Maximizing Surgery Co-Management

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May 6, 2014

Number One Goal – Happy Patients!

Refractive Surgery from Start to Finish
- Your patient referral
  - Submit on-line or Fax to 303-740-8344
  - This gives you the opportunity to list your recommendations and current clinical information.
  - Ex. distance OU
  - mono
  - target power for mono
  - Preferred surgeon

Refractive Surgery Consultation
- We provide a very thorough screening for all refractive surgery patients.
- Testing elements of the consultation
  - Wavescan
  - Orbscan
  - Manual pachemetry
  - Pupils
  - Refraction
  - Dry eye testing
  - Biomicroscopy

Refractive Surgery Consultation
- Doctor’s Consultation
  - Discussion regarding all components of testing
  - Topography—talk about individual characteristics of each patient’s top’s
  - Anterior float symmetry vs Asymmetry, posterior float, thickness maps
  - Pach’s—Calculations of residual bed
  - Dry eye discussed at length, especially if Schirmer’s score is low and what to expect for pre and post operative dry eye management
  - Ex. plugs, Restasis, etc, Fish Oil, artificial tears
  - Discussion regarding stability of refractive error and the probability of future enhancements.
  - Discussion regarding presbyopia, mono vision with demonstration of full correction at distance or mono vision.
  - Pupil size and risks of halos/glare at night and the benefits of Custom wavefront technology
  - Refractive surgery recommendation:
    - LASIK, PK, IOI, CL

Refractive Surgery Consultation
- Discussion of risks, benefits and possible complications of surgery.
  - Infection
  - Inflammation
  - Dry Eye
  - Over/Under correction
  - Enhancements
  - Corneal Scarring
  - Epithelial cell ingrowth
  - Elevated IOP due to steroid drops
  - Slipped flap
Refractive Surgery Consultation

- Most important part of the consultation:
  - **The surgical recommendation**
  - This allows the patient to prepare in advance for their surgical treatment and recovery.
  - This is particularly important for PRK patients. Longer visual recovery requires additional time off work, more help with child care and needing a driver for at least the first two appointments.
  - It is much more difficult for a patient to arrive on surgery day expecting LASIK and get switched to PRK.
  - A surgery SURPRISE can be AVOIDED if they come for the consultation prior to surgery day.

Surgical Treatment Decision

- Corneal thickness compared to refractive error
  - Highest refractive error meridian Power X 15 microns
  - Ex -4.00D = 1.75 X 180 = -7.75 X 15 = 110.25 microns ablation depth
  - Ex +3.00 = 3.00 X 180 = +3.00 X 15 = 45 microns ablation depth
  - How many microns do we have to work with?
    - Ex Par’s 545 microns
    - 450-500 micron= 429
  - LASIK requires an additional 110 micron flap
    - 429-110 = Final residual bed of 319 microns
    - This patient has enough tissue for LASIK, but much room for enhancement in future.
  - Residual bed requirements
    - LASIK 300 microns
    - PRK 370 microns

Surgical Treatment Decision

- **Topographies** – In my opinion this is the most important test!!
  - Orbscan provides 4 maps
    - Anterior float map
    - Anterior Keratometric map
    - Posterior float map
    - Thickness map
  - Each map plays an important role
    - Anterior float: must be symmetrical vertically and horizontally
    - Anterior Keratometric: Must be centered, not be too steep or to flat
    - Posterior float: must not be too steep <0.040
    - Thickness: must have thin spot well centered and similarity in thickness top to bottom.

Topographies

Surgical Treatment Decision

- Refractive error
  - How much myopia or Hyperopia
  - Refractive stability - must be stable for 2 years
  - Astigmatism – If greater than 3.50 D cyl then out of Custom wavefront parameters. Will need conventional laser treatment.
    - **Mixed astigmatism will allow up to 5.00 D cyl**
  - If very high myopia may need to consider ICL or IOL

Surgical Treatment Decision

- Corneal Curvature
  - This is an easy one to overlook!
  - Calculated by how much flattening or steepening must occur to correct refractive error.
  - Myopic treatment calculations requires flattening 75% of power
    - Most myopic meridian X 0.75
    - Ex 8.00 D x 0.75 = 6D of flattening
    - **MAXIMUM flattening – 36 D**
  - Hyperopic treatments are a 1 to 1 calculation
    - Most hyperopic meridian x 1.0
    - Ex +2.50 requires 2.50 D of steepening
    - **MAXIMUM steepening – 47 D**
  - If beyond recommended parameters, quality of vision is compromised.
Refractive Treatment Decision

- Pupil size
  - Halo and glare at night
  - Much less of an issue now with Custom wavefront technology
    - More at risk if scotopic pupil size is > 7.0 mm in diameter
    - Most patients do not complain of halo and glare symptoms after 3 months of healing time.

Refractive Surgery Decision

- Dry eye
  - #1 Side effect from LASIK surgery!!
  - Schirmer’s score of 8+
  - Zone Quick of 18+
  - If lower, may need pre-operative management
    - Plugs
    - Fish oil
    - Restasis
    - Artificial Tears

Patient’s Goals of Refractive Surgery

- Good Distance vision
- What about near vision?
- Mono vision?
  - Age of patient
  - Near target power
  - Surgery on one eye or both?
- Multifocal IOL option?
  - If doesn’t want mono

Surgical Contraindications

- Severe Dry eye
- Cataract
- Collagen Vascular Disorders (no PRK)
- Irregular topo’s
- Refractive error to low
- Refractive error to high
- Cornea too steep or too flat
- Unrealistic expectations
- Medications
  - Amiodarone
  - Acutane
  - Anti-histamines
  - Immuno-suppressives

What is your role as Co-Managing Doctor?

- Pre-operative Exam
  - CYCLOplegic refraction
  - Confirm STABILITY of refractive error
  - Final target
    - Ex OS Mono -1.25
    - OD plano distance
  - Comprehensive dilated exam
  - Informed Consent

Our Pre-op Exam Form

- One Page!
- All information is easy to identify for:
  - Chart Prep
  - Optometrist for final testing on surgery day
  - Surgeon for final review just before surgery
What will your patient Experience on Surgery Day

- Arrive 1 hour early
- Recheck measurements
- Refraction
- Dry eye
- Cornea check
- Pach’s
- Topo’s
- Wavescans
- Informed Consent
- Discussion and answer questions
- Verbally walk them through what to expect in the OR

- Discuss Post op instructions
- Eye medications
- Durezol BID
- Besivance TID
- Pres Free AT’s every 30 min x 3d then q4h
- Discuss Post op limitations
- No Swimming pools
- No hot tubs
- No heavy sweating
- No Skiing/Boarding
- No eye make-up

Surgery Day – Total time 2.5hrs

- Payment
  - Advise patients to call credit card company to inform of large purchase
  - Make sure paperwork in order for CareCredit
  - Check or Cash also accepted

- Pre-op Prep
  - Ativan 1 mg
  - Hat and booties
  - Lid cleaning
  - OR time- 10 to 12 min
  - Post op Time
  - 15-20 minutes with eyes closed

Surgery Day – Time saver

- Advise pre-testing prior to surgery day
- Pre-surgery testing
  - Saves approx 1 hour of time on surgery day
  - Pre surgery testing
    - Wavescans 5-10 pictures per eye
    - Topo’s
    - Dry eye
    - Refraction by Optometrist
    - Informed Consent
    - Medications
    - Pre-op instructions
    - Confirm surgery treatment

POST OP CARE

- Management of Complications
  - On Target?
    - Over correction
    - If hyperopic after a myopic treatment
    - Need to steepen the cornea (too much flattening with surgery)
    - CLAPIKS
      - Steep, non SiHy lens 8.4/8.3
      - NSAID drops
      - Continuous wear
      - Change weekly

What is your role? LASIK

- Post operative
  - On target?
  - Dry eye
  - Flap position
    - Stria
    - Slipped flap
  - Flap interface
    - Debris
    - Epithelial cell ingrowth
    - DLK
Complications - LASIK

- Diffuse Lamellar keratitis/DLK
  - Usually at 1 day
  - DDx – Interface Debris. Also seen at 1 day post op.
  - Often seen under the upper eye lid.
  - More common in pt’s with blepharitis

DLK Management

- Increase Durezol
- Frequency of drops depends on amount of DLK.
  - Grade 1+ - TID
  - Grade 2 – QID
  - Grade 3 – Q2h add steroid ung qhs
  - Grade 4 – needs a lift and wash out. Possibly oral steroids as well
  - WATCH IOP!!

LASIK Complications

- Flap Striae Vs. Slipped flap

Epithelial Cell Ingrowth Vs. Interface Debris

- Lift & Wash Out
- Wait and watch
  - Measure at each visit
  - Increasing in size or stable?
  - See patient every 3-6 weeks depending on how aggressive it is
- Monitor vision
  - Increased astigmatism?
  - Changes on topo?
  - Irregular flap edge/melt?
  - Start Steroid gts!
  - May be difficult to lift

Epi Ingrowth Management

- Ingrowth at edge with flap melt
- Ingrowth more common w/ enhancement surgery!
LASIK Complications

- Dry Eye
- YOU KNOW WHAT TO DO!
- Plugs
- Omega 3’s
- Restasis
- Lotemax
- Blepharitis management
- Autologous Serum Tears

LASIK Complications – It’s all in the timing!

- What to expect when during post op course
  - 1 Day post op
    - Flap Striae
    - Slipped Flap
    - DLK
    - Interface debris
    - Dry eye
  - 1 Week post op
    - Flap Striae may be more visible once edema resolving
    - Dry eye
    - DLK (look under upper eyelid)
    - Interface debris (should look exactly the same as 1 day post op)
  - 1 Month
    - Epithelial cell ingrowth
    - If debris – should look the same as day 1
    - Interface haze

PRK

What is your role? PRK

- Is the wound closing as expected?
  - 3 day, 5 day post op
  - Corneal edema?
  - Thickened, hazy edge of epithelial healing line?
  - Infection?
  - Inflammation?
  - Is BCL in place?

PRK Post Op 3 Day and 5 Day

PRK Complications

- Elevated IOP
  - More common w Durezol
  - Check IOP at every visit after BCL is removed
- Corneal Haze
  - Early onset 4-6 weeks
  - Late onset 3-6 mo’s
- Slow wound closure
  - If over a week with open wound – remove bcl and pressure patch.
  - If persists for 7-10, will need serum tears
  - Vision will take longer to recover if dense healing line
PRK - Complications

- PRK over previous LASIK flap
  - DLK!!
  - Yes, DLK can happen
  - Inflammatory response due to corneal abrasion
  - White blood cells collect in the old flap interface
  - Management is the same as with LASIK
    - STEROIDS!
    - IOP check's
    - Frequent follow ups

Refractive Surgery Other Considerations

- Blepharitis
- Increased risk of DLK
- Increased risk for dry eye
- Increased risk for corneal infiltrates, especially along inferior flap edge
- Pre-op management
  - Add Doxycycline
  - Lid scrubs prior to surgery
  - Omega 3's

Other Considerations

- EBMD
  - Increased risk of flap complications
  - Increased risk for epithelial cell ingrowth
  - RCE's post op
  - Loose epithelium post op
  - Slower visual recovery
  - PRK best option!

Other Considerations

- Collagen Vascular Disease (CVD)
  - Rheumatoid Arthritis
  - Psoriatic Arthritis
  - Lupus/SLE
  - Crohn's Disease
  - Irritable Bowel Disease
- All CVD conditions are contra-indicated for PRK!
- High risk of corneal scarring
- Possibility of corneal melt.
- OK for LASIK

Enhancement

- If greater than 5 years post LASIK we will do PRK for enhancement
- If PRK over previous flap, we use Conventional laser treatment
- Low myope and presbyopic? Is it worth it?
- Consider Mono w/ enhancement by doing surgery on distance eye only (if myopic).
Enhancement

- **When to consider**
  - Vision 20/40 or worse
  - Refractive error with an equivalent sphere of +/- 0.75 D
  - Minimum of 3 months post LASIK 6 months post PRK
  - Vision has stabilized!
  - Dry eye resolved, must have a clear cornea
  - Normal topo’s

- **Risks**
  - Epi ingrowth!
  - 1st procedure <1%
  - Lift 25% +
  - More risk with Microkeratome flap
  - Less risk with Intralase
  - More risk if >5 years
  - Under or Over Correction more likely with small refractive errors.

Enhancement Evaluation

- **Enhancement Evaluation testing:**
  - Topo’s
  - Pach’s
  - Wavescans
  - Refraction

  - Doctor will have a discussion with your patient about risks of enhancement surgery
  - Ingrowth
  - PRK recovery
  - Over/under correction
  - Final decision up to surgeon

Join US for the Day

- Observation of surgery
- Consultation
- Pre and Post op care
- Tour the facility
- Meet the staff
- **GET CE CREDIT!**
  - Contact Amy Johnson to schedule
  - 303-393-6395
  - ajohnson@omnieye.com

- **Need Forms?**
  - See Amy Johnson at our registration table

THANK YOU for your referrals

Thank You!!!