

# FOUR-COLOR AESTHETIC EVALUATION FOR AURICULAR KELOIDS: A PRAGMATIC TOOL FOR CONTOUR, VISIBILITY, AND FOLLOW-UP COMMUNICATION

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## Running Title

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## BACKGROUND

Auricular keloids can disrupt 3D auricular contour and remain noticeable at social distance, yet surface-focused assessment scales may not fully capture contour integrity. We therefore developed a pragmatic Four-Color Aesthetic Evaluation System for auricular keloids and evaluated its preliminary real-world applicability.

## METHODS

This single-center retrospective study included patients treated between January 2022 and December 2025. Ears were graded using a four-tier color system (Black–Red–Orange–Green) based on framework integrity, contour distortion, and visibility at ~1 m. Postoperative grading used the same contour-first logic with a predefined visible-defect threshold and a “no downgrading for tiny scars” principle. Recurrence was recorded independently using an R0–R3 label. For the primary analysis, postoperative status was defined as the most recent photographic assessment within 12 months (preferably at 12 months, otherwise at 6 months, then 3 months). Two clinicians independently graded baseline and postoperative status; inter-rater agreement was assessed using quadratically weighted Cohen’s kappa. Ethical approval: [IRB name, approval date]. Written informed consent for clinical photography and presentation/publication was obtained from all participants.

## RESULTS

Thirteen patients (16 ears) were analyzed. Preoperatively, 8/16 ears (50.0%) were graded Red and 8/16 (50.0%) Orange; none were Black or Green. At the most recent assessment within 12 months, 12/16 ears (75.0%) were graded Green and 4/16 (25.0%) Orange. Overall, 15/16 ears (93.8%) improved by  $\geq 1$  color level and 1/16 (6.3%) remained stable; no ear deteriorated. All ears were recorded as R0 within 12 months, with no R1–R3 events observed. Inter-rater agreement was high (kappa 0.88 at baseline; 1.00 postoperatively).

## CONCLUSION

The Four-Color system is feasible and sensitive to clinically meaningful contour improvement in a pilot cohort and may facilitate follow-up communication by separating aesthetic grades from recurrence labels. Prospective multicenter validation incorporating patient-reported outcomes is warranted.