RLES AI® COMPLICATION ANALYSIS REPORT

COMPLEX CASE: RESOLVING A REPORTED 'BUTTONHOLE' — DEMO

REFRACTIVE LASER EYE SURGERY – ARTIFICIAL INTELLIGENCE ASSISTED

DEMO REPORT — FICTITIOUS PATIENT

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INTERNAL USE ONLY

Confidential intra-clinic quality document; not for third-party authorities. The subject is the process, not the person (just culture) — the goal is preventing recurrence.

1 · THE REPORT AND THE FIRST QUESTION — WHICH KERATOME?

DEMO PATIENT G (fictitious) · intraoperative report: 'buttonhole during the flap cut'. The FIRST question of the engine's mimicker table: which device made the cut? The answer — ML7 — changes everything: the ML7 cuts LINEARLY (plano); buttonholes are a complication of ROTATIONAL keratomes (Moria M2, the B+L family). On an ML7, a 'buttonhole' appearance is by definition something else.

2 · ROOT-CAUSE ANALYSIS

Finding	Assessment
Cut kinematics	ML7 linear → true buttonhole EXCLUDED; the table redirected to 'pseudo-buttonhole = epithelial slide/defect'
Anaesthetic query	5+ drops of topical anaesthetic before the cut — the standard is max 1–2; excess loosens the epithelium
Severity	G2 — intervention required, no permanent effect expected

2b · MIMICKER DIFFERENTIAL · SEVERITY SCALE · TIMELINE

Discriminator	Buttonhole	Epithelial slide/defect (THIS CASE)
Keratome kinematics	rotational cutters (M2, B+L family)	ML7 is LINEAR — a buttonhole cannot form on it ✓
Stromal breach	a stromal hole at the flap centre	stroma INTACT; only the epithelium irregular ✓
Substrate	steep cornea (K>48) + rotational geometry	K 43.8 normal · 5+ anaesthetic drops ✓

Severity	Definition	This case
G1	no visual threat / self-limiting	
G2	intervention required, no permanent effect expected	● THIS CASE
G3	sight-threatening, active treatment required	
G4	permanent loss / structural damage risk	

Timeline: 09:41 suction ON · 09:42 pass — irregular epithelium seen · 09:43 ablation ABORTED · 09:45 flap repositioned + BCL · 10:10 patient informed. Root-cause categories screened: device condition/calibration record ✓ current · blade lot ✓ · PROCESS: anaesthetic protocol breach (5+ drops) → the root cause.

3 · MANAGEMENT & THE SECOND-SURGERY PLAN

Step	Plan
Acute management	NO ablation · no stromal scraping · flap repositioned · BCL (senofilcon A)
Prohibition	THE FLAP IS NEVER RECUT (recut prohibition) — intersecting lamellar planes produce scar keratopathy
Second surgery	after ≥3 months, with stability confirmed: transepithelial PRK with MMC 0.02% — the plan lives INSIDE this report, with a clear timetable for the patient
Preventive actions	anaesthetic protocol fixed at 1–2 drops · added to the pre-cut checklist · device maintenance/calibration record verified

CONCLUSION

A misnamed complication would have bred the wrong prevention. Kinematic analysis found the real cause; the patient has a planned second-surgery route at 3 months, and the clinic two permanent preventive actions.

SURGEON'S SIGNATURE & AI VERIFICATION

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