’
Near Assessment

Vergence Ranges

BI:   X/18/15
BO:  04/08/06
AMP:  10D OD, OS
MEM:  +0.25 OD, OS
NRA:  +1.50 D

Additional Tests

NPC

9cm/13cm
11cm/15cm
11cm/15cm

NPC thru +1.00
15cm/17cm X 3

AC Facility Testing

OD:  10 cpm
OS:  10 cpm
OU:  4 cpm

(+ ) more difficult

Assessment

Final Rx

Additional Considerations

Case 5
24 y.o. WM presents with
a complaint of BLUR
Distance >> Near
Mild
Worse at the end of the day
Near vision is “OKAY”
LEE and Rx:  2 years ago
POHx/PMHx:  (+) eyestrain
At near, with associated fatigue;  (-) diplopia, but loses “focus” frequently when working

Patient Refractive Data:  unchanged from previous cases

Cover Test

Dist:  ortho
Near:  7 XP’

Phoria through MR

Dist:  ortho
Near:  7 XP’

Phoria thru +1.00 Add
10 XP’
Near Assessment
Vergence Ranges
   BI:   X/18/15  MEM:  +1.00 OD, OS
   BO:  4/08/05  NRA:  +1.50 D
AMP:  6D OD, OS  PRA:  -2.00 D

Additional Tests
NPC
   9cm/13cm
   11cm/15cm
   11cm/15cm
   NPC thru +1.00
   5cm/7cm X 3
AC Facility Testing
   OD:  3 cpm
   OS:  4 cpm
   OU:  4 cpm
   (-) more difficult
   BO (+1.00 add)
   15/21/13

Occupation: accountant
Hobbies: lead guitarist for “the Taxmen”

Assessment
Final Rx
Additional Considerations?

Clinical Pearls:
It is difficult to improve on asymptomatic states
A lens change of less than 0.50 D seldom eliminates a complaint..but can create one!
Accommodative and Binocular efficiency is essential component of visual health
Optometric expertise and contribution to visual readiness.
Putting it all together
Nearpoint Review: 32 year old BM with complaint of BLUR
distance>near; esp. when driving home from work
onset: 3 months ago
frequency: everyday
associated symptoms: occassional headache; frontal, dull, pounding
Tylenol or rest for relief

Secondary complaint(s): asthenopia
Occupation: Computer Programmer
Hobbies: video games & reading science fiction

Examination Data
Visual Acuity
Distance (sc) 20/40 OD Near (sc) 20/20 OD
20/40 OS 20/20 OS
20/40 OU 20/20 OU

Cover Test
Distance 3 XP 40 cm: 5 XP

Refraction: OD: -0.75-0.50X180 20/20
OS: -0.75-0.50X176 20/20

Phoria (cc)
Distance: 2XP 40 cm: 6 XP
thru +1.00: 10XP

Vergences
Distance: BI: X/18/14 40 cm: BI: X/16/13
BO: X/10/02 BO: X/04/02

FCC: plano OD, OS
NRA: ??? PRA: -5.00 D
Amplitude of Accommodation: 7.5 D OD, OS

Predict the findings of NPC?
Accommodative facility testing will be:
Clinical Profiles Discussed During Case Review

Convergence Excess
Symptoms/Subjective Data
- asthenopia
- occasional, depending on environmental demand
- inability to perform near tasks for an extended periods
- blur (occasional or constant)
- Distance at the end of the day
- Near
- close working distance
- headache (frontal)
- print running together when reading
- Poor retention when reading at normal speed
- decreased reading speed with good comprehension
- occasional diplopia possible

Diagnostic Findings
- low to moderate EP @ distance
- higher EP’ (will increase on repeated testing)
- normal NPC
- high accommodative lag
- high AC/A ratio
- reduced accommodative amp?
- reduced BI range at near
- may also be reduced at near
- low PRA
- diplopia may be reported endpoint
- reduced binocular facility
- minus more difficult than plus
- may show intermittent suppression at near
- STEREOPSIS may be reduced

Convergence Insufficiency
Symptoms/Subjective Data
- asthenopia associated with near work
- words running together when reading
- Losing place during reading
- intermittent blur during near work
- may prefer a close working distance
• headache (frontal) associated with near work
• possible intermittent diplopia at near

Diagnostic Findings
• ortho to low XP @ distance
• higher XP’ or IXT @near
• reduced NPC (accommodative target)
• normal lag
• low AC/A ratio
• normal accommodative amp
• low BO range at near
• break and/or recovery
• low NRA
• reduced binocular facility
• plus more difficult
• may show intermittent suppression at near

Accommodative Insufficiency
Symptoms/Subjective Data
• asthenopia
• distance and/or near blur
• occassional or constant
• tearing, burning followed by near work
• headache, neck tension, general fatigue
• avoidance of near work

Diagnostic Findings
• low amplitude of accommodation
• latent or uncorrected hyperopia
• lower PRA higher NRA
• poor facility
• unable to clear minus lenses
• good plus acceptance
• increased plus acceptance

Questions?
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