RLES AI® CATARACT & RLE REPORT

COMPLEX CASE: CATARACT PLAN IN A POST-LASIK EYE — DEMO

REFRACTIVE LASER EYE SURGERY – ARTIFICIAL INTELLIGENCE ASSISTED

DEMO REPORT — FICTITIOUS PATIENT

This document is a demonstration output of the RLES AI® report engine. The patient and all measurements are FICTITIOUS; they belong to no real person. Not for clinical use; no medical decision may rely on it. Real reports are produced by the same engine from the surgeon's uploaded examinations.

1 · THE CASE — THE EYE WHERE EVERY FORMULA GOES WRONG

DEMO PATIENT D (fictitious) · 58 · visually significant cataract · myopic LASIK 15 years ago · NO Refractive Passport. In a post-LASIK eye SimK reads the cornea steeper than it is; a standard formula ends in a hyperopic surprise. In most clinics this is 'the difficult eye' — for the engine it is a plan that can be verified layer by layer.

2 · TRUE CORNEAL POWER — THREE LAYERS, ONE ANSWER

Layer	Source	Value	Status
Tier A	Pentacam TCRP (4.0 mm)	38.9 D	✓
Tier B	IOLMaster 700 TK	39.1 D	✓ concordant (Δ 0.2)
Tier C	Gaussian physics model	38.8 D	✓
SimK	comparison	40.9 D	if used: ~2.0 D error

Biometry segments are consistent: AL 25.94 · ACD 3.41 · LT 4.42 · WTW 12.1. Three independent layers agreeing within 0.3 D provide a safe corneal-power foundation even without a passport.

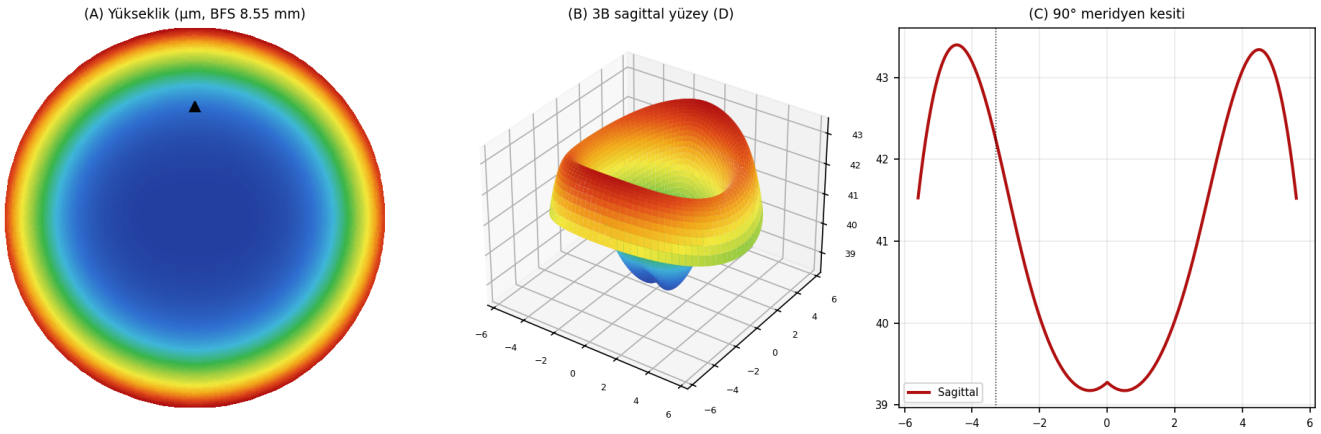

Figure 1 — The post-LASIK OBLATE profile (Rule 13 standard visual): central flattening (≈38.9 D) steepening in the mid-periphery — the exact inverse of the natural prolate cornea. Visual proof of why SimK errs by 2.0 D: keratometry sampling the 3 mm ring reads this transition zone. A reconstruction from the device map; not raw output.

REKONSTRÜKSİYON DİPNOTU

Bu görsel, cihaz çıktısındaki sayısal değerlerden türetilmiş bir rekonstrüksiyondur; ham cihaz çıktısı değildir. 1 D ≈ 10 µm.

2b · WHY STANDARD FORMULAS FAIL — TWO SEPARATE MECHANISMS

Mechanism	Explanation	Remedy
Power error	SimK derives total power from the front surface with a fixed index (1.3375); LASIK broke the front/back ratio, so the cornea reads 2.0 D steeper than it is	the Tier A/B/C true-power layers
ELP error	formulas estimate effective lens position from K; the flat post-LASIK K makes them 'guess' the lens more anterior than it sits	Double-K logic — built into True-K

2c · BIOMETRY QUALITY · SEGMENTS · THE TWO-EYE CONTRAST

Check	OD (post-LASIK)	OS (virgin)	Reading
AL · ACD · LT	25.94 · 3.41 · 4.42	25.71 · 3.38 · 4.45	segment consistency ✓ · inter-eye AL gap 0.23 mm (<0.3 concordant)
Scan quality	SNR ✓ · fiksasyon ✓	SNR ✓	dry-eye set normal — a bad tear film corrupts biometry, so it was screened first
Formula route	Barrett True-K NH	standard (Barrett UII)	TWO ROUTES FOR TWO EYES — the engine classifies per eye; OS needs no True-K
Personal SIA	on record: 0.28 D @ 100 (18 cases)	same	the incision plan follows the surgeon's own SIA

3 · IOL CLASS & RISK SCREEN

Item	Assessment
EDOF	CANDIDATE ✓ — clean macular OCT · normal dry-eye set · the favoured class post-LASIK
Trifocal	CAUTION — post-LASIK spherical aberration; not advised before corneal HOA is measured (iTrace/OPD)
IFIS · PXF	no tamsulosin ✓ · no PXF findings ✓
Glaucoma intersection	ACA 32° green — Referral Summary not triggered

4 · SURGICAL PLAN — READY FOR APPROVAL

Item	Plan
Procedure	phacoemulsification + posterior-chamber IOL
IOL class	EDOF (brand/model the surgeon's; power calculated on the surgeon's biometry platform)
Formula priority	1) Barrett True-K No History · 2) Haigis-L · 3) Shammas-PL
Input set	AL 25.94 · TCRP 38.9 (TK 39.1 cross) · ACD 3.41 · LT 4.42 · WTW 12.1 — ready to copy into the platform
Target	−0.25 … −0.50 (post-myopic safety practice)
Incision	per the surgeon's personal SIA record; on the neutral axis if no record exists
Postop	personal ELP calibration via CHOICE + FOLLOW-UP records · a REFRACTIVE PASSPORT is issued with stable values — the next surgeon never faces this problem

CONCLUSION — THE 'DIFFICULT EYE' BECOMES ROUTINE WITH A VERIFIED PLAN

Three-layer power verification + the right formula set + a class decision: the eye at risk of a hyperopic surprise goes to surgery with an approval-ready plan. Final power, lens choice and decision belong to the surgeon (Rule 11).

SURGEON'S SIGNATURE & AI VERIFICATION

This report is clinical decision support; the plan is finalised by surgeon approval. Signature: _____ Date: _____