CLONIFY

CRANIAL ASSESSMENT REPORT

3D Scan | Measurement Comparison | Modelling | Follow-up

REPORT DATE
19.08.2026

PATIENT INFORMATION

FULL NAME example	EVALUATION DATE 19.08.2026
NATIONAL ID —	PHYSICIAN —
SEX Erkek	BIRTH DATE / AGE 01.01.2026 (7 months)
DIAGNOSIS / CLINICAL NOTE —	SCAN / MODEL kafa1.ply
NOTES —	

OVERALL RESULT — AT A GLANCE — SUMMARY SLICE: TEMPORAL LEVEL (+26 MM)

MILD–MODERATE ASYMMETRY

6.1% CVAI **8.6 mm** CVA **87.6%** CI

438.1 mm Slice circumf. **43.8 cm** OFC

Cephalic Index **87.6%** — Brachycephaly tendency (short-wide). CVAI **6.1%** — Mild–moderate asymmetry. Diagonal difference (CVA) **8.6 mm**. Slice circumference (Temporal level, ear plane +26 mm): **438.1 mm**. Asymmetry is in the mild–moderate band; observation or orthosis planning depends on the clinical context. For detailed metric definitions see the "Measurement Guide" page at the end of the report.

CVAI: Mild–moderate asymmetry | CI: Brachycephaly tendency (short-wide) | Mirror diff. 10.0 mm · left-back flattened

MAX. CIRCUMFERENCE SLICE · Summary values come from the slice with the largest circumference: Temporal level (26 mm above the ear plane) — found by the automatic 2 mm-step scan; 6 slices measured in total.

DIAGONAL DIFFERENCE (CVA)

mm difference between the two diagonals · asymmetry

8.6 mm — Mild–moderate asymmetry

Meaning: Marked diagonal difference; the asymmetry may be clinically significant.

CVAI

Size-independent asymmetry index

6.1 % — Mild–moderate asymmetry

Meaning: Mild–moderate asymmetry; the main follow-up metric for helmet/repositioning care.

CEPHALIC INDEX (CI)

Width / length × 100 · head ratio

87.6 % — Brachycephaly tendency (short-wide)

Meaning: Short-wide ratio tendency (brachycephaly band); CI alone is not diagnostic.

CIRCUMFERENCE

Slice contour circumference · growth

438.1 mm

Meaning: Circumference of the selected slice plane; compare across follow-up scans to track growth. For percentile assessment, the clinical maximum head circumference (OFC) is the reference.

CVAI — ASYMMETRY SEVERITY

<3.5 normal · 3.5–6.25 mild–moderate · ≥6.25 severe

Mild–moderate asymmetry — Current value: **6.1%**. The closer the marker is to the left, the better the symmetry.

CI — HEAD SHAPE RATIO

<75 scaphocephaly · 75–85 normal · ≥85 brachycephaly

Brachycephaly tendency (short-wide) — Current value: **87.6%**. The green band is the normal range.

HEAD HEIGHT

87 mm

Ear (Frankfurt) plane → vertex · Height/width ratio 0.67

EAR SHIFT (TPD, ESTIMATED)

12.3 mm — left ear forward

Midline (glabella–opisthocranion) axis rotated 5.5° relative to the ear axis. Landmark-based schematic estimate; not a caliper TPD measurement.

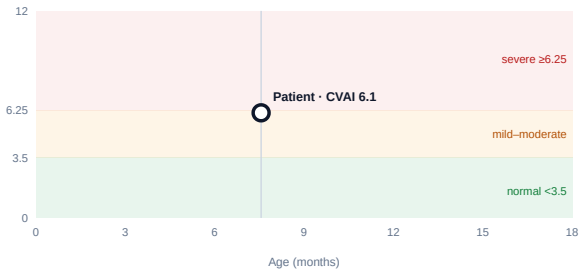
HEAD CIRCUMFERENCE (OFC, FROM SCAN)

43.8 cm

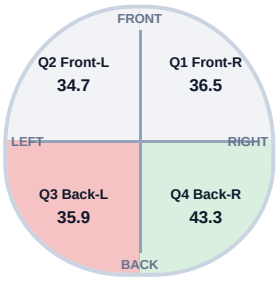
Maximum circumference plane (glabella–opisthocranion approximation). Hair/caps can inflate the value — verify with a tape measure when in doubt.

WHO percentile ≈ **P36** (male, 7 months 18 days). 0–24 month table; embedded values must be verified against the published source.

AGE CONTEXT — 7 MONTHS 18 DAYS (EVALUATION DAY)



Helmet assessment window (typically 4–12 months in the literature · the decision rests with the physician)



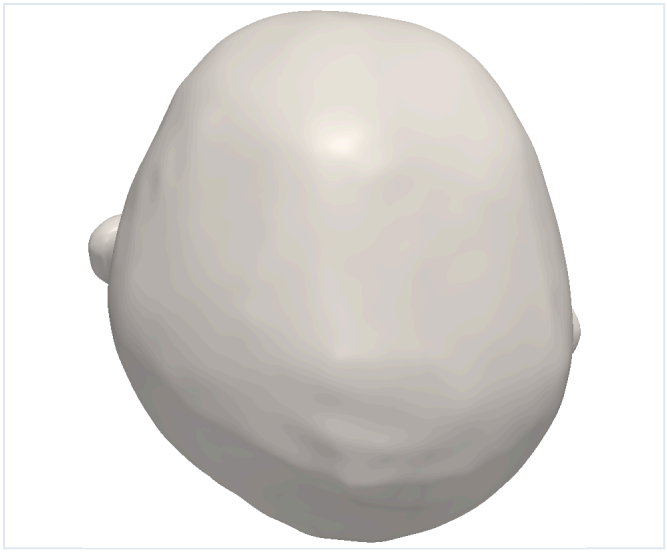
Left back (occipital) region relatively low

Left-right distribution — front: **balanced (diff 5.0%)**; back: **left side 18.7% lower**. Diagonal-axis difference **7.5%** (relatively low axis: **right-front ↔ left-back**; expected to match the short diagonal). Because the front/back split runs through the ear (Frankfurt) axis, the front-back total difference is not used in anatomical interpretation. This pattern is an automatic inference and does not replace a diagnosis.

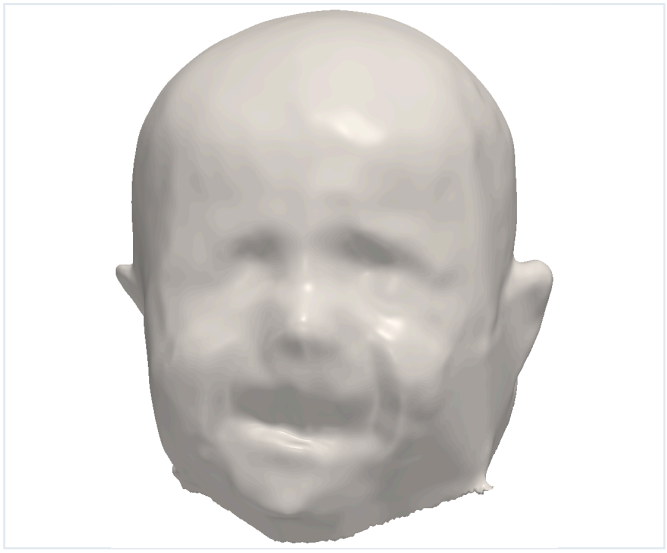
Quadrant balance (diagonal) **89%**

Colour: each quadrant is tinted against the mean of its own front/back pair — reddish = lower than its pair, greenish = fuller than its pair. The horizontal split is the ear (Frankfurt) axis; front-back totals are not compared. Unit: cm³ · summary slice.

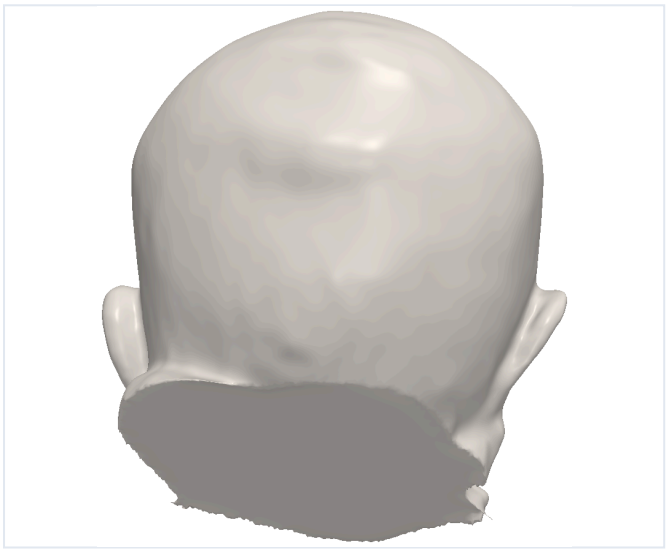
MODEL VIEWS



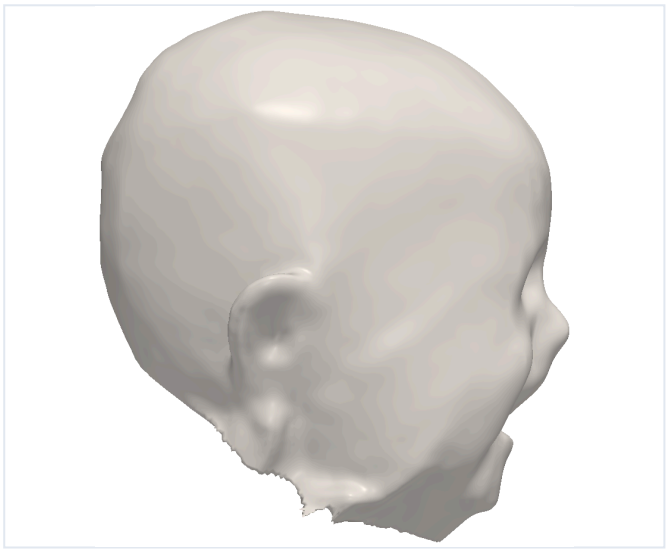
TOP (VERTEX)



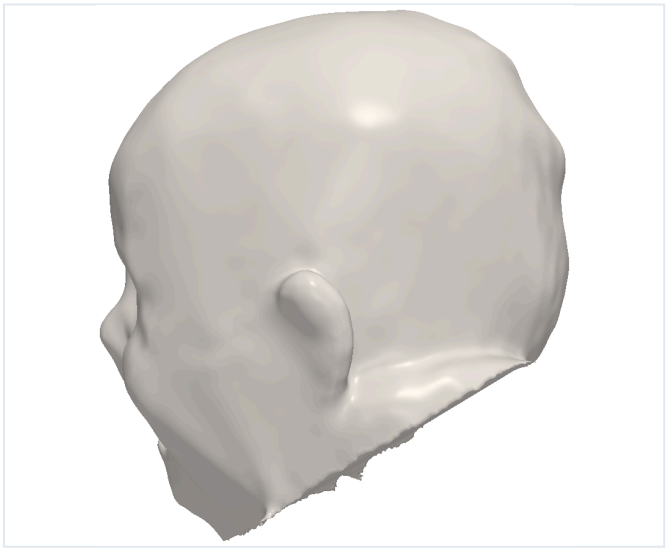
FRONT



BACK



RIGHT SIDE

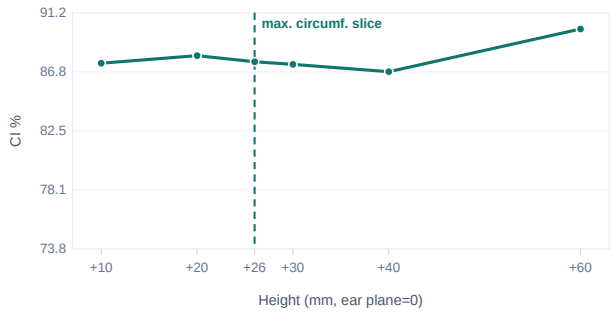


LEFT SIDE

CHART SUMMARY — TRENDS DERIVED FROM SLICE DATA

CEPHALIC INDEX (CI %) — HEIGHT PROFILE

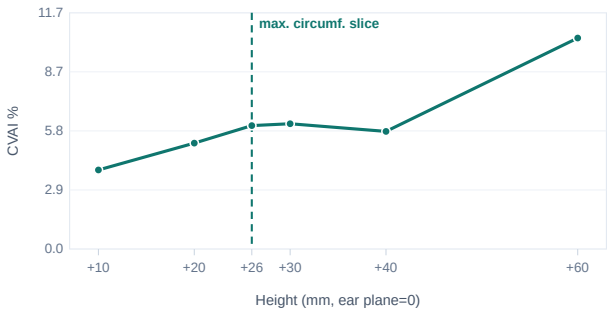
CI = ML / AP × 100. Green band: normal range (75–85). ↑ brachycephaly (≥85), ↓ scaphocephaly (<75).



Normal range 75.0–85.0 · Measurement · max. circumf. slice

CVAI (%) — ASYMMETRY PROFILE

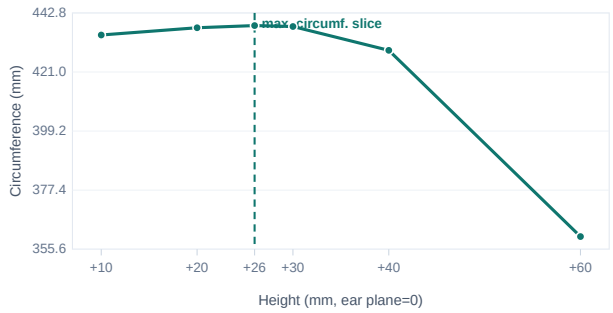
CVAI = (long − short diagonal) / short × 100. Green band: <3.5 normal. ≥6.25 severe. Approaching 0 means better symmetry.



Normal range 0.0–3.5 · Measurement · max. circumf. slice

CIRCUMFERENCE (MM) — HEIGHT PROFILE

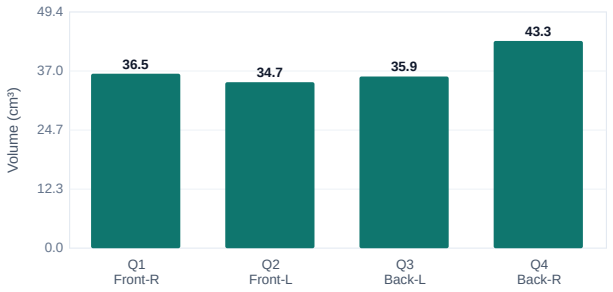
Slice circumference (convex envelope) at each Z height. Compared across follow-up scans to track growth; values below 100 mm (scan error) are not plotted.



Measurement · max. circumf. slice

QUADRANT VOLUMES (CM³) · SOURCE SLICE: TEMPORAL LEVEL (+30 MM)

Q1 front-right · Q2 front-left · Q3 back-left · Q4 back-right. In positional plagiocephaly, flattening in one back quadrant with fullness in the diagonal front quadrant is typical.



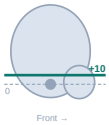
Volume

SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

SLICE 1/6 · ABOVE-EAR LEVEL · EAR PLANE +10 MM

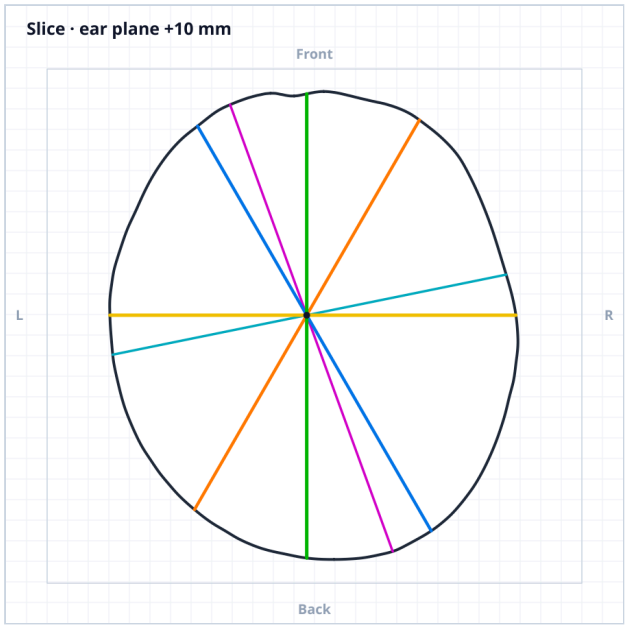
CI 87.5% · Brachycephaly tendency (short-wide) · CVAI 3.9% · Mild–moderate asymmetry



Above-ear level

Slice plane 10 mm above the ear (Frankfurt) plane · at 12% of the ear→vertex range · schematic view

On this slice CI **87.5%** (Brachycephaly tendency (short-wide)), CVAI **3.9%** (Mild–moderate asymmetry), diagonal difference **5.5 mm**. Regional: Left back (occipital) region relatively low.



Axial contour · Above-ear level (ear plane +10 mm)

Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	**434.6** mm
AP (front-back)	**145.3** mm
ML (right-left)	**127.1** mm
Cephalic Index (CI)	**87.5** % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	**140.8** mm
Diagonal 2	**146.3** mm
CVA (diagonal difference)	**5.5** mm
CVAI	**3.9** % Mild–moderate asymmetry
VOLUME AND QUADRANTS	
Slab volume (+0 → +10 mm)	**145.8** cm³
Q1 Front-Right	**35.0** cm³
Q2 Front-Left	**33.2** cm³
Q3 Back-Left	**35.9** cm³
Q4 Back-Right	**41.6** cm³

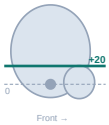
Q1 FRONT-R	Q2 FRONT-L	Q3 BACK-L	Q4 BACK-R
35.0	33.2	35.9	41.6

SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

SLICE 2/6 · ABOVE-EAR LEVEL · EAR PLANE +20 MM

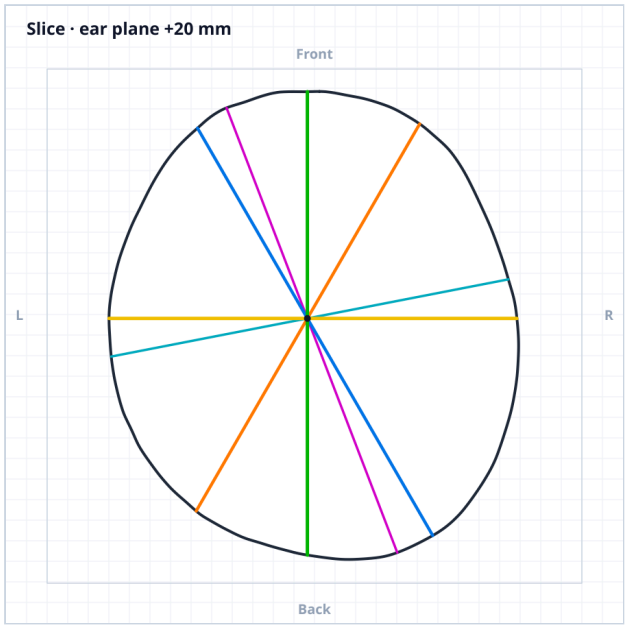
CI 88.0% · Brachycephaly tendency (short-wide) · CVAI 5.2% · Mild–moderate asymmetry



Above-ear level

Slice plane 20 mm above the ear (Frankfurt) plane · at 23% of the ear→vertex range · schematic view

On this slice CI **88.0%** (Brachycephaly tendency (short-wide)), CVAI **5.2%** (Mild–moderate asymmetry), diagonal difference **7.4 mm**. Regional: Left back (occipital) region relatively low.



Axial contour · Above-ear level (ear plane +20 mm)

Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	437.3 mm
AP (front-back)	145.8 mm
ML (right-left)	128.3 mm
Cephalic Index (CI)	88.0 % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	140.6 mm
Diagonal 2	148.0 mm
CVA (diagonal difference)	7.4 mm
CVAI	5.2 % Mild–moderate asymmetry
VOLUME AND QUADRANTS	
Slab volume (+10 → +20 mm)	149.3 cm³
Q1 Front-Right	36.1 cm³
Q2 Front-Left	34.3 cm³
Q3 Back-Left	36.1 cm³
Q4 Back-Right	42.8 cm³

Q1 FRONT-R	Q2 FRONT-L	Q3 BACK-L	Q4 BACK-R
36.1	34.3	36.1	42.8

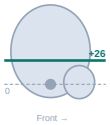
SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

★ AUTOMATIC · MAX. CIRCUMFERENCE PLANE — the summary CI/CVAI on page 1 are read from this slice

SLICE 3/6 · TEMPORAL LEVEL · EAR PLANE +26 MM

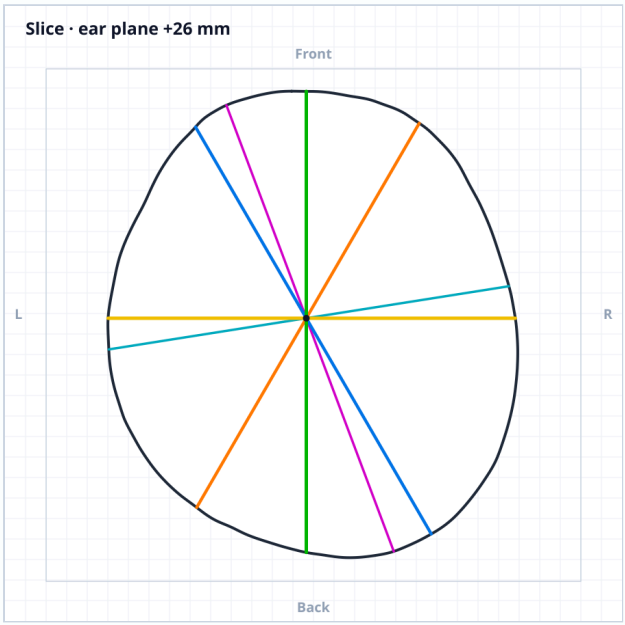
CI 87.6% · Brachycephaly tendency (short-wide) | CVAI 6.1% · Mild–moderate asymmetry



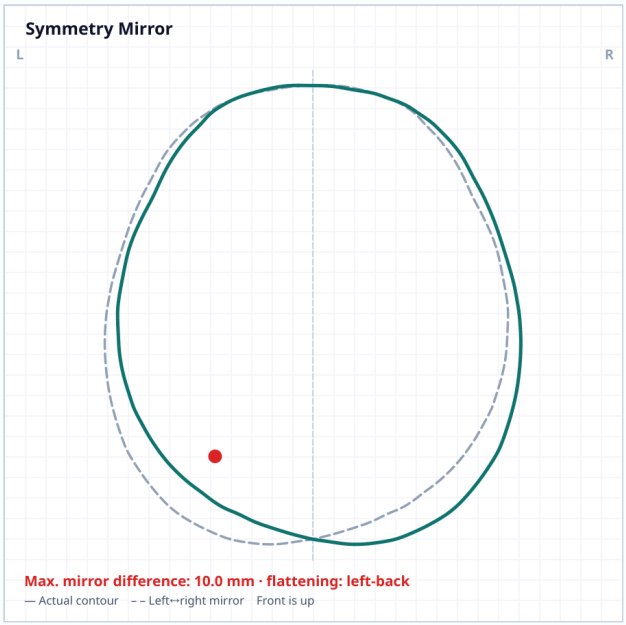
Temporal level

Slice plane 26 mm above the ear (Frankfurt) plane · at 30% of the ear→vertex range · schematic view

On this slice CI **87.6%** (Brachycephaly tendency (short-wide)), CVAI **6.1%** (Mild–moderate asymmetry), diagonal difference **8.6 mm**. This slice was added automatically by the report: the plane with the largest circumference in the 2 mm-step scan. Volume/quadrant measurements apply to slices added in the slicing tool.



Axial contour · Temporal level (ear plane +26 mm)



Symmetry mirror · max. diff. 10.0 mm (left-back flattened)

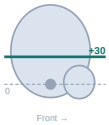
Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	**438.1** mm
AP (front-back)	**147.4** mm
ML (right-left)	**129.1** mm
Cephalic Index (CI)	**87.6** % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	**149.8** mm
Diagonal 2	**141.2** mm
CVA (diagonal difference)	**8.6** mm
CVAI	**6.1** % Mild–moderate asymmetry

SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

SLICE 4/6 · TEMPORAL LEVEL · EAR PLANE +30 MM

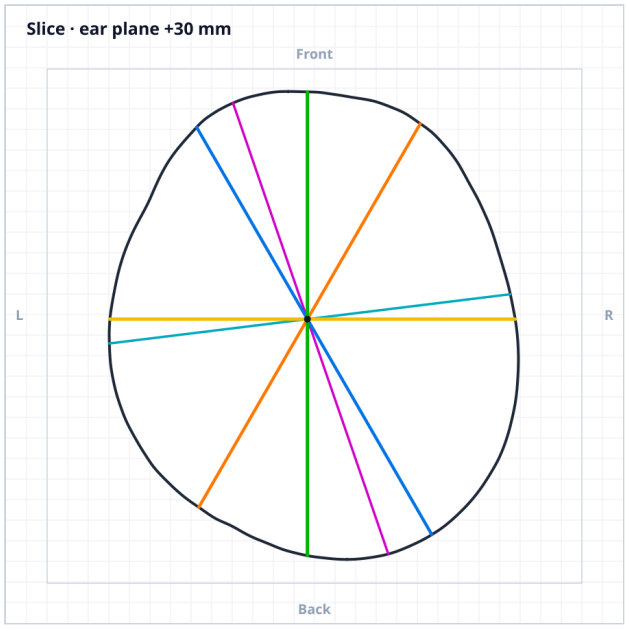
CI 87.4% · Brachycephaly tendency (short-wide) · CVAI 6.2% · Mild–moderate asymmetry



Temporal level

Slice plane 30 mm above the ear (Frankfurt) plane · at 35% of the ear→vertex range · schematic view

On this slice CI **87.4%** (Brachycephaly tendency (short-wide)), CVAI **6.2%** (Mild–moderate asymmetry), diagonal difference **8.6 mm**. Regional: Left back (occipital) region relatively low.



Axial contour · Temporal level (ear plane +30 mm)

Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	437.7 mm
AP (front-back)	146.3 mm
ML (right-left)	127.8 mm
Cephalic Index (CI)	87.4 % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	139.7 mm
Diagonal 2	148.4 mm
CVA (diagonal difference)	8.6 mm
CVAI	6.2 % Mild–moderate asymmetry
VOLUME AND QUADRANTS	
Slab volume (+20 → +30 mm)	150.4 cm³
Q1 Front-Right	36.5 cm³
Q2 Front-Left	34.7 cm³
Q3 Back-Left	35.9 cm³
Q4 Back-Right	43.3 cm³

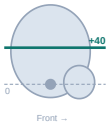
Q1 FRONT-R	Q2 FRONT-L	Q3 BACK-L	Q4 BACK-R
36.5	34.7	35.9	43.3

SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

SLICE 5/6 · TEMPORAL LEVEL · EAR PLANE +40 MM

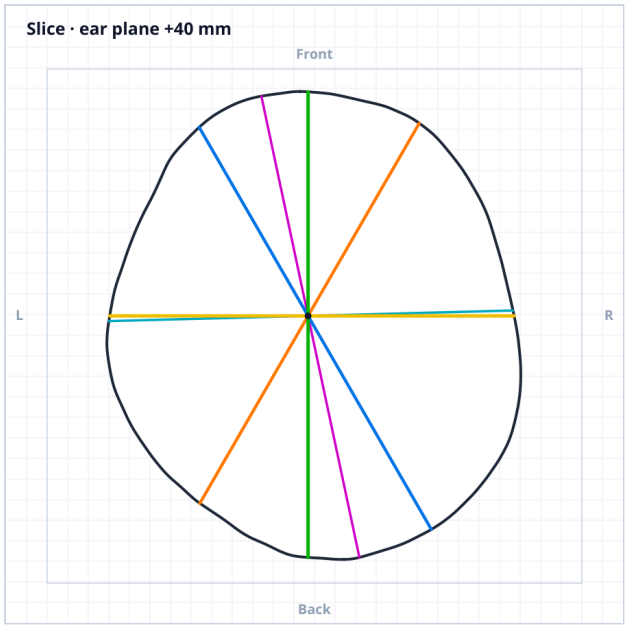
CI 86.8% · Brachycephaly tendency (short-wide) · CVAI 5.8% · Mild–moderate asymmetry



Temporal level

Slice plane 40 mm above the ear (Frankfurt) plane · at 46% of the ear→vertex range · schematic view

On this slice CI **86.8%** (Brachycephaly tendency (short-wide)), CVAI **5.8%** (Mild–moderate asymmetry), diagonal difference **7.9 mm**. Regional: Left back (occipital) region relatively low.



Axial contour · Temporal level (ear plane +40 mm)

Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	429.0 mm
AP (front-back)	144.4 mm
ML (right-left)	125.4 mm
Cephalic Index (CI)	86.8 % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	136.1 mm
Diagonal 2	144.0 mm
CVA (diagonal difference)	7.9 mm
CVAI	5.8 % Mild–moderate asymmetry
VOLUME AND QUADRANTS	
Slab volume (+30 → +40 mm)	148.0 cm³
Q1 Front-Right	35.6 cm³
Q2 Front-Left	33.8 cm³
Q3 Back-Left	35.5 cm³
Q4 Back-Right	43.0 cm³

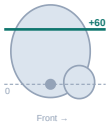
Q1 FRONT-R	Q2 FRONT-L	Q3 BACK-L	Q4 BACK-R
35.6	33.8	35.5	43.0

SLICE ANALYSIS — SINGLE SCAN

CONTOUR COLOURS: AP (front-back) · ML (right-left) · Diag1 · Diag2 · Rmin · Rmax

SLICE 6/6 · PARIETAL LEVEL · EAR PLANE +60 MM

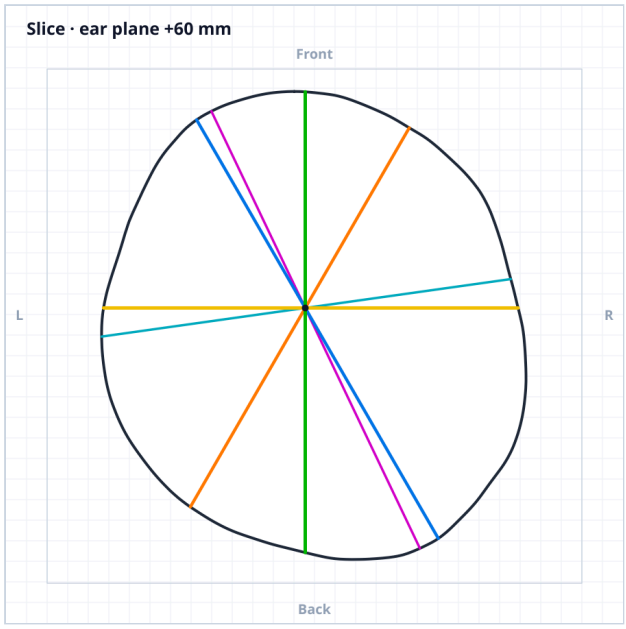
CI 90.0% · Brachycephaly tendency (short-wide) · CVAI 10.4% · Severe asymmetry



Parietal level

Slice plane 60 mm above the ear (Frankfurt) plane · at 69% of the ear→vertex range · schematic view

On this slice CI **90.0%** (Brachycephaly tendency (short-wide)), CVAI **10.4%** (Severe asymmetry), diagonal difference **11.7 mm**. Regional: Left back (occipital) region relatively low.



Axial contour · Parietal level (ear plane +60 mm)

Measurement	Value
SHAPE (AP / ML / CI / CIRCUMFERENCE)	
Circumference	**360.2** mm
AP (front-back)	**117.8** mm
ML (right-left)	**106.0** mm
Cephalic Index (CI)	**90.0** % Brachycephaly tendency (short-wide)
ASYMMETRY (DIAGONALS / CVAI)	
Diagonal 1	**111.9** mm
Diagonal 2	**123.6** mm
CVA (diagonal difference)	**11.7** mm
CVAI	**10.4** % Severe asymmetry
VOLUME AND QUADRANTS	
Slab volume (+40 → +60 mm)	**250.9** cm³
Q1 Front-Right	**58.3** cm³
Q2 Front-Left	**55.7** cm³
Q3 Back-Left	**61.7** cm³
Q4 Back-Right	**75.2** cm³

Q1 FRONT-R	Q2 FRONT-L	Q3 BACK-L	Q4 BACK-R
58.3	55.7	61.7	75.2

MEASUREMENT GUIDE AND NOTES

ABBREV.	METRIC	DEFINITION / HOW MEASURED	REFERENCE	CLINICAL MEANING
AP	**Anterior-posterior length (mm)**	Length of the front-to-back chord through the mid-ear (alignment) axis on the selected axial slice contour.	Age/percentile dependent; interpreted together with CI, not in isolation.	With ML, a core component of head shape; expected to increase with growth.
ML	**Medio-lateral width (mm)**	Right-to-left chord through the same reference point on the same axial slice, measured perpendicular to AP.	Age/percentile dependent; the numerator of the CI calculation.	Its ratio to AP (CI) separates brachycephaly from scaphocephaly.
Circumf.	**Slice circumference (mm)**	Outer-hull (convex envelope) length of the selected axial slice contour — consistent with tape-measure practice.	Compared against age percentile curves (the report gives the raw value in mm).	Expected to increase across follow-up scans. Plane dependent; may not exactly match the anatomical maximum head circumference (OFC). Values below 100 mm indicate a scan error.
CI	**Cephalic Index (%)**	CI = ML / AP × 100, derived from the slice contour.	75%–85% normal; <75% scaphocephaly, ≥85% brachycephaly	Low CI indicates a long-narrow head (scaphocephaly), high CI a short-wide head (brachycephaly).
Diag 1/2	**Cranial diagonals (mm)**	Two oblique chords through the mid-ear axis at ±30° to the midline on the slice contour: Diag1 right-front↔left-back, Diag2 left-front↔right-back.	The two diagonals are expected to be close to each other.	Core measurement for plagiocephaly; the difference reflects asymmetry. The shorter diagonal marks the oblique axis of flattening.
Diag Diff	**Diagonal difference / CVA (mm)**	|Diagonal 1 − Diagonal 2|, also known as Cranial Vault Asymmetry (CVA).	Ideally close to 0; expected to decrease under treatment.	One of the most direct indicators of response to helmet/repositioning therapy.
CVAI	**Cranial Vault Asymmetry Index (%)**	CVAI = (long − short diagonal) / short diagonal × 100 — a size-independent, normalised asymmetry measure.	<3.5% normal; 3.5%–6.25% mild–moderate; ≥6.25% severe	Being size independent, values from different ages/dates are directly comparable.
Volume	**Slice slab volume (cm³)**	Volume of the closed mesh slab between this slice and the previous SELECTED slice plane; for the first slice the slab starts at the ear (Frankfurt) plane. Each card states the slab range.	Expected to increase with growth; right/left balance is tracked via quadrants.	Slab thickness depends on the selected heights — account for the range width when comparing volumes of different slices.
Q1–Q4	**Quadrant volumes (cm³)**	The slab volume split into 4 quadrants by the midline (X=0) and ear-axis (Y=0) planes: Q1 front-right, Q2 front-left, Q3 back-left, Q4 back-right.	Left-right pairs within the same half (Q1↔Q2, Q3↔Q4) and the diagonal-axis sums (Q1+Q3 ↔ Q2+Q4) are expected to be balanced.	Because the front/back split runs through the ear axis, the front-back total difference is NOT by itself a fullness indicator; clinical reading uses left-right and diagonal differences.
APVR	**Anterior/posterior volume ratio**	Anterior-Posterior Volume Ratio: ratio of the volumes in front of / behind the mid plane.	~1.0 indicates a balanced distribution.	Summarises front-back fullness change when tracking brachycephaly / posterior flattening.
FA30	**Frontal angle at 30 mm (°)**	Forehead angle on the slice 30 mm above the base plane (trigonocephaly indicator).	Prototype metric — not clinically validated.	Must NOT be the basis of a clinical decision on its own; for supplementary observation only.

HOW TO READ THIS REPORT

Δ = Current − Previous. Green: change in the clinically desired direction (e.g. decreasing diagonal difference/CVAI, increasing circumference/volume). Red: change in the undesired direction. Grey (—): changes below ±0.05 are considered stable.

Slice levels are measured from the ear (Frankfurt) plane: "+N mm" ("Z+N" in tables) is the axial slice N mm above this plane in the aligned model — not above the base of the head. Follow-up scans are compared at the same level.

Level names are schematic and scale with the patient: the first 25% of the ear (Frankfurt) plane→vertex height is called "Above-ear level", 25–50% "Temporal level", 50–78% "Parietal level", above that "Vertex region". These names describe position only; they are not anatomical landmark measurements.

The report scans the ear-plane→vertex range in 2 mm steps to find the plane with the largest circumference; if it is not among the manually added slices it is added with the "automatic · max. circumference" badge, and the summary CI/CVAI are read from this plane. Volume and quadrant measurements are computed from the slices added in the slicing tool.

Symmetry mirror: the summary slice contour is mirrored left↔right about the sagittal axis; the largest radial difference shows the location and size of the flattening.

Ear shift (TPD) is an ESTIMATE: derived from the rotation of the midline (glabella–opisthocranion) axis relative to the ear axis; it does not replace a clinical caliper TPD measurement.

Head circumference (OFC) is the maximum axial circumference of the scanned surface; hair/caps can inflate it — verify with a tape measure when in doubt. The WHO percentile is approximate, from the 0–24 month table; the embedded table must be verified against the published source.

The age chart shows the CVAI severity bands (the report's clinical thresholds) over the patient's age; it contains no norm/percentile curve. The 4–12 month band is the typical helmet assessment window in the literature — the decision rests with the physician.

METHODOLOGY

Measurements are derived from the patient's 3D surface scan. The head is aligned to the Frankfurt plane using the two ear (tragus) and orbitale landmarks; the coordinate origin is the mid-ear point, and every "Z+N mm" height means N mm above this ear (Frankfurt) plane — not above the base of the head. AP, ML and the diagonals are measured as chords through the projection of the mid-ear axis on the selected axial slice contour; circumference is measured along the outer hull of the contour (convex envelope — tape-measure practice). Slab volumes are computed from the closed surface between consecutive selected slice planes (the first slab runs from the ear plane to the first slice); quadrants split this slab with the midline (X=0) and ear-axis (Y=0) planes. The "Previous" column shows the reference (older) scan, "Current" the up-to-date scan.

IMPORTANT NOTICE

This report contains measurements computed automatically from a 3D surface scan and is an AID to clinical assessment; it does not constitute a diagnosis on its own. Scan quality (holes, hair artefacts, alignment) can affect the results. Trigonocephaly metrics are at prototype level. The final decision rests with the physician.