Course Title: Refractive Surgery Conundrums: Solving the toughest cases

Chief Instructor: Dr Tushar Grover

Instructors: Dr Divya Manohar, Dr Tushar Grover, Dr Rushad Shroff, Dr Pooja Khamar, Dr Madhu Uddaraju, Dr Bhupesh Singh

Topics covered and outcome-specific objectives

Instructor	Name of the Topic	Objective/s
Dr Divya Manohar	**Look before you leap: Navigating suspect topography**	Topographic Red Flags, Green Flags and those in between. Misleading topography in case scenarios with small WTW, Contact Lens Warpage and Epithelial irregularities will be discussed.
Dr Tushar Grover	**Optimal Case selection: Choosing the right procedure for the right patient**	Case Selection often depends on more than just topography. This presentation will discuss factors such as occupation, family history of ectasia, age and other ocular factors.
Dr Rushad Shroff	**The Unseen Challenges: Large Mesopic pupil, Epithelial Irregularities and more**	Hurdles such as having large pupils under mesopic conditions, epithelial masking effects in early ectasia and contact lens warpage can be subtle but critical to detect. This talk will cover when to contemplate surgery and how to establish hidden dangers.
Dr Pooja Khamar	**Refractive Surgery in Patients with Ocular & Systemic Conditions**	Patients with diabetes, rheumatologic conditions, use of acne medications, ocular hypertension, glaucoma, uveitis, or past keratitis come with unique sets of challenges. This talk will look into when and which procedures are safe.
Dr Madhu Uddaraju	**Revisions & Enhancements: When & How?**	Re-corrections can be tricky—residual stromal bed thickness, flap lift versus surface ablation, true regression versus a mimic—

		this talk will provide key decision points on safe and effective enhancements.
Dr Bhupesh Singh	**Perfect Results, Imperfect Reactions: The Patient's Perspective**	What if surgery is flawless, yet the patient is unhappy? Identifying and addressing causes for patient dissatisfaction, managing expectations, and effective communication with the patient are all topics of discussion in this talk.

Take Home Points

1. Look Before You Leap: Navigating Suspect Topography
Dr Divya Manohar

🔍 Presentation Summary

There are the usual green flags, the red flags and those cases in between. This presentation will discuss suspect topography, as well as scenarios such as Small WTW, Contact Lens Warpage and Epithelial Irregularities where Topography may be misleading.

Key Takeaways for the Audience

1. Identify the red flags

- Various parameters that help identify individuals who are ineligible for refractive surgery

2. The false red flags and false green flags

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3. Occupational Demands Are Critical

- A professional cricketer with thin corneas and large pupils needed perfect vision.
- Final choice: Surface ablation + MMC with a 6.5 mm optical zone to avoid glare/halos.

4. Surface Clues Matter

- Patient unhappy post-refractive surgery had subtle anterior stromal irregularities.
- Pentacam revealed issues masked by epithelium.
- Refractive Lens Exchange (RLE) led to a successful outcome.

5. Post-Refractive Cataract Surgery Can Be a Blind Shot in the extreme scenarios

- LASIK patients with cataracts may have unreliable biometry.
- Use Pentacam EKR and ASCRS Calculator.
- Residual error is possible – counsel thoroughly.

6. There's No One-Size-Fits-All

- Tailor decisions to each patient.
- Consider expectations, anatomy, systemic risk, and long-term vision goals.

2. Optimal Case Selection: Choosing the right procedure for the right patient

Dr Tushar Grover

🔍 Presentation Summary

Decision-making in refractive surgery is often more complex than the procedure itself. Through diverse clinical scenarios, this presentation illustrates how ocular parameters, patient lifestyle, history, and long-term outcomes must be considered to personalise care.

🧠 Key Takeaways for the Audience

1. Always Think Beyond the Cornea

- Normal topography doesn't always mean safe surgery.
- Consider age, axial length, family history, and retinal detachment risk, especially in high myopia.

2. The Twin Brother Dilemma

- Two patients, same family, different paths.
- One with moderate myopia had successful LASIK.
- The twin who presented later showed signs of corneal ectasia and was advised against surgery, making us question the long term risk of Post LASIK ectasia in the other twin subsequently

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✅ Final Clinical Pearls

- Decision-making is more nuanced than the procedure.
- Use imaging, history, and lifestyle to guide choices.
- When uncertain, step back and reassess holistically.

3. The Unseen Challenge: Large Mesopic Pupil, Epithelial Irregularities and more
Dr Rushad Shroff

🔍 Presentation Summary

This presentation explores often overlooked factors affecting refractive surgery outcomes: corneal epithelial irregularities, large mesopic pupils, lenticular changes, and accommodation anomalies. Through real case examples, it emphasises the value of comprehensive evaluation and cautious decision-making.

🧠 Key Takeaways

1. The Epithelium Tells a Story

- Epithelial mapping can detect subtle abnormalities like thinning or thickening that may signal early ectasia or inflammation.
- Mild inferior thinning: Consider evolving ectasia; surface ablation is safer.
- Thickened epithelium: Treat ocular surface disease first before proceeding.

2. Prioritise Ocular Surface Health

- Initiate dry eye therapy before surgery: steroids, cyclosporine A, artificial tears.
- A stable surface improves both safety and predictability of outcomes.

3. Pupil Size Can Haunt the Night

- Large mesopic pupils can worsen aberrations, glare, and halos post-LASIK.
- Night vision complaints often correlate with increased optical scatter.
- Always assess pupil size pre-op.

4. The Lens May Be the Culprit

- Progressive myopia post-refractive surgery may be due to preclinical lenticular changes.
- High internal aberrations and poor contrast sensitivity can point to early cataract.
- Dysfunctional Lens Index (DLI < 6) is a red flag even when the lens appears clear.

5. Some Errors Lie Hidden in Plain Sight

- Evaluate accommodative anomalies and ensure cycloplegic refraction, especially in young patients with early regression or undercorrection.
- Not all myopia post-op is refractive error—it might be lenticular.

✅ Final Summary

- Use epithelial mapping to rule in or rule out candidates for refractive surgery.
- Exercise caution in eyes with large mesopic pupils.
- Myopic regression may stem from lenticular changes.
- Don't forget orthoptic evaluation and cycloplegic refraction in tricky cases

4. Refractive Surgery in patients with Ocular and Systemic disease

Dr Pooja Khamar

🔍 Presentation Summary

This presentation addresses the complexities of performing refractive surgery in patients with ocular or systemic comorbidities. It highlights the importance of patient selection, timing, and pre-/post-operative management to prevent complications such as dry eye, poor quality of vision, glare/haloes, and regression.

🧠 Key Takeaways

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1. Appropriate Patient Selection is Crucial

- Up to 10% of post-refractive surgery patients are unhappy due to poor QOV, glare, regression, or dry eye.
- Assess the following before planning surgery:
    - Ocular surface health
    - Corneal topography
    - Systemic diseases
    - Psychiatric history and expectations

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2. Management of Common Ocular Comorbidities

Keratoconus/Ectasia:

- Avoid surgery during progression.

- CXL or ICL may be considered after 1 year of documented stability.

Dry Eye Disease:

- Moderate to severe DED is a contraindication.
- Treat with:
    - Sodium hyaluronate + trehalose QID
    - Cyclosporine 0.05–0.09% / Lifitegrast 5% BD
    - Lid hygiene and procedural therapy (IPL/vector pulsation)
- Wait at least 3 months of optimised treatment before surgery.

Glaucoma:

- Do NOT operate in advanced or uncontrolled glaucoma.
- Acceptable in early/stable cases with:
    - Controlled IOP
    - Minimal RNFL loss
    - Documented optic nerve stability
- *Counselling is critical if proceeding.*

Retinal Dystrophies:

- Avoid if:
    - Progressive central vision loss
    - Unstable fixation
- Consider in:
    - Early disease with stable central vision
    - Realistic expectations
- *Counselling is essential.*

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3. Management of Systemic Conditions

Diabetes:

- Avoid surgery if:
    - HbA1c > 8%
    - Active diabetic retinopathy
- Proceed if:
    - HbA1c < 7%
    - No DME/PDR
    - Stable refraction for ≥6 months

Autoimmune/Thyroid Eye Disease:

- Wait until:
    - Systemic disease inactive for ≥6 months
    - Minimal ocular involvement
    - No exposure keratopathy

Neuro-Ophthalmic Disorders:

- Avoid surgery within 12 months of optic neuritis.
- Proceed only if:
    - Stable vision for >12 months
    - No recent flares
    - Clearance from a neuro-ophthalmologist

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4. Psychiatric & Medication Considerations

- Body Dysmorphic Disorder (BDD) and depression are red flags for poor satisfaction post-surgery.
    - *Pre-op psychiatric screening is advised.*
- Medications to avoid during LASIK:
    - Isotretinoin (Accutane)
    - Immunosuppressants
    - Recent chemotherapy

✅ Final Summary

1. Careful patient selection is the key to preventing poor outcomes.
2. Always optimise ocular and systemic health before refractive surgery.
3. Delay surgery until there is objective evidence of stability.
4. Provide thorough preoperative counselling, especially in borderline or complex cases.

5. Revisions & Enhancements: When and how?

Dr Madhu Uddaraju

🔍 Presentation Overview

This presentation outlines the rationale, timing, and techniques for laser vision correction enhancements. Emphasis is placed on differentiating regression vs ectasia, ensuring patient safety, and achieving realistic outcomes through appropriate selection and method of enhancement.

🧠 Key Takeaways

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1. Know When to Enhance

Enhancement should be considered if:

- Residual refractive error impacts daily activities
- Refraction is stable and correctable
- Adequate residual stromal bed (RSB) is present
- Keratometry values are within an acceptable range
- Ectasia is confidently ruled out

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2. Regression vs Ectasia: Use Epithelial Mapping

- Regression: Central epithelial thickening (overflattened area)
- Ectasia: Epithelial thinning over steepened zones
- Misidentifying ectasia as regression can worsen outcomes if enhanced

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3. The 5 Guiding Principles of LASIK Enhancements

1. Stable Refraction
2. Correct identification of the error source
3. Maximise safe correction
4. Proper patient counselling
5. No contraindications for the chosen method

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4. How to Enhance: Choose Wisely

Decision factors:

- Age (especially presbyopic patients)
- Residual bed thickness
- Time since primary LASIK
- Type of refractive error (myopia/hyperopia)

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5. Techniques for Enhancement

a. Flap Lift (Dry & Depress / Mackool):

- Ideal within 1–3 years of primary LASIK
- Sufficient residual stromal bed
- Caution: Epithelial ingrowth risk

b. Flap Recut:

- Consider if original flap lift is not possible
- Femtosecond is preferred over the microkeratome

c. Surface Ablation / Trans-PRK:

- Safer when RSB is limited or a long gap since the original LASIK
- MMC (Mitomycin-C) for 60 seconds reduces haze
- Preferred when wound healing may be slower

✅ Final Pearls

- Always establish the true cause: undercorrection, regression, or ectasia.
- Select technique based on safety, time since LASIK, and patient profile.
- Counsel patients realistically on outcomes, especially if expectations are high or if healing is delayed.
- Surface ablation with Trans-PRK and MMC is often the safest enhancement approach for older LASIK cases.

6. Perfect Results: Imperfect Reactions

Dr Bhupesh Singh

🔑 Key Concepts

- Objective success ≠ Patient satisfaction
  Perfect surgical outcomes may still lead to unhappy patients.

✅ What Defines Refractive Surgery Success?

- Clinical success: Target refraction achieved, good UCVA
- Patient-perceived success: Visual quality, comfort, no side effects

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📊 Why Are Some Patients Dissatisfied?

1. Unrealistic expectations
2. Dysphotopsias: Halos, glare, starbursts
3. Dry eye disease
4. Higher-order aberrations (HOAs)
5. Psychological traits & anxiety

🧠 Common Clinical Scenarios

Case 1:

- 39-year-old banker, SMILE, UCVA 20/20
- Complaint: Poor near vision focus
- Takeaway: Pre-op BCVA and near vision adaptation should be emphasised.

Case 2:

- 23-year-old female, LASIK, post-op dry eye and vision issues
- Takeaway: Isotretinoin-induced dryness, importance of medication history

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🧠 Neuroadaptation

- The visual system takes time to adjust
- Requires patient reassurance & patience

💡 Counselling: The Real Game Changer

- Pre-op education sets expectations right
- Longer chair-time is worth the outcome
- Discuss:
    - Possible side effects (dryness, glare, visual quality)
    - Timeline for visual recovery
    - Retreatments if needed

📣 Post-op Communication

- Active listening + regular follow-ups
- Early intervention on reported concerns
- Empathy improves satisfaction

Preventing Future Dissatisfaction

- Screen for Type A personalities, unrealistic demands
- Flag high-risk or highly sensitive patients
- Encourage only well-informed, motivated individuals to proceed

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✅ Key Takeaways

- Patient satisfaction is a blend of science and psychology.
- Focus on counselling, expectation setting, and empathy.

- Even with perfect surgical results, a personalised patient approach is key to success.