2014 Monterey Symposium

Cataract Surgery in Patients with Previous Refractive Surgery

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Why would you want to see these patients?

- They need your help and expertise
- More likely to have fee for service component
- Your successes often will become your best referrers
- Challenges can be fun
Why would you NOT want to see these patients?

They require lots of chair time
Success can be elusive
Quality of vision may already be compromised
Many of these patients have exacting visual goals
Challenges are not always fun
National Statistics - Trends

Market Scope

Monthly Newsletter

ASCRS/ISRS/AAO Surveys

R.J. Duffey, MD

1997-2013
U.S. Statistics.....
Or things that make you go hmmm

80 million baby boomers began turning 60 in 2006
  Ostrich egg going through a python
In 2012 estimate 43 million > age of 65
By 2020 will increase to 55 million > 65
By 2025 ~ 60% of US population ≥ 55
Over 50% > age 65 have visually significant cataracts

Currently estimated that cataracts affect > 22 million in US
  That number is expected to increase to > 30 million by 2020
Currently 3 million+ cataract surgeries per year in US
  Increasing ~ 4%/year for last few years
Hmmmmm..... Part deuX

Incidence of cataract surgery increasing

Even when age and sex adjusted

• Improved access to surgery
• More surgeons
• Adoption of widening indications for surgery

Between 1998–2004 28% of patients had 2\textsuperscript{nd} eye sx by 90 d
Between 2005-2011 increased to 60%
In 2001 cataract sx < 2X refractive
In 2014 cataract sx > 6x refractive
The Baby Boomer Generation

Born between 1946 - 1964

- Large, rapidly growing demographic
- Educated, financially secure
- Increased life expectancy
- Longer working careers
- Demand high quality vision
- New requirement for near vision (computers)
- Unwilling to compromise active lifestyle
- Higher BMC quotient?
US Ophthalmic Surgeries 2013
Market Scope 2014

Eye Surgeries

- IOL
- IVT inject
- Refractive
- Photocoag
- Glaucoma
- Vitrectomies
- Other
Quarterly US Cataract Procedures Q1 10 through Q2 14

Source: Market Scope June 2014
Quarterly US Lasik/PRK Procedures
Q1 01 through Q1 14

Source: Market Scope May 2014
Cataract surgery

Typical cataract surgery involves:
- Primary and secondary (smaller) incisions
- Capsulorhexis
- Lens fragmentation
- Phacoemulsification
- Intraocular lens (IOL) insertion
- Incision closure
Terminology

**Primary Incision - bladed**
- Clear Corneal – 50%
- Limbal – 35%
- Scleral tunnel – 15%

**Femtosecond Laser Cataract Surgery (FLCS)**
- Primary & secondary corneal incisions – Medicare allows upcharge
- Capsulorhexis
- Partial lens fragmentation
- For Q1 2014 risen to 5%

**Intra-operative aberrometry**
- ORA (ORange Wavefront Abberometer) – WaveTec
- Assists IOL selection & guidance w toric IOLs & LRIs

**Premium IOL**
- Includes toric IOLs and presbyopia correcting IOLs (PC-IOLs)

**Presbyopia correcting IOLs**
- Includes multifocal and accommodating IOLs

**Refractive Cataract Surgery**
- FLCS and/or ORA
- Premium IOLS
Refractive Procedures you may see

Historical notes

- J. Barraquer developed Keratomileusis in 60’s. Briefly performed in US
- ALK was more popular but still not widely performed

RK (Radial Keratotomy)/AK (Astigmatic Keratotomy)
- Did not require FDA approval as didn’t utilize new technology
- Estimated about 2 million procedures performed in US

PRK (Photorefractive Keratectomy)

LASIK (Laser Assisted Keratomileusis in Situ)
- Over 20 million procedures (PRK + LASIK) have been performed in US

CK (Conductive Keratoplasty)

Intacs corneal rings

ICLs (Intraocular contact lens)

Procedures with refractive implications for cataract surgery

- PK (Penetrating Keratoplasty)
- Corneal Cross-Linking
- Scleral Buckle
LASIK/PRK/ASA/LASEK/Epi-Lasik

What’s the chance you’ll see a patient with the procedure?
Very high – over 20 million procedures performed in US

How can you tell?
Patient history is best guide
Often quite subtle – topography very helpful

Implications for cataract surgery
No impact on the actual procedure clinically
Complicates the IOL calculation
Not as much as some maintain
Most still avoid multifocal IOLS
That thinking is changing
If custom + femto flap we consider multifocal
Certainly consider CrystaLens and torics
Nice to know amount of treatment – old records/Rx helpful

FLCS +/-
ORA - definitely
What’s the chance you’ll see a patient with the procedure?
High – over 2 million procedures performed in US 1978-????
LRI’s (limbal relaxing incisions) still being performed

How can you tell?
Patient history is best guide
Clinical appearance hard to miss

Implications for cataract surgery
Complicates corneal wound construction
  May have to use scleral tunnel
Complicates the IOL calculation
Would avoid multifocal IOLS
  Fluctuations/glare/quality +/–
Would consider CrystaLens

FLCS – avoid corneal use
If use only for capsulorhexis/lens fragmentation can’t upcharge

ORA - definitely
What’s the chance you’ll see a patient with the procedure?
Moderate – less than 500,000 procedures performed in US
Rarely performed today

How can you tell?
Patient history is best guide
Clinical appearance hard to miss

Implications for cataract surgery
Rarely impacts corneal wound construction
Complicates the IOL calculation
Would avoid multifocal IOls
Would consider CrystaLens

FLCS – consensus is to avoid corneal use
ORA – yes
Conductive Keratoplasty - CK

Treats hyperopia/presbyopia
Uses high frequency radio waves

- Produces heat => collagen shrinkage
- 8-24 spots placed in mid-peripheral ring
- Creates band(s) of tightening in mid-periphery
  Causes central steepening
Corneal Inlays

What’s the chance you’ll see a patient with the procedure?
Very low – not approved in US

How can you tell?
Patient history is best guide
Clinical appearance hard to miss

Implications for cataract surgery
Perhaps none
Theoretically would remove the inlay

FLCS – if removed should not impact, so yes
ORA - yes
Kamra Corneal Inlay

Received FDA panel approval 6/14
Full FDA approval????
Approved in 50 countries
Creates a pinhole effect
Insert non-dominant eye
Form of monovision
Inserted under a ‘Lasik flap’
Theoretically reversible
ICLs

What’s the chance you’ll see a patient with the procedure?
Low to moderate – < 1% of current US refractive procedures

How can you tell?
Patient history is best guide
Clinically depends upon which type

Implications for cataract surgery
Typically remove the ICL
In that case none
All procedures are options
All lenses are options

Just don’t want to miss it
FLCS – yes
ORA – yes
ICLs

Iris clip lens – Verisyse
Posterior chamber lens - Visian
ICL placement and vault
Place two small PI’s

Usually LPIS but may be surgical PI
Intacs

What’s the chance you’ll see a patient with the procedure?
Low – less than 100,000 implanted in US
Currently used in conjunction (sometimes) with cross-linking

How can you tell?
Patient history is best guide
Fairly easy to spot at slit-lamp

Implications for cataract surgery
If inserted for myopia correction would remove
  In that case none and
  All procedures are options
  All lenses are options
If inserted as adjunct to cross-linking
  Keratoconus patient
  Avoid all premium IOLs
  ORA should help
INTACS

PMMA semi-rings

Inserted in mid-periphery of cornea

Flattens cornea

Began as primary treatment for myopia

Never a popular option

Now used in keratoconus patients

Moves thinnest spot centrally

In conjunction with corneal cross-linking

Can be removed
Corneal Cross Linking

What’s the chance you’ll see a patient with the procedure?
Low but should expect to rise

How can you tell?
Patient history is best guide
If no Intacs will be similar to PRK so very difficult to tell at SLE
Topography is best way to tell clinically

Implications for cataract surgery
Stick to standard mono-focal IOLs

FLCS – avoid
ORA – looking for any help with calculations
Pentatrating Keratoplasty

What’s the chance you’ll see a patient with the procedure?
Low to moderate

How can you tell?
Pretty much can’t miss

Implications for cataract surgery
Stick to standard mono-focal IOLs
Reason to avoid toric IOLs
   Easier to fit CLs (rigid/Scleral) if no toric to content with

FLCS — avoid
ORA — looking for any help with calculations
Scleral buckle

What’s the chance you’ll see a patient with the procedure?

Low

Moving away from buckles to gas bubbles

How can you tell?

Patient history is your best option
Peripheral retinal evaluation will reveal
Possible to see externally in extreme gaze

Implications for cataract surgery
It lengthens the eye ball so complicates calculations
All premium IOLs should be in play

Femto – yes
ORA – yes
Cataract surgery

Typical cataract surgery involves:

1. Primary and secondary (smaller) incisions
2. Capsulorhexis
3. Lens fragmentation
4. Phacoemulsification
5. Intraocular lens (IOL) insertion
6. Incision closure
Refractive Cataract Surgery
Requires different mindset/mode of practice

Medicare model forces physicians to treat for pathology in a high-volume, low cost approach to medicine that emphasizes efficiency.

Refractive cataract model is elective and demands a more patient-oriented business model where the focus is on quality of life rather than quantity of patients.

It’s the refractive surgery model.
Now most patients are looking for ‘perfect’ surgery.......like their friend got

- **We need to lower their expectations**
  - While doing all we can to maximize outcomes
- **Any previous ocular surgery complicates**
- **Our mantra is under promise & over deliver**
- **We need to pay attention to every detail**
As with all surgeries, focus on the basics:

- **It begins with the tear film**
  - Poor quality tear film compromise the outcome
  - Rehab all corneas prior to surgery
    - Restasis
    - Punctal plugs
    - Omega 3 supplements
    - Aggressively treat marginal lid disease

- **It ends with the retina**
  - Most pathology will r/o PC-IOLs
Femtosecond Laser technology
Femtosecond Laser Cataract Surgery (FLCS)
FLCS

• Currently very expensive way to:
  • Make corneal incisions
  • Create capsulorhexis
  • Partially fragment lens

• Upcharge to patient ~ $1000/eye

• It’s true that capsulorhexis is critical
  • Centration
  • Size – make smaller than optic of IOL

• Many wonder, will patients pay extra for it???
  • Yes...yes they will

• But it’s the corneal incisions that we charge for
  • And that is what resonates/excites patients
FLCS

IOL Position Predictability
• Uniform Shape and Size Capsulotomy

Corneal Astigmatism
• Reproducible Corneal Entry and Arcuate Incisions

Early Wow Factor
• Reduced Phaco Power and Corneal Edema

Norrby SJ, J Cataract Refract Surg 2008;34:368–376
Capsulorrhexis centration is very important with all premium IOLS!

But it is the ‘no blade–laser cataract sx’ that excites patients
FLCS
Femtosecond Laser technology
Arcuate Incisions

- Square edge
- Uniform depth (no ripples)
- Precise, reproducible
  - Arc shape
  - Arc length
  - Diameter
One Day Post-Op
Intra-operative aberrometer
Intra-operative abberometer

- Provides intra-operative biometry which assists in the lens power selection
- Enables real-time surgical course correction
- Compatible with and attached directly to the existing surgical microscope
- Provides axial guidance for use during toric IOL and LRI placement
- Also an upcharge
  - Typically ~ $500/eye
Eye Prep for Successful Measurement

Four Simple Characteristics

- Widely Opened Eye
- Well Hydrated Eye
- Well Pressurized Eye
- Well Aligned Eye
FLCS and ORA are fast growing options

- Outcomes are slightly better
  - Particularly with ORA
  - Especially in patients with previous sx
- Laser Cataract Surgery resonates w patients
Presbyopia Correcting IOLs (PC-IOLs)

*Tremendous Early Excitement*

**Patients**

Presbyopia correction is the ‘Holy Grail’
CrystaLens hits the market in 2003
New designs launched by Alcon & AMO in early 2005

**Surgeons**

Looking to reverse downward trends in reimbursement
Landmark Medicare ruling
Patients allowed to pay a premium for P-IOLs
85%+ of US cataract surgeons trained/certified

**IOL Companies**

Hoped to make more money
P-IOL Market Below Expectations

Demand disappointing for all major lenses

Alcon – ReSTOR 3.0
Largely replaced ReSTOR 4.0

AMO – Tecnis
Similar to ReSTOR 4.0

Eyeonics – Crystalens
Best distance vision. Poorest near vision.

Market leader is Alcon
Lens Options

Monofocal – Meaning one focal length. Usually set for distance.

Toric – Corrects for astigmatism.

Multifocal – Restores the patients distance and near vision.
Multifocal

ReSTOR, Technis MF

Accommodative

Crystalens
Stuff to know

- Crystalens provides best distance vision
- Crystalens degrades image quality the least
- Crystalens has poorest near vision
  - That’s why it’s NOT the market leader
- Tecnis and ReSTOR 4.0 have closest near points
- ReSTOR 3.0 combines good near with good intermediate
- ReSTOR and Tecnis coming out with lower add options
  - Trend is toward better intermediate
- Most patients want to limit use of readers
- All lens involve compromise
Astigmatism Correction

- **Intraoperatively**
  - Incision at steep axis — ~ 0.25-0.50 D
  - LRIs (limbal relaxing incisions) — imprecise, regress
    - Duh, it is RK
  - Femtosecond laser for relaxing incisions
  - Toric IOL

- **Postoperatively**
  - Glasses or CLs — good luck with that
  - LRIs — it’s still RK
  - Excimer laser
    - Lasik at 3 mon s/p
    - PRK if reason not to perform Lasik
Residual Astigmatism = BMCing

• #1 reason sx patients unhappy w/ results
• Has to be addressed
Keys for best outcomes

- **Learn as much as possible re old sx**
  - Get old records if available
  - Even old Rx/glasses can be beneficial

- **Understand the patients’ mindset**
  - I’m looking for improvement
  - I’m looking for a miracle
  - I’m looking for a lawyer

- **Exceptional surgeon/surgery team required**
  - Experience w similar patients is vital
  - Advanced technologies is vital
  - Attention to detail is vital
  - Has to be great communication bwt offices
Keys for best outcomes

- **Understand goal of patient**
  - OK w glasses full time
  - OK w reading glasses
  - Desires spectacle independence

- **Realistic expectations are critical**
  - What can be and what cannot be achieved
  - You and patient must be prepared for surprises

- **Surgical plan/technique may be altered DOS**
  - Surgeon must communicate w patient
  - Surgeon must communicate w you
You must understand

- There will be hand holding
  - Expect lots of chair time
  - How will you be compensated?
- Success may be incremental
- Healing may be slow
- Enhancements are likely
- Predicting BCVA s/p surgery often difficult
Patient must understand

...due to their previous surgery

- Some procedures are off limits
- Some drop off from perfect is expected
- They are absolutely in the best hands
  - You are their advocate
- Success may be incremental
- Healing may be slow
- Enhancements are likely
- Predicting BCVA s/p surgery often difficult
Keys to Success

Under promise
Over deliver
Be very realistic
Be supportive
Individualize
Enhance early & often
Work with patients you like
Work with surgeons you trust

Get compensated for your time
Thanks All Y’all