RLES AI® GLAUCOMA SCREENING REPORT

COMPLEX CASE: TISSUE PASSES, THE GLAUCOMA LAYER SAYS 'WAIT' — 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 — A CANDIDATE THE SAFETY ENGINE PASSES AND THE GLAUCOMA LAYER HOLDS

DEMO PATIENT N (fictitious) · 38 · high-myopic LASIK candidate. Tissue budget and the optical window are clean — most software would end its report here. RLES AI's glaucoma layer (G1–G13), embedded in every plan, flags six separate findings: a narrow angle, family history, a borderline anterior chamber, a disc haemorrhage, pigment-dispersion signs and 14 months of a BAK-preserved pressure drop. This report demonstrates how the layer reads a case as a WHOLE.

Parameter	OD	OS
Manifest refraction	−8.50 −0.75×175	−8.25 −0.50×5
K1 / K2 (D)	43.2 / 44.1	43.4 / 44.0
Kmax (D)	44.3	44.2
Thinnest pachymetry (µm)	545	549
Angle/IC — anterior chamber angle	**23.8°**	**24.6°**
ACD (from endothelium, mm)	**2.92**	**2.95**
IOP — GAT (mmHg)	**23**	**21**
Medication	latanoprost (BAK-preserved) · 14 months	same
Family history	father: angle-closure glaucoma	—
Previous glaucoma surgery	none (G12 assessed)	none

2 · THE HONEST BASELINE FIRST: TISSUE AND OPTICS PASS

The safety engine (flap 100 µm · OZ 6.0 mm · measured table 12 µm/D — Rule 5): ablation 8.5 × 12 = 102 µm. RSB = 545 − 100 − 102 = 343 µm ≥ 300 ✓ · RCT = 545 − 102 = 443 µm ≥ 400 ✓ · PTA = (100+102)/545 = 37.1% < 45% (Kmax < 46 band, Rule 1) ✓. Post-op K1 = 43.2 − 0.8×8.5 = 36.4 D — 0.4 D above the 36 floor, INSIDE the window but flagged amber for proximity (Rule 9). This eye is plannable on tissue and optics: everything below is written IN SPITE of that.

Ectasia index	OD	OS	Band
BAD-D	1.12	1.08	normal (<1.6)
ART max	417 µm	423 µm	normal (>340)
Posterior elevation	6 µm	5 µm	normal
I-S (SIf)	0.7 D	0.6 D	normal (<1.4)
CBI / TBI	not entered	not entered	missing — NOT assumed normal (Rule 5.3)
Rule 13 warpage screen	0/9	0/9	CLEAR — negative proof in Figure 1

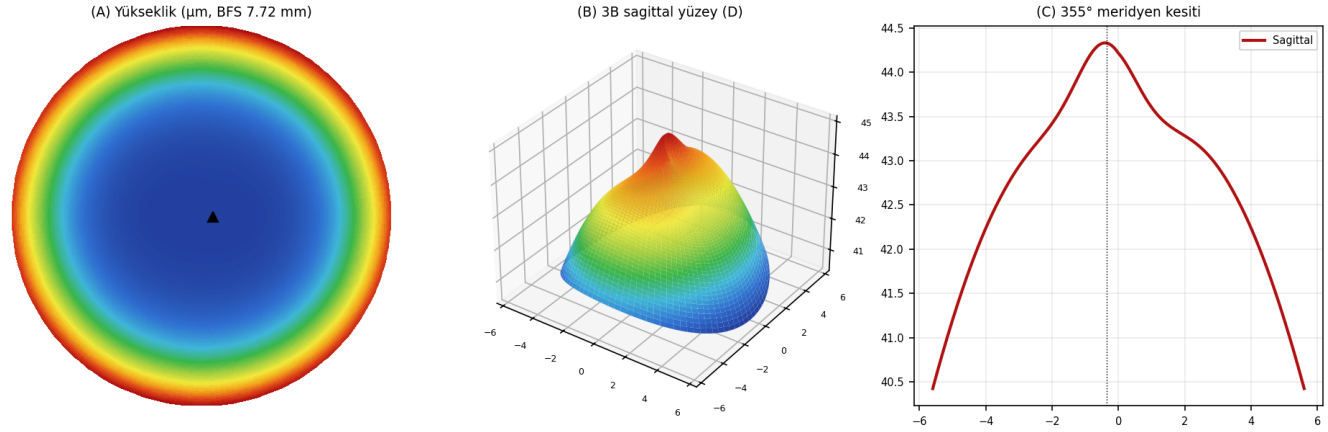

Figure 1 — Rule 13 standard visual (produced even for a NEGATIVE finding): a regular, symmetric bow-tie; gradual apex-to-periphery transition. Concordance statement: reconstruction apex 44.3 D ↔ device-printed Kmax 44.3 D. A reconstruction from the device map, not raw output. 1 D ≈ 10 µm.

REKONSTRÜKSİYON DİPNOTU

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

3 · THE GLAUCOMA LAYER — EVERY TRIGGERED RULE, ONE BY ONE

Rule · finding	Band	Reasoning & source (XAI)
G1/G2 · Angle/IC 23.8°/24.6°	RED	ACA < 25° → gonioscopy + glaucoma assessment [BURAK ACA rule]. Seven additional factors queried; POSITIVE: family history. The LPI decision is the surgeon's; if performed, gonioscopy is REPEATED — ~26% of eyes remain closed [LIT He 2019 ZAP, Lancet].
G3 · ACD 2.92/2.95 mm — borderline	AMBER	The 2.8–3.0 band: GONIOSCOPY IS PRIMARY; AS-OCT is complementary (false positives). If the ICL route opens: FDA on-label ≥3.0 FAILS; international ≥2.8 CONDITIONAL — and the ICL measurably narrows the angle → periodic angle follow-up [BURAK Rule 10 + G3].
G8 · Krukenberg spindle + transillumination + pigmented TM (OD)	AMBER	PDS screen positive → glaucoma assessment advised. Balance: 'the ICL causes pigment dispersion' is never written — 629-eye EVO FDA 3-year: zero dispersion, zero pupillary block [LIT Parkhurst 2025].
G4 · disc-margin haemorrhage + IT rim thinning (OD)	RED	Found on the fundus PHOTOGRAPH — OCT CANNOT image it; a strong predictor of progression over the next 2 years (HR ~2.1) [LIT Founti 2020]. RNFL OD IT 74 µm supports the finding.
G13 · latanoprost (BAK) 14 months · OSDI 28 · TBUT 6 s	AMBER	The dry-eye preoperative set was MANDATORILY RECOMMENDED and done: moderate disease. The plan is not finalised until the surface stabilises. Options: preservative-free equivalent · fixed combination (equal pressure lowering) [LIT Fechtner 2010 · Leung 2008]. Any change requires the PRESCRIBING physician — RLES never alters medication.
IOP context · GAT 23/21 — on medication	AMBER	A single reading; no clinical meaning is attached to a same-observer difference <4.5 mmHg [LIT De Bernardo 2020]. If ablated, GAT will read LOW for life — pre-op IOP + pachymetry were written into the Refractive Passport; bIOP/IOPcc lead post-op follow-up.

4 · THE GLAUCOMA REFERRAL SUMMARY — THE BLOCK AUTO-PRODUCED AT REPORT END

Finding	Band	Suggested step
Narrow angle (both eyes) + family history	RED	Gonioscopy (primary) — LPI is the surgeon's call; repeat gonioscopy if performed
Disc haemorrhage + IT thinning (OD)	RED	Visual fields + OCT RNFL/GCC + repeat fundus photo · glaucoma-specialist assessment
PDS signs (OD)	AMBER	Pigment grading on gonioscopy; post-dilation IOP check
GAT 23/21 — on treatment	AMBER	Diurnal profile + bIOP/IOPcc confirmation; adherence check
BAK burden + moderate dry eye	AMBER	Preservative-free discussion — with the prescribing physician; surface re-check in 2–4 weeks

Closing line (identical in every summary): RLES AI does not diagnose glaucoma; this summary serves the surgeon's referral. Had no rule fired, this block would not exist — its absence means 'no findings'.

5 · THE SURGICAL PLAN — TWO ROUTES, ONE PRECONDITION

Route	Tissue/optics	Glaucoma layer
LASIK (−8.50)	PASSES: RSB 343 · RCT 443 · PTA 37.1% · post-op K1 36.4 (0.4 to floor — amber)	Holds: finalisation is not advised before the disc/angle work-up and surface stabilisation; the post-op steroid period (G9) is watched closely in this eye
Phakic ICL (EVO)	In range (−8.50); ACD 2.92 → FDA on-label FAILS, international threshold CONDITIONAL	Holds: gonioscopy is primary; the PDS screen is positive; the ICL narrows the angle → decision AFTER gonioscopy + glaucoma assessment

CONCLUSION

No floor was violated in this case — and still the plan is not signed today. That is precisely the glaucoma layer's job: to say what it sees about an optic nerve with decades to live, even when the tissue is fine. Suggested sequence: gonioscopy + fields/OCT + a glaucoma specialist's view → surface stabilisation (2–4 weeks) → re-evaluation of the plan. This is NOT an exclusion (Rule 11); the final decision always rests with the surgeon.

Source tags: [BURAK] clinical rule · [LIT] open-access publication (Founti 2020 · He/ZAP 2019 · Parkhurst 2025 · Fechtner 2010 · Leung 2008 · De Bernardo 2020). Missing data was not assumed normal (Rule 5.3). This demo was produced on fictitious DEMO PATIENT N with the engine's real rule set.